

# FINAL REPORT TO THE AER FOUNDATION

<b>Project Title:</b>	The impact of alcohol use during pregnancy on maternal health, neonatal outcomes and infant development
<b>Grantee:</b>	National Drug and Alcohol Research Centre, University of New South Wales
<b>Grant:</b>	\$15,300
<b>Grantee Representative:</b>	Dr Delyse Hutchinson

## FINAL REPORT

### Summary

The AER Foundation grant supported the longitudinal follow-up of a pilot study of pregnant women and their partners when their children reached 12 months of age. The main objective of this project was to examine the impact of parental alcohol use during pregnancy on maternal health, neonatal outcomes and infant development. Specifically, there were three key aims:

1. Monitor alcohol use patterns and mental health in pregnant women and their partners.
2. Examine the relationship of maternal and paternal alcohol use and mental health with obstetric and neonatal outcomes for mothers and infants.
3. Determine how prenatal alcohol use and mental health problems in pregnant women and their partners impact on infant development (physical, cognitive, behavioural and emotional) and family functioning (family cohesion, conflict, and parent-infant attachment).

At the 12-month follow-up, women, partners and infants were assessed using multi-method (i.e. interview, questionnaire, observational), gold-standard assessments of alcohol and other drug use and key child and family indicators. DNA was also collected from the biological parents and the infant.

In total, 100 pregnant women and their partners (15% of which were high risk women in treatment for clinical substance use disorders during pregnancy) were recruited and assessed during the prenatal period, at 8 weeks and 12 months. The study included biological fathers and non-biological partners in an intimate relationship with the mother. Over 90% of all available partners agreed to participate in the non-clinical group, and 60% in the clinical group, which is high, especially given the requirements of the project on families. (Note that more than half of women in the clinical sample reported not being married or in a de facto relationship).

## **Were the outcomes as expected?**

The outcomes of the project were expected and consistent with the research hypotheses. A brief summary of the research outcomes relating to the three main aims is given below:

### ***Aim 1.***

Pregnant women with reported substance use problems were highly disadvantaged. Compared to women recruited through general antenatal clinics (non-clinical), women in the clinical group were more likely to report exposure to violence and poor mental health including antenatal depression, anxiety and stress. Among these women, both licit and illicit substance use was common in pregnancy, particularly poly drug use. The three most commonly used drugs were nicotine (78%), cannabis (34%) and alcohol (23%). Alcohol was the most commonly used substance among pregnant women in the non-clinical group (49%), drinking an average of four days in the past month. Four percent reported the use of nicotine (average 20 days in the past month); and no illicit drug use was reported.

Among partners, substance use was greatest amongst the clinical group. Partners in the nonclinical group mostly used alcohol and tobacco, whereas partners in the clinical group were also likely to be using illicit drugs in the prenatal period.

### ***Aim 2.***

Substance use problems in pregnancy were associated with poorer obstetric and neonatal outcomes for mothers and infants. Women in the clinical group were significantly more likely to report vaginal bleeding (27% versus 9%), severe vomiting and nausea (54% versus 23 %) and poor fetal and infant growth (12% versus 0%).

We were unable to examine the extent to which alcohol use alone was related to outcomes because the sample size was small and women who reported problematic drug use in pregnancy generally engaged in poly drug use. Recruitment of a larger sample will enable the specific effects of alcohol to be disentangled.

It was also found that 71 % of the clinical group had an unplanned pregnancy, despite the fact that only 15% of these women reported using birth control. This finding highlights an important opportunity for intervention (i.e. education that pregnancy can occur despite being drug dependent; easier access to affordable birth control for these women and their partners).

### ***Aim 3.***

Examination of the infant outcome data showed that children born to mothers who reported problematic substance use in pregnancy had poorer cognitive and language development at 12 months of age. No differences in motor or socio-emotional functioning were identified at 12 months. (Note that the socio-emotional development scale is based on maternal selfreport, whereas the other scales of development are assessed by a trained, independent clinical psychologist. The socio-emotional scale is therefore likely to be biased by maternal perception).

Prenatal substance use and mental health problems in pregnant women and their partners were also significantly related to poorer family functioning at both 8 weeks and 12 months, including lower scores on measures of family cohesion and parent-infant attachment (12 months only), and higher scores on measures of conflict.

Please note that the 12 month findings reported here are based on preliminary analyses conducted for this report and have not yet been disseminated publically.

### **The impacts of the project**

A major impact of this project was that the research design was tested and demonstrated to be feasible: As a result, the NHMRC awarded funding through the project grant scheme to extend the study to recruit and follow-up 2,000 Australian families through pregnancy until child age 12 month (The Triple B Study: Bumps, Babies and Beyond).

Importantly, the results of this project provide improved knowledge of the impacts of prenatal alcohol and other drug use on children and families. If the pattern of findings identified in this pilot work is replicated in the larger sample it will have major implications for prevention, intervention and treatment initiatives both in Australia and overseas. As described in the original proposal for this project, improved knowledge in this area will extend the evidence base by directly informing:

1. prevention and early interventions for families affected by parental substance use and young children affected by associated developmental delays;
2. how best to help women with substance use problems in pregnancy, and break the cycle of drug dependence; and
3. provide greater clarity regarding whether there is a safe level of alcohol use during pregnancy which will allow for the development of appropriate public health messages.

The project has also contributed significantly to the establishment of a bio-bank at the Murdoch Children's Research Institute (MCR!) to support genetic research. The bio-bank would allow for epigenetic research into the molecular processes by which alcohol, tobacco and other drug use in pregnancy influence infant development. Epigenetics refer to the programming of gene expression by environmental exposures such as drug use, stress, or diet. Epigenetic programming is potentially reversible which means that the results of this research have the potential to inform new interventions capable of compensating for genomic damage accrued in early life. DNA was collected by cheek swab (buccal cell) in this project. Laboratory results have indicated excellent yields and high quality DNA for storage at MCRI.

Finally, we are currently in the process of developing the protocol for another follow-up assessment of the families when the children reach three years of age. We have sought pilot funding for this work through several grant schemes (e.g. Rotary, UNSW internal support schemes) but have not as yet been successful. Our intention is to continue to seek funding to support this pilot work, which would in turn increase the likelihood of obtaining Category One funding through NHMRC/ARC. The research team's intention is to follow the cohort through preschool and school until at least adolescence to document the long-term outcomes for children and families.

## **Did the project meet the needs expressed in the application form?**

The project has largely met the outlined needs expressed in the application form. The results have led to much improved understanding of the long-term infant developmental issues of parental substance use during pregnancy. This will help inform early intervention initiatives and prevent developmental problems continuing into childhood and adolescence.

However, due to the relatively small sample size examined, and the fact that poly drug use was common in the clinical group, the differential effect of alcohol could not be thoroughly examined. Recruitment of a much larger sample through the NHMRC funded Triple B Study will provide both the necessary statistical power, and variability in patterns of alcohol use (i.e. no use versus occasional use, regular use, heavy use/intoxication) required to determine with greater confidence whether the effects detected in this pilot work extend to alcohol use alone. .

The process for dissemination of information and experience to other Stakeholders Investigators working on the project place considerable import on the dissemination of research findings (refer to the attached dissemination summary). The findings have been disseminated to the participants, hospital services involved in the study, other researchers in the field, and the broader community in the following ways:

1. Research participants have been provided with a written summary of the results from their infant's developmental assessment conducted at the 12 month follow-up. Participants are also being sent a biannual newsletter which provides information on the results of the study and new developments. They are also able to request the aggregate study results.
2. Participating antenatal and hospital services will be provided with written feedback on the results and implications of the study and our team has been making regular presentations to staff at these services (e.g. neonatology, midwifery, drug and alcohol).
3. Broader dissemination of research findings will be achieved through the production of bulletins, technical reports, peer-reviewed journal articles, seminar presentations and conference proceedings. .

During the period of funding numerous presentations were given at conferences (e.g. Australasian Professional Society on Alcohol and Other Drugs) and at professional meetings such as the NDARC Annual Symposium. Three research papers have also been prepared for publication; one is currently under review and two are in preparation. Peer-reviewed journal articles produced from this research will examine the following areas:

- a) The prevalence and associated characteristics of maternal and paternal alcohol use during pregnancy;
- b) Whether alcohol use is interrelated among couples? Examining the extent of influence over time;
- c) The impact of alcohol during pregnancy on obstetric and neonatal outcomes; and,
- d) The longer-term impact of alcohol during pregnancy: 12 month infant outcomes.

## **Personal and professional benefits**

The team of investigators and research staff working on the project have gained personally and professionally from undertaking the project. Important skills have been learnt in the following areas: managing longitudinal cohort studies; liaison and research with large public hospitals, including drug and alcohol services; multi-method assessment and measurement; substance use and mental health in pregnancy and its management; and working with families and children. The staff also gained from the opportunity to develop their academic qualifications through conference and other presentations and the publication of abstracts and papers. The Grantee's capacity to address alcohol and other drug misuse has been greatly enhanced through this research, learning valuable skills that will contribute to implementing the study on a larger-scale and to successfully disseminating the findings.

## **Recommendations:**

Knowledge gained from this research will extend the evidence base by directly informing:

1. prevention and early interventions for families affected by parental substance use and young children affected by associated developmental delays;
2. how best to help women with substance use problems in pregnancy, and break the cycle of drug dependence; and
3. provide greater clarity regarding whether there is a safe level of alcohol use during pregnancy which will allow for the development of appropriate public health messages (the latter outcome will occur after data have been obtained from the full cohort of 2,000 families).

## **Disseminating of information**

The strategy used for disseminating information is described above (see the process for dissemination of information and experience to other Stakeholders). The Grantee has been closely involved with relevant alcohol and drug agencies in the region (Sydney East and South West). She has developed strong collaborative relationships with these agencies that will assist the translation of research into practice in the future.

## **Project material**

Refer to the attached dissemination summary. Copies of poster presentations are attached. Copies of PowerPoint oral presentations are available on request. Peer review publications under submission are also available on request subject to formal acceptance for publication.

## Dissemination List

### CONFERENCES:

#### Conference Abstracts, Presentations and Posters (submitted / accepted / given):

Hutchinson, D., Maloney, E., Mattick, R. P., Allsop, S., Najman, J., Elliott, E., Burns, L., Jacobs, S. (2009) Parental substance use during pregnancy: Assessing maternal psychosocial characteristics, obstetric and neonatal outcomes. Poster presented at Australasian Professional Society of Alcohol and Other Drugs Conference, Darwin, 1-4 November 2009

Abstract published - Hutchinson, D., Maloney, E., Mattick, R., Allsop, S., Najman, J., Elliott, E., Burns, L., and Jacobs, S. (2009) What are the impacts of mothers and partners substance use during pregnancy? Assessing the psychosocial characteristics, obstetric, and neonatal outcomes. *Drug and Alcohol Review*, 28 (Suppl. 1), pg A31

Burns, L., Conroy, E., Maloney, E., Hutchinson, D., Haber, P. (2009) Substance use in marginalised populations: pregnant women and the homeless. Paper presented at the Australian Professional Society on Alcohol and Other Drugs; Darwin, 1 - 4 November 2009

Burns, L., Maloney, E., Black, E., Hutchinson, D. (2010). Alcohol and parenting: What and where is the risk? The Australian Professional Society on Alcohol and other Drugs Conference, Canberra, Australia, 28 November - 1 December 2010

Abstract published - Burns, L., Maloney, E., Black, E., Hutchinson, D. (2010). Alcohol and parenting: What and where is the risk? *Drug and Alcohol Review*, 29 (Suppl. 1), pp. 76.

Kelly E, Hutchinson D, Mattick R, Burns L, Black E (2010): Substance use and mental health among pregnant women: correlates and "Consequences. The Australian Professional Society on Alcohol and other Drugs Conference, Canberra, Australia, 28 November - 1 December 2010

Abstract published - Kelly E, Hutchinson D, Mattick R, Burns L, Black E (2010). Substance use and mental health among pregnant women: correlates and consequences. *Drug and Alcohol Review*, 29 (Suppl. 1), pp. 75

#### Presentations and talks given to services, NDARC seminars, etc.

Hutchinson, D., Maloney, E., Mattick, R., Allsop, S., Najman, J., toille E., Burns, L., Jacobs, S. (2010) Parental Substance Use During Pregnancy: Assessing maternal psychosocial characteristics, obstetric and neonatal outcomes. NDARC Annual Symposium, 18th August 2010

Black, E. Impact of Parental Substance Use on Infant Development and Family Functioning, presentation given to Drug Health Services, Royal Prince Alfred Hospital, August 2010

Campbell, G. Impact of Parental Substance Use on Infant Development and Family Functioning, presentation given to Newborn Care at Royal Prince Alfred Hospital, July 2010

Black, E. Impact of Parental Substance Use on Infant Development and Family Functioning, presentation given at Midwifery Group Inservice at Royal Hospital for Women, 19th May 2010

Black, E. Campbell, G. 'Impact of Parental Substance Use on Infant Development and Family Functioning, presentation given to staff of Obstetrics and Gynaecology Department at Royal Prince Alfred Hospital, 7<sup>th</sup> June 2010

Burns, L., Conroy, E., Maloney, E. Hutchinson, D. Drug use in marginalised populations. Lecture to graduate nursing students. University of Technology. 14<sup>th</sup> April 2010

Burns, L., Conroy, E., Maloney, E., Hutchinson, D. Meeting of the minds. Researching drug use in marginalised population. SWSAHS Drug and Alcohol Services. Kogarah, 19<sup>th</sup> May, 2010

Burns, L., Maloney, E., Conroy, E., Hutchinson, D. Maternal and neonatal impacts of substance use in pregnancy. Paper presented at Langton Treatment Centre 'Meeting of the Minds' Series, 19th May 2009

#### **PEER REVIEWED PUBLICATIONS:**

##### **Papers submitted**

Maloney, E., Conroy, E., Burns, L., Hutchinson, D. & Haber, P. (Under review). " Drug use in pregnancy: Time to consider the mother. Paper submitted in special edition of *Drug and Alcohol Review*. Submitted Oct 2010

##### **Papers accepted**

##### **Papers published**

Hutchinson, D., Maloney, E., Mattick, R., Allsop, S., Najman, J., Elliott, E., Burns, L., and Jacobs, S. (2009). (Abstract) What are the impacts of mothers and partners substance use during pregnancy? Assessing the psychosocial characteristics, obstetric, and neonatal outcomes. *Drug and Alcohol Review*, 28 (Suppl. 1), pp. A31

Kelly, E., Hutchinson, D., Mattick, R., Burns, L., Black, E. (2010). (Abstract) Substance use and mental health among pregnant women: correlates and consequences. *Drug and Alcohol Review*, 29 (Suppl. 1), pp. 75.

Burns, L., Maloney, E., Black, E., Hutchinson, D. (2010). (Abstract) Alcohol and parenting: What and where is the risk? *Drug and Alcohol Review*, 29 (Suppl. 1), pp. 76.

##### **OTHER**

*Impact of Parental Substance Use on Infant Development and Family Functioning* - Project Notes, Centrelines, 26, February 2010

*Impact of Parental Substance Use on Infant Development and Family Functioning* - study description in Cannabis Cohort Research Consortium Newsletter, Issue 5, July 2010.

*The Triple B Study: Bumps, Babies and Beyond*. Participant Newsletter, December 2010

We regularly update the chief and associate investigators on how the study is progressing and on research findings and implications





**Method:** We recruited a community based cohort (Personality and Total Health Through Life Study) in the ACT and Queanbeyan, with follow-up every four years.

**Measures:** We assessed alcohol use and mental health characteristics via standard self-report instruments. Alcohol use was classified from drinks/week (based on Guidelines applicable at the time) as abstainer/occasional drinker <1, light 1-13, moderate 14-27, hazardous/harmful >27 for males and light 1-7, moderate 8-13 and hazardous/harmful >13 for females. Binge drinking was defined as >6 and >4 drinks on a single occasion for males and females respectively. Depression was classified with the Composite International Diagnostic Interview (Short Form) at baseline and the Patient Health Questionnaire at follow-ups.

**Results:** At baseline the 2384 participants (52% female) were classified as: 772 abstainers/occasional, 1205 light, 255 moderate and 152 hazardous/harmful consumers: with 535 (22%) binge drinkers. At eight years 1978 (82%) were re-interviewed. The odds of depression increased with each increment on the Goldberg depression and anxiety scales and with increasing suicide ideation. Increased measures of physical and mental wellbeing (SF-12) reduced the odds of depression. Compared to light drinkers, the hazardous/harmful group had an 80% increase in odds of depression and the abstainers/occasional group a 34% increase. Binge drinking was not significantly related to depression.

**Conclusions:** Over an eight year period, hazardous/harmful alcohol use was reliably associated with increased risk for depression, but binge drinking was not a useful predictor. Poor mental health outcomes were also elevated for abstainers/occasional drinkers.

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## SYMPOSIUM - SUBSTANCE USE AND PARENTING

### MOTHERS IN THE NSW OPIOID TREATMENT PROGRAM

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Increased focus has been placed on parental substance use as a child protection concern in Australia in recent years. Although parental substance misuse has been associated with child maltreatment, not all substance-misusing parents abuse or neglect their children. Studies have found that those parents who come to the attention of the child protection system with problematic substance use are generally those with a greater number of co-occurring problems. Few studies have examined parenting and child protection issues in detail with the substance-using parents themselves. This paper presents the preliminary results from a study of mothers on the NSW Opioid Treatment Program. Two hundred women with children under 16 years of age have been interviewed and data extracted from their child protection and drug treatment records, with their consent. The data collected includes the participants' substance use and treatment histories, their demographic characteristics, any mental health and financial issues, the availability of social supports, and information about their children and parenting. A major focus is placed on services and interventions the families have received, particularly parenting-related interventions and those from child protection services. Some of the data from this study of mothers in opioid treatment will be presented in this paper.

## DOES MATERNAL MENTAL HEALTH IMPROVE WITH PARENTING INTERVENTIONS: FINDINGS FROM THE PARENTS UNDER PRESSURE PROGRAM

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There is widespread agreement that improving family functioning in high risk families with maternal substance misuse is critical. There are many adverse outcomes seen in children raised in environments characterised by parental psychopathology, substance misuse, poverty, social isolation and poor parenting. However, targeting a subset of problems such as substance misuse, in isolation from the broader family context, does little to improve family functioning. Indeed, there is now considerable data indicating that maternal psychopathology especially depression, contributes more to poor child outcome than maternal substance abuse alone. In this presentation the research supporting this proposition will be reviewed. Further, recent data from studies of the Parents Under Pressure program will be presented with a particular focus on maternal depression and anxiety and the relationship this has to poor child outcome.

## SUBSTANCE USE AND MENTAL HEALTH AMONG PREGNANT WOMEN: CORRELATES AND CONSEQUENCES

ERIN KELLY, DELYSE HUTCHINSON, RICHARD MATTICK, LUCY BURNS, EMMA BLACK

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A significant proportion of pregnant women use alcohol, cigarettes, and other drugs during pregnancy, particularly at low to moderate levels. This is of significant concern as research indicates that substance use in pregnancy can have adverse impacts on infant development. However, most research in this area has focused on high-risk samples of women diagnosed with clinical substance use disorders, has used cross-sectional designs, and has not examined the role of partner substance use. This presentation describes preliminary data from the first large-scale Australian cohort study to examine the impact of substance use in pregnant women and their partners. The research design is a longitudinal birth cohort study that commenced in 2010, in which 2000 pregnant women and their partners are being recruited during the prenatal period. Participants are being recruited through antenatal services attached to major hospitals in New South Wales and Western Australia. Participants are also being recruited through specialist drug and alcohol antenatal services. Multi-method assessments are being utilised including interview, questionnaire and observational assessments in the prenatal period, at infant age 8 weeks and at 12 months of age. Data will be presented on the substance use and mental health of a subset of the pregnant women in the cohort, as well as associated factors including demographics, partner substance use, physical health, marital/intimate partner relationship quality and social functioning. Further, outcomes related to prenatal substance use and mental health will be presented using preliminary data from the 8 week follow-up assessments.

## ALCOHOL AND PARENTING: WHAT AND WHERE IS THE RISK?

LUCY BURNS,<sup>1</sup> ELIZABETH MALONEY,<sup>2</sup> EMMA BLACK,<sup>1</sup> DELYSE HUTCHINSON<sup>1</sup>

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Limited research data exists on the prevalence and characteristics associated with parental alcohol use, particularly in Australia. This study has two aims. Firstly to use the 2007 National Drug Strategy Household Survey to examine the drinking patterns of Australian parents, to determine whether the drinking pattern differs by family type and the characteristics associated with regular parental alcohol use. Secondly, linked hospital data will be presented to examine whether maternal residence is associated with alcohol consumption in pregnancy. Findings indicate that parents were less likely to drink at levels defined as risky. Additionally, single mothers were more likely to report monthly and weekly binge drinking, compared to other mothers. Four predictors of risky parental alcohol use were identified: male; a current tobacco smoker; reporting higher levels of psychological distress; and lower levels of education. Analysis of linked hospital data showed that an alcohol-related hospital admission in pregnancy was associated with: residence in a remote/very remote area, being Australian-born, having had a previous pregnancy, smoking in the current pregnancy, and being aged 35+ years. Alcohol-exposed pregnancies were associated with a range of poor obstetric and neonatal outcomes, with no geographic differences noted. However, women in regional/remote areas appeared less likely to attend specialist obstetric hospitals. This presentation shows that suggest a considerable number of Australian children live in households where risky parental alcohol use occurs and provides evidence about a number of maternal characteristics associated with alcohol-related hospital admissions during pregnancy that may be used to assist targeting of service delivery.

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## MAKING FAMILY WORK 'DO-ABLE'

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The Bouverie Centre, in collaboration with The Department of Health, Victoria, is currently working with a group of twenty-five Alcohol and Drug (AOD) agencies, spanning diverse locations and service types, in an ambitious three-year plan to implement and support the sustainability of family work in the sector.

Known as the 'Beacon Strategy', this implementation project includes the provision of foundation training in *Single Session Family Work*, *Family-to-Family Link-ups*, *Family Sensitive Practice* and *Behavioural Family Therapy*. Booster training sessions, individual agency and staff consultations, and monthly facilitated Co-operative Inquiry Groups, provide ongoing support to help embed these practices.

The project is being undertaken within a Participatory Action Research framework. This creates a context for collaborative learning, in which knowledge is drawn from the theoretical perspectives described in implementation literature, and is built on by the emerging practice-based wisdoms of those who work in the AOD sector. It highlights the need to attend to the organisational conditions required to embed purposeful changes in agency practice.

This interactive presentation will explore the challenges faced by organisations and practitioners who incorporate family interventions into existing individually focused treatment models. AOD workers and managers, currently involved in the project, will share their experiences of implementing family inclusive practices, with particular reference to *Family Sensitive Practice* and *Single Session Family Work*. The session will encourage workers to develop 'communities of learning' to help embed family inclusive practices within their organisations. Participants will leave this practical discussion session with a greater enthusiasm for, and understanding of, the 'do-able' nature of family work within their current core business.

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## NEUROCOGNITIVE FUNCTIONING OF ALCOHOL-DEPENDENT INPATIENTS IN SINGAPORE

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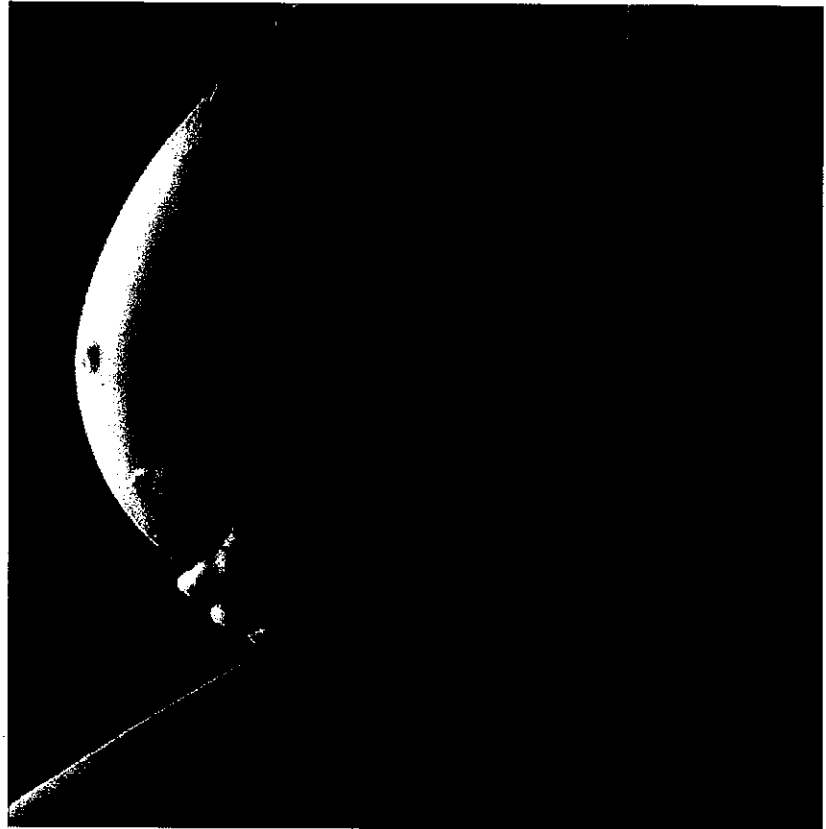
**Introduction:** Research indicates that the effectiveness of alcohol treatment and relapse prevention is dependent on cognitive functioning and abilities including areas of memory, executive function, visuospatial ability, and decision-making. We investigated neurocognitive functioning in alcohol-dependent inpatients undergoing a two-week detoxification programme in Singapore—where mean alcohol consumption is generally lower.

**Method and Results:** Preliminary results indicate that of 16 alcohol-dependent male inpatients recruited (mean age: 49.2 ± 5.2), the mean age of onset for alcohol use was 20.6 ± 7.2 and average daily consumption prior to admission was 24.3 ± 15.5 units. Patients scored a mean of 26.4 ± 15.8 on Severity of Alcohol Dependence Questionnaire (SADQ) and completed various neurocognitive tests including the CANTAB, the Cognitive Functioning Questionnaire (CFQ) and Dysexecutive Questionnaire (DEX).

CANTAB results relate to normative (IQ, age, gender matched) scaled scores (ss). Patients demonstrated impaired visual and spatial memory, reflected on the Paired Associate Learning (PAL) (total trials ss: -1.8, total errors ss: -3.1) and Spatial Working Memory (between errors ss: -1.2) tests. Patients were impaired on executive functioning and planning, based on the Intra-Extra Dimensional Set Shift (total errors ss: -1.1, stages completed ss: -1.0) and Stockings of Cambridge (problems solved in minimum moves ss: -1.1, mean subsequent thinking time ss: -4.8) tests. Correlations with total years of drinking were limited to PAL and the Information Sampling Task. Few correlations were found between neuropsychological performance and education level, DEX and CFQ.

**Discussion:** Preliminary results suggest that despite lower daily consumption relative to Western cultures, alcohol-dependent inpatients of this study showed marked neurocognitive deficits. These were most evident in memory, planning and organisation and to a lesser extent decision making and set-shifting ability, implying functional abnormalities in prefrontal and temporal brain regions. These preliminary results will be tested using the full sample with locally-derived IQ, age and ethnicity matched norms when available.

# The Triple B Study: Bumps, Babies and Beyond



To all our participating families,

I am delighted to write to you in our first newsletter to the families participating in the Triple B Study. This is a wonderful opportunity for me to thank you for being involved in the study. We appreciate all the time you have dedicated and the enthusiasm you have shown for the research being conducted. We believe that the study is of tremendous importance and your contribution is greatly valued.

We now have around 300 families on board, and are meeting lots of beautiful young babies at the moment, with many more due over the coming months. It is a unique and special opportunity for us to be part of this amazing time of change and development. For those of you with

young babies, and for expecting mothers and partners, we wish you all good health at this important time, and hope for the safe arrival of your new little ones into the world.

Sixty-four of our original pilot study families have now completed their age one follow-up which has been an amazing process to be part of. As a mother of two little ones myself (Audrey three and Oscar 18 months), seeing your babies grow and develop and identifying the factors that best assist this process is especially meaningful to me.

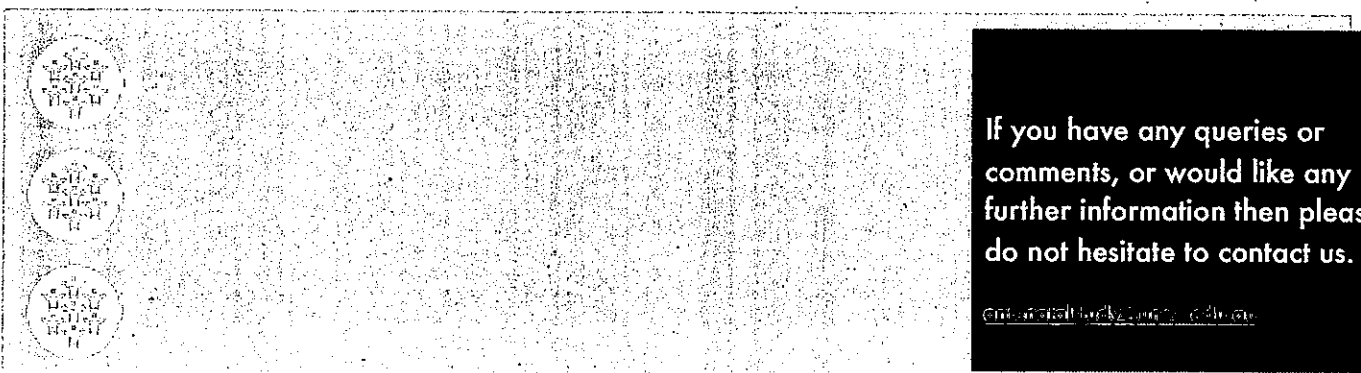
I would also like to tell you about the development of our next follow-up at age three. We have recently developed the research methods and are now awaiting ethics approval to start a pilot study later this year. For a small group

of you with children around age three, we hope to be in touch soon to invite you to be involved. This follow-up will consist of mother and partner interviews and questionnaires, and further gold-standard assessments of children's health and development, including a complimentary follow-up with the Bayleys Scales of Infant Development and written feedback about your child. We are seeking larger-scale funding to support this work at present and very much hope that we will be able to offer the opportunity to be involved to all our families in the future.

Wishing you all the very best over the festive season,

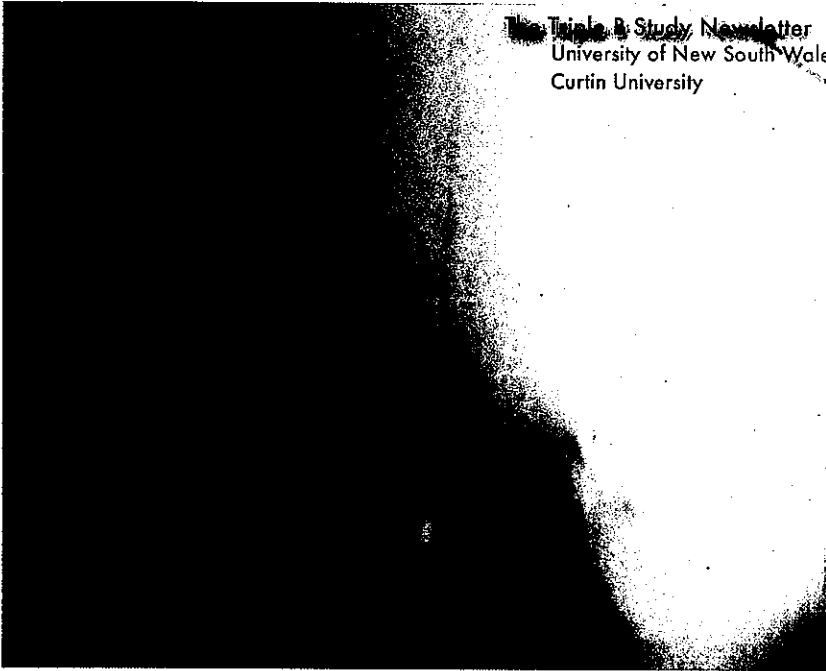
Dr Delyse Hutchinson

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Postdoctoral Research Fellow



If you have any queries or comments, or would like any further information then please do not hesitate to contact us.

[www.triplebudy.com.au](http://www.triplebudy.com.au)



## Meet the team

### Chief Investigators

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Dr Lucy Burns  
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Dr Sue Jacobs  
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Dr Craig Olsson  
 Murdoch Children's Research Institute,  
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Professor Anne Barril  
 Curtin University of Technology, Perth

Maria Gomez

Gabrielle Campbell

Jo Cassar

Laura Dewberry

Thea Gumbert

Erin Kelly

Megan Sety

### Progress to date..

The main objective of the Triple B Study is to investigate the impact of factors such as parental substance use, diet and nutrition, psychological health and social support on infant development and family functioning. Being the first large scale Australian study to comprehensively examine these issues in pregnant women and partners, we hope to improve knowledge of these effects to direct public health and treatment initiatives that improve the health and well being of Australian children and families.

The research project started as a pilot study of 72 families recruited through Royal Prince Alfred Hospital (RPAH) in 2009. Of these 72 families, 64 have now finished, with their babies reaching 12 months of age. We have another 3 who will finish by the end of the year. We would like to extend a big thank you to these families for allowing us into their busy lives to share their experiences during their babies' first year of life.

Preliminary results from the pilot study showed a number of significant findings. The mean age of our sample was 33 years with the majority of participants completing year 12. The sample was further defined by a high percentage of our participants being married or living in de facto relationships (94 per cent) while 21 per cent were unemployed (this included home duties). Results show that a vast majority (80 per cent) of pregnancies were planned, with nearly half of the sample reporting they had previously given birth to another child. Preliminary results also revealed that the most common problem women experienced during pregnancy was severe vomiting, nausea or dehydration.

The sample scores for depression, anxiety and stress were within the normal range, as were scores pertaining to physical and mental health, however, a small minority (11%) reported experiencing antenatal depression.

In terms of substance use, 49 per cent of the sample used alcohol in the month preceding baseline interview (conducted during pregnancy), while 4 per cent reported nicotine use. There was no reported use of heroin, benzodiazepines or cannabis.

Please note that these are only very preliminary data so stay tuned in the New Year for more information on published results and papers.

## A message from Elizabeth...



As many of you are probably already aware, at the end of 2009 I left NDARC and the pilot study I had been co-ordinating to take up an opportunity within the School of Psychiatry to work on a large population-level data linkage project examining child health and development. I wanted to take this opportunity to thank the many participants who allowed me into their lives (and their homes) to share their experiences during pregnancy and the early weeks with their new baby. Thank you for your openness in sharing personal details of your life, and your generosity in devoting the time required to complete the various interviews - this made my job a lot easier. I thoroughly enjoyed initially interviewing the many mothers and partners we recruited, catching up with them at the various follow-ups, and it was always a delight to finally meet the new babies. I wish you the very best for the years ahead.

## The main study...

In January 2010, we were fortunate to receive funding from the National Health and Medical Research Council (NHMRC) to expand the pilot study into a much larger cohort study of around 1,800 families in Sydney and Perth. In addition to following up our fabulous pilot study families as their (your!) babies turned one year old, we have also been busy setting up the new project, with a number of new staff coming on board.

Over the coming 2-3 years, we hope to recruit around 1,800 families. So far, 300 families have generously donated their time and effort. These families have been recruited into the study from the Royal Hospital for Women in Randwick and the Royal Prince Alfred Hospital in Camperdown, and we will soon begin recruitment at Liverpool Hospital in Sydney and King Edward Memorial Hospital in Perth.



## Get in touch with the study team

We would like to invite growing families who have already participated in the study to do so again. If you are pregnant or planning to become pregnant over the next two years and also planning to give birth at any of the above hospitals, please get in touch with the study team for another chance to participate! We would also love to hear from any friends or family members who are pregnant and planning to give birth at one of these hospitals.

7. McDermott F, Pyett P. Not welcome anywhere: People who have both a serious psychiatric disorder and problematic drug or alcohol use. Melbourne: Victorian Managed Mental Health Services; 1993.
8. Roche A, O'Neill M, Wolinski K. Alcohol and other drug specialist treatment services and their managers: Findings from a national survey. Australian and New Zealand Journal of Public Health 2004; 28:252-8.
9. Ministerial Council on Drug Strategy (Australia). National Drug Strategic Framework 1998-99 to 2002-03: Building partnerships: A strategy to reduce harm caused by drugs in our community. Canberra: AusInfo 1998.
10. Commonwealth Department of Health and Aged Care. Second National Mental Health Plan. Canberra: Commonwealth Department of Health and Aged Care 1998.
11. Jenner L, Kavanagh D, Greenaway L, Saunders JB. Dual Diagnosis Consortium 1998 Report. Brisbane: Alcohol and Drug Training and Research Unit 1998.
12. Allsop S, Cormack S, Addy D, Ashenden R, Ask A, Beel A. Education and training programs for front-line professionals responding to drug and alcohol problems in Australia: Summary report. Bedford Park: National Centre for Education and Training on Addiction 1998.
13. Siggins Miller Consultants. Current practice in the management of clients with comorbid mental health and substance use disorders in tertiary care settings. Canberra: Commonwealth Department of Health and Ageing 2003.
14. Kavanagh DJ, Greenaway L, Jenner L, Saunders JB, White A, Sorban J, et al. Contrasting views and experiences of health professionals on the management of comorbid substance misuse and mental disorders. Australian & New Zealand Journal of Psychiatry 2000; 34(2):279-89.
15. Saunders B, Robinson S. Co-occurring mental health and drug dependency disorders: Workforce development challenges for the A&D field. Drug and Alcohol Review 2002; 21:231-7.

## project notes

### A review of adolescent substance use and responses in WHO's Western Pacific Region

**John Howard, Hammad Ali and Lisa Robins**

This review was conducted to assist the WHO's Western Pacific Regional Office develop effective responses for young people who are, or who are at risk of becoming, problematic substance users. The region is home to a youthful population, experiencing the impact of globalisation, unemployment, demographic change, increased drug trafficking and production (eg opioids, amphetamines and cannabis).

Sexual behaviour while intoxicated increases the risk of STIs and unplanned pregnancies. Road traffic and other accidents, suicide and violence are associated with alcohol and other substance use. Young injectors are more likely to be involved in riskier behaviours than older injectors, increasing exposure to HIV, HCV and other blood-borne infections

Data came from peer- and non-reviewed, published and unpublished literature, websites and key informant interviews. Despite the limitations of the data, concerning trends emerged with regards to levels of alcohol, cannabis and amphetamine use, in addition to injecting drug use (IDU). Levels reported in many Pacific Island states far exceeded those for Australia and New Zealand.

The specific needs of young people are recognised, but remain largely unmet. As substance use is associated with many risky behaviours, broad and comprehensive interventions are required to deal with the range. There is a need to:

- Improve data collection via routine surveys to discern trends and emerging difficulties of young people, especially the most at risk adolescents.
- Develop a more collaborative approach from the UN system, governments and NGOs for

the development of a facilitating policy and practice environment.

- Trial evidence-informed prevention and treatment, especially brief and non-residential interventions including those which involve families and the community.
- Build the capacity of both generalist and specific workforces to meet the multiple and complex needs of young substance users in youth friendly settings.
- Explore diverse sites for prevention and screening activities such as schools, dormitories and other out-of-home accommodation used by students, workplaces that employ young workers, and other sites such as seafarer/ marine colleges.
- Use coercion wisely and with regard to both human rights legislation and the Conventions on Rights of the Child (CRC).
- Trial police diversion and youth drug courts for those apprehended and charged with crimes.

### Impact of Parental Substance Use on Infant Development and Family Functioning

**Richard Mattick, Delyse Hutchinson, Lucy Burns, Wendy Swift, Marian Shanahan, Emma Black, Gabrielle Campbell and Erin Kelly**

Community survey data show that half of all Australian women report some alcohol or other drug use in pregnancy. The limited available research also suggests that more than 1 in 4 men drink alcohol at risky levels during the prenatal period. The high incidence of substance use among Australian parents during this critical time is a major public health issue affecting over 100,000 babies each year.

Research suggests that parental substance use can have adverse impacts on birth outcomes and infant development, however the effects of such exposures are far from well understood.

In fact, major gaps in current knowledge have led to uncertainty about appropriate public health recommendations to women and their partners about alcohol and other substance use in pregnancy. Well designed research studies examining these effects in greater detail are urgently needed.

A pilot study commenced in 2008. The current study, funded by an NHMRC grant, commenced in 2010 and will be the first large-scale Australian study to examine the effects of substance use among pregnant women and their partners during the prenatal period on infant development and family functioning. The impact of other factors such as social support, biological factors, income, parents' emotional well-being, exercise, nutrition and temperament will also be examined.

The research design involves a longitudinal birth cohort study, in which 2,000 pregnant women and their partners will be recruited during the prenatal period (conception to birth). Participants will be recruited through antenatal services attached to major hospitals in New South Wales and Western Australia. Participants will also be recruited through specialist drug and alcohol antenatal services. There will be five assessment waves in the study – three in the prenatal period and two postnatal – at eight weeks and 12 months.

This study aims to:

- identify substance use patterns in a cohort of pregnant women and their partners during the prenatal period and the characteristics associated with substance use.
- examine the relationship of maternal and paternal substance use with pregnancy outcomes for mothers and their infants.
- determine the extent to which substance use in pregnant women and their partners predict problems in (a) infant development (physical, cognitive, behavioural and emotional), and (b) family functioning (marital/intimate partner relationship quality, conflict and violence, parenting behaviour and parent-infant relationship quality).



Improved knowledge in these under-researched areas will provide evidence-based direction to the development of public health policy and community interventions that aim to improve the health and wellbeing of a large number of Australian children and families.

## Using the EDRS to monitor "partying practice" of mixing energy drinks and ecstasy

**Natasha Sindicich and Lucy Burns**

The 'partying practice' of mixing energy drinks with alcohol and/or other substances, such as ecstasy or prescribed medications such as stilnox or benzodiazepines, has been a recent issue of concern in the Australian community. The aim of this mixing practice by users is to enhance the "high" associated with these substances and to allow the users to continue using alcohol and other substances for longer periods of time.

Despite the negative consequences of consuming energy drinks in combination with other substances, there has to date been minimal research on the topic. As a result, the 2009 Ecstasy and Related Drugs Reporting System (EDRS) investigated this practice of consuming energy drinks while 'partying' and consumption patterns around mixing energy drinks with alcohol and ecstasy.

In the Regular Ecstasy User (REU) sample of 679 participants, 69% reported consuming energy drinks with alcohol in the previous six months to interview and 57% reported consuming energy drinks with ecstasy in the previous six months. Of those participants that had consumed energy drinks and alcohol and/or ecstasy (n=376), 74% had combined all three substances on their last occasion of consumption. Whilst males and females both reported consuming a national average of four drinks each (that combined alcohol and energy drinks) on their last occasion of use, females appeared to consume more combined drinks than did males, when data for each state was analysed.

Given the high proportions reporting this 'mixing practice' and beliefs held by consumers that energy drinks will reduce the fatigue, cognitive and motor impairments of alcohol, this issue is becoming increasingly concerning. It is of particular concern that consumers may be more likely to engage in risky behaviours, such as operating a car or a motorcycle, in the erroneous belief that they are alert (Ferreira et al., 2004a, 2004b). Further issues of concern that warrant study (included in the 2010 EDRS study) includes the exacerbation of acute 'up' and 'hangover' symptoms: the 'jolt and crash' episode involving headaches, heart palpitations, nausea and, after long-term use, tolerance and withdrawal. These findings suggest a strong role for consumer education around the effects of combining these substances, possible symptoms that may be experienced, and information around the recommended daily allowance of caffeine.

## References

- Ferreira, S.E., Mello, M.T. & Souza-Formigoni, M.L.O. (2004a). Can energy drinks affect the effects of alcoholic beverages? A study with users. *Revista da Associação Médica Brasileira*, 50, 48-51.
- Ferreira, S.E., Mello, M.T., Rossi, M.V. & Souza-Formigoni, M.L.O. (2004b). Does any energy drink modify the effects of alcohol in a maximal effort test? *Alcoholism: Clinical and Experimental Research*, 28, 1048-1412.

## Development of a cannabis withdrawal scale

**David Allsop, Melissa Norberg and Jan Copeland**

Cannabis dependence has a long history of controversy, and yet a growing body of research is unearthing a clinically significant withdrawal syndrome in some regular users. Given the dubious distinction of cannabis as the world's favorite illicit drug of abuse, with an estimated 160 million current users worldwide, learning more about cannabis dependence should be a major public health priority.

This study aims to find out more about the cannabis withdrawal syndrome, with the aim

of developing a clinical measurement tool for assessing the severity of cannabis withdrawal. Cannabis withdrawal typically begins within 24 hours of last cannabis intake, and usually peaks within 1-2 days, and is thought to be largely over after 2 weeks. Cannabis withdrawal is characterized by several domains of physical and psychological discomfort, including anxiety, depression, sleep disturbance, digestive discomfort/problems (including reduced appetite/anorexia) and irritability/anger. Resumption of cannabis use alleviates withdrawal symptoms, thus cannabis withdrawal is believed to be a major contributor to the high rates of relapse observed clinically. Despite the discomforts associated with cannabis withdrawal and the role that withdrawal plays in relapse, there is currently no valid and reliable measure for quantifying the nature and severity of cannabis withdrawal during a quit attempt.

The creation of a psychometrically valid clinical tool for measuring cannabis withdrawal is an essential first step along the path towards developing interventions that can alleviate the discomfort (and relapse) caused by the cannabis withdrawal syndrome. Without a valid and reliable tool for measuring withdrawal, we would not be able to reliably quantify whether novel psychotherapies or pharmacotherapies are having the desired positive impact. To meet this gap in our current treatment efforts for cannabis use disorders we are currently running a pilot withdrawal study to gather cannabis withdrawal data with which to perform psychometric development of a measurement scale. The study is recruiting 50 non treatment seeking DSM-IV dependent cannabis smokers and measuring their withdrawal symptoms daily during a 2 week quit attempt, and a four week follow up compared with a one week "smoking as usual" baseline.

Data collection and analysis is well under way and we anticipate we will have a valid and reliable measurement scale by mid 2010. We feel that a deeper understanding of cannabis withdrawal and an easy and reliable way to measure it will open up novel therapeutic insights, and lead to better treatment outcomes. **cl**

# abstracts

## 2007 National Survey of Mental Health and Wellbeing: methods and key findings

*Australian and New Zealand Journal of Psychiatry*, 49:635-643

**Tim Slade, Amy Johnston, Mark A. Oakley Browne, Gavin Andrews and Harvey Whiteford**

**Objective:** To provide a description of the methods and key findings of the 2007 Australian National Survey of Mental Health and Wellbeing.

**Method:** A national face-to-face household survey of 8841 (60% response rate) community residents aged between 16 and 85 years was carried out using the World Mental Health Survey Initiative version of the Composite International Diagnostic Interview. Diagnoses were made according to ICD-10. Key findings include the prevalence of mental disorder, sex and age distributions of mental disorders,

severity of mental disorders, comorbidity among mental disorders, and the extent of disability and health service use associated with mental disorders.

**Results:** The prevalence of any lifetime mental disorder was 45.5%. The prevalence of any 12 month mental disorder was 20.0%, with anxiety disorders (14.4%) the most common class of mental disorder followed by affective disorders (6.2%) and substance use disorders (5.1%). Mental disorders, particularly affective disorders, were disabling. One in four people (25.4%) with



## Research updates from Consortium partners

### Family-based approaches to reduce alcohol-related harms among Indigenous Australians

Bianca Calabria<sup>1</sup>, Anton Clifford<sup>1</sup>, Anthony P Shakeshaft<sup>1,2</sup>, Christopher M Doran<sup>1</sup>, Julaine Allan<sup>3</sup>, Miranda Rose<sup>2</sup>, and Komla Tsey<sup>4</sup> (<sup>1</sup> *University of New South Wales, Sydney, New South Wales, Australia*; <sup>2</sup> *University of Technology, Sydney, New South Wales, Australia*; <sup>3</sup> *Lyndon Community, Orange, New South Wales, Australia*; <sup>4</sup> *James Cook University, Queensland, Australia*)

Indigenous Australians experience a disproportionately high burden of alcohol-related harm, relative to non-Indigenous Australians. These alcohol-related harms are typically cumulative, extending beyond the individual to the family and community. The number of Indigenous-specific intervention programs to address these harms appears less than optimal, and there have been few rigorous evaluations of alcohol interventions for Indigenous Australians. There is evidence from empirical studies that family-based approaches can be effective for reducing alcohol-related harms among high-risk drinkers, and the negative effects of alcohol misuse on their family members. Family relationships have always been vital to the cohesion and wellbeing of Indigenous communities. What happens at the family level shapes the wellbeing of individuals and the social functioning of Indigenous Australian communities. The potential strength of relationships between Indigenous individuals, their families, and their communities suggests that family-based approaches are likely to be appropriate and effective for reducing alcohol-related harm among Indigenous Australians. This paper will describe the components of a family-based intervention approach with great potential to reduce alcohol-related harm among Indigenous Australians, and a process for tailoring the intervention for routine delivery by a rural Indigenous community-based health service in partnership with a specialist drug and alcohol treatment agency.

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### The Impact of Parental Substance Use on Child Development and Family Functioning

#### Babies, Bumps and Beyond: The Triple B Study

Chief Investigators: Prof Richard P Mattick, Prof Steve Allsop, Prof Jake Najman, Dr Delyse Hutchinson, Prof Elizabeth Elliott, Dr Lucy Burns and Dr Sue Jacobs, plus a wide range of Associate Investigators. Current project team: Emma Black, Gabrielle Campbell, Joanne Cassar, Laura Dewberry, Thea Gumbert and Erin Kelly

This is the first large-scale Australian cohort study to examine the effects of substance use in pregnant women and their partners during the prenatal period on infant development and family functioning.

The impact of other factors such as social support, biological factors, income, parents' emotional well-being, exercise, nutrition and temperament will also be examined.

The study aims to: (1) Identify substance use patterns in a cohort of pregnant women and their partners during the prenatal period and the characteristics associated with substance use; (2) Examine the relationship of maternal and paternal substance use with pregnancy outcomes for mothers and their infants; and (3) Determine the extent to which substance use in pregnant women and their partners predict problems in (a) infant development (physical, cognitive, behavioural and emotional), and (b) family functioning (marital/intimate partner relationship quality, conflict and violence, parenting behaviour and parent-infant relationship quality).

The research design involves a longitudinal birth cohort study, in which 2,000 pregnant women and their partners will be recruited during the prenatal period (conception to birth). Participants are recruited through antenatal services attached to major hospitals in New South Wales and Western Australia. Participants will also be recruited through specialist drug and alcohol antenatal services. Multi-method assessments are utilised including interview, questionnaire and observational assessment measures in the prenatal period, at 8 weeks of age and at 12 months of age. Parents will be provided with the results of their infant's 12 month development assessment (the Bayleys Infant Development Scales), which includes feedback and recommendations.

Data collection is ongoing, with funding received for the full study of 2000 families to be recruited and followed up (funding provided until 2013). Seventy-two women have been recruited into the pilot study and an additional 48 have been recruited since funding for the full study was obtained, giving a total of 120. Baseline assessments have been completed with all of these women. A large proportion of partners have agreed to participate, with 63 partner baseline interviews (pilot study) and 19 partner baseline interviews (main study) completed to date. To date, 72 families have completed the 8-week postnatal follow-up assessment (68 pilot study and 4 main study). We have been unable to locate/book in 3 women for the 8-week follow-up assessment, and one family chose to withdraw from the study due to external factors. Forty-eight families have completed the 12 month assessment (pilot study only).

We'd like to acknowledge all who have participated and/or provided input into the project to date. Funded by a UNSW Gold Star award (pilot study) and the National Health and Medical Research Council (main study). Special thanks to Dr Elizabeth Maloney and Lee Taylor.

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