

## Discussion Forum

### *... but Cuckoos don't nest, do they?* **Neurosurgery for Mental Disorder in the 21st Century** 17 January 2005

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Originally introduced as a treatment for schizophrenia in the era before the discovery of effective drug treatments for mental illness (the 1930's), the frontal or prefrontal lobotomy came to be widely used as a treatment for a broad range of poorly specified mental and behavioural disturbances. These crude and destructive freehand procedures were overused, with an absence of critical appraisal of their efficacy and adverse effects. Without question, many individuals were damaged and disabled as a result of over-zealous and unjustifiable clinical practise. Although the most unsavoury aspects of the history of what ultimately became known as '*psychosurgery*' are familiar to many, the potential value of such treatment approaches in the 21<sup>st</sup> century is much less widely recognised.

In 1976, the World Health Organisation defined psychosurgery as, "*the selective surgical removal or destruction of nerve pathways for the purposes of influencing behaviour*". Implicit within this definition, was the assumption that the primary purpose of surgery was to modify behaviour by its effects on psychological processes within healthy brain tissue. This no longer reflects appropriately our understanding of the neuroscience of mental disorder, nor the therapeutic aims of what has more appropriately become known as Neurosurgery for Mental Disorder (NMD).

NMD has been defined instead as, "a surgical procedure for the destruction of brain tissue, for the purposes of alleviating specific mental disorders, carried out by a stereotactic or other method capable of making an accurate placement of the lesion". This definition emphasises important conceptual shifts:

1. in the manner in which psychological processes are now considered to be located within, and a product of, specific brain circuitry, and;
2. in the explicit focus on the alleviation of the symptoms of specific mental disorders.

Just as the symptom burden of neurological disorders such as Parkinson's disease can now be effectively and reliably modified by the targeted interference in function of specific brain circuitry through neurosurgical methods, there are selected forms of chronic and otherwise untreatable mental illness that can benefit from stereotactic neurosurgery. Such procedures have been available in Dundee since 1992 for a highly selected group of patients with chronic, severe and otherwise intractable illnesses. We believe that the ethical and effective application of such NMD techniques is possible, provided that treatments are offered within a multidisciplinary setting and subject to appropriate clinical governance arrangements. Indeed, it is only within such a clinical framework that the 'third-wave' of neurosurgical treatments for mental disorder, for example electrical deep brain or Vagus nerve stimulation, may be explored.

In my presentation, I shall review the history and present status of neurosurgical interventions for mental disorder, I shall consider some of the key ethical issues and I shall describe the activities of the Dundee Advanced Interventions / NMD service.