

# INVESTING IN NEED

Cost-effective interventions  
for eating disorders



## ACKNOWLEDGEMENT

The Butterfly Foundation acknowledges the valuable input of so many people to this cost-effective interventions for eating disorders report. Butterfly is committed to an evidence based approach in all its work and convened an Experts Panel to have oversight of the research and development of the report. Each member of that Experts Panel has generously provided their experience, expertise and time. On behalf of all those who will learn and benefit from this report – thank you to our Expert Panel members.

We have also relied on the generosity of two Australians who have shared their lived experience in the case studies that are included in this report. We are very grateful for their contributions.

Most importantly, our thanks go to each of you with a lived experience of eating disorders. You have provided invaluable insights into the difficult and often very lengthy battle with an eating disorder from the perspective of the individual, the carer, the partner, the family member and the friend.

**Thank you for your voice.**

## Foreword :: David Murray AO

### INVESTING IN NEED - The economic and social impact of eating disorders in Australia

March 2015

The *Investing in Need* report advances a clear economic imperative for Australia's investment in treatment for eating disorders.

The Butterfly Foundation's work is to make Australia's tomorrow a better place, by working diligently and swiftly to address the needs of more than one million Australians who are affected by eating disorders.

A first Deloitte Access Economics report into eating disorders, commissioned by Butterfly in 2012, found that in 2012 there were more than 913,000 sufferers across Australia, with an estimated socio-economic cost of \$69.7 billion. Even more dreadful is the annual death toll, estimated to have been 1,828 in 2012. We are losing people who would have otherwise led fulfilling and meaningful lives.

The *Investing in Need* report builds on the 2012 findings, providing Australia with a clear economic imperative for adopting a cost-effective way for the health system

to meet the needs of Australians with an eating disorder. The business case is clear. Optimal treatment interventions for eating disorders deliver a five to one benefit cost ratio for government investment on behalf of the community.

The Butterfly Foundation is working with the best clinical advisors in Australia and around the world to identify the optimal treatment interventions. We have a strong business case for such treatment interventions, with the lowest risk and providing cost-effective outcomes.

As a result of Butterfly Foundation's work we now know that eating disorders are a very serious and costly mental and physical health challenge, that they can be treated, and that the cost of treatment is small relative to the benefit. Governments in the past have seeded early stage investment in dealing with emerging serious health issues such as cancer, cardiovascular disease, HIVAids and diabetes. Now is the time for the federal government to do the same thing for eating disorders, in conjunction with their attention to mental health.

A productive Australia depends on the Government making wise investments in the health of its community. The *Investing in Need* report offers this opportunity.



A handwritten signature in blue ink, appearing to read 'D Murray', with a small blue dot at the end.

David Murray AO

Chair of The Butterfly Foundation

## About :: Butterfly Foundation

The Butterfly Foundation represents all people affected by eating disorders – sufferers, their families and their friends. As a leading national voice in supporting their needs, Butterfly highlights the realities of seeking treatment for recovery, and advocates for improved services from both government and independent sources.

Butterfly operates a national helpline, which is staffed by counselors experienced in assisting with eating disorders. It also provides a wide range of facilities for service providers and recovery groups.

Because Butterfly recognises that eating disorders often arise from poor body image, it delivers a range of Positive Body Image workshops to schools and workplaces through its education program. It has a strong media presence to raise awareness of Butterfly's perspective in community debates about body image and eating disorders.

Throughout its work Butterfly emphasises the critical importance of prevention and early intervention strategies in limiting the development of, and suffering from, negative body image and eating disorders. To expand knowledge in this field.

The Butterfly Research Institute supports academic research projects and funds PhD research scholarships.

Butterfly is committed to collaboration across the sector and works with allied medical and mental health providers as well as with clinicians and academics. Butterfly has been appointed to co-ordinate the National Eating Disorder Collaboration (NEDC) for the Australian Department of Health and Ageing.

For help and information please call the national support-line on 1800 33 4673 (ED HOPE)



**Butterfly**

Foundation for Eating Disorders

[thebutterflyfoundation.org.au](http://thebutterflyfoundation.org.au)

## Foreword :: Professor Pat McGorry

### INVESTING IN NEED - The economic and social impact of eating disorders in Australia

March 2015

I welcome the *Investing in Need* report, which demonstrates a clear economic rationale for investment into one of Australia's most serious mental health issues, eating disorders.

As health professionals, we have a professional and moral imperative to prioritise the health of our patients. Our obligation is to ensure that our patients are receiving an optimal standard of care, matched by a commensurate growth in our capabilities through research and innovation.

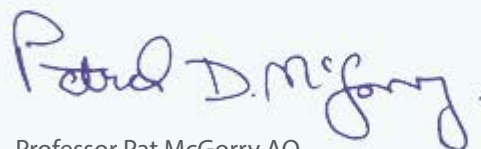
The *Investing in Need* report relied on the conclusions of a large collaborative group of eminent health professionals and clinical scientists, who identified the optimal standard of care for eating disorders in Australia. I would like to thank the members of the National Eating Disorders Collaboration for their tireless and high quality work, which has informed this report and, crucially, their dedication to meeting the needs for those living with an eating disorder in Australia.

It is our responsibility as a nation to put in place as a matter of urgency an optimal standard of care for eating disorders. This argument becomes unassailable when the solution is also cost-effective, and continued inaction would be to stray dangerously close to outright negligence.

The evidence tells us that when diagnosed early and treated with optimal interventions an eating disorder can be 'nipped in the bud'; and with optimal recovery management a sufferer can expect to resume a productive life. When this approach is applied to young Australians, the largest and most vulnerable of the population group affected by eating disorders, we dramatically improve their chances of survival and leading a contributing life. Over the past decade, Australia has made great progress in addressing the unmet needs of young people with emerging mental disorders. Eating disorders need to be included in this vital 21st century reform project.

Essentially, this Report quantifies the difference between current treatment, and optimal treatment as identified by our expert panel of professionals. It identifies a clear path that needs to be travelled by Government and our policy makers responsible for the health system, so that we are finally able to provide optimal treatment interventions for all Australians with an eating disorder.

I wholeheartedly endorse the recommendations of this report, and urge all governments of Australia to move swiftly to respond.



Professor Pat McGorry AO

Chair of the National Eating Disorders Collaboration  
Executive Director of Orygen, National Centre for Excellence  
Youth Mental health

Director of the Board of the National Youth Mental Health  
Foundation (headspace)

Professor of Youth Mental Health at The University of  
Melbourne



Christine Morgan  
CEO  
The Butterfly Foundation  
103 Alexander Street  
Crows Nest NSW 2005

21 November 2014

Dear Christine,

## **Cost effective care models to address eating disorders in Australia**

4 Following on from our 2012 report that demonstrated the enormous cost and health burden of eating disorders, this report demonstrates that best practice treatments identified by the National Eating Disorders Collaboration (NEDC) would be highly cost effective in redressing this burden.

Under the current system, in any given year, the great majority of people with an eating disorder receive no treatment specifically for their condition. For those who do receive standard treatment, it is often expensive and ineffective. Some will never recover – one in every ten of those with anorexia will die prematurely. Many will struggle with their disease for decades, and most will face five to ten years with high morbidity.

Best practice treatment, on the other hand, is substantially more cost-effective than standard treatment, and can lead most people with eating disorders to recovery in under two years.

Rolling out enough best practice multidisciplinary centres would not be cheap – possibly costing around \$500 million over five years. But it is less expensive than doing nothing. New cases of eating disorders in 2015 will cost the economy billions of dollars in lost productivity every year until recovery. Every dollar spent supplying effective treatment will pay for itself more than five times over, through productivity gains and other savings.

Accordingly, Deloitte Access Economics recommends that a number of trial sites should be set up along the lines of best practice as identified by the NEDC, with the results carefully evaluated over two to three years.

Yours sincerely,



Lynne Pezullo  
*Lead Partner, Health Economics and Social Policy,  
Deloitte Access Economics Pty Ltd*

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## :: List of acronyms

AIHW	<i>Australian Institute of Health and Welfare</i>
AN	<i>Anorexia Nervosa</i>
AUD	<i>Australian dollars</i>
AWE	<i>average weekly earnings</i>
BCR	<i>benefit cost ratio</i>
BED	<i>Binge Eating Disorder</i>
BMI	<i>Body Mass Index</i>
BN	<i>Bulimia Nervosa</i>
BoD	<i>burden of disease</i>
CBA	<i>cost benefit analysis</i>
CBT	<i>Cognitive Behavioural Therapy</i>
CEA	<i>cost effectiveness analysis</i>
COI	<i>cost of illness</i>
CPI	<i>Consumer Price Inflation</i>
DALY	<i>disability adjusted life year</i>
DSM-V	<i>Diagnostic and Statistical Manual of Mental Disorders, 5th Edition</i>
DWL	<i>deadweight loss</i>
ED(s)	<i>eating disorder(s)</i>
EDNOS	<i>Eating Disorder Not Otherwise Specified</i>
EDQoL	<i>eating disorder quality of life</i>
FTF	<i>face-to-face</i>
GP	<i>general practitioner</i>
HMO	<i>health maintenance organisation</i>
HRQoL	<i>health related quality of life</i>
MRAOS	<i>Morgan-Russell Average Outcome Score</i>
MCPF	<i>Marginal cost of public funds</i>
NEDC	<i>National Eating Disorders Collaboration</i>
NPV	<i>net present value</i>
QALY	<i>quality adjusted life year</i>
PHI	<i>private health insurance</i>
PYLD	<i>prevalent years of healthy life lost due to disability</i>
QoL	<i>quality of life</i>
TAU	<i>treatment as usual</i>
US	<i>United States</i>
VSLY	<i>value of a statistical life year</i>
YLD	<i>years of healthy life lost due to disability</i>
YLL	<i>years of life lost due to premature mortality</i>



## Advisory :: Board

The Advisory Board provided oversight of the research and development of this report contributing their expertise in eating disorders, mental health and population health.

### PROFESSOR SUSAN PAXTON (CHAIR)

Professor Paxton is Professor of Clinical Psychology in the School of Psychological Science at La Trobe University. She is Past President of the Academy for Eating Disorders and of the Australian and New Zealand Academy for Eating Disorders. Professor Paxton is a clinical psychologist and researcher engaged in projects that focus on understanding risk factors of body image and eating problems, evaluating prevention and early intervention strategies and exploring stigma and mental health literacy related to eating disorders in the community. Professor Paxton is on The Butterfly Foundation Board and Chair of the Foundation's clinical oversight committee.

### PROFESSOR STEPHEN TOUYZ

Professor Touyz is Professor of Clinical Psychology and Clinical Professor in the Discipline of Psychiatry at the University of Sydney. He has written/edited seven books and over 300 research articles and book chapters on dieting, eating and eating disorders. He is a fellow of the Academy of Eating Disorders (AED) and the Australian Psychological Society (APS). Professor Touyz is a Past President of the Eating Disorders Research Society (EDRS). He was the inaugural treasurer of the Australian and New Zealand Academy of Eating Disorders (ANZEAD). He is a member of the steering committee of the National Eating Disorders Collaboration. He has also served on the Executive of the Eating Disorder Foundation of New South Wales and is a member of the Editorial Boards of the European Eating Disorders Review, International Journal of Eating Disorders and Advances in Eating Disorders: Therapy, Research and Practice. He is the co-editor of the Journal of Eating Disorders and has been presented with a Leadership Award in Research by the Academy of Eating Disorders. In 2014, he was the recipient of the first Lifetime Achievement Award by the Australian and New Zealand Academy of Eating

Disorders and the Ian Campbell Prize by the Australian Psychological Society for his contribution to the scientific and professional status of clinical psychology in Australia.

### PROFESSOR PHILLIPA HAY

Professor Hay is Foundation Chair of Mental Health at the School of Medicine, University of Western Sydney and Adjunct Professor of Psychiatry at the School of Medicine, James Cook University and Senior Consultant in Psychiatry at Campbelltown Hospital. She has over 20 years of experience in the field of eating disorders as a clinician, researcher and educator. She is a Past-President of the Australian and New Zealand Academy for Eating Disorders (ANZEAD) and has held senior committee positions in the Royal Australian and New Zealand College of Psychiatrists (RANZCP) and the International Academy for Eating Disorders (AED). She is regularly invited to give plenary, keynote and other addresses at scientific meetings in Australasia, the Americas and Asia. She is also regularly invited to submit articles and commentaries to Australasian and International journals, publications and books. In 2014, she was a recipient of the prestigious CAPES Science Without Borders visitors research grant (2015-2018) to the Federal University of São Paulo, Brazil.

### PROFESSOR FEDERICO GIROSI

Federico Girosi is an Associate Professor in Population Health at the School of Medicine, University of Western Sydney, and is a Research Leader for the Capital Markets CRC Health program. Dr. Girosi is a health economist and a modeller, and his areas of interest include the analysis of geographic variation in health, the development of a microsimulation for the prediction of health and health care utilisation, the evaluation of otitis media interventions in Aboriginal children, the analysis of the Australian hospital payment system and the burden of eating disorders. Dr. Girosi earned a Ph.D. in Health Policy from Harvard University in 2003, and worked eight years at the RAND Corporation (Santa Monica, U.S.A.) as a policy researcher. At RAND he was the leader of the modelling team that developed the COMPARE microsimulation for the analysis of

## Advisory :: Board continued

health insurance reform. He was also involved in the development of the Future of the Elderly Model (FEM), a model that can be used to study the costs and benefits of prevention for the U.S. population over age 51. Dr. Girosi also led the modelling effort for a Gates Foundation project aiming to evaluate the benefits of introducing new diagnostic tools in the developing world. In addition, he was part of a RAND team that quantified the cost and benefits of electronic medical records systems. He also holds a Ph.D. in Physics from the University of Genoa, Italy, and conducted research for ten years at the Artificial Intelligence Laboratory of the Massachusetts Institute of Technology in the fields of statistical data analysis and computer vision.

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### PROFESSOR RICHARD NEWTON

Clinical Associate Professor Newton is the Medical Director of Austin Mental Health Service. Austin Mental Health is a large mental health service based in a teaching hospital with a strong research component. It has a diverse range of Adult, Child and Youth, regional and state-wide specialist mental health services. Richard is also a Consultant Psychiatrist and the Clinical Director, of BETRS, a specialist Body image, Eating Disorder, Treatment and Recovery Service. He is strongly committed to consumer and carer participation in Mental Health Service development and the provision of safe effective evidence based interventions for all members of the community in need of mental health care. Richard has published more than 50 peer reviewed articles or book chapters on a range of topics including CBT, treatment of psychosis, eating disorders, psychosocial interventions in mental health services, health service redesign, and homelessness. He teaches a Masters level course in Structured Psychotherapy at the University of Melbourne and an Advanced Training course in CBT accredited for RANZCP AT in Psychotherapy.

### PROFESSOR HOWARD STEIGER

Professor Steiger directs the only large-scale, specialised program for the treatment of adults suffering eating disorders in the Province, the Douglas

Institute Eating Disorders Program. He is an active clinician, researcher, and teacher, Associate Editor of the International Journal of Eating Disorders, and Co-President of the Quebec Government's committee to develop a "Charter for a Healthy and Diversified Body Image". Professor Steiger is a Past President of the Eating Disorders Research Society, and previous Executive-Committee member of the Academy for Eating Disorders. Steiger and colleagues have recently been studying a) Genetic and epigenetic influences upon ED development and course. b) System-wide efforts to transfer specialised knowledge on EDs to 1st and 2nd line services and to alter attitudes towards thinness at a population level.

### DR MIMI ISRAEL M.D

Mimi Israël is chair of the Department of Psychiatry at McGill University, psychiatrist-in-chief of the Douglas Mental Health University Institute, psychiatrist at the Douglas Eating Disorders Program, consultant psychiatrist to a first-line community mental health care team, and Associate Professor of Psychiatry at McGill. She is also president of the Association of Chiefs of Departments of Psychiatry of Montreal, and a fellow of the Academy of Eating Disorders. Active as a clinician, teacher, researcher and administrator, she is primarily interested in the areas of eating disorders, community mental health, health care service organisation, public education and advocacy. A recipient of several McGill teaching awards, she was also presented with the National Alliance for the Mentally Ill Exemplary Psychiatrist Award in 1998, the grand prize from the Quebec Medical College of Physicians in 2006, and the Quebec Ministry of Health and Social Services "Persillier-Lachapelle Career Achievement Award" in 2013. Her research interests have focussed on the implications of temperamental traits and adverse life events on neurobiological indices, and genetic variations in eating disorders. Other areas of interests within the field of eating disorders include the study of factors that determine treatment outcome, and determinants of the efficacy of different treatment techniques such as partial hospitalisation.

## Advisory :: Board continued

### DR SLOAN MADDEN

Dr Sloane Madden is recognised for his expertise in the treatment and management of eating disorders (ED). He is the Eating Disorder Coordinator for the Sydney Children's Hospital Network, the largest public eating disorder service in Australia. His research has three major foci, early onset eating disorders, the treatment of anorexia nervosa and the neurobiology of eating disorders. Dr Madden has been/is a chief investigator on two NHMRC funded, treatment trials looking at treatment interventions in anorexia nervosa including a randomised controlled trial of inpatient treatment in anorexia nervosa and an innovative psychological intervention for excessive exercise in anorexia nervosa. Dr Madden is the author of over 80 peer reviewed journal articles, published abstracts and book chapters on eating disorders. He is a Fellow of the Royal Australian and New Zealand College of Psychiatrists (RANZCP) and of the Academy of Eating Disorders. He is President of the Australian and New Zealand Academy of Eating Disorders and on the board of the International Academy of Eating Disorders, where he is in charge of the Research Practice Integration Portfolio. Dr Madden has been a member of a number of State and Federal Government committees and advisory bodies including the NSW Department of Health Stimulants Committee and the NSW Department of Health Advisory Committee: Restraint, Seclusion and Transport for Patients with behavioural disturbance. He has been a steering committee chair on the Federal Government funded National Eating Disorder Collaboration since 2009.


### CHRISTINE MORGAN

Christine is the CEO of The Butterfly Foundation and National Director of the National Eating Disorders Collaboration (NEDC). Prior to her role at Butterfly, Christine was General Manager with Wesley Mission, responsible for the Community Services and Corporate Services portfolios. Christine has qualifications in law and business and prior to entering the not-for-profit sector in 2005, served in senior executive corporate roles for over 20 years, holding the positions of General

Counsel/Company Secretary for a number of listed public companies on the ASX 200.

### LESLEY COOK

Lesley established Partners in Practice as the health and community service arm of Blackboro Associates Pty Ltd in 2007 after a career that has encompassed most areas of community welfare. With over 30 years of experience working with community organisations, Lesley's areas of expertise include: collaboration, consumer participation, program design & evaluation, and professional development. A focus of Lesley's career has been the engagement of people with lived experience and professionals in the co-design of effective services. In 2006, Lesley was awarded a Churchill Fellowship to research the processes that contribute to successful collaboration. She has worked closely with the National Eating Disorders Collaboration since its inception in 2009 investigating service models with the potential to deliver cost effective solutions for people with eating disorders.



“We now have a very compelling argument for the economic and clinical benefits of early intervention under a stepped model of care that is inclusive, connected, responsive and flexible.”

**PROFESSOR SUSAN PAXTON,**  
College of Science, Health and Engineering  
– School of Psychology and Public Health, La Trobe University

## “A productive Australia depends on the Government making wise investments in the health of it’s community. The Investing in Need report offers this opportunity.”

DAVID MURRAY AO,  
Chair, The Butterfly Foundation

Eating disorders (EDs) are expensive conditions. It can cost more than \$100,000 to appropriately treat a person with Anorexia Nervosa (AN)<sup>1</sup>. EDs are also long lasting and debilitating conditions. For example, if someone has AN for a decade, the costs of their foregone productivity and other financial costs could be larger than \$200,000<sup>2</sup>.

On the available evidence, only between 5% and 15% of people receive any treatment for their EDs in any given year. Furthermore, for those who do receive treatment, much is not evidence-based, and of undemonstrated efficacy.

The National Eating Disorders Collaboration (NEDC) is an initiative of the Australian Government representing approximately 1,000 members, including leading experts in eating disorders treatment, frontline clinicians working with people with eating disorders, people with lived experience and their families. NEDC reports reflect the best available evidence of relevance to the Australian context. In 2012, the NEDC identified a suite of evidence-based treatment options and delivery mechanisms, which features:

- a focus on early intervention;
- a range of delivery options, from general practitioners and online self-help, through intensive outpatient and residential programs, to full inpatient hospitalisation;
- a “stepped care” approach, realising that patients might need to progress both up and down (sometimes repeatedly) through delivery levels; and
- long-term follow up, to prevent relapse.

The Butterfly Foundation tasked Deloitte Access Economics with assessing whether a cost benefit analysis (CBA) of investing in such interventions could be developed.

There are a number of centres already operating around the world, such as the Douglas Institute in Canada and the Emily Program in Minnesota. However, there does not appear to have been any CBA or cost effectiveness analysis (CEA) conducted in relation to these centres.

Indeed, CEA studies of any sort are conspicuous by their absence in the field of EDs. A recent systematic review of CEA and cost of illness studies for EDs found just two that met standard criteria for CEA (Stuhldreher et al, 2012). Similarly, there have been almost no program evaluations for ED centres. A recent Australian PhD thesis found only five worldwide (Weber, 2010)<sup>3</sup>.

Even among simple effectiveness analysis of ED treatments, there are no uniform agreements as to what constitutes remission or recovery. Moreover, the aetiology of eating disorders does not appear to be well understood yet (Rikani et al 2014).

Estimates of the natural path and duration of the traditional EDs, AN and Bulimia Nervosa (BN) are few, and based on small samples. Binge Eating Disorder (BED) was only accepted as a distinct disorder by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) in 2013. There is almost no useable data pertaining to what were referred to in DSM – IV as Eating Disorder Not Otherwise Specified (EDNOS) and are now referred to as Other Specified Feeding and Eating Disorders in DSM-5, even though these are highly prevalent.

However, in order to estimate the efficacy of an intervention, it is necessary to have some idea of what would occur in the absence of the intervention. Accordingly, Deloitte Access Economics undertook statistical analysis of cohort studies to derive durations for BN and AN that were i) consistent with such published estimates as are available, and ii) provided an

<sup>1</sup> See section 3.2.

<sup>2</sup> Deloitte Access Economics (2012) estimated the annual financial costs per ED case were more than \$20,000.

<sup>3</sup> None of which were sufficiently robust.

## Executive Summary

average path of outcomes over time. An inter-temporal approach is necessary for CBA, since future outcomes are discounted to estimate the net present value (NPV) of costs and benefits.

An extensive literature search uncovered a handful of cost-effectiveness studies for evidence-based interventions that included stepped care, day centres and specialist outpatient services. While only a few of these used common effectiveness measures, by employing some assumptions it was feasible in most cases to translate outcomes into recovery rates. Costs and effectiveness (recovery rates) were then estimated for this suite of treatments that, together, could act as a proxy for the best practice model advocated by the NEDC.

For modelling purposes, it was assumed that there will be a roll out program similar in implementation time and costs to that established by the Australian Government to address youth mental illness. This will enable primary healthcare professionals to detect EDs in early onset, and will provide enough multi-disciplinary teams to then treat these cases. The best practice interventions are applied in the model to the 213,208 Australians estimated to develop EDs in 2014.

By substantially reducing hospitalisations, best practice is less costly than treatment as usual, particularly for AN. However, it is still more expensive than no treatment, which constitutes current standard practice for up to 95% of people with EDs. Yet because best practice interventions enable most people to recover more quickly, they can participate in many more years of productive employment / study.

In 2012, Australia only spent \$109 per year for each person with an ED (Deloitte Access Economics 2012), which equates to \$145 million 'treating' new cases developed in 2014 over the next ten years, in NPV terms. Over this ten year period, their EDs will rob the economy of more than \$27 billion in lost productivity and other financial costs.

Applying best practice interventions to all new cases of EDs would represent a cost of around \$2.8 billion (NPV) over ten years to treat everyone who gets an ED in 2014, while the resultant productivity benefits and other gains to the economy would be around \$15.1 billion (NPV). Best practice would increase recovery rates from 5 to 8% initially (where almost nobody receives best practice treatment), up to 50 to 80% as enough health professionals are trained and centres constructed, to

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**Table i: ED Financial costs under base case and intervention (NPV)**

Category	\$ billion
A. Health, productivity and other financial costs under base case – (treatment as usual)	27.8
B. Cost of intervention	2.8
C. Health, productivity and other financial costs post intervention	12.7
D. Benefit of intervention (=A-C)	15.1
E. Net benefit of intervention (=D-B)	12.3
<b>Benefit cost ratio (BCR=D/B)</b>	<b>5.38 to 1</b>

Source: Deloitte Access Economics calculations. Presented results may not be directly calculable due to rounding of figures to \$ billions.

<sup>4</sup> Indeed, EDNOS no longer exists in the DSM-5, with most patients now reassigned to the other three disorders, and a new condition "other specified feeding and eating disorders" applied to the remainder.

<sup>5</sup> The CBA is conducted over the ten years following the intervention. However, it is acknowledged that many people have EDs for longer than ten years.

<sup>6</sup> The National Institute for Health and Clinical Disorders (2004) recommends 16 to 20 treatment sessions over four to five months for most EDs.

<sup>7</sup> This is a conservative figure as it does not include savings from reducing comorbidities associated with EDs.

be able to provide best practice treatment for all new cases as they occur. This will improve the lives of tens of thousands of people. Moreover, since the majority of the benefit is related to productivity, there would not only be tangible financial benefits to those affected by EDs, but also large benefits to government, with an additional \$4.3 billion in tax receipts.

**Thus the benefits of such an intervention outweigh its costs by more than 5.38 to 1.**

The results of the CBA suggest that there is a very strong case on economic grounds to implement the NEDC's findings and work towards best practice treatment models for Australians with EDs.

Deloitte Access Economics

**“This important report makes it clear that upskilling our mental health practitioners to treat eating disorders would be a cost-effective approach to the serious problem that robs so many young people of a productive life.”**

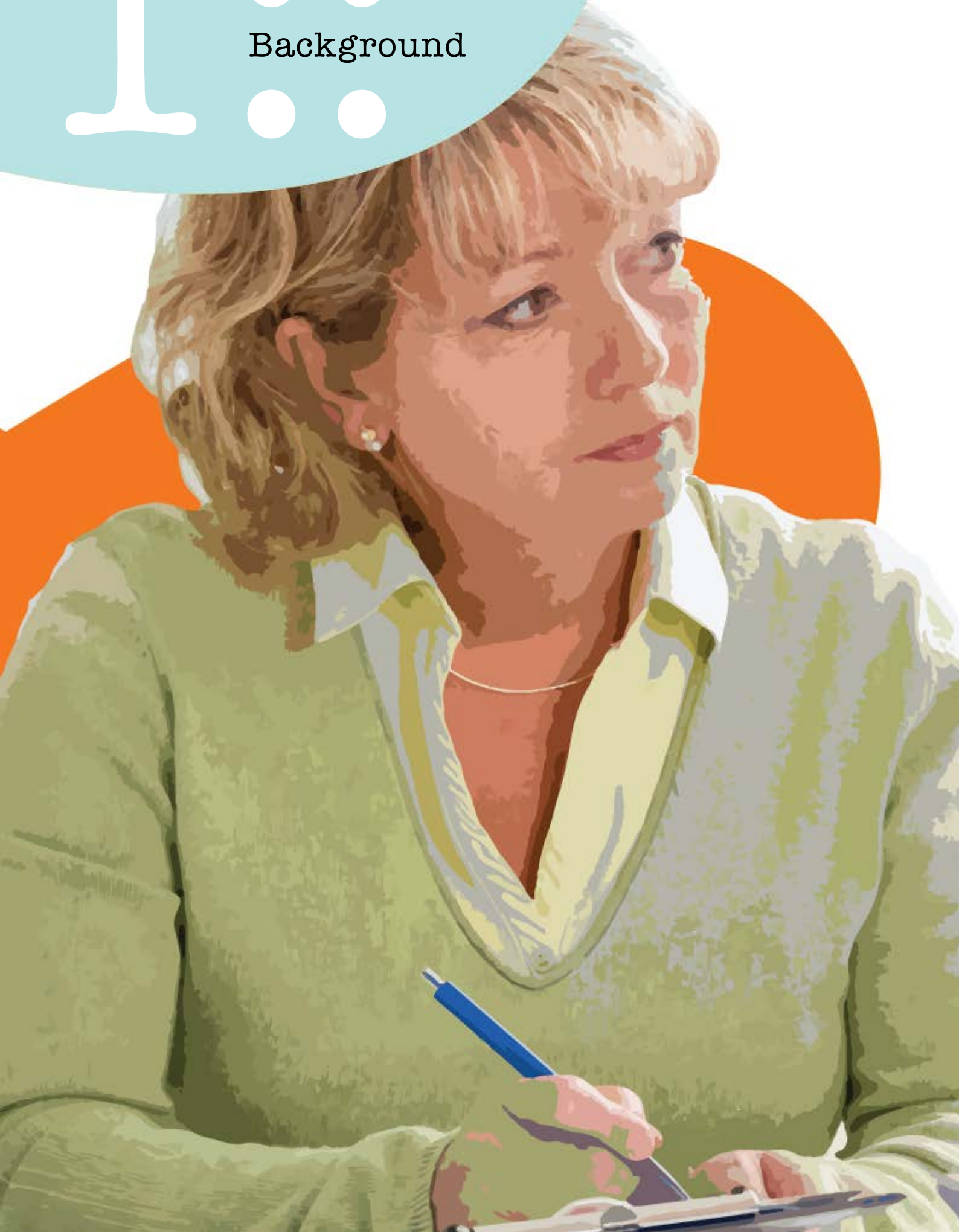
**PROFESSOR TRACEY WADE,**  
DEAN, SCHOOL OF PSYCHOLOGY, FLINDERS UNIVERSITY




# 1



Background







“Eating disorders remain a significant cause of psychological distress, medical complications and functional impairment for affected individuals, their families, friends and partners – they represent an enormous loss to society, including economic losses.”

**DR SLOANE MADDEN (FRANZCP),**  
EATING DISORDER COORDINATOR, SYDNEY CHILDREN'S HOSPITAL NETWORK  
PRESIDENT OF THE AUSTRALIAN AND NEW ZEALAND ACADEMY OF EATING DISORDERS

### Recovery from an eating disorder is possible. Early detection and intervention is critical to successful outcomes.

All eating disorders are serious mental illnesses with high levels of psychological distress, risks of long-term medical complications and an increased risk of premature death due to medical complications and to an increased rate of suicide. Eating disorders have been shown to have one of the highest impacts on health related quality of life of all psychiatric disorders.

Eating disorders most frequently start in childhood and youth, and impact on education, identity formation and physical growth. With a high risk of recurrence and chronicity, eating disorders can impact on health and quality of life for the whole life span.

Deloitte Access Economics (2012) conservatively estimated that the socio-economic cost of eating disorders in Australia that year was \$69.7 billion. Three key components of that cost burden were: i) health system costs of \$99.9 million (noting that this was based solely on instances where patients were specifically identified as being treated for an eating disorder. A very significant number of patients suffering from an eating disorder will be recorded in the health system not under 'eating disorders' but rather under the medical complication from an eating disorder for which they are being treated, such as cardiac, organ failure, etc.); ii) productivity costs of \$15.1 billion reflecting the significant impact of eating disorders on the short and long-term capacity of someone with an eating disorder to live a fully productive life; and iii) burden of disease costs of \$52.6 billion indicating the severe impact of the duration of the illness, its high mortality rate and the impact on quality of a person's life. The burden of disease costs for eating disorders are comparable to the estimates for anxiety and depression of \$41.2 billion, and obesity of \$52.9 billion.

Eating disorders are relatively common when compared with other priority health issues such as Type 1 diabetes or asthma. Eating disorders are estimated to affect approximately 9% of the total population with

prevalence in any one year of around 2.94% in males and 5.11% in females.

The rate of eating disorders in the Australian population is increasing. This trend is most evident in binge eating disorder and has paralleled the increase in childhood obesity. Studies suggest that only 22% of people with eating disorders access specialist treatment at any time over the duration of their illness and that this rate may be as low as 10% for people with binge eating disorder.

Eating disorders are a distinct group of complex illnesses with treatment requirements that are different to other types of mental illness. The complexities of eating disorders require a long-term multi-disciplinary team approach; integrating medical, nutritional and psychological treatment delivered in a supportive environment.

Recovery from an eating disorder is possible. Early detection and intervention is critical to successful outcomes. People who have had an eating disorder for less than two years are likely to respond more quickly to treatment and experience fewer physical health consequences.

Without early intervention, the long-term prospects are relatively poor. Recovery from an eating disorder is a long-term process, lasting on average for one to six years, but affecting up to 25% of sufferers as a severe and long term illness. The experience of an eating disorder increases the risk of future episodes of illness, and people with a history of eating disorders require continued access to support to promote wellbeing and early help seeking.

Lack of access to appropriate treatment contributes to the severity and chronicity of the disorder, the impact on the individual, and the costs to the community and the health system. In contrast, early intervention delivered by health professionals who are trained to deliver eating disorders treatment has been shown to improve rates of

<sup>8</sup> Many people also contract EDs later in life, but the earlier an ED occurs, the more likely it is to restrict career and social development.

recovery, improve quality of life, reduce recurrence and therefore reduce the demands on the health system.

In 2012 the National Eating Disorders Collaboration (NEDC) developed a suite of evidence-based treatment options and delivery mechanisms, which features:

- A focus on early intervention;
  - A range of delivery options, from general practitioners (GP) and online self-help, through intensive outpatient and residential programs, to full inpatient hospitalisation;
  - A “stepped care” approach, realising that patients might need to progress both up and down (sometimes repeatedly) through delivery levels; and
  - Long-term follow up, to prevent relapse.
- The Butterfly Foundation tasked Deloitte Access Economics with assessing whether a CBA of investing in such interventions could be developed. This report outlines the methodology and findings of that project.
  - Chapter 2 assesses the ‘base case’ or what are the costs of treating EDs in Australia at present; and what are the natural (or largely untreated) progression paths of eating disorders, including remission. The chapter also contains a brief summary of the (updated) economic costs of EDs, from Deloitte Access Economics (2012).
  - Chapter 3 examines the costs and efficacy of standard treatments currently applied for EDs in Australia (which are largely not evidence based).
  - Chapter 4 outlines the suite of optimal interventions, treatment facilities and pathways that could be used to prevent, treat and avoid relapse of EDs. Similar approaches have been relatively widely adopted in the United States (US), Canada and Great Britain.
  - Chapter 5 conducts cost effectiveness analysis (CEA), assessing the health costs incurred per recovered patient, under treatment as usual (TAU) and best practice treatment.
  - Chapter 6 examines the impacts of two cases, the current progression path and if the optimal intervention was implemented in Australia. A CBA is modelled for a single cohort over ten years, comprising those who develop an ED in 2014, and investigates the change in wellbeing and financial implications for the two cases by the various payers.
  - Chapter 7 draws conclusions from the analysis.





## Natural progression of EDs

“Our current health care provision for eating disorders is inadequate, and has largely developed in an ad hoc way.”

ASSOCIATE PROFESSOR RICHARD NEWTON,  
MEDICAL DIRECTOR MENTAL HEALTH, AUSTIN HEALTH





The financial cost of eating disorders in 2014 was \$19.8 billion, or \$20,970 per person.

### 2.1 Duration

In Australia, Vos et al (2001) estimated the average duration for AN is eight years, and five years for BN (Vos et al, 2001). There was no information ascertained on the duration of BED or EDNOS, as these were not recognised as distinct disorders at the time.

However, the duration of illness is not significantly correlated to changes in the Health-Related Quality of Life (HRQoL) scores, that is, people may be impaired in their quality of life independently of the current severity of illness (Bianco et al, 2014).

### 2.2 Severity

Severity of EDs can be measured in a variety of ways. The most common metrics are an eating disorder specific quality of life measure (EDQoL), or a more generic health-related quality of life (HRQoL) measure<sup>9</sup>. While EDQoL measure provides greater variability and more specific information than HRQoL (Ackard et al, 2014a), HRQoL provides a benchmark that can be used to compare the relative impact of eating disorders to other conditions or to individuals in good health.

A meta-analysis (Winkler et al, 2014) and a comprehensive review (Bianco et al, 2014) have recently been undertaken on the HRQoL in EDs. Both studies concluded that in comparison to the general populace, those with an ED have a poorer HRQoL. Winkler et al (2014) noted that studies have shown that those with EDs showed a lower HRQoL compared to other psychiatric disorders, including severe depression. They also found equally low levels of HRQoL in individuals regardless of the type of eating disorder i.e. whether it is AN, BN, BED or EDNOS. Winkler et al (2014) found that all domains<sup>10</sup> except physical functioning were lower than the normal populace. Bianco et al (2014) noted that the poorer HRQoL was particularly evident in the mental health component.

#### 2.2.1 Factors that impact severity

The literature (notably Ackard et al, 2014a) outlined a number of factors that impact the severity of EDs and associated quality of life, including age at initial assessment and length of time between initial and follow-up assessments.

##### Age

Ackard et al (2014b) found that those who are at or over 40 have more complicated clinical presentations than those who are younger, with a higher percentage of comorbid diagnoses. Those who are older are less likely to be diagnosed with AN or BN at initial assessment, and they are also less likely to receive inpatient treatment. They had generally poorer quality of life and psychological health indices and reported greater interpersonal concerns in several domains compared to younger individuals.

The study found that youth below the age of 18 were more likely to have good outcomes than adults aged 18-39, who in turn were more likely to have good outcomes than adults aged 40 or over. Death outcomes from initial assessment increase with age (from 7.3% of 18 year olds to 23.5% of those aged over 40, see Table 2.1). Keel and Brown (2010) in their study of treatment outcomes note that “results support optimism for most patients with eating disorders”. However, this is not necessarily the case for adults, as Hay et al (2014) note that “there is no clear first-line psychological therapy”.

##### Assessment

Ackard et al (2014a) found that the severity of ED diagnosis and low body mass index (BMI) were indicative of poorer HRQoL. This study concurred with the more comprehensive reviews mentioned (Winkler et al, 2012 and Bianco et al, 2014) that there were no differences across ED diagnosis in generic HRQoL.

<sup>9</sup> A HRQoL is a broad multidimensional concept that usually includes self-reported measures of physical and mental health. It has been designed to encompass the overall aspects of quality of life that can be clearly shown to affect health. More information can be found at: <http://www.cdc.gov/hrqol/>

<sup>10</sup> Domains were based on SF-36 studies being; vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning, and mental health.

**Table 2.1: Health and mortality outcomes by age at initial assessment of ED (%)**

ED outcome	Age group at initial assessment		
	Youth < 18 years old	Young adult 18-39 years old	Midlife adult 40+ years old
Good	27.5	14	5.9
Poor/not good	65.1	65.6	70.6
Death	7.3	20.4	23.5

Source: Ackard et al, 2014b (age group descriptions as per source)

Using a more sensitive EDQoL, however, patients diagnosed with AN (binge/purge subtype) at the initial assessment had significantly poorer quality of life in the work/school domain than AN (restricting subtype), BN or EDNOS<sup>11</sup> and lower in the psychological domain compared to those with AN (restricting subtype) or EDNOS. The likely explanation for this is that those with AN (binge/purge subtype) may be having additive distress of low weight and binge-eating with compensatory behaviours.

Emphasising that early intervention is critical to good outcomes, some domains of HRQoL may not show significant improvement until all ED symptoms have remitted, possibly after years of treatment intervention (Ackard et al, 2014a).

### Comorbidities

ED is frequently comorbid with major depressive disorder, anxiety disorders and substance or alcohol abuse. Additionally, ED relapses and successive hospitalisations reduce the response to treatment of comorbidity (Bianco et al, 2014). Ackard et al (2014b) identified that having any alcohol and/or drug misuse, endocrine concerns at initial assessment and no family eating disorder history were associated with poorer outcomes or death. Bianco et al (2014) found that those who reported a comorbid psychiatric diagnosis were more likely to report a history of previous treatments for ED (85%) compared to those without a comorbid diagnosis (50%).

The review itself found that among the obese patients, those with BED had a poorer HRQoL than non-BED subjects.

Winkler et al (2014) noted that psychiatric comorbidity, especially depression (shown to be a critical determinant of all aspects of HRQoL), needs to be considered. However, more studies using similar screening tools need to be undertaken to ascertain the exact impact.

### 2.3 Relapse patterns

Ackard et al (2014a) found that treatment that results in the individual no longer meeting diagnostic criteria (recovery) may still need to continue until other areas of life show significant improvement in order to prevent relapse. This is reinforced by findings that 93% of those who had an eating disorder felt that a sense of belonging was important in maintaining quality of life in addition to abstinence from eating disorder behaviours (followed by work/education at 64.3%, health 39.9%, well-being 38.1%, and a sense of self 32.2%).

Hay (2012) supports a view of recovery that includes both absence of eating disorder symptoms and presence of positive indicators of psychological and social wellbeing. However, in this report recovery is defined as the absence of diagnosable condition for at least one year, because that is the most common metric in the cost-effectiveness studies utilised.

Bianco (2014) concluded more needs to be done to ascertain 'what aspect of treatment improves HRQoL of ED patients?' In summary, even though published data confirms that many treatments are able to improve HRQoL, they were not able to discern whether the improvement was due to some specific characteristics of the treatment or due to the patients being genuinely cared for.

<sup>11</sup> In this study only, BED is classified with EDNOS.

### 2.4 Costs of (untreated) EDs

The basis undertaken in this report is the same as was undertaken in the previous Deloitte Access Economics report *Paying the Price: Economic and social cost of eating disorders in Australia*. The financial cost of EDs in 2014 was \$19.8 billion, or \$20,970 per person (with a prevalence of more than 945,000). Almost 88% of the costs are related to productivity, which cost \$10.8 billion for individuals, \$5.6 billion to the Federal Government, and \$965 million to employers.

#### 2.4.1 Health system expenditure

##### 2.4.1.1 Acute care

The per-capita health expenditure figures identified in the previous Deloitte Access Economics report were updated using health cost inflation data from the

Australian Institute of Health and Welfare (AIHW 2013) into 2014 dollars. Prevalence estimates of EDs were also adjusted for the 2014 year by applying prevalence and incidence rates to the 2014 population estimates. This per person cost was then multiplied by the number of people in each age and gender cohort to ascertain total expenditure on EDs. This results in a total expenditure of \$106.7 million, as broken down in Table 2.2.

The AIHW (2013) reports that total health expenditure paid by the Australian government is 42.4% of the total. State, territory and local governments contribute 27.3%, and individuals, family and friends 17.3%. "Other" sources (mainly private health insurance (PHI), compulsory third party motor vehicle insurance and workers compensation) fund the remaining 13%.

**Table 2.2: Estimated total health expenditure on EDs, 2014 (\$m)**

Age	Males	Females	Total
0-9	0.0	0.0	0.0
10-14	2.6	16.8	19.4
15-19	1.2	24.1	25.3
20-24	1.7	35.5	37.2
25-29	0.3	7.1	7.4
30-34	0.3	5.0	5.3
35-39	0.2	3.2	3.4
40-44	0.2	3.1	3.4
45-49	0.0	1.9	1.9
50-54	0.0	1.8	1.9
55-59	0.1	0.4	0.5
60-64	0.0	0.3	0.3
65-69	0.1	0.1	0.2
70-74	0.1	0.0	0.1
75-79	0.0	0.2	0.2
80-84	0.0	0.1	0.1
85-89	0.0	0.1	0.2
90+	0.0	0.0	0.0
<b>Total</b>	<b>6.9</b>	<b>99.8</b>	<b>106.7</b>

Source: AIHW special data request, Deloitte Access Economics calculations.

**Table 2.3: ED expenditure by bearer, 2014**

	Federal Government	State/Territory Governments	Individuals	Family	Other	Total
Expenditure \$m	45.3	29.1	10.7	7.7	13.9	106.7
Expenditure (%)	42.4%	27.3%	10.1%	7.2%	13.0%	100.0%

Source: AIHW special data request, Deloitte Access Economics calculations.



Health system costs of EDs in Australia are thus borne mainly by the Australian government (\$45.3 million) and state, territory and local governments (\$29.1 million). Individuals contribute \$10.7 million, while other and family/friends make up the remaining \$21.6 million (Table 2.3).

**2.4.2 Other financial costs**

**2.4.2.1 People with EDs**

Productivity losses are the cost of production that is lost when people with eating disorders are unable to work because of their condition. They may work less than they otherwise would (either being employed less, being absent more often or being less productive while at work) or they may die prematurely.

**Employment participation**

Updating the 2012 report to 2014 yields a total loss of income of \$6.92 billion in 2014, equating to an estimated \$141 per week per person with an ED, on average. This estimate also assumes that people with

EDNOS and BED have similar productivity impacts to those with AN and BN (the bulk of survey respondents). In this respect the NEDC (2010) notes:

**The annual cost of lost earnings due to reduced employment participation from ED was estimated at \$6.92 billion in 2014.**

**Absenteeism**

For people with eating disorders who are employed, the condition can adversely affect work performance through absence from work. Such absenteeism is measured by looking at the number of work days missed by people with eating disorders over a 12 month period.

**Based on these parameters and the AWE for each age-gender group, in 2014, the total cost of absenteeism and lost home production due to eating disorders was estimated at \$1.7 billion. This includes around \$1.4 billion due to absenteeism for people in paid work and around \$0.2 billion in lost household productivity for those in unpaid work<sup>12</sup>.**

*The diagnostic category of EDNOS is sometimes mistakenly assumed to describe individuals with milder or less serious forms of eating disorders. This is an incorrect assumption; individuals with EDNOS experience psychological and physiological morbidity and secondary impairment that is comparable to AN and BN.*

**Table 2.4: Average lost weekly earnings for persons with an ED, 2014 \$**

Age	Males	Females
15-19	38.11	27.66
20-24	137.88	103.56
25-29	214.37	136.51
30-34	243.85	139.36
35-39	273.35	139.43
40-44	290.97	144.85
45-49	292.07	158.28
50-54	260.79	135.66
55-59	215.99	98.23
60-64	147.84	48.71
65-69	47.90	12.56
70-74	13.54	1.95

Source: ABS Employee Earnings and Benefits, Cat No 6310, Deloitte Access Economics calculations.

<sup>12</sup> Rounding between the figures are accountable for the discrepancy between total costs

### Presenteeism

Eating disorders can also affect a person's ability to function effectively while at work, for the same morbidity-related reasons as it contributes to absenteeism and lower employment participation. Presenteeism can be estimated by multiplying the number of days worked with eating disorders by the percentage reduction in effectiveness on days worked with eating disorders.

**In 2014, the total cost of 'presenteeism' (lower productivity while at work) due to ED was estimated as \$6.1 billion.**

### Premature death

There were an estimated 1,941 deaths due to EDs in 2014 (547 males and 1,394 females). Based on the age-gender distribution of these deaths, and incorporating employment rates and estimates of average lifetime earnings for different age-gender groups, the present value of lost earnings due to mortality among those

who would otherwise have been employed was estimated.

**The annual cost due to lost productivity from premature death due to ED was estimated as \$2.3 billion in 2014.**

Premature death also leads to additional search and hiring costs for replacement workers. These are estimated as the number of people with EDs (by age and gender) who die prematurely, multiplied by the chance of being employed (if they did not die), multiplied by the search and hiring cost brought forward three years. The search and hiring cost is estimated as 26 weeks at AWE and the three year bring forward reflects average staff turnover rates in Australia.

**In 2014, additional search and hiring costs were estimated as \$1.6 million.**

### Summary

The combined economic productivity loss for people with eating disorders in 2014 is \$17.4 billion.

**Table 2.5: Summary of productivity loss for people with eating disorders, 2014**

	\$ million
Reduced workforce participation	6,917
Absenteeism	2,076
Presenteeism	6,143
Premature death	2,289
Search and hiring costs	1.6
<b>Total</b>	<b>17,426</b>

### 2.4.2.2 Carers

#### Productivity costs

Carer costs have also been updated for 2014. While informal care is provided free of charge, it is not free in an economic sense - time spent caring is time that cannot be directed to other activities such as paid work, unpaid work (such as housework or yard work) or leisure. As such, informal care is a use of economic resources.

Deloitte Access Economics has adopted the opportunity

cost method, as in the last report. Our previous report identified that carers spend 12.4 hours per week looking after people with an eating disorder. In 2012, according to Centrelink data, there were 525 people who received Commonwealth payments to care for someone with AN or BN. Based on the 2012 figures for carers, who could otherwise work in paid employment at rates for 12.4 hours per week, and inflating for 2014 wages, the opportunity cost of lost wages in 2014 is estimated as \$10.1 million.

## Quality of life of caregivers

While this could not be costed, in addition to the financial cost outlined above, eating disorders have a strong impact on the quality of life of caregivers (Hays et al, 2014). The loss in QoL did not vary significantly between the type of ED the carer was caring for. Predictors in reducing the burden on caregivers of ED patients included:

- A reduction in the caregivers level of anxiety
- Perception of the severity of the patient's symptoms
- Decline in the patient's anxiety and depression

Higher scores in mental health and low perception of burden at baseline predicted improved caregiver QoL at one-year follow-up. The caregivers QoL improved if the perception of burden decreased over time and if depression of the patient improved. The results suggest that interventions directed to reduce the caregiver's perception of burden and to improve the mental health of the ED patients would lead to improved caregiver QoL.

## Welfare costs

Centrelink provides support for people who care for someone with an eating disorder. There are two forms of this support, Carer Payment, and Carer Allowance.

- *Carer Payment* provides support for people who are unable to work in substantial paid employment due to providing full-time daily care to someone with a severe disability or medical condition, or to someone who is frail aged<sup>13</sup>.

- *Carer Allowance* is a supplementary payment for parents or carers who provide daily care to an adult or dependent child who has a disability or medical condition or is frail aged.<sup>14</sup>

In 2014, Carer Payment was paid at a rate of \$766 per fortnight for singles, with \$118 per fortnight for Carer Allowance.<sup>15</sup> The Department of Human Services provided data on the combined outlays for those caring for people with EDs totalling \$7.8 million in 2014.

## 2.4.3 Deadweight loss

Public funding of health care costs and reductions in income tax revenues related to eating disorders together mean that the government must increase tax revenue to achieve a budget neutral position.<sup>16</sup> Consequently, taxation rates including income and indirect taxation rates must be higher than they would have otherwise been, in the absence of EDs.

Using the same methodology as the 2012 report we have calculated the deadweight loss (DWL) associated with eating disorders on society, using the marginal cost of public funds or MCPF (28.75 cents per dollar):

- the government financed component of the health system costs of ED;
- welfare costs of ED; and
- the lost income tax revenue from productivity losses.

The total estimated DWLs from eating disorders were \$1.6 billion in 2014, as outlined below.

**Table 2.6: ED Carer Allowance and Carer Payment outlays, 2014 (\$m)**

	Carer Payment	Carer Allowance	Total
AN	6.33	0.43	6.76
BN	0.94	0.06	1.00
<b>Total</b>	<b>7.27</b>	<b>0.49</b>	<b>7.76</b>

Source: Department of Human Services – based on number of people receiving the payment on 9 March 2012. Figures for BED and EDNOS were not identified.

<sup>13</sup> <http://www.humanservices.gov.au/customer/services/centrelink/carers-payment>

<sup>14</sup> <http://www.humanservices.gov.au/customer/services/centrelink/carers-allowance>

<sup>15</sup> <http://www.humanservices.gov.au/customer/enablers/centrelink/carers-payment/payment-rates> and <http://www.humanservices.gov.au/customer/enablers/centrelink/carers-allowance/payment-rates>

<sup>16</sup> This implicitly assumes funds have not been redirected from some other area of the health care system.

## Chapter 2 :: Natural progression of EDs

### 2.4.3.1 Health system costs

As noted in Section 2.4.1, 69.7% of health system expenditure is borne by governments, an estimated \$74.4 million in 2014. Applying the marginal cost of public funds, this would result in DWL of \$21.4 million.

### 2.4.3.2 Welfare costs

As noted in Section 2.4.2.2, carer expenditure borne by governments totalled an estimated \$7.8 million in 2012. At an MCPF of 28.75 cents, this would result in DWL of \$2.2 million.

### 2.4.3.3 Productivity losses

As outlined in Section 2.4.2.1, reduced earnings due to reduced workforce participation, absenteeism and premature death also have an effect on taxation revenue collected by the Government. As well as forgone income (personal) taxation, there will also be a fall in indirect (consumption) tax, as those with lower incomes spend less on the consumption of goods and services.

In 2014, lost taxation revenue due to ED impacts on productivity are estimated at \$5.6 billion.<sup>17</sup> The DWL incurred in raising this revenue from other sources would be \$1.6 billion.

### 2.4.4 Out of pocket costs

Aids and modifications consist of out-of-pocket costs borne by the individual, and are taken to include aids, equipment and home modifications, alternative and herbal medications, transport and accommodation costs, and miscellaneous out-of-pocket costs not included in other cost categories.

The median travel and accommodation cost reported in the 2012 survey for the original Paying the Price: Economic and social cost of eating disorders in Australia report was \$750 per year. Similarly the median binge eating respondent estimated that this increased the household grocery bill by \$750 a year. Assuming this is applicable to people with BN and BED, and inflating to 2014<sup>18</sup>, this leads to an estimated “bingeing bill” of \$638 million dollars per year. This is included in the model.

The requirement of out of pocket costs associated with ED was estimated at \$638 million in 2014.

### 2.4.5 Funeral costs

The ‘additional’ cost of funerals borne by family and friends of people with eating disorders is based on the additional likelihood of premature death associated with eating disorders in the year 2014. However, some people (particularly older people) would have died in

**Table 2.7: Summary of other financial costs of eating disorders, 2012**

	\$ million
Productivity costs	17,426
<i>Reduced workforce participation</i>	6,917
<i>Absenteeism</i>	2,076
<i>Presenteeism</i>	6,143
<i>Premature death</i>	2,289
<i>Search and hiring costs</i>	1.6
Carer costs	10.1
Out of pocket costs	638
Funeral costs	9.6
DWL	1,635
<b>Total other financial costs</b>	<b>19,719</b>

<sup>17</sup> \$5.6 billion is estimated based on economic productivity losses for those with eating disorders and carers (\$17.4 billion and \$10.1 million respectively) multiplied by the average personal income and average indirect tax rate (21.8% and 11.1% respectively), and then applying the MCPF.

<sup>18</sup> Inflating prevalence to 2014 figures, and monetary costs by CPI.

2014 anyway; eventually everyone must die and thus incur funeral expenses. The Bureau of Transport and Road Economics (2000) calculated a weighted average cost of a funeral across all states and territories, to estimate an Australian total average cost of \$3,200 per person for 1996, or \$5,081 per person who died in 2014.

The bring forward of funeral costs associated with premature death for people with ED was estimated at around \$9.6 million in 2014.

**2.4.6 Total financial cost**

**In total, the non-health related financial costs of eating disorders were estimated to be \$19.7 billion in 2012. Together with the health system expenditures, total financial costs were estimated as \$19.8 billion.**

**2.4.7 Burden of disease (BoD)**

The burden of disease methodology was developed as a comprehensive measure of mortality and disability from diseases, injuries and risk factors for populations around the world in 1990, projected to 2020 (Murray and Lopez, 1996). It uses a non-financial approach, where pain, suffering and premature mortality are measured in terms of disability adjusted life years (DALYs).

Under the DALY framework the total burden of disease for an individual with a condition is the sum of the mortality and morbidity components associated with that condition and consists of two components – years of healthy life lost due to disability (YLD) and years of life lost due to premature mortality (YLL). These values were summed to estimate the DALYs.

**DALY = YLL + YLD**

The disability weight for AN and BN is 0.28 (Begg et al 2003).

The Global Burden of Diseases, Injuries and Risk Factors Study 2010, through the *Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010* (Whiteford et al, 2013) estimated the impact of eating disorders. Eating disorders were defined as AN and BN, but did not including BED and EDNOS. It found that EDs still made up 1.1% of YLD, 2.4% of YLL and, in total, 1.2% of DALYs lost to mental and substance use disorders globally. This impact varies by region, with EDs having an impact 40 times higher in Australasia than they had in western sub-Saharan Africa.

The BoD as measured in DALYs can be converted into a dollar figure using an estimate of the value of a statistical life year (VSLY). As the name suggests, the VSLY is an estimate of the value society places on an anonymous life year. The VSLY is derived by measuring consumers’ willingness to pay to avoid risk, largely derived through wage-risk trade-off studies (e.g. higher compensation for working in more dangerous occupations such as underground coal mining) as well as willingness to pay for safety. The Department of Finance (2008) requires Commonwealth agencies to use a VSLY of \$151,000 (2007 dollars). This inflates to \$182,336 in 2014 dollars, and is used for calculations in modelling in this report.

**EDs were estimated to have caused 294,688 DALYs in 2014. At a value of \$182,336 per DALY, this equates to a cost of \$53.7 billion in 2014.**

**Table 2.8: DALYs caused by eating disorders, 2014**

	Males	Females	Total
YLD	76,849	168,224	245,073
YLL	13,576	36,038	49,615
<b>DALYs</b>	<b>90,425</b>	<b>204,263</b>	<b>294,688</b>

# 3

## Costs and efficacy of TAU

“Appropriate training opportunities for the health workforce on eating disorders are an important priority, so that they can provide life-saving treatments.”

**DR WARREN WARD,**  
PAST SECRETARY, AUSTRALIA AND NEW ZEALAND  
ACADEMY FOR EATING DISORDERS.  
SENIOR LECTURER, DEPARTMENT OF PSYCHIATRY,  
UNIVERSITY OF QUEENSLAND.





### Current funding initiatives for mental health support a treatment dosage that is substantially less than the evidence-based treatment dosage.

The NEDC (2013) reports that:

Up to 85% of people seeking treatment experience difficulty accessing appropriate treatment, and 60% of clinicians experience difficulty referring clients for EDs treatment.

- There are no specialist ED inpatient services for adults in Tasmania, the Northern Territory or Western Australia.
- There are no specialist ED services in regional areas of Australia.
- None of the local health districts provide a full continuum of care.
- Most treatment services, including specialist ED services, do not include the full range of professionals necessary for the multi-disciplinary team.
- Current funding initiatives for mental health support a treatment dosage that is substantially less than the evidence-based treatment dosage.
- Most treatment for EDs is provided through private practice and through private hospitals. Lack of recognition of EDs in PHI, Medicare benefits and other funding initiatives leads to difficulties in accessing treatment, particularly for people who are reliant on public health services.

#### 3.1. Efficacy of current actual treatment

For many of those who receive treatment, the outcomes may not be much better than those who do not. For example, if Medicare covers only half as many sessions of cognitive behaviour therapy (CBT) as evidence-based practice recommends, the intervention may not be effective:

- Deloitte Access Economics (2012) noted stories of AN patients being hospitalised when their body

weight gets dangerously low; force-fed until their physical health was stable, but then discharged without any mental health follow up.

- Gowers et al (2010) concluded “Lengthy psychiatric inpatient treatment does little to add to positive outcomes and is cost-ineffective.”
- The NEDC (2013) reported that people with moderate to severe EDs are typically only accepted at adult mental health services if they have a comorbid condition such as major depression. The consequence of this is potentially ineffective care for clients with EDs, where the focus may be on the depression rather than the underlying ED.
- Noordenbos et al (2010), reporting on the treatment of patients with chronic EDs, observed that GPs generally did not have enough knowledge, experience or skill to diagnose EDs, which led to both treatment delay and ineffective treatment.

#### 3.2. Costs for those treated

For those who do receive treatment for an ED the costs can be expensive. Stuhldreher et al (2012) reported data from a systematic review of cost of illness (COI) studies across a number of Western countries<sup>19</sup>. Converting their results to current Australian dollars (AUD), the average cost of treating a case of BN was around \$6,000 and for AN around \$84,000.

#### 3.3. Coverage

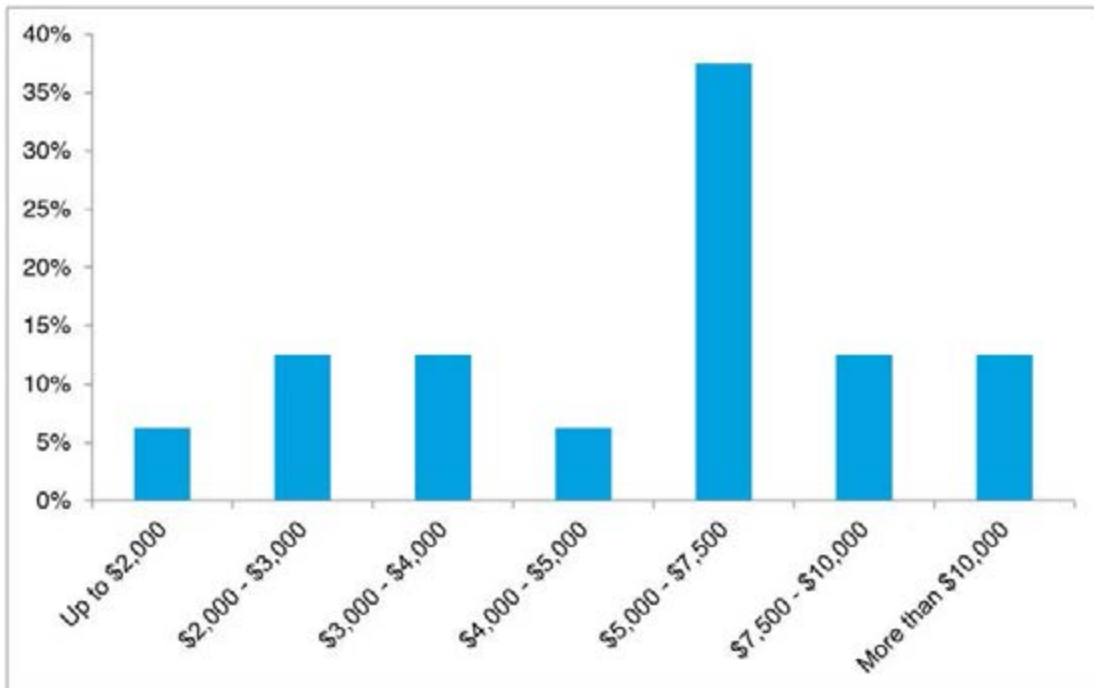
In contrast, Deloitte Access Economics (2012) reported that total ED health costs divided by prevalence of EDs yielded average per capita expenditure of \$74 for BN and \$2,440 for AN. Given reported per treatment costs are far higher than this (section 3.2), this fits with studies show that that very few people are treated for EDs in Australia.

Stuhldreher et al (2012) note that despite the fact that

<sup>19</sup>The COI studies were undertaken in the US, Great Britain, Canada, Finland and Germany.

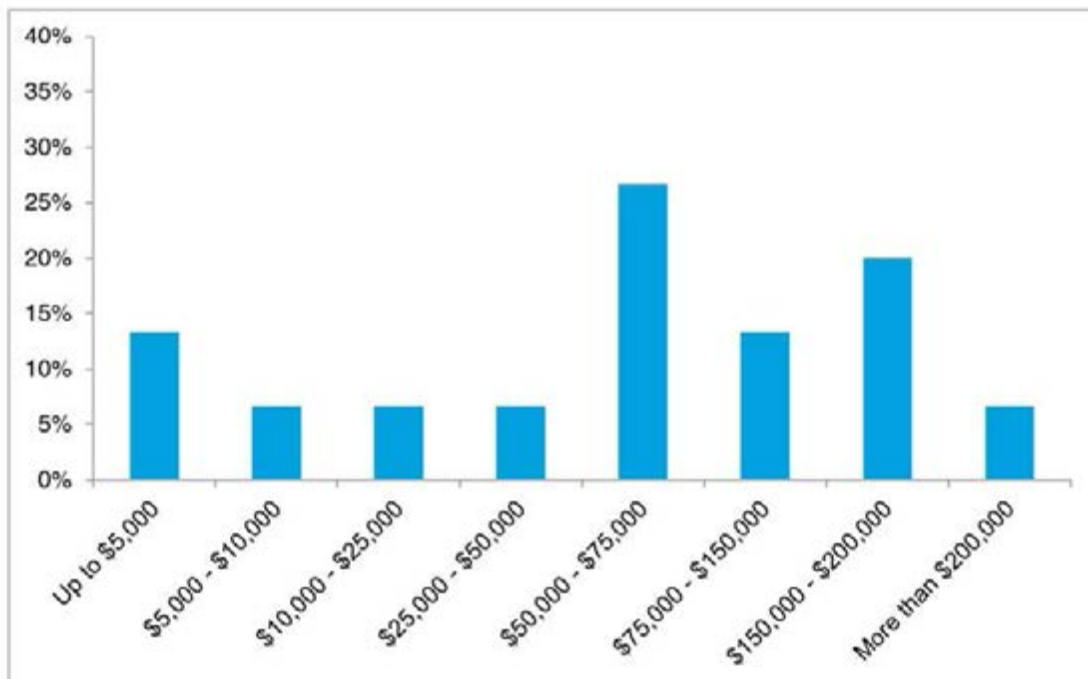


**Chart 3.1: Distribution of annual BN intervention costs**



Note: all costs converted to current AUD.  
Source: Stuhldreher et al (2012)

**Chart 3.2: Distribution of AN annual treatment costs**



Note: all costs converted to current AUD.  
Source: Stuhldreher et al (2012).

## Chapter 3 :: Costs and efficacy of treatment as usual (TAU)

“EDs pose a serious public health problem, evidence regarding health care utilisation is sparse”. Table 3.1 shows the available evidence of the percentage of people with EDs that receive treatment in a given year, or over their lifetime.

Australian evidence suggests that less than 5% of people with an ED receive treatment for it in any given year (Mond et al, 2009). Indeed, the evidence suggests that only 11% of Australians with an ED receive treatment for it during their lifetimes (Mond et al, 2007). However, it is also worth noting that Australia does also have examples of some of the best available approaches to ED prevention and recovery support, although they “... have developed on an opportunistic basis in isolation from each other and other health sectors, driven by individual expertise, perceived local need and funding opportunity” (NEDC, 2013).

Even in the US, where PHI companies are required by law to grant equal treatment for mental illness as physical illness, it would appear that 15% of people with an ED receive treatment for it in any given year (Hudson 2007). In Europe, 20% of people with EDs obtain treatment during the course of the disorder (Preti et al, 2009).

Total Australian annual health expenditure on EDs was \$99.9 million in 2012, for 913,986 people with an ED. If, as per Mond et al (2009), only 4.7% of receive treatment in any given year that would be 42,957 people treated. This equates to \$2,325 per person treated, which is substantially below the average treatment cost for BN of around \$6,000 reported by Stuhldreher et al (2012).

**Table 3.1: Percentage of people with ED receiving treatment**

Authors	Duration	Country	Observation	Per cent
Mond et al (2009)	Year	Australia	Receiving treatment for eating problems: Disordered eating behaviour and overweight	2.2
Mond et al (2009)	Year	Australia	Receiving treatment for eating problems: Disordered eating behaviour, but not overweight	4.7
Mond et al (2007)	Life	Australia	Treatment by a mental health professional for ED	11.3
Hudson (2007)	Year	US	Treatment for any emotional problems, within ED, by mental health professional	15.6
Swanson et al (2011)	Life	US	Service use for eating or weight problems, within ED	21.5
Preti et al (2009)	Life	Europe	Access to service use, mental health, for any emotional problems within ED	20.0

“I was shocked to discover that everywhere I turned I was regarded as ‘far too ill’ for hospital. Either I die or I manage the eating disorder on my own”

- BETH



REPORT

# Case Studies::

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There are two case studies in this report that illustrate the way in which failure to diagnose eating disorders early in the course of illness and provide adequate treatment, impacts on the health of people with eating disorders and therefore on the health system.

Both case studies tell the story of long term severe illness, although one of the subjects is still a young adult at age 25. It would be easy to dismiss these cases as unusual. Research indicates that long term experience of eating disorders is common. Given the high rate of death for people with eating disorders these case studies are not the most extreme cases.

Despite differences in age between the two subjects and changes to the health system over time, the cases tell a consistent story.

- Failure to diagnose early in illness even when there is contact with health professionals.
- No access to treatment until a health crisis. Inpatient treatment is a costly and often ineffective first point of intervention.
- No coordinated support for rehabilitation. Lacking this support a cycle develops of inpatient treatment, repeated crises and finally inpatient treatment again.
- No integration between medical and psychiatric care which is the basic safe standard for the treatment of eating disorders (Reference National Eating Disorders Framework, NEDC, 2011)
- No access to eating disorders programs in their local community. One of the subjects moved interstate to access treatment. This option is not available for most people.
- High and ongoing costs for the medical consequences of their eating disorder

### Health Costs

Estimated health costs for one year (2012 - 2013) of eating disorder and medical treatment for each case study are:

- **\$59,703 for Beth, aged 41 living with anorexia nervosa**
- **\$261,781 for Simone, aged 25, living with a typical anorexia nervosa with functional bulimia**

These costs do not include all of the costs of medication, essential tests, presentations to Accident and Emergency or general medical costs such as GP appointments.

The costs for one year are not isolated incidents. The case studies illustrate how these costs are part of a repetitive cycle of treatment for medical as well as psychiatric problems associated with an eating disorder.

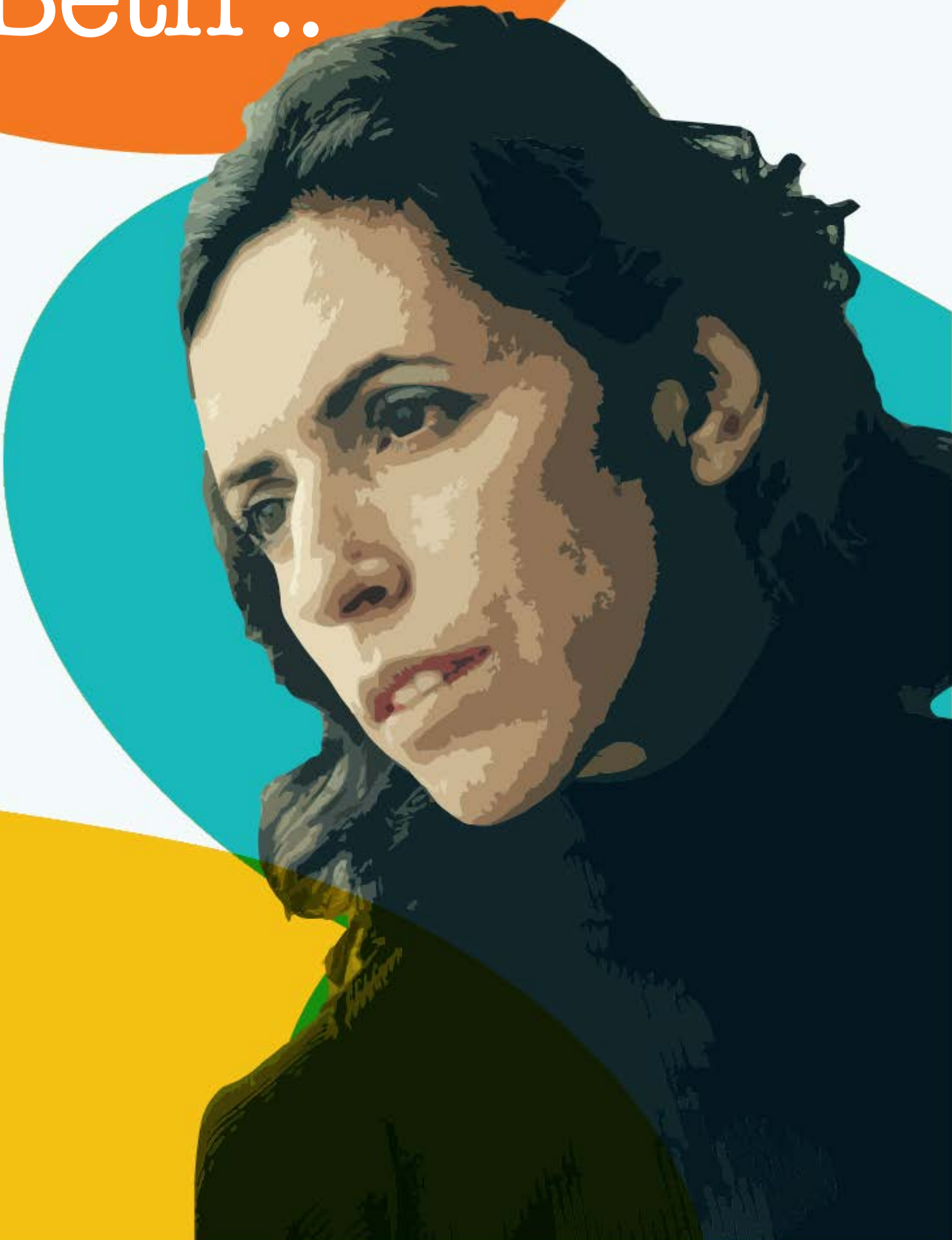
Both of these women developed their eating disorder when they were very young. What will happen to the young people, and the almost equal number of older adults who are being diagnosed with eating disorders today? The outcome will depend on how early their illness is identified and whether they have access to effective coordinated treatment or not.

If early diagnosis and treatment is not available, or treatment is experienced as traumatising – and the case studies illustrate that both of these are often the case – then the costs of their eating disorder can be expected to be much the same as the women in these case studies.

COASSEE SSIUDDY

# Beth ::

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# Case Study :: Beth

By the age of 13 Beth had all the symptoms required for a diagnosis of anorexia nervosa (AN). As a young dancer her health was, to some extent, being monitored by her physiotherapist who became suspicious about her increasing health problems. No direct action was taken and, consistent with the nature of AN, Beth avoided doctors for fear that they would diagnose her condition.

Her health deteriorated. At the age of 18 with glandular fever and chronic fatigue syndrome Beth was no longer able to avoid the health profession. At the age of 22 she was treated by a psychiatrist for depression but her AN remained undiagnosed. It took attempted suicide at the age of 23 before her AN was diagnosed and she was offered her first treatment: one week in a inpatient refeeding program.

Over the next year, Beth’s condition continued to deteriorate. At the age of 24 she was admitted to a private hospital psychiatric ward. This admission lasted for nine months. In the first few months Beth did not gain weight. An intensive refeeding strategy was used to enable Beth to be discharged.

**“The nurses told me I just had to get to a certain weight and then I could go home and lose it all, which is what I did.”**

The approach to treatment was experienced as punitive involving removing all privileges - including

the ability to contact her family or interact with other people – leaving Beth traumatised. The low self esteem and self loathing characteristic of AN were strengthened by the treatment. When she was discharged with no on-going treatment plan to support her, she avoided seeking help for her AN for the next 11 years.

By 2004, Beth, now in her thirties was experiencing significant physical health problems due to her eating disorder and treatment was essential. Over the next few years Beth experienced broken bones due to low bone density, neurological problems, cardio vascular problems, a stroke, and depression and multiple suicide attempts.

In 2012 Beth was admitted to an eating disorder specialist program in a private hospital. While treatment had come a long way since her first admission in 1997 the focus was on weight gain and not on the complexity of issues that had developed over Beth’s long struggle with AN. A second admission to the program was brief. Seven days after admission a stroke required her transfer to a public medical hospital and long months of rehabilitation.

Note: This outline of treatment requirements between 2011 and 2014 does not include multiple presentations to Accident and Emergency in each year to address issues of dehydration, blood pressure issues and suicide attempts.

Type of treatment	2011-2012	2012-2013	2013-2014
General psychiatric	\$6,321	\$12,917	\$2,193
Psychiatric inpatient	20 days	40 days	
Psychiatric day program	Weekly sessions x 48	12 weeks	
Medical inpatient		Inpatient neurology 14 days	Inpatient neurology 35 days
Medical rehabilitation		Rehabilitation for stroke	Day program \$7,223

## Case Study :: Beth

In the first seven months of the current financial year (2014 to 2015) Beth's treatment has included two hospital admissions as a Neurology inpatient, weekly appointments for trauma therapy, and three presentations to Accident and Emergency due to low blood glucose. The year has not included any treatment for her eating disorder because no treatment has been available so far. There is an option for Beth to travel interstate to access an eating disorder program provided that her physical health remains stable.

**“There has never been any coordination of care, no follow up after discharge and very little specific eating disorder treatment.”**

### Positive moments

At different points in Beth's history there have been moments of positive support and intervention which have helped to sustain her. Of particular note was gaining access to an online program in 2007 – The Smart Eating Program – which helped to change Beth's view of recovery and motivate her to try treatment again despite her previous experiences. Important features of the program were its motivational content and ease of access but also the fact that there were therapists monitoring the program and interacting directly with the service users. This personal contact with someone who understood her eating disorder and could give her feedback and guidance made all the difference for Beth.

### What if effective treatment were available?

Beth has yet to receive effective treatment for her eating disorder. As someone with what is called an enduring illness she has been repeatedly refused treatment in the past six years. This reduces the immediate costs of treatment but increases the risk of death and disability.

**“I was shocked to discover that everywhere I turned I was regarded as “far too ill” for hospital. Either I die or I manage the eating disorder on my own”**

In her view if she had had access at any time in her illness to a recovery oriented approach to treatment that emphasised empowerment and the development of life-skills in a home-like environment, followed by continued support and rehabilitation in the community, most of her health problems could have been avoided.

**“I need the opportunity to develop as a human being not just refeeding.”**

If that approach was available now, even with almost 30 years of illness behind her, she believes that she could live a healthy life in recovery. Unfortunately, there are no treatment programs for eating disorders in Beth's state that are able to provide the therapeutic approach plus the coordinated long term support that are the best practice approach to the treatment of people with long term AN.



CASE STUDY

# Simone ::



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## Case Study :: Simone

Simone knew something wasn't right by the age of 12. She was already showing significant symptoms of an eating disorder. By the age of 14 she met the criteria for a diagnosis of anorexia nervosa (AN). Simone fainted at school during exercise at the age of 16 and a friend insisted she see a doctor. The General Practitioner made a formal diagnosis. Sadly, her family did not accept the diagnosis. It took another year before Simone could start treatment. By this stage, Simone wanted to end her life.

With no appropriate services in her state, Simone travelled on a regular basis to Victoria to attend the Bronte Foundation (now closed). Simone found the treatment acceptable and effective but unfortunately the time and costs of travel were not sustainable.

At the age of 19 Simone relocated to another state and with the encouragement of friends started trying to access treatment for her eating disorder however there was a waiting time of approximately four months to even obtain an initial appointment with her local eating disorder service.

By the following year Simone was receiving outpatient treatment from a Psychiatrist (at the state wide eating disorder service). She was sent to accident and emergency for rehydration five times in quick succession.

With only four eating disorder treatment beds available for the state Simone was still unable to gain admission to hospital but she was admitted to an eating disorder outpatient program. Later that year (2009), Simone was finally admitted to public hospital and stayed in the inpatient program for four months. Showing no improvement in that time, Simone was discharged and became an outpatient again.

**“It was horrific. I can't tell you how bad it was. Admission scared me. I was so determined not to end up there again. I reverted back to bulimia and became a functional bulimic.”**

Over the next 14 months Simone presented to hospital on average twice a month for rehydration. In 2011 Simone attempted suicide. This led to three days in a

public hospital intensive care unit (ICU) before transfer to a medical/renal ward. A psychiatrist conducted an assessment. As someone with BN, Simone had a healthy body weight. The psychiatrist's opinion was that she 'didn't look like she had an eating disorder'. Her medical history was not accessed. Her usual psychiatrist – who worked at the same hospital where Simone was being treated - was not contacted. Simone was discharged without treatment for her eating disorder.

That same day, her next step was to go to a doctor and get sleeping pills. Simone attempted her life again. She spent three days in ICU, followed by transfer to a medical ward for 18 days, transfer to another hospital's psychiatric unit for seven days and then discharge without treatment for her eating disorder.

Even when not underweight, Simone was suffering from the consequences of severe malnutrition. By this stage Simone was attending accident and emergency on average twice a week. Her physical health was rapidly deteriorating. Each episode in accident and emergency, usually in one of the more expensive cardiac monitoring beds, led to discharge within 16 hours. She was sent home to live alone. Aged 21, severely unwell, with no car, no ability to work and no money, she walked home.

At the end of that year she was admitted to a private hospital in another state for a 40 day eating disorder program. Discharged at the end of the program she went home without follow-up support and her condition deteriorated. She collapsed and was admitted as an acute medical patient to a medical/psychiatric ward for two and a half weeks where there was no meal therapy or specific treatment for her eating disorder.

Simone managed to gain readmission to the private hospital eating disorder program and travelled interstate again for a seven week admission. With increasing risk of self harm, she was transferred to a public psychiatric ward for treatment for depression. During that inpatient admission she received no treatment for her eating disorder. She was discharged

## Case Study :: Simone

when severely malnourished, hypoglycaemic and dehydrated. Four hours later, after visiting a GP she was referred to emergency which led to a medical admission for three days and subsequently a further admission for 40 days in an eating disorders program.

This was the beginning of a two year cycle of admission to hospital, discharge for several weeks, then readmission. Unable to support her recovery at home by herself the gains made during inpatient treatment were rapidly lost. Simone was put on a waiting list for a day program after one inpatient admission eventually receiving a place on the program six months later. Simone lasted for two and a half weeks at the day program before becoming so severely medically compromised that she required re-admission through Accident and Emergency to a public hospital medical ward for three and a half weeks followed by involuntary admission to a public hospital general psychiatric ward for 11 weeks.

In one year (December 2012-2013) treatment included:

- 180 days in a private hospital eating disorder program at \$1,042 per day
- 76 days in a public hospital general psychiatric ward at an estimated \$746 per day
- 25 days in a public hospital medical ward at an estimated \$605 per day
- 84 days (12 weeks) living independently receiving general psychiatric and medical care at an estimated cost per week of \$200

Unable to work, Simone receives a disability benefit. Without this she could not afford her medications and private health insurance.

### Turning Point

In the following year (2014), Simone spent four and a half months in hospital as an involuntary patient under the mental health act. Towards the end of the year however, three 40 day admissions to private hospital together with weekly community support from a dedicated eating disorder treatment team including a psychiatrist, psychologist, dietitian and outreach nurse

has helped Simone to make real progress. The intensity and continuity of treatment has given Simone an opportunity for recovery.

She is still receiving weekly treatment by four members of her clinical team. On the other hand she is now able to live in the community with the support of her friend and carer, study again, at least part time and she has hope for the future.

Simone had applied for acceptance in a day program for continued support at the intensity she needs to sustain her recovery. At the time of writing, Simone had just been informed that the day program is full and she will have to wait another three months.

### What's different about effective eating disorder treatment?

Simone points to the following features of her new treatment program that have helped her to turn a corner in the progress of her illness:

- A genuine collaborative approach - non punitive, non-judgemental treatment that negotiates boundaries individually with each patient and rewards achievement
- Meal therapy - well supervised and supported meal times
- Recovery oriented focus – focus on re-nourishment to address malnutrition which can be present in all eating disorder diagnoses; an attitude that communicates ‘we want you to recover and recovery is possible’ and adequate therapy for all mental health issues – eating disorder thoughts, depression, trauma and other comorbid conditions.
- Coordinated treatment and support after discharge from hospital.

**“I really feel that if I had been able to access comprehensive treatment early on in the development of my illness, I would have had a better chance of escaping my illness without some of the long term side effects I now have.”**

# 4



Optimal interventions



“This report provides the economic imperative for best treatment options being made available to any Australian with an eating disorder.”

PROFESSOR STEPHEN TOUYZ,  
PROFESSOR OF CLINICAL PSYCHOLOGY, UNIVERSITY OF SYDNEY



All of these components are essential to provide access to effective care at each stage from the development to recovery from an eating disorder.

The NEDC (2012) has reported on an optimal suite of ED interventions based on international evidence and expert opinion. The core features of this are:

- early intervention and prevention;
- a continuum of care, rather than the binary (front-line primary health or hospital) approach of much of today's standard of care (placing intensive outpatient, day care and residential care between these bookends);
- stepped care, which recognises that people with ED may need to move up and down variously through these levels of care over the duration of their illness;
- multi-disciplinary teams offering a suite of flexible treatment options and durations; and
- long-term follow up / relapse prevention.

The following sections draw on material from the NEDC (2012, 2013) and Butterfly Foundation (2014).

### 4.1 Prevention and early intervention

Early identification and prompt intervention, based on appropriate, multi-disciplinary approaches, are required to reduce the severity, duration and impact of EDs. Outcomes are improved when people receive the recommended treatment early.

Primary prevention strategies may target:

- the whole community;
- known high risk groups; or
- individuals at very high risk, typically indicated by showing early signs of mental ill-health.

Secondary prevention strategies lower the severity and duration of an illness through early intervention - both early detection and early treatment.

Tertiary prevention intervention strategies, such as rehabilitation and relapse prevention, reduce the impact of mental ill-health on an individual, including reducing the likely period of recovery.

### 4.2 A continuum of care

The necessary continuum of care includes six core components, with access at all levels to tertiary consultation and support:

1. Primary, secondary and tertiary prevention.
2. General outpatient support provided in both hospital and community settings. This should also include access to a range of services placing emphasis on relapse prevention and early intervention as needed.
3. Intensive outpatient support for people who require intensive clinical support, but wish to remain living at home or in other support structures.
4. Day programs, which provide structured programs, including group therapy.
5. Residential programs that provide 24-hour support. These programs would ideally be located in the community and provide an intermediary level between hospitalisation and other care programs. This intermediary level is important in the absence of good home support structures.
6. Inpatient services for medical intervention and stabilisation. These programs should be intensive and structured to address severity and co-morbidity.

Table 4.1 presents essential service elements of a continuum of care that has the capacity to address both prevention and treatment, taking into consideration the high degree of variation in individual and family needs.

Table 4.1: Clinical continuum of care for EDs

Level of care	Entry	Outpatient	Intensive outpatient	Day program	Residential program	Inpatient
<b>Core elements</b>	Well publicised soft entry points Community outreach Opportunistic screening Initial assessment Information Engagement support Referral pathways Patient advocacy Holding response Monitoring Recovery support Family support	Regularly scheduled appointments with a therapist and dietitian, working collaboratively with the GP and other care providers Individual, family and/or group therapy Appointments at intervals to suit patient, but typically weekly at start of treatment Services networked or provided on a shared care basis	Regular individual therapy and dietitian appointments Group meetings and supported meals Family education and support May include support therapies and recreational activities Program attendance 2 to 3 times per week for at least 3 hours per session All services co-located	Regular individual therapy and dietitian appointments Group meetings and supported meals Family education and support Includes support therapies and recreational activities Program attendance 5 days per week, for 6 to 8 hours a day All services co-located	Regular individual therapy, nutritional counselling and psychoeducation Group meetings and supported meals Family education and support 24 hour clinical supervision and support All services co-located – may be located in hospitals or at a separate community-based centre	Regular individual therapy, nutritional counselling and psychoeducation Group meetings and supported meals Family education and support 24 hour clinical supervision and support Medical monitoring and treatment Re-feeding services Treatment for comorbid psychiatric conditions Joint admissions under both medical and psychiatric care
<b>Service context</b>	Primary health care Non - Government Organisations Tele-support services Emergency departments also play a key role	Services best delivered in community locations Service providers include: primary care (e.g. medical centres), hospital outreach, nongovernment organisations and private providers All services must be networked with tertiary consultation-liaison and hospital inpatient services				Hospital or eating disorders treatment centre with inpatient and medical facilities

Level of care	Entry	Outpatient	Intensive outpatient	Day program	Residential program	Inpatient
<b>Tertiary support</b>	Tertiary consultation/liaison: services integrate triage, outreach, tele-psychiatry and inpatient and outpatient specialist treatment with community-based health care Care coordination: specialist ED nurses or clinicians liaise between primary care and hospital care and provide people with rapid access to support and advice					
<b>Recovery support</b>	Step up or step down model of service access with rehabilitation and relapse prevention to ensure that people have access to the right level of care as part of a long term treatment plan.					
<b>Patient status</b>		Medically stable Weight >85% Good motivation for change Self-sufficient – can reduce ED behaviours in unstructured setting No current risk of suicide or self-harm No comorbid disorders Family or others able to provide support Lives near treatment centre	Medically stable Weight >80% Fair motivation for change Self-sufficient – can reduce ED behaviours in unstructured setting No current risk of suicide or self-harm No comorbid disorders Family or others able to provide support Lives near treatment centre	Medically stable Weight <85% Partial motivation for change Needs structure to reduce ED behaviours No current risk of suicide or self-harm No comorbid disorders or disorders well managed Family or others able to provide limited support Lives near treatment centre	Medically stable to extent that intravenous fluids, nasogastric feedings or daily laboratory tests are not needed Weight <85% Poor to fair motivation for change Needs supervision for activities of daily living No current risk of suicide or self-harm No comorbid disorders or disorders well managed Severe family stress of absence of family or other support Treatment centre too distant for patient to participate from home	Medically unstable – weight <80% or acute weight loss with food refusal Very poor to poor motivation for change Needs supervision during and after all meals Specific suicide plan with high lethality or intent Comorbid disorders requiring inpatient treatment Severe family stress of absence of family or other support Treatment centre too distant for patient to participate from home

Source: Butterfly Foundation (2014).

**4.3 Stepped care approaches**

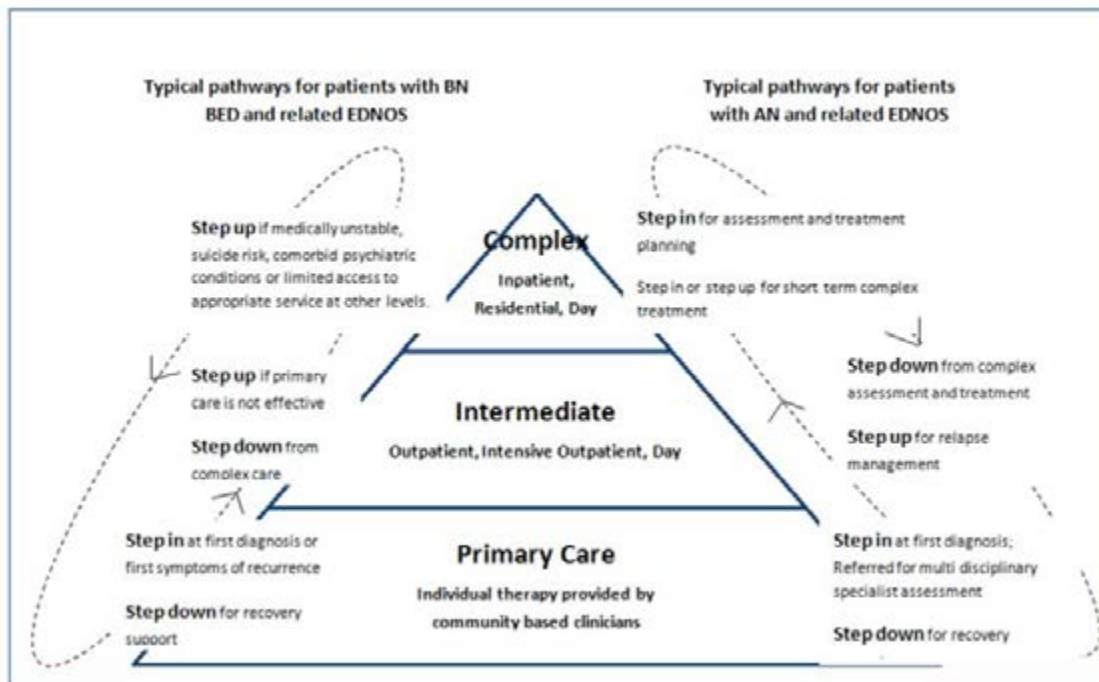
All of these components are essential to provide access to effective care at each stage from the development to recovery from an ED. They must be delivered with step up, step down, step in, and step out flexibility throughout the continuum of care that responds to the individual’s needs.

This approach allows the individual to receive the required treatment earlier than the traditional stepped care model, which typically starts with low intensity treatment and increases if required. A focus on low-

intensity treatment early on may lead to adverse consequences for an individual resulting from inadequate levels of treatment. Adverse consequences include a higher risk of suicide, disengagement from treatment, and may increase the risk of relapse.

The use of the lowest intensity intervention is appropriate for people in the early stages of BN or BED. The use of intensive multi-disciplinary models of care may be more appropriate than low intensity approaches for people who meet the full diagnostic criteria for AN, or if they also have complex comorbid conditions.

**Figure 4.1: Stepped care pathways through ED treatment**



Source: Butterfly Foundation (2014)

**4.4 Range of treatment facilities and durations**

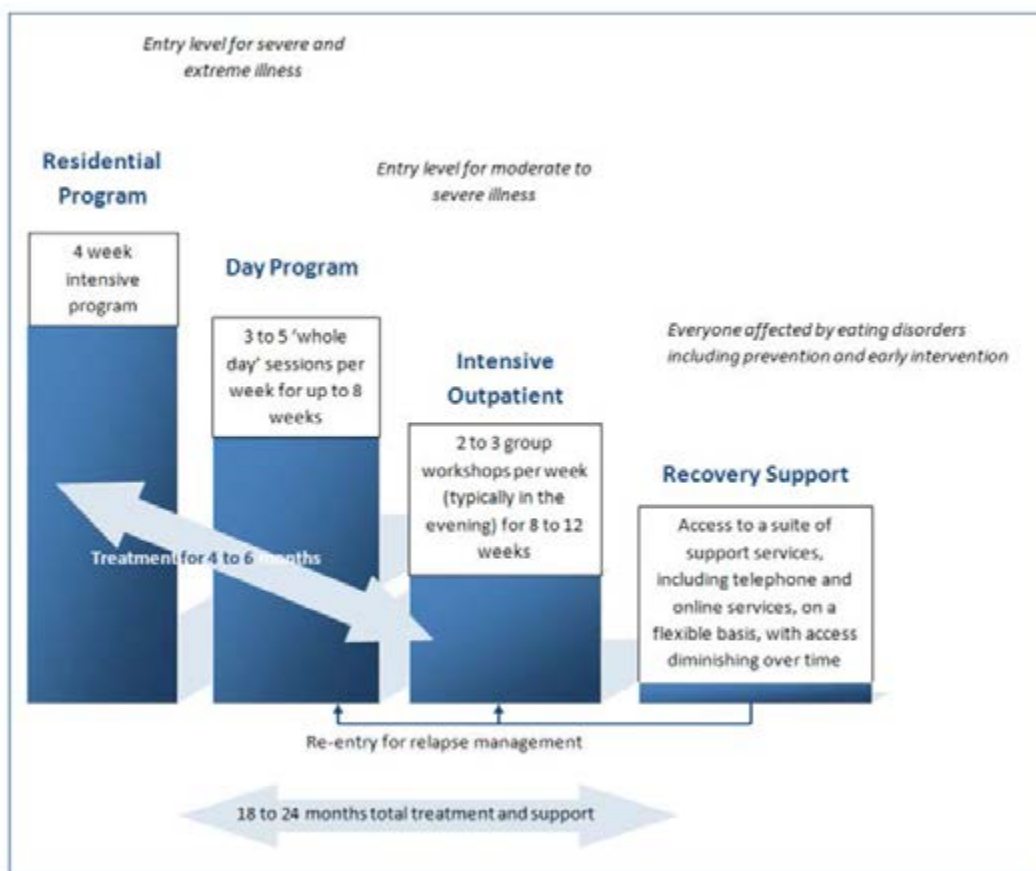
A person’s progression through an ED is not necessarily linear, and there is no single approach that will be effective for every person. The required intensity of treatment and support must be based on individual assessment. Individual assessment includes several dimensions of need: diagnosis, severity, motivation to change, access to treatment and support, range of

multi-disciplinary support, impact of comorbidities, transition issues, and the level of family or community support.

Treatment options include family-based treatment, CBT, interpersonal psychotherapy, and specialist supportive clinical management. Interventions should be designed to address the complexity of the ED, and be delivered by health professionals with an appropriate level of skill and knowledge of EDs. If another disorder



**Figure 4.2: Duration of treatment by intensity level under stepped care**



Source: NEDC

is also present, it is essential that the ED is specifically addressed, with the treatment for both disorders implemented collaboratively.

The NEDC (2013) notes that the minimum course of treatment for EDs supported by evidence is at least 20 sessions of family behavioural therapy or CBT, delivered over a four to six month period. Shorter periods of treatment are not supported by research evidence and are inadvisable, except as a preventative approach.

Access to more intensive and longer treatment, with access to at least 50 sessions of therapy, is required for people with persistent or complex illness, low BMI (<17.5), and those who do not respond to initial treatment.

People with EDs require access to recovery support on a flexible basis for a sustained period of time even when the symptoms are mild to moderate. This will help them

to avoid or effectively manage relapse and establish healthy patterns of behaviour.

Best practice treatment for BN and BED involves CBT, with 20 sessions recommended, and can be delivered as either individual or group therapy. For AN, the minimum treatment period is 20 sessions, although it can range to 50 sessions for complex cases. This is delivered over a number of months, with six months duration with review and opportunity for longer engagement as necessary being used in various successful treatment options. A longer course of treatment is required where early intervention is not possible.

Duration of treatment in hospital varies, although when there are no time limits placed on the duration of hospitalisation this can range up to six months, with an average of around seven weeks. Follow-up plans are required, along with re-admission guidance and referral to recovery support.

## Chapter 4 :: Optimal interventions

Ideally, there should be mechanisms for hospitalisation of patients with AN before the onset of medical instability (see Table 4.1).

To respond appropriately to the needs of clients, various treatment settings are required. These treatment settings include (NEDC, 2012):

- primary health care;
- community-based clinical outpatient treatment;
- intensive outpatient treatment;
- day programs;
- residential programs;
- inpatient treatment; and
- recovery-oriented community-based support programs.

Table 4.2 presents the optimal treatment for EDs under various treatment settings.

### 4.5 Long term follow up / relapse prevention

The vulnerability to illness continues long after weight restoration potentially throughout the rest of life. Appropriate and sensitive treatment therefore needs to be available for the long term.

Factors that may contribute to a relapse include: duration of illness, body image disturbance, comorbid disorders, personality traits, entrenched belief systems, stress, and a lack of access to transition services to support generalisation of new behaviours and beliefs.

To ensure long-term recovery the following components are required:

- treatment plans that provide for a minimum of 24 months access to treatment and support;
- scheduled follow ups after treatment;
- transition and discharge plans developed collaboratively with the individual;

Table 4.2: Optimal ED treatment

Level of care	Primary care	Secondary care	Tertiary care	Recovery support
	Universally accessible early intervention and treatment provided in the community: diagnosis, initial care and facilitation of treatment pathways	First-line therapies and treatments, provided by medical specialists usually in a hospital outpatient or inpatient setting	Specialised care that includes advanced diagnostic capacity, specialist treatment and consultation for people with complex needs	Tertiary prevention with strategies to reduce the impact of mental ill-health on a person's life through approaches such as rehabilitation and relapse prevention. It also includes actions to ensure people have access to support within the community
Focus of treatment	Psychological intervention Medical monitoring  Coordination of other health and social support services, e.g. dietitian, occupational therapy, physiotherapy, social worker and support services  Recovery and wellbeing services	Inpatient medical care for physical resuscitation or stabilisation  Outpatient multi-disciplinary treatment  Psychotherapy and/or inpatient psychiatric intervention if needed  Nutritional counselling Medical monitoring Physiotherapy	Specialist ED inpatient services Specialised outpatient services, e.g. day and residential programs  Nutritional psychotherapy Medical monitoring  Recovery and wellbeing services, such as meal support therapy, nutritional assessment and education  Physiotherapy	Psychological intervention Medical monitoring  Coordination of other health and social support services, e.g. dietitian, occupational therapy, physiotherapy, social worker and support services  Recovery and wellbeing services
Location	Services provided in the local community	Services provided in hospital or specific purpose medical centres	Services provided in hospital or specific purpose medical centres	Services provided in the community
Evidence based approach	CBT Nutrition education and support  Educational support, e.g. psychoeducation, 8 week curriculum of how to deal with	Family-based treatment CBT Interpersonal psychotherapy Specialist supportive clinical		Recovery and wellbeing services, such as meal support therapy, nutritional assessment and education  Peer support and telephone support services

Level of care	Primary care	Secondary care	Tertiary care	Recovery support
	perfectionism Recovery and wellbeing services, such as meal support therapy, nutritional assessment and education	management Combined treatments		
<b>Core standards</b>		Tertiary consultation and professional development Multi-disciplinary team Intervention early in treatment and early in episode Individually tailored and coordinated care		

Source: NEDC (2012)

- access to a full range of health and community services that meet long term needs for people with enduring illness; and
- monitoring of physical and mental health for five years post treatment.

#### 4.6 Other aspects of best practice

Successfully combating EDs requires more than medical treatment by physicians and psychologists.

**Support for families.** Families and carers are integral members of the consumer’s team. The family’s needs must be catered for in the mode, intensity and location of delivery.

“A range of effective evidence-based treatments need to be made available for individuals and families across inpatient, day patient, intensive outpatient and outpatient settings.”

**DR WARREN WARD,**  
Past Secretary, Australia and New Zealand Academy for Eating Disorders.  
Senior Lecturer, Department of Psychiatry,  
University of Queensland.

**Integration and collaboration** is required between the ED specialists and:

- education, physical activity instruction, community services and frontline health professionals;
- health promotion initiatives addressing weight and appearance-related issues; and
- professional training institutions.

**Multi-disciplinary teams** are needed who can work with medical practitioners to meet consumers’ physical, mental, nutritional, occupational and social needs. Everyone with an ED should have an individual care plan and a designated case coordinator.



# 5



Cost and effectiveness parameters



“Whilst Australia’s roll out of effective treatments for mental illness is well under way, we are barely at the starting line for the dissemination of effective treatments for eating disorders, - often due to practitioners feeling ill-equipped to deal with these complex disorders.”

PROFESSOR TRACEY WADE,  
DEAN, SCHOOL OF PSYCHOLOGY, FLINDERS UNIVERSITY



“It is our responsibility as a nation to put in place as a matter of urgency an optimal standard of care for eating disorders. This argument becomes unassailable when the solution is so cost-effective.”

PROFESSOR PAT MCGORRY AO

Data concerning almost any aspect of EDs is conspicuous by its absence, and cost-effectiveness is no exception. There are very few cost-effectiveness studies, and those that exist do not measure outcomes on a compatible basis.

Stuhldreher et al (2012), in their recent systematic review of COI studies, noted: “that costs of EDs are notably under-researched, and the evidence regarding the cost-effectiveness of different treatments in EDs has not been reviewed at all” (italics added). Similarly, Grilo and Mitchell (2010) observed “very little is known about the cost-effectiveness” of ED interventions. Gowers et al (2010) note that immediately before their study “little was previously known of the relative clinical effectiveness or cost effectiveness of different service settings” for AN.

The most commonly used outcome measure in health cost effectiveness analysis is dollars per quality adjusted life year (\$/QALY). However, Pohjolainen et al (2010) observed that “no studies so far have QALYs gained as

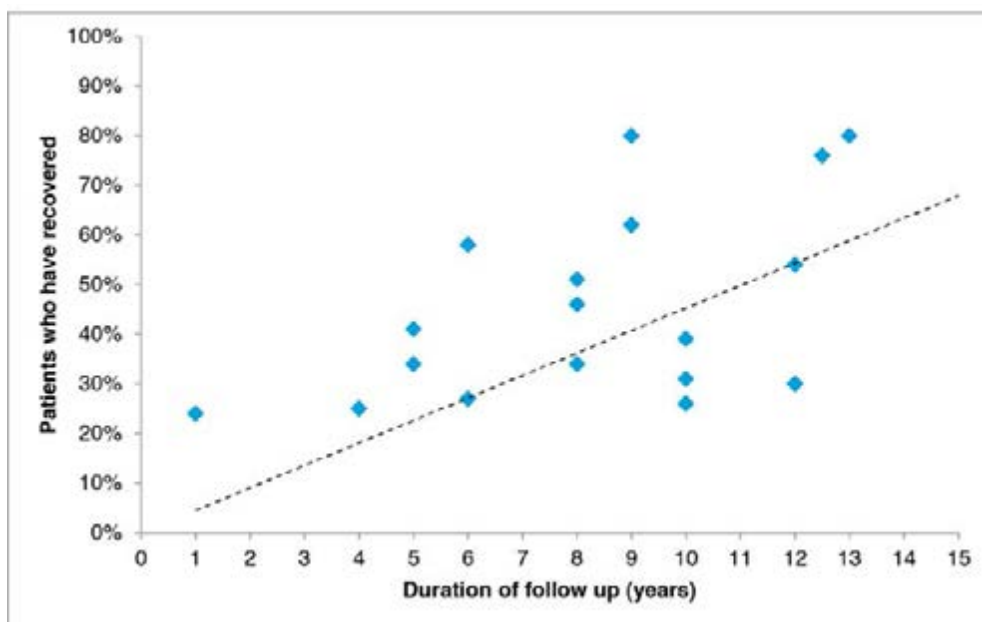
outcome in the field of eating disorders”. Perforce, as Stuhldreher et al (2012) concluded in their systematic review, the “comparability of CEAs was limited”.

However, this is not the fault of those conducting CEAs. There is a vexed issue in the field of EDs, in that there are no agreed definitions of recovery. Aaserudseter (2007) notes: “This lack of agreement on a definition of remission leads to problems in defining response to treatment, as well as recovery, and creates difficulty in clearly describing outcomes within studies, and in comparing outcomes across studies.”

### 5.1 TAU

Berkman et al (2007) conducted a systematic review of the outcomes of EDs across more than 60 cohort studies in a number of nations (including Australia) with follow up periods ranging from one year to two decades. As with Australia, it appears that most people with EDs go untreated across developed nations (Section 3.3). Accordingly, it is reasonable to use recovery rates from

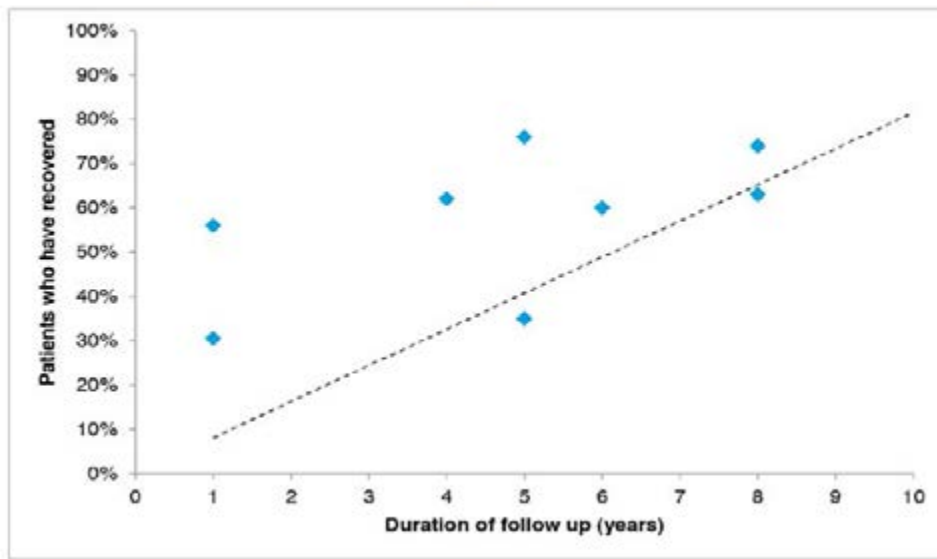
Chart 5.1: Recovery path for AN under TAU



Source: Berkman et al (2007).

<sup>20</sup> To the extent that treatment rates in other developed nations appear to be higher than in Australia, this is a conservative assumption.

**Chart 5.2: Recovery path for BN under TAU**



Source: Berkman et al (2007).

Based on Berkman et al (2007), the average duration (years until 50% of patients have recovered) for AN is 11 years, and for BN 6.2 years.

Berkman et al (2007) for the TAU base case.<sup>20</sup>

Based on Berkman et al (2007), the average duration (years until 50% of patients have recovered) for AN is 11 years, and for BN 6.2 years.

By way of triangulation, this is slightly longer than the durations estimated by Vos et al (2001) of eight years for AN, and of five years for BN (Section 2.1). However, Vos et al (2001) note “the prevalence of eating disorders was derived from international epidemiological studies for lack of relevant data”, whereas Berkman et al (2007) included a number of Australian studies. Vos’ ED estimates were also only based on two studies, where Berkman et al (2007) used more than 60 studies. Vos et al (2001) also estimated duration indirectly from reported prevalence, incidence and mortality rates (AN only) using the DisMod<sup>21</sup> model, where Berkman et al used directly observed recovery rates.

When conducting a CBA, future costs and benefits are discounted when compared to current costs and benefits. Thus, it is important to know not just what the average duration of EDs is, but also what “shape” the recovery path takes. For example, if half the people in a cohort recover in the first year, but the other half only recover in the tenth year, this will cause different future

costs to another cohort with a linear 10% recovery rate.

From Chart 5.1 and Chart 5.2, it appears reasonable to model recovery as linear for cost purposes.<sup>22</sup> For patients in the TAU arm, under Pohjolainen et al (2010) and based on observations of BN in a community-based cohort, “HRQoL improves linearly in ten years to the same level as the treated patients had after six months of [best practice] treatment.”

Pope et al (2006) conducted a study specifically assessing the duration of BED. They reported that an average duration of BED was 14.4 years.

Even though the great majority of people with EDs in Australia do not receive treatment for their disorders from the health system, most of this population as a whole appear to eventually recover, with the exception of the tenth of those with AN who will die prematurely (Sullivan, 2002). However, this lack of health system expenditure is a false economy. Not treating people with EDs can result in them becoming unproductive members of society for many years.

## 5.2 Optimal interventions

As noted in the introduction to this chapter, there are few cost-effectiveness studies in the

<sup>21</sup> [http://www.who.int/healthinfo/global\\_burden\\_disease/tools\\_software/en/](http://www.who.int/healthinfo/global_burden_disease/tools_software/en/)

<sup>22</sup> In reality, the lines are curvilinear, as the recovery rate will never get to 100%. However, they approximate linear over the ten years being modelled.

**Table 5.1: Implied costs and efficacy of ED TAU in Australia**

Disorder	Average years duration	Annual recovery rate	Average annual health expenditure	\$ per recovery*
BN	6.2	8.1%	\$93	\$918
AN	11.0	4.5%	\$2,440	\$53,680
BED	14.4	6.9%	\$18	\$259

Notes: \*equals costs per person with ED divided by number of recoveries. In the absence of cost or duration data, EDNOS is assumed to be a prevalence-weighted average of other disorders.

Source: Berkman et al (2007) and Pope (2006).

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ED field. Fortunately, however, most of those that exist address evidence-based interventions. Deloitte Access Economics' literature search managed to uncover a handful of studies that both assessed the costs of evidence-based treatment (including a few corresponding to NEDC best practices such as stepped care, specialist outpatient and day care centres), and had effectiveness measures that could be compared with each other using the rubric of 'recovery'.

Recovery is defined in this report as no longer meeting diagnostic criteria (that is, being symptom free). However, recovery does not preclude later relapse (section 2.3).

Due to lack of data on frequency and duration, relapse rates have not been explicitly modelled. However, it is implicitly assumed that best practice interventions, by virtue of prolonged follow up, have the same comparative advantage over TAU for preventing remission that they do in promoting recovery. Fairburn et al (2000), who conducted a five-year follow up of BN and BED patients, observed marked initial improvement followed by gradual improvement thereafter. This may indicate that among those who recover in the first year, relapse rates are not substantial. Hay (2012) notes that where BN patients have been in remission for a year, the likelihood of relapse is remote, such that the term recurrence may be preferred.

Measuring 'recovery' for BN is relatively straightforward, as most studies use 'abstinence' or a variation of abstinence.

Crow et al (2013) undertook a randomised trial where 293 women who had BN received stepped care treatment or CBT. Similarly, Crow et al (2009) studied 128 adults with BN or EDNOS who were randomly assigned to receive 20 sessions of CBT delivered either face-to-face (FTF-CBT) or via telemedicine (TV-CBT). Both studies used abstinent subjects as their recovery criteria, which correlates directly with recovery.

- Crow et al (2013) note that "abstinence from binge eating is considered the most desirable goal in clinical treatment and the reporting of clinical trial results". In both studies abstinence was measured using the Eating Disorder Examination, the validity and reliability of which have been well documented.
- Lynch et al (2010) studied 123 adult members of health maintenance organisation (HMO) with BN who were randomised either to TAU or TAU plus CBT-Guided Self Help. The clinical outcomes were binge-free days per year, from the Eating Disorder Examination Questionnaire. For the CBT arm, at 12 month follow up, the average participant was binge-free for 91 out of every 100 days. This is taken to indicate a 91% recovery rate. For the TAU arm, recovery was calculated at 84%.
- Pohjolainen et al (2010) had 72 patients with BN complete the 15D health-related quality of life (HRQoL) questionnaire<sup>23</sup> and the Eating Disorder Inventory before and six months after the start

<sup>23</sup> <http://www.15d-instrument.net/15d>

<sup>24</sup> Implicitly assuming no excess mortality for BN

<sup>25</sup> Lynch et al (2010) had as their base case TAU from a large US HMO. However, as this included CBT and other specialist mental health services, it can be considered closer to best practice than to Australian treatment – if only because everyone in the study received treatment.

<sup>26</sup> A substantial minority of the participant studies by Lynch et al (2010) had BED. Both BN and BED patients received the same treatment, and there were no statistically significant differences in response rates between the disorders.



of treatment. Quality adjusted life years (QALYs) gained were calculated and cost-utility was assessed within the time horizon of ten years. The average gain in QALYs over the first year was 0.241. The AIHW (Begg et al, 2007) estimate that prevalent years of healthy life lost due to disability (PYLD) per person per year with BN is 0.280. Thus a gain of 0.24

QALYs (or DALYs averted) is equivalent to remission of 86% of the 0.28 DALYs incurred (QALYs lost) from untreated BN.<sup>24</sup> This can be taken to be equivalent to an 86% recovery rate. There was no control arm under the Pohjolainen study. Instead outcomes were compared to a cohort study on the natural course of BN in young women (Fairburn et al, 2000).

**Table 5.2: Cost-effectiveness of optimal BN treatments**

Authors	Intervention	Measure	Recovery rate	Cost per patient	Cost per recovery*
Pohjolainen et al (2010)	Stepped care	QALYs	86%	\$7,418	\$8,618
Crow et al (2013)	CBT	Abstinence	18%	\$5,702	\$31,678
Crow et al (2013)	Stepped care	Abstinence	26%	\$4,888	\$18,801
Lynch et al (2010)	Standard treatment	Abstinence	84%	\$7,363	\$8,797
Lynch et al (2010)	CBT	Abstinence	91%	\$6,595	\$7,279
Crow et al (2009)	CBT	Abstinence	27%	\$4,981	\$18,246
Crow et al (2009)	Tele-CBT	Abstinence	26%	\$3,059	\$11,857
<b>Average (all cases)</b>			<b>51%</b>	<b>\$5,715</b>	<b>\$11,192</b>

Note: \*Equals total costs per person treated divided by recoveries. Recovery rates are at 12 month follow up.

As all BN studies effectively compare one evidence-based practice against another, the average across all arms of all studies was taken to be representative of best-practice BN interventions for cost and efficacy

purposes.<sup>25</sup> In the absence of any data, BED recovery rates were assumed to be the same as for BN, and EDNOS the same as the prevalence-weighted average of the other three disorders.<sup>26</sup>

**Table 5.3: Cost-effectiveness of optimal AN treatments**

Authors	Intervention	Measure	Recovery rate	Cost per patient	Cost per recovery†
<i>Williamson et al (2001)</i>	<i>Inpatient</i>	<i>Recovery</i>	63%	47,857	75,964
Williamson et al (2001)	Stepped care	Recovery	63%	27,236	43,233
<i>Birchall et al (2002)</i>	<i>Inpatient</i>	<i>BMI</i>	96%	163,523	171,129
Birchall et al (2002)	Day care	BMI	100%	126,959	126,959
<i>Byford et al (2007)</i>	<i>Inpatient</i>	<i>MRAOS*</i>	69%	60,201	87,038
Byford et al (2007)	Specialist outpatient	MRAOS*	70%	39,458	56,368
<i>Lock et al (2008)</i>	<i>Standard care</i>	<i>Recovery</i>	40%	160,495	401,237
<b>Average (best practice)</b>			<b>85%</b>	<b>64,551</b>	<b>75,520</b>

Notes: †Equals total costs per person treated divided by recoveries. Recovery rates are at 12 month follow up.

Lines in italic represent TAU, normal font are best practice.

\*MRAOS = Morgan Russell Average Outcome Score

Definitions of successful outcomes for AN were somewhat more varied. As Darcy et al (2010), in their study of definitions of recovery for AN observe: “Treatment outcome literature is plagued by a lack of consensus on what constitutes a good outcome, and particularly, on concepts of remission and recovery”.

Williamson et al (2001) evaluated the cost-effectiveness of a hospital based CBT program for EDs. The study found that by using a systematic, decision-tree approach to treatment patients with severe EDs could be treated effectively by initiating treatment in a partial day hospital program, with less cost than when treatment was initiated at an inpatient level of care. Williams et al classified patients as “recovered” if they scored less than 70 on 3 subscales of the Multifactorial Assessment of Eating Disorder Symptoms. While not fully meeting the definition of stepped care, 20% of patients were readmitted to day hospital or inpatient settings, and so can serve as a reasonable proxy for cost purposes.

Byford et al (2007) conducted a multicentre randomised controlled trial comparing inpatient psychiatric treatment, specialist outpatient treatment and general outpatient treatment. Outcomes and costs were assessed at baseline, one and two years. Outcomes were reported under the Morgan-Russell Average Outcome Scale (MRAOS). For patients in the specialist outpatient arm, the average score at two year follow up was 8.4 out of a possible 12. Accordingly, this was taken to represent a 70% recovery rate ( $=8.4/12$ ). For inpatients, recovery was 69%.

Birchall et al (2002) assessed the impacts that opening of a day program for the intensive care of people with AN had on admission rates, length of stay, cost of treatment and patient outcomes. This study was useful as it was the only one revealed in the literature search to report costs specifically for a day centre (£112 per person day). The authors’ only reported outcome was BMI, which is not an ideal measure of recovery. However, as Darcy et al (2010), in their survey of the literature observe: “Being the defining feature of anorexia nervosa, weight has been considered a reasonable indicator of illness status.” Under the widely used norm that ‘ideal’ BMI is between 18.5 and 24.9<sup>27</sup>; recovery was assessed as the proportion

of patients who had achieved this range at six months follow up. For the day centre, this was 100%, and for the inpatients, 96%.

Lock et al (2008) reported on the costs of overall treatment for a cohort of adolescent patients with AN treated with inpatient medical stabilisation, outpatient family therapy, and psychiatric medications. The study concluded that costs appear to be lower when families are used effectively to aid in treatment.<sup>28</sup> Recovery (40%) was defined as an Eating Disorder Examination score within one standard deviation of normal, and a BMI of at least 95% of ideal body weight.<sup>29</sup>

Inpatient treatment represents the largest cost in treating AN. An important outcome of best practice interventions is to stop using inpatient as the default approach, and to only use it as a last resort instead, with attendant cost savings. The average cost of TAU interventions for AN is substantially higher than best practice, while also being less effective (Table 5.3). Lock et al (2008) does not have a TAU comparator so was necessarily excluded. Accordingly, for modelling purposes, only the average of the other three best practice studies was used (Williamson et al 2001, Byford et al 2007, Birchall et al 2002), which are all directly relevant to NEDC-identified best practice – stepped care, specialist outpatients and day care respectively.

<sup>27</sup> See for example, [http://www.nhlbi.nih.gov/health/educational/lose\\_wt/BMI/bmicalc.htm](http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm)

<sup>28</sup> However, this result was not sufficiently robust to be included in our model.

<sup>29</sup> Ideal body weight is another term that is used frequently within ED studies, but lacks an agreed definition.

(See discussion at <http://www.healthyplace.com/blogs/eatingdisorderrecovery/2010/05/ideal-body-weight-what-does-it-mean/>)



# 6

## Cost benefit analysis

“Eating disorders are serious mental illnesses that require principled, evidence-informed, multidisciplinary treatments. This excellent report provides needed background data and indispensable guidelines for those in a position to implement health-system reforms that are needed if eating disorders are ever to be addressed in a realistic and effective manner.”

PROFESSOR HOWARD STEIGER, PHD,  
DIRECTOR, EATING DISORDERS PROGRAM, DOUGLAS INSTITUTE  
PROFESSOR, PSYCHIATRY DEPARTMENT, MCGILL UNIVERSITY





The total cost if optimal treatment occurs for those who develop an ED in 2014, is equivalent to \$49.9 billion, of which \$12.7 billion is financial and \$34.4 billion is the value of healthy life lost. There are also \$2.8 billion of intervention costs.

The cost benefit analysis considers, on a whole-of-society basis over ten years, what the net present value (NPV) of the treatment of usual and an optimal intervention would be.

In order to assess this one cohort of EDs, the estimated 213,000 people who will have developed an ED in 2014, was modelled (Table 6.1). The model maps out the lifetime duration of EDs under the TAU and under

optimal intervention, and assigns the costs associated with each pathway.

It is assumed to take a number of years and several hundred million dollars before the optimal intervention can enable effective early identification for every new instance of ED, and provide an adequate number of health professionals with ED specialist skills to be able to treat each of these new cases (section 6.2.1).

**Table 6.1: 2014 ED incidence**

Condition	2014 Incidence
AN	3,333
BN	25,550
BED	101,857
EDNOS	82,467
<b>Total</b>	<b>213,208</b>

Source: Deloitte Access Economics calculations.

### 6.1 Treatment as usual (TAU)

TAU assumes a case where there is no change in treatment – that is, there is a continuation of the current costs and impacts associated with EDs, as outlined in section 2.4. These health expenditures and financial impacts of incident cases follow the largely untreated progression of EDs, as identified in section 5.1 and explained further in the next section.

The modelled rates of progression for various EDs are outlined in Table 6.2.

#### 6.1.2 Cost and DALYs

Applying the recovery rates from (Table 6.2) to the cohort who contracted EDs in 2014 enables us to calculate for

each subsequent year how many people are still suffering from an ED. Multiplying these cases by the per capita health, productivity and other financial costs yields the total financial costs incurred over the next ten years (Table 6.3).

This results in a total cost of \$27.8 billion (Table 6.3 NPV terms over 10 years) under the TAU arm. This is comprised of \$145 million in health care costs and \$27.7 billion in financial costs (such as decreased productivity and employment as outlined in section 2.4.6). Over the period of ten years, the 2014 cohort will lose 479,521 DALYs. If the burden of disease is monetised, using the current VSLY of \$182,336 (Department of Finance, 2008), it would be equivalent to a NPV cost of \$75.4 billion.

**Table 6.2: Recovery rates over time (percent)**

Condition	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AN	5	9	14	18	23	27	32	36	41	45
BN	8	16	24	32	40	49	57	65	73	81
BED	7	14	21	29	36	43	50	57	64	71
EDNOS	8	16	24	32	40	48	56	64	72	80
<b>Total</b>	<b>8%</b>	<b>15%</b>	<b>23%</b>	<b>30%</b>	<b>38%</b>	<b>45%</b>	<b>53%</b>	<b>60%</b>	<b>68%</b>	<b>75%</b>

Source: Berkman et al (2007) for AN and BN, Pope et al (2006) for BED. EDNOS is prevalence weighted average of other conditions.

**Table 6.3: TAU costs of ED cases that onset in 2014 (\$ millions, DALYs)**

	NPV	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>Health</b>	145	24	23	21	20	19	18	17	16	15	14
<b>Other financial</b>	27,662	4,447	4,228	4,020	3,822	3,634	3,455	3,285	3,123	2,969	2,823
<b>Total financial costs</b>	<b>27,807</b>	<b>4,471</b>	<b>4,251</b>	<b>4,041</b>	<b>3,842</b>	<b>3,653</b>	<b>3,473</b>	<b>3,302</b>	<b>3,139</b>	<b>2,984</b>	<b>2,837</b>
<b>DALYs Burden of disease</b>	479,521*	66,457	61,465	56,849	52,578	48,629	44,976	41,598	38,473	35,584	32,911
<b>Total costs</b>	<b>103,185</b>	<b>16,589</b>	<b>15,772</b>	<b>14,995</b>	<b>14,257</b>	<b>13,555</b>	<b>12,887</b>	<b>12,253</b>	<b>11,649</b>	<b>11,076</b>	<b>10,530</b>

Source: Deloitte Access Economics calculations, NPV discount rate is 7%, Consumer Price Inflation (CPI) rate 2.8% and health inflation rate of 1.8%, DALYs as per Begg et al (2007)<sup>30</sup>, monetisation to burden of disease as per Department of Finance (2008).

\*DALY total is not in NPV terms, however, the monetisation of them as per 'Burden of disease' is in NPV terms. Total costs are the sum of the total financial costs and burden of disease.

The total cost under the TAU arm for those who develop an ED in 2014, is equivalent to \$103.2 billion, of which \$27.8 billion is financial and \$75.4 billion is the value of healthy life lost.

### 6.1.3 Cost by payer

Costs by payer for TAU are shown in Table 6.4, estimated using the methodology from Section 2.4. Individuals

who have an ED are impacted the most (bearing over half of total costs), while the Federal Government bears 29% (half of what individuals bear).

**Table 6.4: Cost of TAU by payer, NPV**

Payer	\$ millions	Percent
Individuals	16,142	58%
Federal Government	7,935	29%
Society/others	2,312	8%
Employers	1,353	5%
State Government	41	Close to 0%
Family/friends	23	Close to 0%
<b>Total</b>	<b>27,807</b>	<b>100%</b>

Source: Deloitte Access Economics calculations.

The majority of costs to the Federal Government are due to a loss in taxation revenue from the lower productivity of those with EDs (Table 6.5). Direct support paid to those with an ED or their carers is a much smaller portion, accounting for less than 1% of the total loss

due to ED for the Federal Government.

For those with an ED, the largest impact is on foregone income (94.4% of total costs) (Table 6.6).

<sup>30</sup> For consistency with Deloitte Access Economics (2012), AIHW burden of disease parameters are used in preference to global parameters.

**Table 6.5: Cost of TAU for Federal Government, NPV**

Section	\$ millions	Percent
Health system	63	0.8
Productivity	7,861	99.1
Welfare	10	0.1
<b>Total</b>	<b>7,935</b>	<b>100</b>

Source: Deloitte Access Economics calculations.

For those with an ED, the largest impact is on foregone income (94.4% of total costs) (Table 6.6).

**Table 6.6: Cost of TAU for individuals, NPV**

Section	\$ millions	Percent
Health system	15	0.1
Productivity	15,232	94.4
Out of pocket costs	895	5.5
<b>Total</b>	<b>16,142</b>	<b>100</b>

Source: Deloitte Access Economics calculations.

## 6.2 Optimal interventions

Optimal intervention assumes that the costs and impacts associated with EDs outlined in section 4 apply, with the costs of best practice interventions being applied to all cases of EDs in 2014, and then again tracking the health expenditure and other financial and DALY impacts over the next ten years.

Even with optimal intervention delivered to all those who have ED, not everyone will achieve recovery. For those who do not respond, they will continue to use health system resources and the financial loss as the TAU case. The treatment rates and natural progression of EDs are identified in section 3.

As discussed in section 5.2, recovery for BN is measured by abstinence or gain in QALYs. For AN, recovery is measured by results of various validated ED assessment tools, or by sustained ideal body weight.<sup>31</sup> As there were no studies assessing cost efficacy for BED, this was assumed to be the same as for BN.<sup>32</sup> Similarly, EDNOS was assumed to have the prevalence-weighted characteristics of the other disorders.

### 6.2.1 Establishment costs and timeframes

There is no discussion in the literature about what it would cost, or how long it would take, to build up a sufficient network of centres to be able to treat all new ED cases.<sup>33</sup>

However, it may be reasonable to assume that these costs would be similar to those for addressing youth mental health. EDs largely afflict young people, have a substantial mental health component, and share a similar level of prevalence in Australia (Access Economics, 2009).

In the 2011-12 Budget, the Minister for Health and Ageing announced that the Australian Government would spend \$491.7 million over five years to “achieve complete national coverage” of youth-focused mental health services, including integrated prevention and early intervention for children and young people at risk of mental illness.<sup>34</sup>

Accordingly, it is assumed in this report that a similar cost would be required to roll out effective coverage of ED services.<sup>35</sup>



This may overstate costs to the extent that some of these youth mental health services would be used to address mental health aspects of EDs. Also the prevalence of youth mental illness is around 25% higher than that of EDs. On the other hand, as they have both physical and mental components, EDs are more complex to treat and would require case coordinators. This may increase costs.

It is further assumed that this rollout would proceed in a linear manner. Ability to treat would also proceed in a linear manner until all new cases could be treated. It is assumed in the modelling that this will mean that 20% of the cohort can be treated in any one year.

### 6.2.2 Progression

The modelled rates of progression for various EDs are outlined in Table 6.7. The NEDC model expects to actively treat people for up to 20 weeks (section 4.4).<sup>36</sup>

There is some evidence that patients tend to either: respond within a year; or do not respond to treatment and recover at similar rates to the untreated. Grilo et al (2006) observe that rapid response to treatment in BN is established as a clinically significant predictor of later sustained weight loss. Omsted et al (2002) also observed that rapid response was associated with low relapse rates. In this case, the majority of those with an ED can have recovery in the initial year that they are treated, as a result of optimal intervention.

However, for the sake of conservatism, those who do not respond initially are assumed to continue receiving treatment for as long as they have the disorder. In the absence of other evidence, response rates in subsequent years are assumed to be the same as in the first year. It is also assumed that those who have not yet been treated follow the normal progression path outlined in TAU (Table 6.2).

**Table 6.7: Recovery rates over time (percent)**

Condition	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>AN</b>	21	42	59	77	91	99	100	100	100	100
<b>BN</b>	17	35	48	58	65	83	92	96	98	99
<b>BED</b>	16	34	47	58	65	83	92	96	98	99
<b>EDNOS</b>	17	35	48	59	66	84	92	96	98	99

Source: Deloitte Access Economics calculations. Note numbers are rounded, for example 100% of people are not treated until 2022 for those with AN.

### 6.2.3 Cost and DALYs

Applying the 2014 incidence of ED (Table 6.1), the progression to when they no longer have ED (Table 6.7), and the expected health costs attributable to both the optimal intervention (Table 6.8) and ED from TAU we find a total cost of \$15.5 billion (Table 6.9 NPV terms over 10 years). This is comprised of \$67 million in health care costs for those not reached by the intervention,

\$2.8 billion in optimal intervention costs and \$12.7 billion in financial costs (such as decreased productivity and employment as outlined in section 2.4.6). Optimal treatment means that over the period of ten years, the 2014 cohort will lose 203,829 DALYs. If the burden of disease is monetised, using the current VSly of \$182,336 (Department of Finance, 2008), it would be equivalent to a NPV cost of \$34.4 billion.

<sup>31</sup> As noted in section 5.2 recovery is the absence of symptoms, but does not preclude later remission.

<sup>32</sup> Grilo et al (2011) report that abstinence from binge eating is also associated with significant weight loss in those with BED. Olmsted et al (2002) also note that a rapid response is associated with a low relapse rate.

<sup>33</sup> This may be due to absence of precedent.

<sup>34</sup> [http://www.health.gov.au/internet/budget/publishing.nsf/Content/379A1A7327F54C2ACA257CA0003FF52B/\\$File/DHA%20Ministerial.PDF](http://www.health.gov.au/internet/budget/publishing.nsf/Content/379A1A7327F54C2ACA257CA0003FF52B/$File/DHA%20Ministerial.PDF)

<sup>35</sup> This only indicates that establishment costs may be similar between EDs and youth mental health – not the treatment approaches, nor necessarily the age of patients.

<sup>36</sup> Follow up after recovery may require years, but does not require the same resource intensity as treatment.

**Table 6.8: Costs under optimal intervention**

Condition	Intervention cost (\$)	2014 Incidence
AN	64,551	3,333
BN	5,715	25,550
BED	5,715	101,857
EDNOS	7,220	82,467

Source: Deloitte Access Economics calculations, BED is assumed to cost the same as BN due to lack of literature identifying costs, EDNOS is the weighted average of treatment costs for AN and BN like symptoms. Disease costs in Table 6.9 are incidence \* cost per case \* percent of cases reached by the intervention.

**Table 6.9: Optimal intervention costs of ED cases that onset in 2014 (\$ millions, DALYs)**

	NPV	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AN	255	43	51	53	61	64	23	3	1	0	0
BN	242	29	45	53	67	78	8	4	2	1	0.5
BED	934	116	178	213	265	312	8	4	2	1	0.5
EDNOS	948	119	181	216	268	315	9	5	2	1	1
Workforce	431 <sup>^</sup>	98	98	98	98	98					
<b>Total intervention costs</b>	<b>2,810</b>	<b>406</b>	<b>554</b>	<b>633</b>	<b>759</b>	<b>868</b>	<b>47</b>	<b>16</b>	<b>7</b>	<b>3</b>	<b>2</b>
Health*	67	20	16	13	10	9	4	2	1	0.5	0.3
Other financial	12,633	3,715	2,978	2,458	1,988	1,673	833	416	208	104	52
<b>Total financial costs</b>	<b>12,700</b>	<b>3,735</b>	<b>2,994</b>	<b>2,471</b>	<b>1,998</b>	<b>1,682</b>	<b>837</b>	<b>418</b>	<b>209</b>	<b>105</b>	<b>52</b>
<b>Total costs including intervention</b>	<b>15,510</b>	<b>4,547</b>	<b>4,101</b>	<b>3,738</b>	<b>3,517</b>	<b>3,418</b>	<b>931</b>	<b>450</b>	<b>222</b>	<b>111</b>	<b>55</b>
<b>DALYs</b>	<b>203,829*</b>	<b>55,513</b>	<b>43,291</b>	<b>34,764</b>	<b>27,347</b>	<b>22,394</b>	<b>10,839</b>	<b>5,266</b>	<b>2,562</b>	<b>1,247</b>	<b>607</b>
<b>Burden of disease</b>	<b>34,425</b>	<b>10,122</b>	<b>8,115</b>	<b>6,698</b>	<b>5,417</b>	<b>4,560</b>	<b>2,269</b>	<b>1,133</b>	<b>567</b>	<b>283</b>	<b>142</b>
<b>Total costs</b>	<b>49,935</b>	<b>14,263</b>	<b>11,662</b>	<b>9,803</b>	<b>8,175</b>	<b>7,110</b>	<b>3,153</b>	<b>1,567</b>	<b>782</b>	<b>391</b>	<b>196</b>

Source: Deloitte Access Economics calculations, NPV discount rate is 7%, CPI rate 2.8% and health inflation rate of 1.8%, DALYs as per Begg et al (2003), monetisation to burden of disease as per Department of Finance (2008).

Notes:\* Costs for people with ED not reached by intervention.

<sup>^</sup>Establishment costs for the workforce are the same as outlined in section 6.2.1 just in NPV terms.

DALY total is not in NPV terms, however, the monetisation of them as per 'Burden of disease' is in NPV terms.

Total costs are the sum of the total financial costs and burden of disease.

The total cost if optimal treatment occurs for those who develop an ED in 2014, is equivalent to \$49.9 billion, of which \$12.7 billion is financial and \$34.4 billion is the value of healthy life lost.

There are also \$2.8 billion of intervention costs.

## 6.2.4 Cost by payer

Costs by payer under optimal treatment are shown in Table 6.10, estimated using the same methods as for TAU in section 6.1.3. Individuals who have an ED are impacted the most (bearing 48% of total costs),

while the Federal Government bears 23% (again around half what individuals bear). The additional \$2.8 billion in treatment costs (18% of the total) is not allocated by payer, as the payment mechanism for this cost element has not been presumed. It could potentially be a mix of Government, PHI and individual contributions.

**Table 6.10: Cost under optimal treatment by payer, NPV**

Payer	\$ millions	Percent
Individuals	7,373	48
Federal Government	3,624	23
Society/others	1,056	7
Employers	618	4
State Government	19	Close to 0
Family/friends	11	Close to 0
<i>Unallocated treatment costs</i>	<i>2,810</i>	<i>18</i>
<b>Total allocable costs</b>	<b>12,817</b>	<b>100</b>

Source: Deloitte Access Economics calculations.

The cost distribution for the Federal Government (Table 6.11) and individuals (Table 6.11) remains similar to the distribution for TAU; however, the total amount of expenditure has been reduced. The cost to Federal Government is \$3.6 billion (Table 6.11) for optimal

treatment, substantially less than under TAU where the cost is \$7.9 billion (Table 6.5). The majority of this is due to a change in productivity which impacts on income earned and taxation received.

**Table 6.11: Cost under optimal intervention for Federal Government, NPV**

Section	\$ millions	Percent
Health system*	29	0.8
Productivity	3,590	99.1
Welfare	5	0.1
<b>Total</b>	<b>3,624</b>	<b>100</b>

Note: \* People with ED not reached by best practice under the intervention

Source: Deloitte Access Economics calculations

**Table 6.12: Cost under optimal intervention for individuals, NPV**

Section	\$ millions	Percent
Health system*	7	0.1
Productivity	6,957	94.4
Out of pocket costs	409	5.5
<b>Total</b>	<b>7,373</b>	<b>100</b>

Note: \* People with ED not reached by best practice under the intervention.

Source: Deloitte Access Economics calculations

## Chapter 6 :: Cost benefit analysis

### 6.3 CBA

Under TAU, the costs incurred over the next decade from those who contract EDs in 2014 are estimated to be \$27.8 billion (NPV). The cost of giving best-practice treatment to everyone in this cohort is \$2.8 billion.

Under optimal treatment the costs of EDs are estimated

as \$12.7 billion over the decade, \$12.3 billion less than under TAU.<sup>37</sup> Thus the cost of the intervention (\$2.8 billion) results in gains of \$15.1 billion, which equates to a benefit cost ratio of 5.38 (Table 6.13).

As well as providing financial net benefits of \$12.3 billion, optimal treatment also results in 203,829 fewer

**Table 6.13: ED Financial costs under base case and intervention (NPV)**

Category	\$ billion
A. Health, productivity and other financial costs under base case	27.8
B. Cost of intervention	2.8
C. Health, productivity and other financial costs post intervention	12.7
D. Benefit of intervention (=A-C)	15.1
E. Net benefit of intervention (=D-B)	12.3
<b>Benefit cost ratio (BCR=D/B)</b>	<b>5.38 to 1</b>

Source: Deloitte Access Economics calculations. Presented results may not be directly calculable due to rounding of figures to \$ billions.

DALYs.<sup>38</sup> In health economics this is described as a 'dominant' intervention – producing both health benefits and financial net benefits.

Note that the total cost of optimal treatment could be absorbed by government and it would still provide a net

benefit to government alone due to increased productivity and therefore associated tax revenue (\$4.3 billion), as well as the benefits that accrue to the rest of society.

<sup>37</sup> Conservatively, this does not include savings from treating comorbidities such as obesity for BED, tooth decay for BN, or kidney failure for AN, as Deloitte Access Economics (2012) was not able to identify these costs from AIHW data.

<sup>38</sup> If these DALYs are monetised using the VSLY, the equivalent saving is \$59.8 billion in addition to the financial net benefit of \$15 billion.



Best practice treatment is up to 50% more cost-effective than standard practice. There is a 5:1 benefit cost ratio for implementing optimal treatment interventions.



## Conclusions

“It is clear that the treatment as usual approach needs to be reformed, to ensure that the current rate and severity of eating disorders in Australia is arrested.”

**PROFESSOR SUSAN PAXTON,**  
COLLEGE OF SCIENCE, HEALTH AND ENGINEERING – SCHOOL OF PSYCHOLOGY AND PUBLIC HEALTH





## Chapter 7 :: Conclusions

The results of the CBA suggest that there is a very strong case on economic grounds to implement the NEDC-identified best practices, and work towards best-practice treatment models for Australians with EDs. Interventions similar to the NEDC's recommendations are already operating around the world, such as the Douglas Institute in Canada and the Emily Program in Minnesota. However, there does not appear to have been any CBA or CEA conducted on programs that are exactly equivalent interventions. Indeed, a recent Australian PhD thesis found only five worldwide evaluations of ED programs (Weber, 2010).<sup>39</sup>

In 2012, Australia only spent \$109 per year for each person with an ED (Deloitte Access Economics 2012). If maintained this would equate to \$145 million 'treating' those who develop an eating disorder in 2014 over the next ten years, in NPV terms. Under this regime, most people will take six years (BN) to 12 years (AN) to recover from their EDs. Over this time, their EDs will cost the economy over \$27 billion in lost productivity and other financial costs.

Applying best practice interventions to all new cases of EDs would represent an intervention cost of around \$2.8 billion (including costs of rolling out the programs over five years) for those who get an ED in 2014.<sup>40</sup> Due to both the long lasting and debilitating way EDs impact individuals in society,

the resultant productivity benefits and other gains to the economy would be around \$15.1 billion (NPV).<sup>41</sup> Moreover, since the majority of the cost is related to productivity, there would not only be tangible financial benefits to those affected by EDs, but also large benefits to government, with an additional \$4.3 billion in tax receipts. Thus the benefits of such an intervention outweigh its costs by more than 5 to 1.

There is solid evidence that the best practice interventions reported by the NEDC – early intervention, stepped care, intensive outpatient and long-term follow up – work effectively to achieve recovery for most people with EDs in under a year (Table 5.2, Table 5.3).<sup>42</sup>

For example, Pohjola et al (2010) observed in Finland, six months of best practice BN treatment achieved what it would otherwise take TAU to achieve in ten years. In that study, an investment of less than \$7,500 per person in best-practice interventions prevented on average a decade of lost productivity.

If health expenditures are seen as an investment in productivity, healthy life and preventing avoidable deaths, optimal practice in treating EDs would achieve these outcomes. Even from a pure budget revenue perspective, the increased tax revenue on the regained productivity would more than pay for the intervention, even if wholly funded by government.

**Table 7.1: Costs and benefits by scenario \$m (NPV)**

Category	TAU	Best practice intervention	Net benefit
Health system expenditure*	145	67	77
Other financial	27,662	12,633	15,029
Intervention costs		2,810	(2,810)
Burden of disease	75,379	34,425	40,954
<b>Total</b>	<b>27,807</b>	<b>15,510</b>	<b>12,297</b>

Note \* expenditure on those not reached by the intervention

Source: Deloitte Access Calculations

<sup>39</sup> None of which were particularly robust.

<sup>40</sup> The National Institute for Health and Clinical Disorders (2004) recommends 16 to 20 treatment sessions over four to five months for most EDsN.

<sup>41</sup> Conservatively, this figure does not include savings from reducing comorbidities associated with EDs.

<sup>42</sup> Recovery is largely defined as abstinence from binge eating for BN and BED, and BN-like EDNOS. For AN, and AN-like EDNOS, recovery is defined by highest level outcomes on a number of validated ED assessment tools (section 5.2). Recovery, so measured, does not preclude relapse in subsequent years.



“We must protect the wellbeing and health of future generations.”

PROFESSOR STEPHEN TOUYZ,  
PROFESSOR OF CLINICAL PSYCHOLOGY,  
UNIVERSITY OF SYDNEY



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