Institution: University of Cambridge		
Unit of Assessment: 4		
Title of case study: Alleviating the societal and economic burden of depression worldwide through cost-effective Mindfulness-Based Cognitive Therapy		
Period when the underpinning research was undertaken: 2000 - 2018		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Dr Tim Dalgleish	MRC Programme Leader	1994 – present
Professor John Teasdale	Special Scientific Appointment	1985 – 2004
Professor Peter Jones	Professor of Psychiatry	Oct 2000 – present
Period when the claimed impact occurred: 1st August 2013 to 31st December 2020		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact (indicative maximum 100 words)

Depression is a common mental health disorder that runs a recurrent, relapsing course. Affecting more than 264 million people worldwide, depression is a major contributor to the global burden of disease (WHO, 2020). Professor Teasdale, Dr Dalgleish and colleagues developed Mindfulness-Based Cognitive Therapy (MBCT) as an effective and cost-effective alternative to medication in the prevention of depressive relapse and recurrence, without the side-effects associated with antidepressants. Over 10,000 patients in the UK have benefited from MBCT, and through international training it is now available in ~200 clinics in the USA reaching around 6000 patients annually. MBCT is included in professional guidelines in North America, Australasia, and Europe, and has been extended to multiple health conditions and social domains including prisons, education and the workplace.

2. Underpinning research (indicative maximum 500 words)

Depressive disorders are a primary cause of disability in the UK, with up to one in 10 adults experiencing depression in any given week. Depression runs a relapsing and recurrent course across the lifespan and consequently imposes an enormous annual cost to the taxpayer in lost productivity, lost earnings and benefit dependence, estimated to rise to GBP12 billion in the next decade (McCrone et al, 2008).

There are a number of effective interventions for depression recommended by the National Institute for Health and Care Excellence (NICE). However, even the best of these delivers clinical remission in only around half of patients. The risks of relapse are also high, with at least 50% of those who recover from a first depressive episode having one or more additional episodes in their lifetime; approximately 80% of those with a history of two episodes having another recurrence (American Psychiatric Association, 2000). The magnitude of the social and economic challenge posed by current levels of depression indicates that a reactive 'treatment' model alone cannot address present needs, and so concerted efforts have been made to develop preventive approaches.

In 2000, Professor John Teasdale at the Medical Research Council's Cognition and Brain Sciences Unit (CBU) in Cambridge along with colleagues in Bangor (Mark Williams) and Toronto (Zindel Segal) developed mindfulness based cognitive therapy (MBCT), integrating mindfulness techniques with elements of cognitive therapy, developed by Aaron T. Beck in the 1960s. MBCT was created to prevent the relapse and recurrence of depression, thereby pioneering the application of mindfulness approaches to the domain of mental health [1].

MBCT is a group-based intervention that enhances cognitive control over emotional information by cultivating the ability to psychologically 'step back' from distressing mental content, reframe it, and return attention to more neutral content [2]. It focuses on preventing relapse in currently well patients with recurrent depression. Initial randomised controlled trial

(RCT) evidence led from the CBU [1,3] supported the efficacy of MBCT for depression prevention.

Large-scale definitive RCTs were still lacking so, along with Willem Kuyken and colleagues in Exeter, in 2015 Dr Dalgleish completed the first definitive RCT [4] comparing MBCT against an active control intervention – maintenance anti-depressants (the PREVENT trial; *N*=424) [4]. Depressive relapse rates were comparable for both treatments, indicating that MBCT represents an important psychosocial alternative to maintenance medication for recurrent depression. This was corroborated in a large data synthesis of all existing MBCT RCTs by Dr Dalgleish, Professor Teasdale and Professor Kuyken supporting MBCT as a frontline preventive intervention for depression, that offers no risk of side-effects [5].

MBCT-based programmes have now been extended to multiple health conditions and settings (as outlined in the impact section below) as a broad prophylactic intervention for mental distress. In one such extension led by Cambridge, Professor Peter Jones in the Psychiatry Dept. at the University of Cambridge completed an NIHR-funded pragmatic RCT (The Mindful Student Study; *N*=616) [6] showing that an MBCT-based programme increased resilience to stress during the examinations period, compared to support-as-usual in university students.

3. References to the research (indicative maximum of six references)

1. ***Teasdale, J.** D., Segal, Z. V., Williams, J. M. G., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by Mindfulness-Based Cognitive Therapy. *Journal of Consulting and Clinical Psychology, 68*(4), 615-623.

2. *Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R. S., Byford, S., […], **Dalgleish, T.** (2010). How does Mindfulness-Based Cognitive Therapy work? *Behaviour Research and Therapy*, *48*(11).

3. *Ma, S. H., & **Teasdale, J. D.** (2004). Mindfulness-Based Cognitive Therapy for reDepression: Replication and exploration of differential relapse prevention effects. *Journal of Consulting and Clinical Psychology, 72*(1), 31-40.

4. *Kuyken, W., Hayes, R., Barrett, B., Byng, R., **Dalgleish, T.,** Kessler, D., Lewis, G., Watkins, E., Brejcha, C., Cardy, J., Causley, A., Cowderoy, S., Evans, E., Gradinger, F., Kaur, S., Lanham, P., Morant, N., Richards, J., Shah, P., Sutton, H., Vicary, R., Weaver, A., Wilks, J., Williams, M., Taylor, R., & Byford, S. (2015). Effectiveness and cost-effectiveness of Mindfulness-Based Cognitive Therapy compared with maintenance anti-depressant treatment in the prevention of depressive relapse/recurrence: Results of the PREVENT randomised controlled trial. *The Lancet*, *286,* 63-73.

5. *Kuyken, W., Warren, F., Taylor, R.S., Whalley, B., Crane., C., Bondolfi, G., Hayes, R., Huijbers, M., Ma, H., Schweizer, S., Segal, Z., Speckens, A., **Teasdale, J.D.,** van Heeringen, K., Williams, J.M.G., Byford, S., Byng, R, & **Dalgleish, T.** (2016). Efficacy and moderators of Mindfulness-Based Cognitive Therapy (MBCT) in prevention of depressive relapse: An individual patient data meta-analysis from randomized trials. *JAMA Psychiatry, 73,* 565-574.

6.*Galante, J., Dufour, G., Vainre, M., Wagner, A. P., Stochl, J., Benton, A., . . . **Jones, P. B**. (2018). A mindfulness-based intervention to increase resilience to stress in university students (the Mindful Student Study): A pragmatic randomised controlled trial. Lancet Public Health, 3(2), E72-E81. doi:10.1016/s2468-2667(17)30231-1

Evidence of min 2* research quality: *research outputs have undergone rigorous peer review; research supported by competitively won funding

Key competitive funding

1997-2004: TEASDALE (Principal Investigator). MRC Intramural Programme Grant (GBP472,000) *Cognition and Emotion – Development and evaluation of clinical therapeutic procedures and processes (CE8).*

2009-2014: DALGLEISH (Co-Investigator). NIHR HTA Clinical Trials Board GBP(GBP2,281,965; PI – Kuyken, Exeter). *Preventing depressive relapse/recurrence in NHS settings through mindfulness-based cognitive therapy (MBCT).*

2009-2013: DALGLEISH (Principal Investigator). Intramural MRC Programme Grant (GBP1,710,000) *Cognitive efficiency and mental control – from basic processes to clinical interventions*
2013-2019: DALGLEISH (Principal Investigator) Intramural MRC Programme Grant (GBP2,533,000) *Cognitive efficiency and mental control – from basic processes to clinical interventions*
2014-2019: JONES (lead applicant) NIHR Collaboration for Leadership in Applied Research & Care East of England (GBP9.2m total) Innovation theme (GBP150,000) *The Mindful Student Study*

4. Details of the impact (indicative maximum 750 words)

The Cambridge University research has had a significant and far-reaching impact on the lives of patients with depression worldwide. Beneficiaries include patients, health service providers, mental health workers, and the wider society through the economic benefits of reduced welfare costs and increased employment and productivity. The impact of MBCT nationally and internationally now extends beyond depression to other psychiatric and physical health conditions, and beyond the healthcare domain to education, the workplace, and the criminal justice system.

Inclusion of MBCT in professional guidelines worldwide

The weight of evidence in favour of MBCT as a psychosocial preventive intervention for depression and as an alternative to maintenance medication has led to its inclusion in UK National Institute of Health and Care Excellence (NICE) guidance since 2004. In 2017, the NICE updated consultation document extended the recommendations around MBCT, based on Cambridge University research (citing [1,3,4]), to advocate MBCT as a relapse prevention alternative for those who want to come off of medication: "*Offer group CBT*[cognitive behavioural therapy] *(or MBCT for those who have had 3 or more previous episodes of depression) for preventing relapse to people who are assessed as being at higher risk of relapse and who recovered with medication but who want to stop taking it"* [A]).

MBCT is also included as a frontline prevention for depressive relapse in other international guidelines referencing Cambridge University research, e.g. Belgium (2016),-Canada, Australia and New Zealand and the USA [B]. Clinical practice guidelines for mood disorders from the Royal Australian and New Zealand College of Psychiatrists (2015) recommend that "*MBCT or CBT should be offered as a relapse prevention intervention, particularly amongst patients with recurrent depressive episodes*". Guidelines for the management of adults with major depressive disorder from the Canadian Network for Mood and Anxiety Treatments (2016)[B-iii] recommend MBCT "*as sequential first-line treatment after a course of antidepressants, and as a secondline alternative to long-term maintenance antidepressant treatment*". Guidance from the American Psychological Association Guideline for the Treatment of Depression (2019) [B-v] recommends MBCT as a first line adult treatment as one of several evidence-based approaches.

Impact on the UK health service

In November 2013, the Mindfulness Initiative was founded to support British politicians in forming the All-Party Parliamentary Group on Mindfulness (MAPPG). In their *Mindful Nation UK 2015* report, the MAPPG recommended national roll-out of MBCT across the UK NHS for the 580,000 sufferers of recurrent depression each year in need of treatment, stating that "*Mindfulness-Based interventions (MBIs) have a unique role to play in addressing the health challenges facing the country"* [C].

Following these recommendations, in 2017, Health Education England (HEE) commissioned training to make MBCT more accessible within the NHS [D]. This led to the first UK-wide training programme for MBCT therapists in the national NHS Improving Access to Psychological Therapies (IAPT) Programme. It was led by Sussex Mindfulness Centre (SMC), in partnership with the Nottingham Centre for Mindfulness, the University of Exeter, Tees, Esk and Wear Valleys NHS Foundation Trust and the Oxford Mindfulness Centre [D]. Since 2018 the regional providers have completed MBCT training for a total of 615 people, including 165 IAPT professsionals[E]. The inclusion of MBCT nationwide as a frontline

intervention within the NHS IAPT programme alone between 2015 and 2020 has seen more than 10,000 patients benefit from MBCT[Dii].

Courses to train clinicians in MBCT techniques are now available internationally, including in Hong Kong, the USA, Canada, Europe, and China [F] with an internationally agreed set of training criteria outlined in a report referencing the underpinning research [G]. As of December 2020, there are now 200 clinics in North America that deliver MBCT face-to-face for the prevention of depression, reaching around 6000 patients a year[F].

Economic impact

Depression is estimated to cost the UK GBP9.19 billion a year in lost earnings, and is forecast to cost the NHS GBP2.96 billion in the next decade. The NICE 2017 Consultation Document to update the 2009 guidelines concluded that MBCT is the most cost-effective option for severely affected patients. *"In people at high risk of relapse who have remitted following acute psychological treatment and who are expected to experience more severe depression if they relapse, clinical management appears to be the most cost-effective option ..In sensitivity analysis that included group CT and MBCT, MBCT became the most cost-effective option*"[A]. Similar evidence of the cost-effectiveness for MBCT has been gathered internationally [Fii].

Broader health impact of MBCT beyond depression

Since August 2013, good supporting evidence has emerged from randomised controlled trials supporting MBCT's or adapted-MBCT's therapeutic benefits for other psychiatric conditions including Obsessive Compulsive Disorder, and Bipolar Disorder [H].Trial evidence also supports MBCT's efficacy in alleviating psychological and physical symptoms for a number of physical health conditions including Chronic Obstructive Pulmonary Disease (COPD), and irritable bowel syndrome [H]. Evidence also now supports extension of MBCT as a healthcare intervention to an online delivery format [H].

Impact beyond the healthcare system

The MAPPG also recommended an evaluation of MBCT-derived interventions for adults in non-clinical settings such as the workplace, the criminal justice system and education [C]. In 2016 the Mindfulness Initiative published *'Building the case for Mindfulness in the Workplace'* [I-i] which reported that programmes based on MBCT have an increasing impact within work and other adult non-clinical settings. Emerging data, including a systematic review and meta-analysis led from Cambridge involving Professor Jones and Dr Dalgleish, supports MBCT's beneficial effects on critical work indicators such as reduced risk of drop out, as well as the expected reductions in stress and associated mental health problems [I-ii].

MBCT was introduced into the UK prison service in 2017, initially at HMP Pentonville but now extended to eight other prisons nationally. The prison programmes have three elements: (i) to reduce staff stress,(ii) as a mental health intervention for inmates, and (iii) to provide staff training as MBCT practioners [I-iii]. In Autumn 2016, 21 staff members (including occupational therapists, clinical psychologists and mental health nurses) undertook the 8 week training programme, of whom 17 continued to undertake full MBCT training. As a result one prison now offers six MBCT groups with an average of six men in each group. A pilot project with prisoners was found to be effective – the average participant rated the course as 8.8/10. From one prisoner "*'It has helped me in steadying myself when things are rushing in my head- concentrating on me now rather than could be or has been.'*

Within the education domain, Cambridge University research [6] showing that an MBCT-based programme confers resilience to exam stress in students at Cambridge has led to approximately 2,100 Cambridge students (14 courses for 30 students run/year) going through the programme since 2015, which has also been disseminated and trialled internationally at institutions in France and Finland, with further interest from Chile and the United States [I-iv].

Finally, popular self-help guides and workbooks on MBCT for depression have emerged from the underpinning research: *The Mindful Way through Depression*; Williams et al., 2007; *The Mindful Way Workbook*; Teasdale et al., 2014; and *Mindfulness: A Practical Guide to Finding Peace in a Frantic World*; Williams & Penman, 2011), that have variously been translated into over a dozen languages. Combined they have sold over 1,280,000 copies worldwide [J].

5. Sources to corroborate the impact (indicative maximum of 10 references)

A. **NICE**, Depression in adults: treatment and management. (2017). Draft for consultation. Recommendation 11.8, point 104 pg.672

B. **Incorporation in International guidelines:**

(i) Belgium: *Depressie bij volwassenen*(2017) p. 8, pp. 46-47, p. 52, p. 54, and p. 56 and p.60.[in Flemish] **(ii)** Malhi, G. S. et al. (2015). **Royal Australian and New Zealand** College of Psychiatrists clinical practice guidelines for mood disorders. Australian and New Zealand Journal of Psychiatry, 49(12), 1087–1206. *(p.64).* **(iii)** Parikh, S. V., et al. (2016). **Canadian Network for Mood and Anxiety Treatments (CANMAT)** 2016 clinical guidelines for the management of adults with major depressive disorder: Section 2. Psychological treatments. *Canadian Journal of Psychiatry, 61*(9), 524–539 **(iv) American Psychological Association:** Clinical Practice Guideline for the Treatment of Depression Across Three Age Cohorts Guideline Development Panel for the Treatment of Depressive Disorders(2019), Table 3.

C. **Mindful Nation UK.** Report by the Mindfulness All-Party Parliamentary Group (MAPPG).

D. MBCT Rollout through IAPT: (i) National Health Service. Mindfulness-based Cognitive Therapy National MBCT Training Curriculum, 2017(ii) NHS IAPT data, accessed November 2020.

E. Regional data from each of the centres coordinating MBCT training for IAPT:
(i) North of England; (ii) Midlands (iii) South East (iv) South West

F. **International training:** Testimonials from(i) Helen Ma (Hong Kong) (ii) Zindel Segal (North America).

G. **Mindfulness-based Cognitive Therapy Training Pathway** (2018)

H. Exemplar references to RCTs and manuals for other health care conditions:

i) OCD:Cludius, B., Landmann, S., et al (2020). Long-term effects of mindfulness-based cognitive therapy in patients with obsessive-compulsive disorder and residual symptoms after cognitive behavioral therapy: twelve-month follow-up of a randomized controlled trial. *Psychiatry Research*, 113119 **(ii)** Bipolar disorder: Xuan, R. R., Li, X. M., et al (2020). Mindfulness-based cognitive therapy for bipolar disorder: A systematic review and meta-analysis. Psychiatry Research, 290. **(iii)** Chronic Obstructive Pulmonary Disorder**:** Farver-Vestergaard, I., O'Toole, M. S., et al (2018). Mindfulness-based cognitive therapy in COPD: a cluster randomised controlled trial. European Respiratory Journal, 51(2). **(iv)** Irritable Bowel Syndrome: Henrich, J. F., Gjelsvik, B., et al (2020). A Randomized Clinical Trial of Mindfulness-Based Cognitive Therapy for Women With Irritable Bowel Syndrome- Effects and Mechanisms. Journal of Consulting and Clinical Psychology, 88(4), 295-310. **(v)** Online intervention: Spijkerman, M. P. J., et al (2016). Effectiveness of online mindfulness-based interventions in improving mental health: A review and meta-analysis of randomised controlled trials. Clinical Psychology Review, 45, 102-114.

I. Mindfulness in the workplace and non-clinical settings

(i) Building the Case for Mindfulness in the Workplace. The Mindfulness Initiative (2017)
(ii) de Bruin, E. et al (2020). The Unilever Study: Positive Effects on Stress and Risk for Dropout from Work after the Finding Peace in a Frantic World Training. Mindfulness, 11(2), 350-361. **(iii)** Galante, J., Friedrich, C., Dawson, A.F., Modrego-Alarcón, M., Gebbing, P., Delgado-Suárez, I., Gupta, R., Dean, L., **Dalgleish, T**., White, I.R. & **Jones, P.B**. (in press). Mindfulness-based programmes for mental health promotion in adults in non-clinical settings: A systematic review and meta-analysis of randomised controlled trials. PLoS Medicine **(iv)** Testimonial from HMP Pentonville **(v)** Mindfulness@cam and testimonials/numbers from higher education in France, Finland, Chile and USA.

J. **Book sales figures:** Testimonial from Emeritus Professor of Clinical Psychology, University of Oxford.