

Video Transcript

Cognitive Change Associated with Anesthesia and Surgery: Establishing a Common Nomenclature

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Today I have an update on a new publication that considers, discusses and provides a framework for understanding central nervous system changes that occur in the perioperative environment. When I say perioperative, I mean the central nervous system (CNS) disorders associated with factors related to a hospital admission for surgery, the conduct of surgery and anesthesia, discharge from the surgical environment and discharge from the hospital.

The publication is titled, *Recommendations for the Nomenclature of Cognitive Change Associated with Anesthesia and Surgery 2018*. This publication reflects a lot of work that has been conducted by *The Nomenclature Consensus Group*, which has been assembled to review the evidence and seeks to understand and develop a common framework for discussing, defining and characterizing the changes that occur through the perioperative space. The importance of this nomenclature statement is that it reflects the opinions, expertise and experience of researchers and clinicians that come from a diverse set of areas of medicine, all of which have been directly or indirectly involved in seeking to manage or understand the way in which brains change as a result of anesthesia in surgery. This includes anesthesiologists, surgeons, gerontologists, neuropsychologists and general physicians, who all have had to deal with issues associated with questions around the extent to which new CNS changes may have been related to the conduct of surgery or anesthesia.

The first author on the publication is Lis Evered, from St. Vincent's Hospital in Melbourne, Australia. She and a group of experts assembled a large number of panels where they held multiple discussions to generate and refine the nomenclature. I recommend that you take a look at [the publication](#) and consider in detail what is written in it.

The Nomenclature Consensus Group recognizes that the greatest risk factor for adverse CNS outcomes associated with anesthesia and surgery is age. We have known for many years that surgery and anesthesia may cause some changes in the way people think and behave. For almost as long as anesthesia has been used, it has been recognized that delirium, personality changes and cognitive changes may occur after surgery. We have all seen people who come to our clinics, where their history includes statements like, "my mother was not the same after she had surgery," or, "things were going well until she had her operation." For many years we have been trying to get to the bottom of how these circumstances occurs.

Mass amounts of research have given rise to the necessity and acceptance for this nomenclature. For many years we thought heart surgery was associated with an adverse cognitive consequence; that is as a consequence of some aspect of cardiac arterial bypass grafting, there was a CNS affect. It could be a consequence of being managed with respiratory support, the high dose of opioid anesthetics that are necessary for the conduct of open-heart surgery, processes associated with pre-morbid factors such as hypertension, or even dementia that could be exacerbated by the surgery. However, we started to appreciate that these adverse outcomes, such as people leaving surgery with some abiding cognitive impairment, were actually occurring after other surgeries. For example, elective surgeries for hip or knee replacements and in some cases where investigations like angiograms were conducted. This led the field to understand that it may not be specific types of surgery that increases risk of adverse CNS outcomes, but rather the nature of surgery or anesthesia itself.

The problem is that while neuropsychologists, gerontologists and surgeons were all seeking to understand seeing this in our clinical practices, we did not have a common language to talk about the nature and magnitude of these disorders. Consequently, we could not ask about prevalence or incidents of these disorders, and without that, it is difficult to understand risk factors, mitigating factors or protective factors. **The crucial aspect of this nomenclature statement--and the fact that it arises as a consequence of the input from multiple disciplines--is we now have a common framework for discussing the nature, magnitude, risk factors and outcomes that are associated with anesthesia and surgery.** This provides a stable framework to challenge the hypothesis that we all have. It allows us to start to identify those tools, procedures and time points at which we can best understand these adverse outcomes. We can then start to consider what therapeutic or practical interventions might exist, so we can minimize, forestall or even improve or cure any adverse outcomes we see as a consequence of the surgical process.

This provides a really exciting starting point and also provides a broad range of specialists with knowledge and information about this important aspect of healthcare, particularly at a time when the rates of older people having both elective and emergency surgery are increasing dramatically.

At Cogstate, we are very pleased to be a part of this process and to have contributed to the nomenclature statement. In our own commitment to understand and potentially advance therapies for CNS diseases, disorders or injuries that occur in older people, we realize this is another important contributing factor. We have worked with the greatest of urgency to understand and refine our own processes, so they are optimal for conducting research in this space.