Collaborative Research Grant Initiative: Mental Wellness in Seniors and Persons with Disabilities

Ideas Fund Final Report

Strength is in the Knowing: Identifying Risk of Postpartum Depression During Pregnancy to Decrease Prevalence

June 27, 2012 – Charlene Hann
EXECUTIVE SUMMARY
Childbirth is noted as a significant life-changing event that comes with varying degrees of thoughts and emotions for mothers. According to the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association [DSM-IV-TR], 2000), Postpartum Depression (PPD) is defined as the onset of a major depressive episode within 4 weeks after childbirth. It is estimated that 13% of mothers are a risk of developing PPD. Researchers have suggested that interventions utilizing support are effective in reducing PPD symptoms. The purpose of this research project was to develop, implement and evaluate a PPD Prevention Program for expectant mothers. The primary goal of the prevention program was to reduce expectant mothers’ risk of developing PPD symptoms. Expectant mothers (N=25) between the ages of 22 and 39 years were randomly assigned to participate in the prevention program (Experimental Group), where they were given information on the development of PPD, identified risk factors and appropriate ways to intervene for each identified risk factor, or receive treatment as usual (Control Group). At 7-weeks postpartum, mothers were re-contacted and given the Edinburgh Postpartum Depression Scale (EPDS) to assess for signs of PPD. Results indicated that despite mothers in the PPD Prevention Group having an overall lower mean score on the EPDS as compared to the Control Group (2.27 versus 2.64 respectively), results were not significant (F(1, 23) = .099, NS). Results may however be more indicative of sample size and lack of statistical power and therefore continuation of research on preventative measures for PPD should continue.

RESEARCH OVERVIEW
Objective(s)
The purpose of this research project was to develop, implement and evaluate a Postpartum Depression (PPD) Prevention Program for expectant mothers in Fort McMurray, AB. The primary goal of the prevention program was to reduce expectant mothers’ risk of developing PPD symptoms. To do so, expectant mothers in Fort McMurray were given the opportunity to participate in the prevention program where they were given information on the development of PPD, identified risk factors and appropriate ways to intervene for each identified risk factor. Given the importance of social support, expectant mothers’ will also be aided in the development of an individualized social support system prior to their infant's arrival.

Background
Childbirth is noted as a significant life-changing event that comes with varying degrees of thoughts and emotions for mothers. For some, it is a time of jubilation where expectations and dreams during pregnancy become reality. For others, it may be time when their expectations and dreams during pregnancy do not become reality and as a result, these mothers may become at risk for a postpartum mood disturbance.

Postpartum mood disturbances can be classified into three categories: postpartum blues, postpartum depression (PPD) and postpartum psychosis. Postpartum blues, experienced by 50 to 80 percent of postpartum mothers, is described as a fluctuating mood that peaks approximately the 4th day post delivery and ends approximately 2 weeks later. This disturbance does not impair functioning and rarely requires treatment. However, 10 to 15% of mothers will experience a more disabling postpartum mood disturbance that requires treatment. According to the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association [DSM-IV-TR], 2000), PPD is defined as the onset of a major depressive episode within 4 weeks after childbirth. It is estimated that 13% of mothers are a risk of developing PPD (Dennis & Ross, 2006). At the end of the spectrum is
postpartum psychosis that is characterized by a dramatic onset usually within the first 2 postpartum weeks. During this time, mothers may experience a manic or mixed episode with symptoms that include restlessness, insomnia, irritability and disorganized behavior. In addition, mothers may experience delusions and/or hallucinations. Postpartum psychosis is very rare and will affect less than 1% of the population (Ray, 1999).

Mothers who experience PPD experience a number of disabling symptoms that have both negative consequences for mothers and infants. During this time, mothers report feeling a number of symptoms specifically related to depression and can include disinterest in activities, fatigue, sleep disturbances, decrease/increase in appetite and possible suicidal ideations. Relating more specifically to motherhood, mothers report preoccupation with the infant’s well-being, experiencing disinterest in the infant, grief over loss of independence, fearfulness of being alone with the infant and over-intrusiveness which may interfere with the amount of rest that the infant receives (American Psychiatric Association, 2000). For infants, PPD has been linked to attachment disorders, impaired cognitive development, emotional developmental delays and behavioral difficulties (Beck, 2001a; Dennis, 2004).

The etiology of PPD is controversial. Researchers in the area of PPD have suggested that a number of factors are related to the onset of depression and include biological changes, past psychiatric history, age, obstetrical difficulties and complications, anxiety during pregnancy, social economic status, personality traits, attitudes, marital status and relationship quality, stress, infant temperament and support (Ray, 1999; Beck 2001a). Since PPD affects both mother and infant, and the entire family, prevention, detection and treatment are paramount.

In 2009, Northern Lights Regional Health Centre (NLRHC) delivered 1065 infants and given that approximately 13 - 20% of mothers are at risk of developing PPD it is expected that at least 138 mothers in 2009 were at risk of developing PPD within Fort McMurray alone (Dennis & Ross, 2006). Within NLRHC, therapists were finding that more mothers are being referred to Addiction and Mental Health by Public Health during their infants’ 2-month immunizations. At this time, mothers are screened for postpartum depressive symptoms using the Edinburgh Postpartum Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987)). During initial assessments with therapists, mothers were noting that the lack of adequate support was one factor contributing to their inability to cope effectively with being a new mother. As such, it would be useful for professionals to determine whether support is related to the onset of PPD and if so, whether NLRHC should focus on identifying and providing appropriate prevention and treatments to help mitigate PPD given the potential negative outcomes for mother and baby (i.e., impaired mother-infant interactions, cognitive and emotional developmental delays for baby and recurrent depression for mother; Dennis & Ross, 2006).

Researchers have suggested that interventions utilizing support are effective in reducing postpartum depressive symptoms (e.g., Chen, Tseng, Chou & Wang, 2000). Given this finding, it would be important to determine whether lack of support is related to the onset of PPD. This information would help Alberta Health Services – North Zone in identifying at-risk expectant mothers and possibly provide them with a preventative program that may eliminate or reduce the risk of developing PPD. In addition, this would mitigate the associated negative outcomes for mother and infant.

To determine the relationship between support and onset of PPD, a systematic review of primary studies from 1997 to 2008 was conducted by writer (available upon request). The review indicated that support was not the only factor influencing the development of PPD and was often embedded within a multi-factorial framework (income, age, ethnicity, etc.). Despite this finding that a number of factors are related to the onset of PPD, in the general population, social support single-handedly accounted for approximately 13% of the variability in PPD onset.

The lack of adequate social support (support which matches mothers’ expectations) may place expectant and new mothers at an increased susceptibility to PPD. Despite recognizing this, few prenatal programs currently address issues relating to the risk of developing PPD and the importance of support for new mothers. For many new mothers, PPD is only discussed following the presentation
of symptoms; albeit this is more so for new mothers who can acknowledge and seek help for their symptoms. For new mothers who are struggling with the guilt and shame of feeling depressed during this momentous time, many are left to deal with these symptoms in isolation. While completing the review, two qualitative studies made direct reference to the importance of social support in the treatment of PPD. When mothers were questioned on treatment preferences for their PPD, the theme of social support was evident (Ugarriza, 2002). Mothers indicated that having more education or knowledge of PPD, as well as receiving more support, would have reduced the likelihood or severity of PPD. Furthermore, mothers who reported seeking social support reported that their depressive symptoms had subsided (Amankwa, 2003). This suggests that healthcare facilities need to provide evidence-based services that are relevant to the needs of expectant mothers in order to avoid unintended or harmful results to mothers and their babies.

In August 2008, Alberta Health and Wellness presented the Children’s Mental Health Plan for Alberta. This three-year action plan (2008-2011) was developed to provide direction and funding over this period for “strategies to improve access to mental health services for infants, children, youth and their families” (pg. 1). The plan suggested that “mentally well parents are a protective factor in their children’s lives” (pg. 1). Strategy 2.3 suggested that programs “enhance and build upon infant and preschool developmental screening and mental health intervention programs to provide early intervention to families and young children at risk for developing mental health problems” (pg. 9) and made specific reference to mothers with prenatal and postpartum depression in Action 22. This review has suggested that support may be an important factor relating to PPD and may need to be included in screening and intervention programs for both prenatal and postnatal mothers.

**Approach and Methods**

**Population:** Initially, 72 expectant mothers expressed interest in participating in the study when recruited from prenatal programs within Fort McMurray, AB from October 1st, 2011 to April 30th, 2012. Of those 72 mothers, 19 expectant mothers did not continue follow-up when contacted by researcher and 24 expectant mothers’ due dates exceeded the study’s cut-off date of May 3, 2012. A total of 29 expectant mothers (15 control; 14 experimental) initially participated in the study however at the 7-week follow-up 4 additional mothers (1 control; 3 experimental) were unable to be reached via telephone and therefore omitted from the study results.

Twenty-five expectant mothers between 22 and 39 years of age (mean age = 28.16 years) were included in the study. Expectant mothers were primarily Caucasian (Caucasian = 22; First Nations = 2; Indian = 1) and reported to be in married/common law (Single = 3; Married/Common-Law = 22) relationships. On average, expectant mothers reported living in Fort McMurray, AB for approximately 4.4 years (range = 5 months to 23 years). Twenty-two of the expectant mothers reported working prior to and during pregnancy while 5 expectant mothers reported being unemployed. The majority of expectant mothers were primiparous (No additional children = 22; 1 additional child = 1; 2 additional children = 1; 3 children or greater = 0). Only 8 expectant mothers reported any previous depression or anxiety and no expectant mothers reported experiencing any current depressive or anxiety symptoms.

**Project Design:** The researcher presented at the prenatal classes and provided the class with a brief overview of the study, a Participant Information Sheet and Contact Information Sheet. Inclusion criteria for the study included expectant mothers: (1) in their third trimester of pregnancy (>28 weeks gestation); (2) who were 18 years of age or older; (3) able to read and speak English; (4) not experiencing a current mental health disorder; (5) not experiencing any complications with the pregnancy; and (5) in the professional judgment of the physician, would not suffer harm from participation. Participants meeting inclusion criteria were told that they would be contacted by the researcher within 7 days where the researcher would go through the study in more detail and arrange a mutual time to meet in order to complete a number of questionnaires.

Participants were randomly assigned to either the PPD Prevention Group or the Control Group. So that the researcher was not aware of the group assignment at the time of recruiting, a randomization schedule was prepared. A table of random numbers was generated and numbers from the table were
placed into individual sealed brown envelopes. The researched selected a brown envelope and assigned participants to the control group if an even number was selected or the experimental group if an odd number was selected. For participants assigned to the PPD Prevention Group and the Control group, the research met with each participant individually where informed consent was obtained and the Beck Depression Inventory-Second Edition (BDI-II), Beck Anxiety Inventory (BAI), and Demographic Questionnaire were completed. For those participants assigned to the PPD Prevention Group, the researcher also invited each participant to attend a 2-hour Educational Group for Expectant Mothers. At this group, the research administered the Postpartum Depression Predictors Inventory-Revised (PDPI-R) and expectant mothers were given information on the etiology of PPD. The research specifically addressed each risk factor on the PDPI-R as a group and provided strategies to help expectant mothers reduce the impact of each risk factor. Seven weeks following their actual due date, all participants were re-contacted by telephone. At that time, the Edinburgh Postpartum Depression Scale (EPDS) was completed. Following the completion of the EPDS, participants in the control were debriefed and provided with the opportunity to receive the Postpartum Depression Information either by group or individually.

**Measures:** Consenting expectant mothers were initially given the Beck Depression Inventory-Second Edition (BDI-II; Beck & Steer, 1993) and the Beck Anxiety Inventory (BAI; Beck, Steer & Brown, 1996) to screen for existing depressive and anxiety symptoms. The BDI-II (Beck & Steer, 1993) is a widely used 21-item self-report questionnaire that assess the severity of depression in adults and adolescents 13 years and older. Patient scores ranging from 0-13 are classified as exhibiting minimal depression while scores 14 and beyond are classified as evidence of depression. More specifically, scores from 14-19 are classified as mild, scores 20-28 are classified as moderate and scores 29-63 are classified as severe. The BAI (Beck, Steer & Brown, 1996) is also a widely used 21-item self-report instrument that assesses the severity of anxiety in adults. Total scores from 0-7 are considered to reflect minimal anxiety while scores 8 or greater reflect problematic anxiety in patients. More specifically, scores in the range of 8-15 are classified as mild anxiety, scores in the range of 16 to 25 reflect moderate anxiety and in the range of 26 to 63 are classified as severe anxiety. For research purposes, any participant scoring 14 or higher on the BDI-II and/or 25 or higher on the BAI will be considered as exhibiting significant depressive or anxiety features and ineligible to participate in the study.

Participants in the experimental group were given the PDPI-R (Beck, 2001b) to determine whether they are at risk of developing PPD. This inventory, in the form of a checklist, consists of risk factors found to be related to PPD in the literature (Prenatal Depression; Child Care Stress; Life Stress; Social Support; Prenatal Anxiety; Marital Satisfaction; History of Previous Depression; Infant Temperament; Maternity Blues; Socioeconomic Status; Marital Status; and Unwanted/Unplanned Pregnancy). The PDPI-R was designed to be administered by a clinician through an interview format. The PDPI-R does not calculate a cutoff score but allows mothers to identify and discuss potential risk factors.

The EPDS (Cox et al., 1987) is a 10-item self-rating scale developed to detect depression in postpartum mothers. Is a widely used instrument “which has satisfactory reliability and adequate sensitivity and specificity when compared with a psychiatric diagnosis of major depression” (pg. 480; Goodman & Tyer-Viola, 2010). According to the developers of the EPDS (Cox et al., 1987), a score of 9 or 10 indicates minor depression and a score of 12 or 13 indicates major depression. For research purposes, any score greater or equal to 10 will be considered depressed.

**Data Analysis:** Descriptive analysis was initially completed to determine whether any significant differences existed between participants who completed the prevention group versus those participants who did not complete the prevention group on demographic variable which included age, marital status, years living in Fort McMurray, employment status, number of children and previous history of depression and/or anxiety. To determine whether the PPD Prevention Group was indeed effective in reducing PPD symptoms in new mothers, an Analysis of Variance would be completed that compared mothers’ scores on the EPDS who completed the PPD Prevention Program versus mothers’ scores on the EPDS who did not complete the PPD Prevention Program.
Key Findings
To determine whether any differences between the PPD Prevention Program Group and Control Group existed, independent samples t-test were completed on the demographic variables as well as scores on the BDI-II and BAI. According to the results, it was determined that expectant mothers in the PPD Prevention Group were significantly more likely to report previous depression or anxiety symptoms than expectant mothers in the Control Group. Otherwise, analyzes indicated homogeneity between the PPD Prevention Group and the Control Group.

*Equality of Variances not assumed according to Levene’s Test for Equality of Variances.

To test whether the PPD Prevention Group was effective in reducing expectant mothers’ risk of developing PPD, an one-way analysis of variance was completed on mothers’ EPDS scores at 7-weeks postpartum. According to the results, no significant difference in mothers’ EPDS scores was evident for mother’s who had completed the PPD Prevention program versus mothers who had not.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>T</th>
<th>DF</th>
<th>Significance Level (2-tailed)</th>
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<tbody>
<tr>
<td>Age</td>
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<td>28.45</td>
<td>.323</td>
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<td>.750</td>
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<td></td>
<td>Control</td>
<td>27.93</td>
<td></td>
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<td>PPD Prevention</td>
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<td>1.883*</td>
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<td>Years in Fort McMurray</td>
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<td>-1.341*</td>
<td>15.16</td>
<td>.199</td>
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<td></td>
<td>Control</td>
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<td></td>
<td>Control</td>
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<tr>
<td>Number of Children</td>
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<td>-1.749*</td>
<td>13.00</td>
<td>.104</td>
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<tr>
<td></td>
<td>Control</td>
<td>.29</td>
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<td>Previous Depression/Anxiety</td>
<td>PPD Prevention</td>
<td>1.45</td>
<td>-2.177*</td>
<td>17.139</td>
<td>.044</td>
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<td></td>
<td>Control</td>
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<td>BDI-II</td>
<td>PPD Prevention</td>
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<td>23</td>
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<td>Control</td>
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<td>.522</td>
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<td></td>
<td>Control</td>
<td>5.71</td>
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</table>

Despite a lack of significance, mothers in the PPD Prevention Group had an overall lower mean score on the EPDS at 7-weeks postpartum (mean = 2.27) as compared to mothers in the Control Group (mean = 2.64). As such, the analysis may be a reflection of an inadequate sample size as opposed to the PPD Prevention Program being unsuccessful.

Conclusions
The purpose of this research project was to develop, implement and evaluate a Postpartum Depression (PPD) Prevention Program for expectant mothers in Fort McMurray, AB. The primary goal of the prevention program was to reduce expectant mothers’ risk of developing PPD symptoms. Results indicated that completion of the PPD Prevention program did not significantly reduce expectant mothers’ risk of developing PPD symptoms as reflected on the EPDS at 7-weeks postpartum despite mothers in the PPD Prevention Group having a lower overall mean score on the EPDS as compared to mothers in the Control Group.

The observation that mothers who had completed the PPD Prevention Program had an overall lower mean score on the EPDS may suggest that through screening and providing early preventive opportunities, mothers did learn more about PPD. This additional knowledge may have helped mothers feel more confident in their ability to cope and identify when support is needed; whether this is accessing the support system that they themselves developed during their participation in the program or accessing services through various agencies within Fort McMurray, AB. As previously
suggested, the results may be a reflection of a small sample size and the lack of statistical representation and power, especially given only 10-15% of new mothers will experience PPD. As such, with a larger sample size any important differences may not have been missed. However, given time restraints for the completion of the project and the difficulties with the ethical review prior to the study’s implementation the available time for recruitment of participants and completion of the study was condensed.

**Implications for Policy or Practice**

The implications for research in PPD are profound and have direct impact for mothers, children, communities, educational and healthcare agencies. The guilt and shame that many new mothers’ feel as a result of lack of education and support on PPD may in fact hinder their disclosures. As such, many mothers are living with PPD behind closed doors and this may result in more severe consequences for mother, infant and the family. Through screening and providing early preventive opportunities, mothers are given the opportunity to learn more about PPD. Through education, mothers will be more confident in their ability to cope and identify when support is needed or have the tools necessary to help others mothers who are going through PPD.

Despite the current study not demonstrating a significant effect for the PPD Prevention Program changes in practices within Fort McMurray, AB as a result of this study are evident. Prior to this study, very little was being done to support mothers experiencing PPD and nothing, to this writer’s knowledge, was being done to help prevent the risk of developing PPD within Fort McMurray, AB. Since the study’s implementation, Addiction and Mental Health Services of Alberta Health Services have provided mothers experiencing PPD with more timely services, eliminating wait-lists for this population. As well, various community agencies have requested presentations on PPD to their clientele or have requested consultations for their clientele regarding PPD. Awareness of PPD within the community of Fort McMurray, AB is growing as result of this study and this alone may prove to be fruitful.

Overall, both the community and Alberta Health Services are helping expectant mothers prepare for the birth of their infants, provide them with the opportunity to experience motherhood to its fullest through providing them with information on PPD and providing infants with the most favorable environment for an optimal, healthy development. A vision which was also shared by Alberta Health Services and has been clearly identified in Action 22 of the Children’s Mental Health Plan for Alberta.

**Directions for Further Research**

Since PPD affects both mother and infant, and the entire family, prevention, detection and treatment are paramount. However, the majority of research on PPD has focused on treatment as opposed to prevention of PPD. As such, research on preventative measures for PPD should continue. Recall in one study, when mothers were questioned on treatment preferences for their PPD, the theme of social support was evident (Ugarriza, 2002). Mothers indicated that having more education or knowledge of PPD, as well as receiving more support, would have reduced the likelihood or severity of PPD. In addition, results of this study showed that despite being non-significant, mothers in the PPD Prevention Program reported less depressive symptoms as reflected in the overall mean on the EPDS as compared to the Control Group and the lack of statistical significant may be a result of small sample size as opposed ineffectiveness of the program. As such, it would be beneficial to conduct a similar study with a larger sample size. In addition, continuing research with a mixed design (quantitative and qualitative components) may also prove to be more meaningful, especially in determining the exact needs of expectant mothers when it comes to PPD preventative measures.

**Knowledge Dissemination and Translation Activities**

Dissemination of the findings have included the following:

1. Participants in the study were all sent out a brief summary of the study’s findings through mail.
2. A copy of the report was given to the Fort McMurray Addiction and Mental Health Manager and Addiction and Mental Health Director of the North Zone
3. A summary of the findings was sent out to all Addiction and Mental staff via email.
4. A brief summary of the report was given out to all prenatal programs where the researcher recruited participants.
5. Researcher has been interviewed by a local newspaper, The Fort McMurray Connect, about the study.

Future dissemination of the findings will include:
1. Presentation at a conference (either verbal or poster).
2. Development of a poster to be placed in the waiting room of Addiction and Mental Health Department in Fort McMurray, AB.
3. Submitting the findings in the Alberta Health Services, North Zone, Newsletter.

**PRINCIPAL APPLICANT (TEAM LEADER)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position Title</th>
<th>Topics of interest</th>
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<tbody>
<tr>
<td>Charlene Hann</td>
<td>Registered Psychologist, Addiction and Mental Health Services, Alberta Health Services</td>
<td>Postpartum Depression; Infant and Toddler Mental Health</td>
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**PROJECT PARTNERS (TEAM MEMBERS)**

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<tr>
<th>Name</th>
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<tr>
<td>Tamara Austin</td>
<td>Registered Psychologist, PsychSmith Inc.</td>
<td>Data Collection, Data Synthesis</td>
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**PUBLICATIONS AND PRESENTATIONS**

No publications or presentations of the study’s findings have been completed at this time.

**ABOUT THE ALBERTA ADDICTION AND MENTAL HEALTH RESEARCH PARTNERSHIP PROGRAM**

The *Alberta Addiction and Mental Health Research Partnership Program* is comprised of a broad-based multi-sectoral group, representing service providers, academic researchers, policy-makers and consumer groups, working together to improve the coordination and implementation of practice-based addiction and mental health research in Alberta.

The mission of the Research Partnership Program is to improve addiction and mental health outcomes for Albertans along identified research priority themes, by generating evidence and expediting its transfer into addiction and mental health promotion, prevention of mental illness, and innovative service delivery.

The Research Partnership Program sets out to increase Alberta’s excellence and output of addiction and mental health research findings, and to better translate these findings into practice improvements.
REFERENCES