

Written Testimony for the Record  
American Society of Anesthesiologists (ASA)  
FY 2017 Appropriations for the National Institutes of Health  
Subcommittee on Labor, Health and Human Services, Education and Related Agencies  
Committee on Appropriations

The American Society of Anesthesiologists (ASA) is an educational, research, and scientific association of physicians organized to raise and maintain the standards of anesthesiology and improve the care of the patient. Since its founding in 1905, the Society's achievements have made it an important voice in medicine and the foremost advocate for all patients who require anesthesia or relief from pain.

Physician anesthesiologists are responsible for preparing the patient for surgery, administering anesthesia to relieve pain, and for managing vital life functions. After surgery, they maintain the patient in a comfortable state during the recovery and are involved in the provision of critical care medicine in the intensive care unit. Physician anesthesiologists are experts at managing post-operative pain, and they may also treat patients with chronic pain outside of the acute care setting.

ASA respectfully submits this testimony on the need for federal investment in anesthesia and pain medicine research supported by the National Institutes of Health (NIH). ASA supports research on the impact of anesthesia on two vulnerable populations: pediatric and senior patients. ASA also supports research on acute and chronic pain management and the rational and safe use of opioids, including basic and clinical research on the biopsychosocial mechanisms that produce and maintain chronic pain and the development of innovative non-opioid pain therapies.

The safety of drugs used for anesthesia and sedation in children - There is concern that anesthetics and sedatives may cause long-term abnormalities in behavior, learning, and memory when administered to infants and toddlers. Concerns about the safety of anesthetic drugs for infants and young children initially arose when scientific studies in young animals showed that commonly used anesthetics can be harmful to the developing brain and result in adverse effects on behavior, learning, and memory. Accumulating evidence from studies in children suggests a similar association between surgery with anesthesia in early childhood and subsequent cognitive and behavioral abnormalities. Experts agree that additional preclinical and clinical research efforts are necessary; this research will help determine if particular anesthetics are hazardous to young children, to design the safest anesthetic regimens, to develop practice guidelines, and to potentially foster the development of new anesthetic drugs.

On November 19, 2014 the Food and Drug Administration (FDA) Science Board held a meeting to review existing data related to the use and potential toxicity of anesthetics in the pediatric population. ASA and the Society for Pediatric Anesthesia submitted a letter to the FDA Science Board noting the “relative dearth of reports studying the neurodevelopmental effect of anesthetics in humans,” but that “even a modest effect, if real, could have profound public health consequences given the millions of anesthetics that are provided to children around the world

each year.” The FDA Science Board’s overall consensus was that there is a high likelihood that the troubling animal findings are translatable to humans.

The FDA also joined SmartTots, a Public-Private Partnership that coordinates and funds research with the goal of making anesthesia safer for the pediatric population. In November 2015, SmartTots, with ASA, the American Academy of Pediatrics, and other health professional societies, issued a Consensus Statement on the Use of Anesthetic and Sedative Drugs in Infants and Toddlers which states:

“Concern has been raised about the safety of the medicines used for anesthesia and sedation in young children. This concern is based on research in animals demonstrating long-term, possibly permanent, injury to the developing brain caused by exposure to these medicines. This injury results in abnormalities in behavior, learning, and memory in animals. The effect of exposure to anesthetic drugs in young children is unknown; however, some but not all studies have suggested that problems similar to those seen in animals could also occur in infants and toddlers. It is important to recognize that the studies in children suggest that similar deficits may occur. These studies in children have limitations that prevent experts from understanding whether the harmful effects were due to the anesthetic drugs or to other factors such as the surgery or related illness. Better research is required to understand whether children are harmed and if so, what alternative medicines might be used to minimize risk from anesthesia. Because there is not enough information about the effects of anesthetic drugs on the brains of young children, it is not yet possible to know whether use of these medicines poses a risk, and if so, whether the risk is large enough to outweigh the benefit of the planned surgery, procedure, or test.”

Anesthesia and sedation in senior citizens- In senior citizens, post-operative delirium and post-operative cognitive dysfunction are commonplace and are associated with increased post-operative morbidity and mortality. According to “Controversies in anesthesia for noncardiac surgery in older adults” in the *British Journal of Medicine*, while the importance of delirium to the immediate postoperative course is largely recognized, the longterm outcomes of postoperative delirium remain to be described in high-quality studies.<sup>1</sup>

Postoperative delirium is a common consequence of anesthesia in the elderly, which can lead to longer hospital stays, poor recovery, and higher death rates. As the country’s population ages, identifying patients at high-risk for developing postoperative delirium is increasingly important. According to the US Census, the population age 65 yr and older is expected to more than double between 2014 and 2060, increasing from 47.8 million (14.8% of the total population) to 98.1 million (23.6%). The US National Hospital Discharge Survey showed that in 2010, patients age 65 yr and older constituted 33% of hospital discharges and 44% of days of inpatient care. Moreover, the amount of surgery performed in older patients is increasing at a rate greater than

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<sup>1</sup> Murthy S, Hepner DL, Cooper Z, Bader AM, Neuman MD. Controversies in anaesthesia for noncardiac surgery in older adults. *Br J Anaesth*. 2015 Dec;115 Suppl 2:ii15-ii25. doi: 10.1093/bja/aev396.

the aging of the population. As such, the care of older surgical patients is of increasing importance.<sup>2</sup>

The incidence of postoperative delirium ranges from two to 33 percent in elderly patients undergoing major surgery, depending on the patient's risk factors and the degree of operative stress. Patients who have postoperative delirium can suffer from fluctuating inattention, disorientation, lethargy, agitation, and combative behavior. By better understanding who may be at higher risk of post-operative delirium, physician anesthesiologists can develop interventions, such as considering giving patients antipsychotic medications before surgery, carefully monitoring the depth of anesthesia, and/or having patients see a geriatrics specialist prior to surgery.

Postoperative cognitive dysfunction (POCD) is a distinct phenomenon from postoperative delirium, but like postoperative delirium it disproportionately affects the elderly. Given that age is a strong predictor of POCD, the rate is expected to grow as the population ages. POCD is the deterioration of cognition after surgery that may last from a few days to weeks. POCD can take the form of memory loss and cognitive impairment, and is associated with longer hospital stays and an altered quality of life.

Chronic pain and the rational and safe use of opioids- There is a dual crisis of chronic pain and opioid misuse, abuse, and diversion in the United States. Pain is the most common complaint for which patients seek medical attention. According to the Institute of Medicine, approximately 100 million U.S. adults have common chronic pain conditions at an annual cost of \$560-635 billion.<sup>3</sup> In addition, the number of prescriptions for opioids has risen dramatically, and their greater availability has been accompanied by an alarming increase in opioid overdose deaths. The treatment of acute and post-surgical pain with opiates has increasingly become a gateway to chronic opioid use and addiction. In 2014 alone, more than 28,000 people died from opioid overdoses.<sup>4</sup> To relieve the burden of chronic pain and to reduce opioid overdose fatalities, ASA believes it is a health care safety and quality imperative to expand investment into basic and clinical research on the biopsychosocial mechanisms that produce and maintain chronic pain, to develop innovative non-opioid therapies to treat acute and chronic pain, to develop improved treatments for acute pain that minimize the use of opioids, and to foster a greater understanding by physicians and the public on the rational and safe use of opioids.

The American Society of Anesthesiologists is committed to quality of care and patient safety. In 2016, ASA will launch a patient safety initiative on improving brain health, fostering understanding, developing best practices, and increasing awareness of postoperative cognitive dysfunction and delirium with the goal of laying the groundwork for research into minimizing its effects. We look forward to continuing to work with Congress in order to address the need for

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<sup>2</sup> Ibid.

<sup>3</sup> (2011). *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*. Washington, DC, Institute of Medicine.

<sup>4</sup> Centers for Disease Control and Prevention. (2016). *Injury Prevention and Control: Opioid Overdose*. Retrieved from <http://www.cdc.gov/drugoverdose/> on 11 April, 2016.

research on the impact of anesthesia on vulnerable populations and on acute and chronic pain management and the safe use of opioids.