

Strategic Review of Health and Medical Research

A Response to the McKeon Review

Summary

The following response is focused on the need for greater emphasis and encouragement to be given to research into the aetiology and early detection of mental health conditions such that more cost effective therapies may be applied. The benefits of such research will be found in the much reduced cost of dealing with the symptoms, such as unemployment, homelessness, family stress and potential breakdown, suicide, alcoholism, dementia, schizophrenia, Alzheimers, etc. Without a clear understanding of the underlying causes, there is no means of controlling the increasing numbers of people affected by these conditions, and therefore there will be an increasing drain on scarce resources to handle the results of mental disorder.

Response to Main Issues

Why is it in Australia's interest to have a viable, internationally competitive health and medical research sector? (Terms of Reference 1 and 6)

1. Research should be seen as a key sector in Australia's overall well being which is too reliant on mining, agriculture, manufacturing, and services.
2. There is a need to establish and expand centres of excellence in mental health research.

How might health and medical research be best managed and funded in Australia? (Terms of Reference 2, 3 and 7)

1. There is a need to increase research funding such that ~50% of the grant applications are approved compared with the current ~20%. This can be achieved with a Government public education program and funded by an increase of \$1.50/head of working population/week.
2. The largest return on investment in mental health research will come from increased self-reliance of those who suffer from these conditions and their ability to become productive members of the workforce.

What are the health and medical research strategic directions and priorities and how might we meet them? (Terms of Reference 5, 12 and 13)

1. There is a need to change the NHMRC Grant Review system to encourage more fundamental research into mental health from an holistic point of view.
2. There is a need for a better balance in funding between behavioural research and the aetiology of mental health.
3. There is a need for more research into the impact of diet on mental health.

4. There is a need for better medical training of health professionals, particularly with regard to mental health.
5. Encouraging international conferences on mental health fundamental research will stimulate local endeavour.

How can we optimise translation of health and medical research into better health and wellbeing? (Terms of Reference 4, 8, 9, 10 and 11)

1. Medicare limits on pathology testing are self defeating. Much better use of more comprehensive testing will help reduce pricing and provide much more useful data than is currently the case with minimal testing. Such pathology testing can be used to encourage people to modify their lifestyle, thus saving taxpayer money dealing with unwanted sequelae later in life.
2. More extensive pathology testing in conjunction with multigenerational longitudinal studies will also provide a data base that can be used for data mining to expose hitherto unknown connections between health conditions and the underlying biochemistry.
3. A National Register of Mental Health Conditions is recommended.

Review of Recent Reports Relating to Mental Health Research from an Economic Viewpoint

In the last 13 years there have been a number of reports relating to mental health and the following extracts represent a few of their findings in order to put the costs associated with mental health in perspective.

Brain and Mind Disorders: Impact of the Neurosciences¹

This report was produced by Dr Leanna Read et al in 2003. It states (page 12) that

“... brain and mind disorders impose the greatest burden on Australian health of any disease group, accounting for over 22% of the aggregate losses, well ahead of cancer (11.3%) or heart disease (9.9%). Even more strikingly, the brain and mind disorders comprise 50% of the burden when disability alone is considered ...because of their tendency to be long term or even lifelong”. (*my emphasis*)

The Burden of Disease and Injury in Australia 1999 by Mathers, Vos, and Stevenson (page xxiv)²

¹<http://www.innovation.gov.au/Science/PMSEIC/Documents/BrainAndMindDisordersImpactOfTheNeuroscience.pdf>

² <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442459197>

- Mental disorders are the leading cause of years of life lost due to disability (YLD), accounting for nearly 30% of the non-fatal burden of disease in Australia.
- Nervous system and sense organ disorders are each responsible for 16% of the disability burden.
- Depression is the leading cause of non-fatal disease burden in Australia, causing 8% of the total YLD in 1996.

The Burden of Disease and Injury in Australia 2003 Cat No PHE 82
 Canberra AIHW (Published 2007) Begg S Vos T Barker B Stevenson C
 Stanley L Lopez A³

“ Mental disorders were responsible for 13.3% of the total burden of disease and injury in Australia in 2003 (Table 3.11), with anxiety & depression, alcohol abuse and personality disorders accounting for almost three-quarters of this burden (Figure 3.17). There were marked sex differences in the mental illness burden for particular disorders. The burden from anxiety & depression was twice as high for females as for males. Conversely, the burden from substance abuse was more than three times as high in males as in females. Eating disorders occurred mainly in females. Autism spectrum disorders were much more common in males, with females having just 15% of the total burden from these conditions.

Seven per cent of the burden from mental disorders was due to mortality, most of which was accounted for by fatal outcomes associated with substance abuse”.

The ten leading causes of DALYs# in 0-14 year olds by sex, Australia 2003 are shown in table 3.6 of the report. “Asthma was the leading cause of burden for both males and females (17.6% and 17.0% respectively). This was followed by autism spectrum disorders, anxiety & depression, and low birth weight in males. In females, anxiety & depression, low birth weight and birth trauma & asphyxia were the next leading causes”. Taking the commonly held views of what constitutes a mental condition, then the total percentage of DALYs due to such conditions are as shown in the following table. (Based on data in table 3.6)

#DALY = Disability Adjusted Life Year

Condition	Boys	Girls
ASD	9.4	2.1
Anxiety and depression	7.7	16.0

³ <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442459747>

ADHD	5.7	2.9
Epilepsy	2.6	2.5
Total	25.4	23.5

The other five leading causes, low birth weight, birth trauma and asphyxiation, congenital heart disease, road traffic accidents, neonatal infections (boys only) otitis media (girls only) account for only 16.8% (boys only, and 16.9% girls only).

Asthma is considered an autoimmune disease, and there are an increasing number of reports that suggest ASD is symptomatic of autoimmune disorder.^{4 5}

Improving Mental Health Outcomes in Victoria The Next Wave of Reform Prepared by the Boston Consulting Group July 2006⁶

According to this report, (page 3) “Mental illness is estimated to cost the Australian economy around \$20 billion each year”

Furthermore, on page 5 it says: “Mental health is the subject of considerable debate in the press and in policy circles. This reflects its significant social impact in terms of suicide rates, crime rates and the despair of individuals and families in crisis. It also reflects the significant economic impact of mental illness, which we estimate to be around \$5.4b annually in Victoria, driven in large part by diminished workforce participation and productivity.

This report focuses on three key issues in the services delivered by the mental health system in Victoria:

1. Insufficient access to clinical services, with around 50% of people with mental illness not receiving appropriate care
2. Lack of connectedness between parts of the mental health system, with many individuals unable to navigate ‘siloes’ services such as housing and employment to obtain consistent, ongoing support;
3. Limited investment in prevention and early intervention, (*my emphasis*) with many children and young people in particular not receiving support designed to forestall or avoid the escalation of mental illness”.

⁴ Familial clustering of autoimmune disorders and evaluation of medical risk factors in autism. Comi AM, Zimmerman AW, Frye VH, Law PA, Peeden JN. *J Child Neurol*. 1999 Jun; 14(6):388-94.

⁵ **Phenotypic expression of autoimmune autistic disorder (AAD): a major subset of autism.** Singh VK. *Ann Clin Psychiatry*. 2009 Jul-Sep;21(3):148-61.

⁶ <http://www.health.vic.gov.au/mentalhealth/publications/boston-report060706.pdf>

Page 11 “The prevalence of mental illness varies by age. In children, it is estimated at ~14%, increasing to 27% among 18-24 year olds and declining to ~6% for those over 65 (excluding dementia).

The measure ‘Years Lived with Disability’ (YLDs) provides another lens on prevalence. According to this measure, mental illness is the largest single cause of disability, accounting for 27% of all years lived with disability and 45% for those in the prime working age group of 25-44 years (Exhibit 4).”

Page12 “Based on the Australian average income of ~\$37,000 per year, this suggests a loss of economic output to Victoria of ~ \$2.7b”

Page 13 “Total Economic Cost

As Exhibit 6 illustrates, mental health imposes costs totalling over \$5 billion on the Victorian economy, through:

- Direct costs associated with health care;
- Significant additional direct costs associated with other service delivery, such as welfare, employment and housing; and
- Indirect costs associated with reduced workforce participation and productivity(discussed above).”

“The total cost of mental illness in Victoria is almost four times direct Government spending on mental health services and seven times the spending on clinical services.

As discussed in Chapter 6, the potential to reduce the economic loss associated with low workforce participation and productivity provides the foundation for the case for additional investment in reducing the burden of mental health” .

Why is it in Australia’s interest to have a viable, internationally competitive health and medical research sector? (Terms of Reference 1 and 6)

In the world stockmarkets, Australia is treated as a commodity based nation, and this is currently being confirmed by the present mining boom which (most unusually) has been going on for about a decade, thanks to massive demands primarily from China and India. The dollar is trading at historic levels against most currencies and this is beginning to create problems in the traditional manufacturing industries such as defence, car manufacture, and engineering in general, as well as on tertiary education enrolments from overseas, and the travel and service industries. The tyranny of distance and the availability of cheap labour in Asia, do not help.

In order to provide some balance to the economy, and to provide greater certainty as to a steadily improving future, it is essential that Australia needs to develop itself as a health research and development platform for the world

whereby it can attract overseas funding for high level research in a stable democracy and attract the best brains in order to do it. The existing Centres of Excellence are very good at what they do, but they need more funding in order to become more widely recognised. Such a strategy has the following benefits:

- It will raise the quality of life for its population with new discoveries which will help those in need, not just here, but around the world. These people will then be able to make a contribution to the common wealth, rather than be recipients of the same.
- Attracting the world's best will raise the profile of Australia as a whole as the place to be for researchers and those willing to fund them.

How might health and medical research be best managed and funded in Australia? (Terms of Reference 2, 3 and 7)

It is essential to establish and build Centres of Excellence in specific medical related fields of interest. These are already underway in Melbourne, Sydney, Brisbane, and Perth. These centres allow easy interaction between multiple disciplines which are increasingly needed in gaining a better understanding of the functions of the human body at the genetic, neurological and biochemical levels.

More Generous Funding

In 2005 Research Australia published a discussion paper ⁷ in which it is stated that "Philanthropic funding for health and medical research is relatively low in Australia. Australian philanthropy contributed over \$216m to HMR (Health and medical research) in 2001, which represented 12% of total HMR expenditure. This contrasts with the UK where philanthropy contributes a third of total HMR funding."

Funding needs to be much more generous than it is at the present time (2010-11 NHMRC grants totalled ~\$750 Million)⁸. The present grant system is accepting only approximately 20% of all applications, which therefore means all the time and effort put into working up submissions (which can mean months of work) is wasted. Collectively, this means years of time wasted by highly educated people who just want to get on and do what they do best ie research. This is a shameful use of resources, and completely depressing for those whose projects are not found to be acceptable.

⁷ Health and Medical Research Philanthropy: The Fourth Dimension of a Virtuous Cycle

http://www.ans.org.au/uploads/neuroissuesdocs/2006_Research_Australia%20H&MR%20Research%20Philanthropy.pdf

⁸ NHMRC Annual Report 2010-11

Better funding for research can be achieved by investing in it so that there is less need to spend money on dealing with the symptoms arising from not investing in it. eg dealing with Alzheimers, depression, dementia, schizophrenia, autism, bipolar etc. The only problem is that there is a long delay between the results of successful research and the actual application. A fraction of a percentage increase in the Medicare levy would make a useful contribution and should be acceptable to the general public. Ideally the NHMRC grants should be allocated to say, 50% of those applying, rather than 20%, which would mean increasing the value to approximately \$2 billion/year. (The total budget for the Department of Health and Ageing in the 2010/11 budget was ~\$45 billion, of which \$0.75 billion (1.7%) was allocated to the NHMRC)⁹.

With a working age population of some 15 million (aged 15-64) in 2010¹⁰, this would equate broadly to an extra \$83/person/year, or \$1.50/week. Such a sum would surely be acceptable to the population as a whole if it were explained that this would help them obtain a better quality of life. It is certainly much cheaper than a 0.25% increase in the cost of an average mortgage for most people, or the ~10c/litre weekly rise in the cost of a tank of petrol.

Knowing there is a 50% chance of winning a grant will make Australia a much more attractive proposition to local and overseas researchers and encourage them to stay in the country, and this will help build the critical mass required, as indicated earlier. The eventual payback on such research will be substantial according to the academic reports mentioned at the beginning of this submission.

A greater emphasis on international alliances would foster collaboration on solving complex problems, and it is pleasing to see that this is beginning to take place.⁸

What are the health and medical research strategic directions and priorities and how might we meet them? (Terms of Reference 5, 12 and 13)

The Grant Review System

Anecdotally, the present system of grants also tends to work on the basis of favouring those who have received grants in the past, and those who have published the most papers. This means that it is extremely difficult for anyone with new ideas, or wanting to move into new fields of endeavour, to attract funding, and this is especially depressing for the younger cohort of

⁹ [http://www.health.gov.au/internet/budget/publishing.nsf/Content/63054855146691F6CA25770C001F3EAF/\\$File/Portfolio_Overview.pdf](http://www.health.gov.au/internet/budget/publishing.nsf/Content/63054855146691F6CA25770C001F3EAF/$File/Portfolio_Overview.pdf) (pages 10,11).

¹⁰ <http://www.abs.gov.au/ausstats/abs@.nsf/Products/3235.0~2010~Main+Features~Main+Features?OpenDocument#PARALINK10>

researchers. For example, if one wants to study the biochemistry and genetics of autism, there is hardly anybody with any length of experience working in this field in Australia who has produced a sufficient number of papers on the subject, and as a result the chances of winning a grant are remote, despite its great national importance. On the other hand, there are many researchers working on cancer and cardiac disease with proven track records, who, as a consequence, are able to attract even more funding. Thus the present grant system appears to be self-perpetuating in favour of what is already being well researched, and other areas, of similar, if not greater, importance are starved of funds.

The current priority areas for R&D in the health and medical area are as shown in the table below:¹¹ The NHMRC funding for the Financial Year 2011-12, and the approximate number of Australians affected by the condition

Condition	NHMRC Funds ¹¹ \$Millions	No. of people affected (millions)
Arthritis and osteoporosis	25	3.85
Asthma	14	>2
Cancer	159	0.5yr [^] 0.34 (prevalence 2004-5) [‡]
Cardiovascular disease	92	3.4
Diabetes	71	1
Injury	32	~0.004 ^{##} 4.0 ^{**12}
Mental Health	54	3.2
Obesity	31	~5.4 ^{^^}

[^] includes 430,000 with one or more non-melanoma skin cancers

[‡] 87% of 390,000 reported cancerous neoplasms¹³

^{^^} 25% of the population who are technically obese (BMI>30)

^{##} Calendar year 2010 deaths [Includes intentional self harm (2,359) and accidental falls (1648)].¹⁴

¹¹ <http://www.nhmrc.gov.au/grants/research-funding-statistics-and-data/nhpas>

¹² <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4825.0.55.001>

¹³ <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4822.0.55.001>

¹⁴ <http://www.abs.gov.au/ausstats/abs@.nsf/Products/6BAD463E482C6970CA2579C6000F6AF7?opendocument>

**Applying an 18% rate to the present population of 22 million gives an injury population of ~4.0 million. According to the ABS website:

“Injuries were responsible for 7% of the total burden of disease and injury in Australia in 2003, with suicide, self-inflicted injuries, road traffic injuries and falls accounting for nearly two thirds of this burden.”

As can be seen, total funding for all mental health for Financial Year 2011-12 is ~\$54M compared to \$159M for cancer, despite the fact that, according to the Read report mentioned in the beginning, the total burden of health for mental disease accounts for over 22% of the aggregate losses, compared with only 11.3% for cancer and 9.9% for heart disease. In other words, the cost to the economy is far greater for poor mental health than for cancer and cardiac diseases combined, and yet these two areas of health attract some \$250M in funding compared with only \$54M for all mental health research.

The above data may be presented in another way, as follows:

Annual R&D spend/head of affected population

Condition	NHMRC \$ Millions	Affected population (Millions)	\$/head
Arthritis and osteoporosis	25	3.85	6.5
Asthma	14	>2	~7.0
Cancer	159	0.5yr [^] 0.34 (prevalence 2004-5)‡	~318
Cardiovascular disease	92	3.4	27.1
Diabetes	71	1	71.0
Injury	32	~4.0	8.0
Mental Health	54	3.2	16.9
Obesity	31	~5.4 ^{^^}	5.7

These data suggest there is an apparent mismatch between the amount of money spent on cancer research and the number of people affected. The same would appear to apply to diabetes. NB These figures do not take into account the funds raised by charities for research.

In conclusion, it is recommended that there needs to be a greater focus on resolving then causes of mental ill health. This does not mean that all the

focus needs to be on the brain, but it should take a holistic view and consider the genetic, epigenetic, and underlying biochemical landscapes as well.

Whilst there is some excellent work being done in Alzheimer research at Melbourne and Edith Cowan Universities, epilepsy at Melbourne Uni, schizophrenia at Deakin Uni., Rett Syndrome WA Uni., autism at the Telethon Institute in WA, there is a need for centres of excellence in the aetiology of autism and ADHD. Autism is currently estimated to be found in 1/160 – 1/88 births with a male/female ratio of 4:1.^{15 16} The Australian Advisory Board on Autism Spectrum Disorders states that “The report’s core finding could be extrapolated to suggest that with a prevalence rate of 62.5 per 10,000 there could be as many as 125,000 people with ASD in Australia or, expressed in another way, half a million Australians in families affected by ASD”.

Autism is not just an Australian problem, but is a condition found in most developed countries, so there are many opportunities for international collaboration in this field.

Psychological Research and Biochemical Research Funding

Over the past 12 years, the proportion of research grants given to behavioural science research has increased from 9.9% to 22.8% of the total whereas the proportion allocated to autism research has increased from ~5% to only 6.4%. Furthermore the ratio of ASD research to behavioural science research reduced from 50.3% in 2000 to 28.3% in 2011. Similarly, ADHD research claimed only 2.7% of grants in 2000 and 3.2% in 2011, and its research ratio to behavioural science research has reduced from 27.4% in 2000 to 13.9% in 2011.¹⁷ This suggests that there has been a trend to spending more on researching the symptoms and therapies, rather than on the aetiology which can eventually lead, through a better understanding, to a reduction in incidence.

Dietary Research

Dietary factors are a key area of research with regard to mental health. There is wide spread coverage in the media about the apparent rise in allergies in

¹⁵ The Prevalence of Autism in Australia Australian Advisory Board Report on Autism Spectrum Disorders 2007

¹⁶ US Government Centre for Disease Control March 2012
http://www.cdc.gov/media/releases/2012/p0329_autism_disorder.html

¹⁷ <http://www.nhmrc.gov.au/node/1517> - and download mental health data set for more detail

children and the possible causes. Depression is another mental condition associated with obesity.^{18 19}

In the scientific literature and press, there is an increasing interest in diet and the gut flora. Some coeliac disease, metabolic syndrome, PKU (phenylketoneurea), some refractory epilepsy conditions, migraines, depression, appear to benefit from dietary modification.^{20 21 22}

All of these conditions are associated with the body's difficulty or inability to process certain foods or the lack of adequate intake of others. It is therefore encouraging to see some NHMRC grants being awarded for further research into this important area of contact with the environment. However, there is much more to be discovered and, with regard to autism for instance, the last Cochrane Review on the subject actively encourages further trials of gluten and casein free diets to determine their effectiveness for this community. Quote "Large scale, good quality randomised controlled trials are needed."²³

Whilst treating the symptoms of mental health is highly commendable, it is clearly also in the country's interests to try to get a better understanding of their causes, and thus provide more effective treatments which will enable those affected to make a larger contribution to society. The alternative is to continue to allow the incidence grow, with a resulting need for increased taxes to accommodate their needs.

International Conferences

¹⁸ A study examining the association between obesity and depression in the general population and exploring potential moderating (demographic) factors. (de Wit L, Luppino F et al. doi:10.1016/j.psychres.2009.04.015] [http://www.psy-journal.com/article/S0165-1781\(09\)00170-X/abstract](http://www.psy-journal.com/article/S0165-1781(09)00170-X/abstract)

¹⁹ Overweight, Obesity, and Depression A Systematic Review and Meta-analysis of Longitudinal Studies (Luppino FS et al. Arch. Gen Psychiatry 2010 67 (3) 220-229)

²⁰ Associations between diet quality and depressed mood in adolescents: results from the Australian Healthy Neighbourhoods Study Felice N. Jacka et al. Australian and New Zealand Journal of Psychiatry, May 2010, Vol. 44, No. 5 : Pages 435-442 (doi: 10.3109/00048670903571598 <http://informahealthcare.com/doi/pdf/10.3109/00048670903571598>

²² The ketogenic diet for the treatment of childhood epilepsy: a randomised controlled trial. Neal EG, Chaffe H, Schwartz RH, Lawson MS, Edwards N, Fitzsimmons G, et al. Lancet Neurol. 2008 Jun;7(6):500–6. doi:10.1016/S1474-4422(08)70092-9. PMID 18456557

²² Neuroprotective and disease-modifying effects of the ketogenic diet. Behav Pharmacol. 2006;17(5–6):431–9. Gasior M, Rogawski MA, Hartman AL. PMID 16940764

²³ Cochrane Review: Gluten- and casein- free diets for autism spectrum disorder (Millward C et al January 2009) (DOI: 10.1002/14651858.CD003498.pub3

One way of encouraging a better understanding is to encourage international conferences and symposia to be held in Australia, so that local researchers and other health professionals can be stimulated by meeting those working overseas in similar areas and for the visitors to get some measure of local capability and facilities. These events are already happening, but could be developed further to bring together basic researchers from all mental health conditions, so there is a greater cross fertilisation of ideas. The Science of Nutrition in Medicine conferences being organised by the CSIRO, ACNEM, and NSA (The Nutrition Society of Australia) are an example of how this can be done.

How can we optimise translation of health and medical research into better health and wellbeing? (Terms of Reference 4, 8, 9, 10 and 11)

Return on Investment

As discussed above, the biggest payback in terms of research into mental health will be in the larger workforce contributing to society, rather than being dependent on it. The amount of money likely to result from patenting better diagnostic tools, or producing pharmaceuticals to mitigate the effects of mental ill health are likely to be very limited, (perhaps <0.1% of the contribution of the resulting larger workforce). Given the time it takes to patent pharmaceuticals, there could be a lead time of some 10-15 years, and most patents end up in the hands of USA based pharmaceutical companies anyway.

As an example of this thinking, the following extract shows the savings which were made, just in the USA, through the use of lithium salts in the treatment of manic depressive illness (bipolar) in the years 1970-1991.²⁴

“Between 1970 and 1991, lithium saved over \$170 billion, or roughly over \$8 billion per year. Approximately \$15 billion in direct costs, which included inpatient and outpatient care as well as research, was saved between 1970 and 1991. The savings are more dramatic for indirect costs, which include the lost productivity of wage-earners, homemakers, family caregivers, and individuals who are in institutions or who committed suicide; these totalled roughly \$155 billion.”

Thus a more appropriate focus needs to be related to returning people to work, so they can achieve a sense of fulfilment in being useful to society. If there are opportunities for patenting some of the research, then this will be a bonus. This is also the strategy proposed by the BCG group in their report mentioned earlier.

²⁴ Psychiatr Q. 2001 Summer;72(2):149-66 <http://www.ncbi.nlm.nih.gov/pubmed/11433880>

Current examples of using such simple remedies in the treatment of mental illness may be found in the work being done in Australian universities on the use of zinc salts to treat early stage Alzheimers, and the possible use of N-acetyl cysteine in the treatment of schizophrenia and autism. While the products in themselves may not be patentable, their application may well be. Furthermore, using such products also offer the possibility of substantial savings for the PBS, and reduced side effects normally associated with the use of pharmaceuticals.

These developments have come about through the close collaboration between universities and hospitals, despite very restricted funding. So much more could be done with more funding from Governments, philanthropic, and not-for-profit organisations. Unfortunately mental health research does not have the same public profile as say, breast cancer, or cardiac research, and it would be helpful if there was a government funded educational campaign to assist the population towards a better understanding of mental health costs to the community. Mental health issues can destroy families, and as such add to the collateral damage to society.

Better Medical Training

There is a need to provide better training and more up to date information to health professionals, particularly medical and nursing students on the latest research into mental health and to view it more holistically, rather than being “something wrong in the head”. Mental health tends to be seen by GPs as a psychological problem and therefore referred to psychologists, whereas in many instances it is related to underlying imbalances in the normal homeostasis. Such imbalances can be relatively easily determined by comprehensive blood, urine, saliva, and genetic testing.

Medicare Limitations to Pathology Testing

The current level of pathology testing normally carried out by GPs is extremely limited due to the exigencies of the Medicare funding. As such it is false economy to limit testing to such nutritional metals such as calcium, copper, magnesium, manganese, selenium, and zinc, when other elements such as cobalt, iodine, phosphorus, and sulphur may well have a bearing on mental health and can be easily analysed in the same sample. Similarly on the toxic metal side, there is apparently no provision for testing antimony, despite its presence in flame retardant formulations. Another example is the standard stool test which tends to provide very basic data, rather than present a comprehensive analysis of the gut flora. One might ask what does a stool test have to do with mental illness? Although there is still some debate about the connection, it is well known that many children with autism have gut co-morbidities such as diarrhoea and constipation. Their treatment tends to relieve some of the behavioural issues associated with autism.

DNA testing is becoming more widely accepted and there are now non-invasive saliva tests which can be used to obtain lipid genetic profiling which

can help determine dietary recommendations for individuals with autism and no doubt a number of other mental conditions, as well as those suffering from obesity. Although such DNA testing may be considered expensive, the costs are coming down rapidly (in a similar manner to the price of computers and other IT equipment), and would reduce even more quickly if they were to be used for screening those at risk. The resulting data can then be used to indicate the optimum diet for each person, thus saving many millions of dollars being spent on dealing with the symptoms of poor health later in life.

Testing urine for organic acids and blood spot test for amino acids are two other tests which can provide much valuable data on the underlying biochemistry. Chromosome testing should be automatically required for all with mental health issues. New testing protocols need to be encouraged, whether they are for completely new biochemical (eg peptides) or genetic signals (eg Cytokine Block Micronuclei (CBMN)), or refinements of existing tests need to be encouraged. The same goes for producing new analytical equipment.

Raising the quality and scope of such simple pathology tests can provide a much more useful guide as to some of the underlying causes of mental ill health. This can easily be done and is currently offered by a number of pathology testing organisations in Australia who work in collaboration with USA based laboratories. The fact that such testing falls outside the present Medicare regime means that it benefits only those who can afford it, and thus the majority of the population miss out. A more wide spread use of comprehensive testing would reduce the cost/test and encourage local laboratories to upgrade their capabilities. By doing so they could then offer a more attractive service to third world countries in the region.

A National Register of Mental Health Conditions

A credible comprehensive National Register of Mental Health conditions is urgently needed in order to plan for the growth in their numbers and the increase in the length of life which is forecast between now and 2050. For example, between 1999 and 2011, the life expectancy of both males and females has increased by ~2.5 years.²⁵ Furthermore, numbers of dementia sufferers are expected to increase from 267,000 in 2011 to 553,000 in 2030 and 943000 in 2050.²⁶

²⁵

<http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by+Subject/4125.0~Jan+2012~Main+Features~Life+expectancy~3110>

²⁶ Dementia across Australia: 2011-2050. Deloitte Access Economics, 2011
http://www.fightdementia.org.au/common/files/NAT/20111014_Nat_Access_DemAcrossAust.pdf, accessed 12 February 2012

Similar accurate data are required for all other mental conditions, given that they are large contributors to the burden of health, and are likely to continue to grow. The collection of data appears to be very poor for a variety of reasons, including personal confidentiality and the fear of being “labelled” eg as autistic. This situation can be improved through the public education program suggested earlier, and by collecting the data within the 10 year ABS census. Mandatory central reporting by psychologists, psychiatrists, paediatricians, and GPs will provide a cross check to the census. Early detection of dementia and other mental conditions eg Alzheimers, is considered a health priority.²⁷ In support of this proposal, the WHO report goes on to say (page 59): A consultation exercise conducted for the *National Dementia Strategy* in England highlighted a combination of three factors contributing to low rates of detection of dementia – the stigma of dementia preventing open discussion, the false belief that memory problems are a normal part of ageing, and the false belief that nothing can be done. These factors resulted in inactivity in seeking and offering help (121). Raising awareness and help-seeking are thus central to the strategy for reducing the dementia treatment gap. [Ref 121 Living well with dementia: A National Dementia Strategy. Leeds, Department of Health, 2009 (http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_094051.pdf, accessed 4 February 2012)].

Data Mining Research

The establishment of this register will facilitate data mining and offer the potential to uncover hitherto unknown connections between physical and mental diseases and conditions. This will require the establishment of an e- health system which records both physical and psychological symptoms, as well as underlying biochemical and genetic data. More longitudinal and multigenerational research similar to those being run by the Telethon Institute and the Avon Longitudinal Study of Parents and Children (Bristol University) will also assist in obtaining a better understanding of the impact of environment and its epigenetic effects on the human genome.

Whilst there may well be much concern about privacy issues, there is a compelling case for such a register to be set up. In the past 100 years there has been a steady erosion of privacy with the computerisation of banking, tax, superannuation, insurance, not to mention facebook, twitter, and many other social media, that it is inevitable there will eventually be a comprehensive e-health system established in most of the countries of the Western world. The reader is referred to the NIHR leaflet produced by the NHS in England on how patient confidentiality is being managed in the UK. “Your Health Records Save lives. What? How? Why?”²⁸

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²⁷ WHO Report Dementia A Public Health Priority 2012

²⁸ http://amrc.org.uk/news-policy--debate_patient-data-in-clinical-research