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The development of Brain stimulation therapies for Dementia

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Dementia remains one of the major challenges facing western society with an estimated affected people of 80 million by 2040. Despite this, only a handful of modestly effective symptomatic therapies exist. Recent trials of pharmacologic agents aimed at reducing aggregation of pathogenic proteins have proved ineffective, likely because of the heterogeneity of the genetic and molecular pathology underlying dementia syndromes and therefore, there is a need for novel approach. Brain stimulation therapies can avoid these difficulties by modulating the disease process downstream at the neural network level, aiming to restore cognitive processing patterns and thereby relieve symptoms. In this presentation, I will discuss how improved understanding of cognitive brain networks are harnessed for development of novel brain stimulation therapies for dementia, with a particular focus on the use of deep brain stimulation. I will cover both basic scientific and clinical aspects of this approach, and discuss the results of two clinical trials recently completed in our unit. I will also look to the future and discuss how cognitive neuro-modulation can be advanced further through improved understanding of brain functioning, from both empirically driven and computationally driven approaches.

Biography

James Gratwicke qualified in Medicine from the University of Oxford and undertook Post-graduate training in Neurology at the National Hospital for Neurology and Neurosurgery in Queen Square, London. He is a practicing neurologist both at NHNN, Queen Square and St. George's Hospital in South London, with specialist interests in movement disorders, dementia and neurodegenerative diseases. He is concurrently completing a PhD at UCL's Institute of Neurology where he works within the Unit of Functional Neurosurgery, delivering both a specialist academic and clinical DBS service to patients. He has published a number of highly cited papers in reputed journals discussing cognitive network dysfunction in dementia and the use of cognitive neuro-modulation as a therapy to counter this.

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