THE FLOREY

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Submission to the Productivity Commission
Inquiry into improving mental health to support economic participation, and enhancing productivity and economic growth

The Florey Institute of Neuroscience and Mental Health welcomes the opportunity to provide a submission to this important inquiry.

With more than 500 research and support staff, the Florey is the largest brain research group in the Southern Hemisphere. Our researchers are searching for cures to complex, debilitating and sometimes life-threatening brain disorders. Our work in mental health encompasses a broad spectrum of conditions – depression, anxiety, schizophrenia, bipolar disorder, addiction and neurodegenerative disorders which affect cognition.

Our submission focuses on the questions where we believe our experience offers a unique perspective. We would welcome the opportunity to discuss.

Yours sincerely

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Director

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Examine the effectiveness of current programs and initiatives across all jurisdictions to improve mental health, suicide prevention and participation, including by governments, employers and professional group

Assess whether the current investment in mental health is delivering value for money and the best outcomes for individuals, their families, society and the economy.

We believe that fundamental research has the potential to improve the mental health of Australians and that this can occur through both evidence-based incremental improvements to delivery of care and treatments, as well as innovations which change the nature of how we prevent, diagnose and treat mental illnesses.

As members of the Association of Australian and Medical Research Institutes (AAMRI), we endorse their submission and the associated investigation by KMPG which indicates that for every dollar invested in Australian mental health research, a return of $2.70 is delivered to the broader economy[1]. The evidence base suggests that for many areas of mental health research priority, innovations have the potential to greatly increase this rate of return. For example, early intervention in psychosis has been estimated to have a long-term ROI of 8.6 per person[2]. Similarly, innovations which can improve effectiveness of existing treatments can have a large impact on the estimated $4.63 billion spend by the Government on support services for people with mental illnesses including income support, housing assistance, community and domiciliary care, and employment and training opportunities[3].

We fully support the recommendation of the 2013 McKeon review of Health and Medical Research that Australia should "embed research in the health system". Within the mental health field, the lag between publication of a research finding and implementation into practice can range upward of 6 – 11 years, with longer lags occurring for laboratory-based research[4]. The Florey's geographic locations close to the Royal Melbourne Hospital and Austin Health as well as partnerships in clinical care means that the lag for our own research is at the lower end, but we note that this is not the case for all research organisations in Australia. We encourage consideration of methods which can reduce barriers to research translation including funding sources for interdisciplinary research, shared training experiences between clinical and basic researchers and science communication efforts which focus on adoption of research findings.

We provide three case studies below which illustrate how investment from the Australian government can improve mental health outcomes for individuals, the community and the Australian economy.

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[1] KMPG & Association of Australian Medical Research institutes (2018), Economic impact of Medical Research in Australia.

[2] KPMG & Mental Health Australia (2018) Investing to save: The Economic benefits for Australia of investment in mental health reform.

[3] Doran C, Kinchin I (2019) A review of the economic impact of mental illness, *Australian Health Review*, 43:43-48.

[4] Morris Z, Wooding S, Grant J (2011) The answer is 17 years, what is the question: understanding time lags in translational research, *Journal of the Royal Society of Medicine*, 104: 510 – 520.

Case study: New treatments to prevent relapse in alcohol use disorders

Alcohol use disorders represent a significant social and economic challenge to Australian society, resulting in over 400 hospitalisations and 15 deaths per day. Estimates from 2010 assess the economic impact of productivity losses associated with alcohol abuse at over $6 billion per year[5]. Clinicians working with those affected by an alcohol use disorder can also experience difficulties in assessing and optimising treatment of their psychiatric complaints as these conditions can co-exist and sometimes co-contribute to the affected person's symptoms. Although approved treatments for alcohol dependency exist and are regularly used in clinical settings (with mixed success), currently around 90% of addicts relapse following treatment[6]. For this reason, a suite of medications which can improve outcomes at the population level could have a dramatic impact on the health of individuals and their associated use of health services.

In 2006, in work conducted at the Florey Institute in Melbourne and supported by an NHMRC Program Grant, Professor Andrew Lawrence and colleagues were the first in the word to establish that the orexin system played a critical role in the desire of people to seek and consume alcohol[7]. This fundamental change in understanding the underlying biological mechanisms that result in relapse during treatments has led to global research effort in this system, now culminating in an FDA approved therapeutic Belsomra® being registered for use in Australia, the US and Japan. Commencing in 2019, a world-first study will be undertaken in Melbourne in partnership between the Florey Institute, St Vincent's Hospital and Merck to undertake a double-blind placebo trial of Belsomra® in people diagnosed with comorbid insomnia and alcohol dependency. This trial is supported by funding from two sources, the Percy Baxter Charitable Trust and the Victorian Government Medical Research Acceleration Fund, plus the in-kind support from Merck to supply compound and matched placebo. Drawing Merck to Australia in this manner benefits the sector and this trial will employ a project officer. A positive outcome would expand the toolbox for prescribing clinicians and reduce productivity losses.

Case study: Improvements to diagnosis or predictors of treatment response in schizophrenia

Schizophrenia is a complex condition which laboratory research suggests may be caused by a number of different underlying biological mechanisms. Clinically, this can mean that people who are diagnosed with schizophrenia may have very different responses to prescribed therapeutics. Similar issues exist in the treatment of bipolar disorder with delays in optimisation of treatment sometimes occurring due to the difficulties caused by overlapping symptom presentation between bipolar disorder, schizophrenia and major depression.

[5] Manning M, Smith C, Mazerolle P (2013) The societal costs of alcohol misuse in Australia, prepared for Australian Institute of Criminology.
[6] Sinha R (2011). New findings on biological factors predicting addiction relapse vulnerability. *Current Psychiatry Reports* 13(5): 398–405.
[7] Lawrence AJ, Cowen MS, Yang HJ, Chen F, Oldfield B (2006) The orexin system regulates alcohol-seeking in rats. *British Journal of Pharmacology* 148:752–759.

Research being undertaken by Professor Brian Dean and colleagues at The Florey is focusing on the discovery of biomarkers for sub-types of schizophrenia through investigation of biological markers[8]. The ultimate aim for this research is two-fold – tests which can be used as diagnostics, or tests which can be used as predictors of treatment response in people with schizophrenia.

A method of accurately diagnosing sub-types of schizophrenia could make it possible to rapidly optimise the treatment intervention required for individuals. Assessments suggest that implementing optimal, evidence-based care based on these assessments would cost no more but would increase the health gain by two-thirds[9].

Case study: Innovation in treatment resistant depression

Treatment resistant depression affects 20 – 30% of individuals diagnosed with major depressive disorder and is defined as non-response to two or more adequate course of consecutive antidepressant treatments[10]. Studies have shown that costs per depressive episode are approximately three times higher for individuals affected with treatment-resistant depression compared to those with non-resistant major depressive disorder[11].

In such cases where psychological and pharmaceutically based options for treatment of depression have been exhausted, approved device-based alternatives exist including electroconvulsive therapy, repetitive transcranial magnetic stimulation and vagus nerve stimulation. While these options provide benefits to those affects by treatment resistant depression, use can be hampered by lack of target specificity and/or lead to undesirable side effects.

Researchers at the Florey are developing 'optoceutical' treatment avenues which target specific neural pathways suspected to be involved in treatment resistant depression. If proven usable in the clinic, this research has the capacity to revolutionise the way in which major depression is treated, using a device rather than a small molecule.

Summary of case studies:

In summary, all 3 case studies exemplify how basic research can, and does, impact the treatment and management of mental health outcomes. Indeed, improving treatment options can reach large numbers of patients and so amplify improvements in productivity.

[8] Scarr E, Udawela M, Thomas EA, Dean B (2018) Changed gene expression in subjects with schizophrenia and low cortical muscarinic M1 receptors predicts disrupted upstream pathways interacting with that receptor, *Molecular Psychiatry* 23:295-303.
[9] Andrews G, Sanderson K, Corry J, Issakidis C, Lapsley H (2003) Cost-effectiveness of current and optimal treatment for schizophrenia, *British Journal of Psychiatry* 183:427-435.
[10] Johnston KM, Powell LC, Anderson IM, Szabo, S, Cline S (2019) The burden of treatment-resistant depression: A systematic review of the economic and quality of life literature, *Journal of Affective Disorders* 242:195-210.
[11] ibid