

## Psychiatric Neurosurgery – Ethical, Legal, and Societal Issues, (PNS)

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Psychiatric neurosurgery (PNS) is defined as neurosurgery for treating psychiatric disorders, which are not directly caused by brain diseases like brain tumors or epileptogenic tissues and whose biological underpinnings are unknown. Until the 1970ies, rather crude forms of “psychosurgery” had been used in hundreds of thousands of mentally ill patients. The abuse of psychosurgery has been brought to the public consciousness by Ken Kesey’s famous novel “One flew over the cuckoo’s nest”. Due to public criticism and the development of anti-psychotic drugs, psychosurgery became nearly completely abandoned, and was forbidden in many countries. However, since 2010, there is a renaissance of psychiatric neurosurgery, albeit in a much more refined and safer form. Contemporary PNS procedures include deep brain stimulation (DBS) and ablative neurosurgical procedures. For DBS, thin electrodes are inserted deep into the brain, which are connected with a stimulator that gives permanently current to the targeted brain area in order to activate or deactivate these areas. The ablative neurosurgical procedures comprise thermal or radiofrequency ablation procedures, and radiosurgery (Gamma Knife). These procedures create tiny lesions in brain areas, which play a crucial role in psychiatric symptoms. Radiosurgery does not require brain surgery; either by heat or radiation. Although these modern forms of psychiatric neurosurgery have lesser adverse effects and risks, and are more precise due to neuroimaging studies, many ethical issues remain. For example, is it justified to intervene in the brain of mentally ill patients with the aim to change their personality and behavior? How is the risk-benefit-ratio for the patients? For which kinds of disorders can the use of PNS be justified – also for drug addiction or anorexia nervosa? In addition, many legal questions are open. The legislation with regard to PNS differs significantly across the countries. We will investigate these issues in a broader social context with a particular focus on economic interests, and the role of the media and social media. Our international project will investigate ethical, legal, and societal issues of all kinds of contemporary psychiatric neurosurgery. We will publish recommendations for a responsible use of PNS.