1 Perioperative Neurocognitive Disorders Defined

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Objective: Cognitive change affecting patients after anesthesia and surgery has been recognised for more than 100 yr. Research into cognitive change after anesthesia and surgery accelerated in the 1980s when multiple studies utilised detailed neuropsychological testing for assessment of cognitive change after cardiac surgery. This body of work consistently documented decline in cognitive function in elderly patients after anaesthesia and surgery, and cognitive changes have been identified up to 7.5 yr afterward. Importantly, other studies have identified that the incidence of cognitive change is similar after non-cardiac surgery. Other than the inclusion of non-surgical control groups to calculate postoperative cognitive dysfunction, research into these cognitive changes in the perioperative period has been undertaken in isolation from cognitive studies in the general population. This study aimed to develop similar terminology to that used in cognitive classifications of the general population for use in investigations of cognitive changes after anesthesia and surgery.
Participants and Methods: A multispecialty working group followed a modified Delphi procedure with no prespecified number of rounds comprised of three face-to-face meetings followed by online editing of draft versions. Two major classification guidelines [Diagnostic and Statistical Manual for Mental Disorders, fifth edition (DSM-5) and National Institute for Aging and the Alzheimer Association (NIA-AA)] are used outside of anesthesia and surgery and may be useful for the inclusion of biomarkers in research. For clinical purposes, it is recommended to use the DSM-5 nomenclature.
Results: The working group recommends that 'perioperative neurocognitive disorders (PND)' be used as an overarching term for cognitive impairment identified in the preoperative or postoperative period. This includes cognitive decline diagnosed before operation (described as neurocognitive disorder); any form of the acute event (postoperative delirium) and cognitive and functional decline diagnosed up to 30 days after the procedure (delayed neurocognitive recovery (dNCR)) and up to 12 months (postoperative neurocognitive disorder (postoperative NCD).1 Further, the working group has undergone a further Delphi process to expand these recommendations for research purposes which will also be covered.
Conclusions: Perioperative neurocognitive disorders are the most common complication for patients aged 65y or more undergoing anesthesia and surgery. Moreover, they are associated with significant morbidity, mortality, loss of functional independence and extreme economic costs. A multi-disciplinary approach to PND, including neuropsychologists, is critical to reducing and preventing these disorders. Evered L, Silbert B, Knopman DS, et al. Recommendations for the nomenclature of cognitive change associated with anaesthesia and surgery-2018. Br J Anaesth 2018; 121: 1005-12

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2 From Bench to Bedside: How Tau Protein is Altered by Perioperative Factors

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Objective: Postoperative neurocognitive disorder is common after all forms of surgery in older adults. The mechanisms are multifactorial, and probably require pre-existing neuropathology, whether the patient is symptomatic or not. In Alzheimer's disease (AD) and other tauopathies, the microtubule-associated protein tau can undergo aberrant hyperphosphorylation potentially leading to the development of neurofibrillary pathology, one of the neuropathological hallmarks of the disease. Preclinical and human CSF studies suggest that anesthesia and surgery elicits an increment in CNS tauopathy, which may accelerate any pre-existing neuropathology and produce a risk of delirium and the commonly reported changes in cognition.

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