

# Meditation, mindfulness and mental health

Brendan D Kelly

*Ir J Psych Med 2008; 25(1): 3-4*

To 'meditate' is to exercise the mind in contemplation or focus the mind on a subject in a concentrated, contemplative or religious manner.<sup>1</sup> Meditation and contemplative practices play a substantive role in many spiritual, religious and psychological traditions. In recent years there has been an upsurge of research interest in the effects of meditation on the brain and the possible use of meditation in the management of a range of physical and mental illnesses. There has also been a substantial increase in public interest in contemplative practice both as a method to manage psychological symptoms (such as anxiety and depression) and a way to maintain mental health.

## Meditation and the brain

Meditative and contemplative practices involve several co-ordinated cognitive functions performed simultaneously, often over a prolonged period or on repeated occasions. There is increasing evidence that meditation has significant effects on the physiology of the brain; these effects include increased blood flow in the prefrontal cortex, inferior parietal lobes and inferior frontal lobes during meditation.<sup>2</sup> In addition, long-term meditators not only self-induce high-amplitude electroencephalographic gamma-band oscillations and phase-synchrony during meditation, but also have a higher ratio of gamma-band activity (25-42 hertz) to slow oscillatory activity (4-13 hertz) over medial frontoparietal electrodes when they are not meditating.<sup>3</sup>

These findings suggest that prolonged or long-term meditation may have sustained effects on the physiology of the brain – effects which persist even when the individual is no longer meditating. Meditation also has significant, sustained effects on individuals who are not long-term meditators but engage in short-term practice. Individuals who are not habitual meditators but attend an eight-week training programme in mindfulness meditation show significant increases in left-sided anterior activation and antibody titre rises to influenza vaccine eight weeks after training ends; the magnitude of the increase in left-sided anterior activation predicts the magnitude of the antibody titre rise to the vaccine.<sup>4</sup>

Any model integrating these and other research findings into a single, unified theory of how meditation affects the brain is hampered by the small numbers of subjects in existing studies, the diversity of physiological measures examined and

general limitations on current understandings of brain structure and function. Nonetheless, Austin has attempted to provide an integrated model that combines neuroscientific findings with the psychological and experiential correlates of meditative practice, especially from the Zen (or Ch'an) tradition of Buddhism.<sup>5</sup> While Austin's model is both insightful and provocative, there is clearly a need for more basic neuroscientific research and psychological investigation of the effects of meditation.

## Meditation and mental health

Meditation and contemplative prayer are accorded substantial value in many spiritual and religious schools, especially those with strong monastic traditions. Roman Catholicism, for example, has a strong monastic tradition that incorporates elements of solitary living, individual prayer and prolonged, silent contemplation. While research into the effects of contemplative practice on the brain has tended to focus on long-term Buddhist meditators,<sup>3</sup> there is evidence of similar effects in Roman Catholic practitioners of contemplative prayer, such as Franciscan nuns.<sup>2</sup>

The Buddhist tradition is fundamentally centred on the practice of meditation to produce calm (*amatha*) and meditation to produce insight (*vipa yan*).<sup>6</sup> Buddhism also has a particularly intricate literature on the psychological correlates of contemplative practice: the *Abhidharma* or 'higher teaching' of Buddhism is essentially devoted to a systematic description of all possible states of mind and cognitive functions, many of which are presented in association with the levels of meditative attainment in which they are experienced. Clear understanding and personal experience of these mental states are essential prerequisites for spiritual advancement and the development of insight.

The reasons why various traditions value contemplative practice vary significantly: in Roman Catholicism contemplative prayer is directed at a specific God, often with the purpose of praise or intercession, while in Buddhism, meditation is not directed at any specific deity but aimed at producing individual enlightenment. In most spiritual traditions, however, contemplative prayer or meditation is seen as positive, progressive element within an individual's broader spiritual practice.

In terms of mental health, there is evidence that 'spiritual meditation' is superior to both 'secular meditation' and 'secular' relaxation techniques in reducing anxiety, improving mood, enhancing spiritual health and increasing tolerance of pain.<sup>7</sup> This is consistent with the facts that individuals attending mental health services consistently identify spirituality as a significant factor in determining mental health, and spirituality is significantly correlated with higher global quality of life, hope and sense of community.<sup>8</sup>

**Brendan D Kelly, MD MA MSc MRCPsych**, Department of Adult Psychiatry, University College Dublin, Mater Misericordiae University Hospital, 62/63 Eccles Street, Dublin 7, Ireland.

SUBMITTED: JANUARY 24, 2008. ACCEPTED: JANUARY 27, 2008.

## Meditation and mental illness

There is a growing literature examining the possible role of meditative practices (eg. mindfulness) in the management of specific mental illnesses such as anxiety disorders, depression, alcohol misuse, substance misuse, post-traumatic stress disorder and psychosomatic disorders. Most such studies tend to be based on opportunistic samples, include small numbers of participants and have sharply limited generalisability outside the study settings.

Anxiety disorders are the most commonly studied disorders in this context, with a moderate number of studies examining the effects of mindfulness meditation, meditation-based stress reduction and transcendental meditation. A Cochrane Collaboration review, however, has highlighted a marked paucity of high quality, randomised controlled trials of meditation therapy for anxiety disorders, with only two studies qualifying for inclusion in the review.<sup>9</sup> In addition, the authors noted that drop-out rates appeared to be high; adverse effects of meditation had not been reported; and further study was needed before conclusions could be drawn.

There are even fewer randomised controlled trials of meditation for other disorders, further highlighting the need for systematic investigation of the effects of meditation for specific mental illnesses. In addition, despite a long-standing association between certain forms of meditation (eg. Zen) and certain forms of psychotherapy (eg. psychoanalysis),<sup>10,11</sup> there remains a similar need for further systematic considerations of the precise role of meditation in the analytic context. In the meantime, there are scattered reports, of varying levels of rigour, suggesting the usefulness of specific meditative practices in specific groups of patients: mindfulness meditation, for example, may help alleviate depressive symptoms in women with fibromyalgia.<sup>12</sup> There is also a Cochrane Collaboration review underway examining the possible benefits of meditation therapies for attention deficit/hyperactivity disorder (ADHD), as suggested by small studies of the use of yoga and meditation strategies in children with ADHD.<sup>13</sup>

At present, however, there is insufficient evidence to support the systematic use of meditation therapy for any

specific mental illness. This situation may change in future years in response to further study of the neuroscience of meditation, more randomised controlled trials and systematic reviews (especially in relation to anxiety disorders), continued emphasis on spirituality amongst mental health service users and sustained public interest in forms of psychological therapy that focus on mental wellness rather than illness. In particular, recent years have seen social policy-makers increasingly focus on happiness as a societal goal and this trend is likely to deepen interest in psychological therapies that appear to advance this goal while remaining acceptable to the public.<sup>14</sup> On this basis, meditation, with its lengthy history in myriad cultures, is likely to attract increasing attention in the years to come.

Declaration of Interest: None.

### References


1. Pearsall J, Trumble B (eds). *The Oxford English Reference Dictionary* (Second Edition), Oxford, Oxford University Press, 1996.
2. Newberg A, Pourdehnad M, Alavi A, d'Aquili EG. Cerebral blood flow during meditative prayer: Preliminary findings and methodological issues. *Percept Mot Skills* 2003; 97: 625-30.
3. Lutz A, Greischar LL, Rawlings NB, Ricard M, Davidson RJ. Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proc Natl Acad Sci USA* 2004; 101: 16369-73.
4. Davidson RJ, Kabat-Zinn J, Schulmacker J, Rosenkranz M, Muller D, Santorelli SF, et al. Alterations in brain and immune function produced by mindfulness meditation. *Psychosom Med* 2003; 65: 564-70.
5. Austin JH. *Zen-Brain Reflections*. Cambridge, MA: The MIT Press, 2006.
6. Gethin R. (1998) *The Foundations of Buddhism*. Oxford: Oxford University Press, 1998.
7. Wachholtz AB, Pargament KI. Is spirituality a critical ingredient of meditation? Comparing the effects of spiritual meditation, secular meditation and relaxation on spiritual, psychological, cardiac and pain outcomes. *Behav Med* 2005; 28: 69-84.
8. Bellamy CD, Jarrett NC, Mowbray O, McFarlane P, Mowbray CT, Holter MC. Relevance of spirituality for people with mental illness attending consumer-centred services. *Psychiatr Rehabil J* 2007; 30: 287-94.
9. Krisanaparakornkit T, Krisanaparakornkit W, Piyavhatkul N, Laopaiboon M. Meditation therapy for anxiety disorders. *Cochrane Database of Systematic Reviews* 2006; 1:CD004998.
10. Fromm E, Suzuki D, Demartino R. *Zen Buddhism and Psychoanalysis*. New York: Harper & Row, 1960.
11. Epstein M. *Psychotherapy Without the Self*. New Haven & London: Yale University Press, 2007.
12. Sephton SE, Salmon P, Weissbecker I, Ulmer C, Floyd A, Hoover K, et al. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: Results of a randomised clinical trial. *Arthritis Care Res* 2007; 57: 77-85.
13. Krisanaparakornkit T, Witoonchart C, Krisanaparakornkit W. Meditation therapies for attention deficit /hyperactivity disorder (Protocol). *Cochrane Database of Systematic Reviews* 2007; 2: CD006507.
14. Layard R. *Happiness: Lessons from a New Science*. London: Penguin, 2005.



For the person within

**INVEGA®**  
**PALIPERIDONE**  
Prolonged-Release Tablets

Invega® is a new atypical antipsychotic for the treatment of schizophrenia.<sup>1</sup>  
Invega® is efficacious across all PANSS scores<sup>2</sup> with overall incidence of  
common side-effects similar to placebo at the recommended dose of 6mg.<sup>3</sup>

 JANSSEN-CILAG Ltd

**INVEGA® PRESCRIBING INFORMATION** INVEGA® PROLONGED RELEASE TABLETS (3 mg, 6 mg or 9 mg) **ACTIVE INGREDIENT:** 3 mg, 6 mg or 9 mg paliperidone. Please refer to Summary Product Characteristics (SmPC) before prescribing. **INDICATION:** INVEGA (paliperidone) is indicated for the treatment of schizophrenia. **DOSAGE & ADMINISTRATION:** **Adults:** recommended dose is 6 mg once daily in the morning with or without food (do not alternate). Initial dose titration not required. Dose may be adjusted within recommended range (3 mg to 12 mg once daily) after clinical reassessment. Swallow tablets whole with liquid. **Children and adolescents:** Not recommended. **Elderly:** Caution in elderly dementia patients with stroke risk factors. **Renal impairment:** 3 mg initial dose recommended in patients with mild to moderate renal impairment. 3 mg every other day recommended initial dose in severe renal impairment. Do not use in patients with creatinine clearance below 10 ml/min. **Hepatic impairment:** No dose adjustment for mild or moderate hepatic impairment. Caution in severe hepatic impairment. **CONTRAINDICATIONS:** Hypersensitivity to paliperidone, risperidone, or excipients. **SPECIAL WARNINGS & PRECAUTIONS:** **Cardiovascular disease:** Caution in patients with known cardiovascular disease, or family history of Q-T prolongation. INVEGA may induce orthostatic hypotension in some patients. Use with caution in cerebrovascular disease and conditions that predispose to hypotension. **Neuroleptic Malignant Syndrome:** Discontinue INVEGA if symptoms/signs develop. **Tardive dyskinesia:** If signs/symptoms appear, consider discontinuing all antipsychotics, including INVEGA. **Patients with diabetes mellitus/hyperglycaemia:** Appropriate clinical monitoring is advisable (rare increases in blood glucose have been reported). **Patients with seizures:** Caution where there is a history of seizures/other conditions that potentially lower the seizure threshold. **Patients with dysphagia:** Do not administer to patients with significant swallowing difficulty or known gastro-intestinal strictures. **Patients with decreased gastro-intestinal transit time:** Reduced absorption of paliperidone may result. **Patients with renal impairment:** See Dosage. Do not use in patients with creatinine clearance below 10 ml/min. **Patients with hepatic impairment:** See Dosage. Caution in severe hepatic impairment. **Elderly patients with dementia:** Use with caution in elderly dementia patients with risk factors for stroke. **Priapism:** no cases reported in clinical trials with INVEGA; paliperidone may be associated with this risk due to its alpha-adrenergic blocking effects. **Body temperature regulation:** Care when prescribing to patients experiencing conditions which may contribute to core body temperature elevation. **Anti-emetic effect:** Observed in paliperidone preclinical studies; if occurs in human patients may mask signs and symptoms of overdose with certain medicines, or of medical conditions such as intestinal obstruction, Reye's syndrome, brain tumour etc. **Lactose content (3 mg tablets only):** Avoid in patients with rare hereditary galactose intolerance, Lapp lactase deficiency or glucosegalactose malabsorption. **SIDE EFFECTS:** The most frequently reported ADRs in INVEGA treated subjects in clinical trials were: Headache, tachycardia, akathisia, sinus tachycardia, extrapyramidal disorder, somnolence, dizziness, sedation, tremor, hypertonia, dystonia, orthostatic hypotension, dry mouth. Uncommon: Anaphylactic reaction, increased appetite, nightmare, dizziness

(postural), dyskinesia, Grand mal convulsion, syncope, oculogyration, palpitations, sinus arrhythmia, hypotension, ischaemia, muscle rigidity, amenorrhoea, breast discharge, erectile dysfunction, galactorrhoea, gynaecomastia, irregular menstruation, oedema. **Extrapyramidal Symptoms (EPS):** No difference observed between placebo and the 3 mg and 6 mg doses of INVEGA. Dose-relatedness for EPS was seen with higher INVEGA doses (9 mg and 12 mg). **Laboratory Tests: Serum Prolactin:** median increases observed in 67% of subjects in clinical trials with INVEGA; however potentially prolactin-related adverse events were reported in 2% subjects overall. **Weight gain:** clinical trials revealed similar incidence of weight gain for INVEGA 3 mg and 6 mg compared with placebo; higher incidence of weight gain for INVEGA 9 mg and 12 mg. **Class effects:** QT prolongation, ventricular arrhythmias, sudden unexplained death, cardiac arrest and Torsade de pointes may occur with antipsychotics. Refer to SmPC for other side effects. **PREGNANCY:** INVEGA should not be used during pregnancy. **LACTATION:** INVEGA should not be used while breastfeeding. **INTERACTIONS:** Caution prescribing INVEGA with medicines that prolong QT interval e.g. class IA and class III antiarrhythmics, some antihistaminics, some other antipsychotics, some antimalarials. **Potential for INVEGA to affect other medicines:** Not expected to cause clinically important pharmacokinetic interactions with medicines metabolized by cytochrome P-450 isozymes. Use with caution in conjunction with: centrally acting medicines e.g. anxiolytics, antipsychotics, hypnotics, opiates, or alcohol; medicines known to lower seizure threshold i.e. phenothiazines, butyrophenones, tricyclics, SSRIs, tramadol, mefloquine etc; medicines capable of inducing orthostatic hypotension (an additive effect may be observed when INVEGA is co-administered); levodopa and other dopamine agonists (paliperidone may antagonise their effect- use the lowest effective dose of each treatment if this combination must be prescribed e.g. end-stage Parkinson's disease). **Potential for other medicines to affect INVEGA:** No indications from in vitro and in vivo studies that isozymes CYP2D6 and CYP3A4 are significant in the metabolism of paliperidone. Concomitant administration of INVEGA and paroxetine (a potent CYP2D6 inhibitor) showed no clinically significant effect on paliperidone pharmacokinetics. Metoclopramide and other medicines affecting C.I. transit time may alter paliperidone absorption. Do not use INVEGA with oral risperidone as additive paliperidone exposure may occur. **LEGAL CATEGORY:** Prescription Only Medicine. **PRESENTATIONS, PACK SIZES & PRODUCT LICENCE NUMBERS:** 3 mg, 6 mg, 9 mg prolonged release tablets. EU/1/07/395/001, 1/07/395/006 and 1/07/395/011. Blister packs of 28 tablets. **MARKETING AUTHORISATION HOLDER:** JANSSEN-CILAG INTERNATIONAL NV, Turnhoutseweg 30, B-2340 Beerse, Belgium. **FURTHER INFORMATION IS AVAILABLE FROM:** Janssen-Cilag Ltd, Saunderton, High Wycombe, Buckinghamshire HP14 4HJ UK. © Janssen-Cilag Ltd 2007. PIVER240707. **References.** 1. Summary of Product Characteristics. Invega ER. June 2007. 2. Kramer M *et al.* Poster P.3.a.039. Presented at ECNP 2006; Paris, France, 16-20 September 2006. 3. Meltzer H *et al.* Poster 2007. Presented at ICOSR 2007, 28th March-1st April 2007, Colorado, USA. Date of preparation: September 2007. IRE/IBE/0026/2007