

## **EPD/22/07 - HEalth And Dementia outcomes following Traumatic Brain Injury (HEAD-TBI).**

There is growing recognition that traumatic brain injury can lead to a lifelong impact on health, including a higher risk of dementia. Indeed, it is estimated that around 3% of dementia cases in the community are due to brain injury. Notably, poor health outcomes after brain injury include not only dementia. A wide range of conditions are observed in brain injury survivors, many of which also increase dementia risk. As such, our theory is that the increased dementia risk associated with brain injury may be due to both the direct effect of the injury on the brain and the indirect effects of wider, poor health outcomes after brain injury which, in turn, increase dementia risk.

To test this theory we propose a series of interlinked studies titled “HEalth And Dementia outcomes following Traumatic Brain Injury (HEAD-TBI)“. These studies are designed to compare differences in health between people with and without a history of brain injury and how these might contribute to dementia risk. This will give us a better understanding of the link between traumatic brain injury and dementia, which will help us identify ways that we might act to reduce this risk.

The aims of HEAD-TBI, therefore, are to:

- Analyse risk of dementia and other neurodegenerative diseases in those with a history of traumatic brain injury compared to uninjured individuals from the general population.
- Analyse common causes of death and common health issues, including mental health, in those with a history of traumatic brain injury compared to uninjured individuals from the general population.
- Analyse brain scans to look for changes that may help us understand who is most at risk of dementia following a traumatic brain injury.

We will use unique, comprehensive digital health records and death certificate data, together with diagnostic brain scans available for research. Patients with a history of brain injury will be identified from a search of available health records. The lifelong health outcomes and brain scans in these individuals will then be compared to people from the wider population without a history of brain injury, matched to our brain injured patients by year of birth, sex and degree of social deprivation.

As results emerge these will be presented at appropriate multi-disciplinary research conferences and made available as draft manuscripts through open access platforms before formal, peer-reviewed journal publication. We anticipate HEAD-TBI will have wide interest and, when appropriate, we will leverage news and social media communications and participate in broad public engagement events.