**Differences in Degree of Psychiatrist Involvement in Care for Individuals with Major Depressive Disorder: History and Trajectory of Service Utilization**

**Project Acronym or Short Study Title:** Degree of Psychiatrists Involvement in Treating MDD

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# Protocol Synopsis

The purpose of this research is to determine how differences in the clinical history of individuals diagnosed with Major Depression Disorder (MDD) predict the degree to which a psychiatrist is involved in their care. Additionally, cost and mortality rates associated with psychiatrist involvement will be determined.

# Background & Rationale

The proposed research is concerned with service utilization patterns and demographic factors that are associated with the degree to which a psychiatrist is involved in the treatment of individuals diagnosed with MDD, and how differential levels of involvement are related to individual health care costs and mortality rates. The rationale for this research is derived from current findings in the literature pertinent to healthcare related outcomes related to depression. MDD adversely affects the health of those afflicted and as a result, these individuals utilize health care services significantly more than the non-clinical population. For example, compared to individuals without a diagnosis, those with depression are at an increased risk for the development of cardiovascular, metabolic, viral, and infectious disease, experience mortality rates two to three-times higher than the normal population1, have higher annual healthcare expenditures, and a higher cost for every category of care (e.g. medical specialist, inpatient, pharmacy, and laboratory services)2.

Importantly, patients treated with antidepressants also use substantially more non-psychotropic and psychotropic medications than those not on antidepressants3. This results in a much higher probability of considerable adverse side effects resulting from the interaction of simultaneous drug usage. These findings underscore the importance of psychiatrist’s collaboration in care for patients with depression.

The mental health training and expertise of psychiatrists add a unique and imperative component for treating patients with MDD. For example, in a study conducted by McKay, Imel, and Wampold4, it was demonstrated that although pharmacological treatment of MDD was significantly more efficacious than placebo, only 3.4% of the variance in Beck Depression Inventory (BDI) scores were due to medication, while interaction with a psychiatrist accounted for 9.1 %. Interestingly, closer inspection revealed that patients who tended to improve on medication were treated by the same psychiatrists whose patients also tended to improve in the placebo condition. This means that an effective psychiatrist can not only augment the effects of medication, but contribute to better outcomes through superior interpersonal skills, which is often missing in the health care setting. In fact, it has been demonstrated that in the primary care setting, psychiatrist consultation with general practitioners greatly increases accurate diagnosis and treatment2. Collaborative care can not only lessen the probability of adverse health consequences, but also enhance accurate diagnosis and appropriate treatment for patients.

# Objectives

The objectives of this study are three-fold:

1. Firstly, this research aims to understand patterns of care utilization and demographic variables of patients with MDD that are predictive of the degree of psychiatrist involvement in care.
2. Secondly, differences in mortality rates based on physician involvement will be determined.
3. Lastly, costs associated with physician involvement will be compared.

Findings from this research are intended to inform appropriate care for those with a MDD diagnosis. Through understanding clinical predictors of psychiatrist involvements, and understanding the consequences of such involvement, this research has important practical applications for the health care system.

# Major Research Hypothesis and Associated Research Questions

Regarding the first objective, there are no existing past studies examining service utilization patterns and psychiatrist involvement in care. Therefore, this research is intended to be descriptive and exploratory in nature, to uncover predictors of the degree of psychiatrist involvement in care for people with MDD. Regarding the latter hypotheses, controlling for severity of illness, it is expected that those who have more psychiatrist involvement in care will experience lower rates of mortality, and require less health care funds allocated to their care.

**Study Approach, Design**

**Design, methodology**

The cohort will consist of patients who have received Ambulatory Psychiatric Consultation Services (palette code 84). All participants with records in the Island Health Enterprise Data Warehouse (EDW) will be included in the initial cohort. There are an estimated 22, 000 participants meeting this criterion. Data regarding previous encounters, psychiatrist involvement in treatment, and demographic variables will be requested. The cohort will be divided into groups, based on level of psychiatrist involvement in care. That is, individuals will be grouped based on those receiving treatment that is primarily guided by a psychiatrist (Primary), those who only consulted with a psychiatrist (Consult), and those with no psychiatrist involvement (Control). Individuals receiving mental health services from psychologists and with comorbid mental health conditions will be excluded from the study, to reduce confounding variables.

In order to meet the first objective, a regression analyses will be employed to determine the patterns of service utilization and demographic variables that are associated with the degree of psychiatrist involvement in care. A multinomial logit model will be fit to the data in the statistical program R (package *mlogit*).

To meet the latter objectives, instrumental variable analysis (IVA) will be conducted to determine the effects of varying degrees of psychiatrist involvement on mortality rates and health care costs, while controlling for the effects of severity of MDD. Probit Models, a part of a family of generalized linear models, will be utilized as they are well suited in working with discrete data in R (package *SemiParBIVProbit*). However, this approach requires that the severity of the “instrument” (i.e. depression) is controlled for, so that the effects of psychiatrist involvement, or the exposure, on outcomes (i.e., cost and mortality) can be understood independent of the severity of MDD.

**Limitations**

The proposed study is not without limitations. Firstly, generalizability is compromised, as these findings can only be extended to those seeking secondary or tertiary care, as primary data is missing. Moreover, care sought in the private sector, such as psychotherapy, would not be accounted for in the analyses. Additionally, little is knowns about the availability of psychiatrists at various services locations included in the study, and thus limited access to these professionals may confound analyses.

# Data management

Clinical encounter data for a cohort of individual’s diagnosed with MDD will be utilized in analyses. All data elements will be reviewed against the Safe Harbor list of identifiers, and researchers will only have access to the de-identified data. The data request will be reviewed by the Island Health Ethics Review Board (IH-REB), and care will be taken by the data manager to insure the research team only has access to data necessary for research, and that it is sufficiently anonymized. In addition to these precautions, all data will be stored on an encrypted USB (256 bits).

# Consent, Protection of Privacy

The protection and privacy of individuals will be insured through following the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TPC2) guidelines. Specifically, through IH-REB meeting criteria of Article 3.7A, regarding exceptions to typical consent procedures, and Article 5.5A regarding research in which consent has not been obtained from participants, will be ensured.

# Data retention

The data will only be accessed on a secure University of Victoria server. Care will be taken to transmit files with care, ensuring that information is not sent through other servers.

# Publication of Results

TBD

# References

1 Hert, M., Correll, C. U., Bobes, J., Cohen, D. A. N., Asai, I., ... & Newcomer, J. W. (2011). Physical illness in patients with severe mental disorders. I. Prevalence, impact of medications and disparities in health care. *World psychiatry*, *10*(1), 52-77.

2 Bodlund, O., Andersson, S. O., & Mallon, L. (1999). Effects of consulting psychiatrist in primary care: 1-year follow-up of diagnosing and treating anxiety and depression. *Scandinavian journal of primary health care*, *17*(3), 153-157.

3 Bingefors, K., Isacson, D., Von Knorring, L., Smedby, B., Ekselius, L., & Kupper, L. L. (1996). Antidepressant-treated patients in ambulatory care long-term use of non-psychotropic and psychotropic drugs. *The British Journal of Psychiatry*, *168*(3), 292-298.

4 McKay, K. M., Imel, Z. E., & Wampold, B. E. (2006). Psychiatrist effects in the psychopharmacological treatment of depression. *Journal of affective disorders*, *92*(2), 287-290.