

# The Anesthesia Perspective: The Impact of Drug Shortages on Patients and Practitioners

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# Disclosure

- **I have no financial relationships with any corporate entities related to this presentation**

# Where Do Anesthesiologists Practice?

- **Hospitals**
- **Ambulatory surgery centers (freestanding)**
- **Physician's offices**
- **Dental offices**
  
- **Many types of purchasing agreements (ranges from large multi-institution healthcare system contracts to individual practitioner)**

# What Do Anesthesiologists Do?

- **Anesthesiologists are physicians who:**
  - Evaluate and optimize the patient's medical conditions with an understanding of the procedure
  - Prescribes an anesthesia plan and manages the pre-operative, intra-operative, and post-operative care; and
  - Have maintaining the patient's safety as their foremost goal

# Anesthesia Plan Includes Multiple Drugs

- Induce and maintain anesthesia or sedation
- Provide muscle relaxation/paralysis (general anesthesia)
- Prevent intra-operative and post-op pain
- Maintain appropriate blood pressure and heart rate during surgery
- Prevent post-op nausea and vomiting
- Drug selection to allow prompt and safe recovery

# ASA Drug Shortage Survey, April 2011

- **1,373 anesthesiologist responses**
- **90% reported a shortage of 1 or more drug at the time of the survey**
- **98% experienced a drug shortage during the past year**
- **Specific drugs in shortage in past year**

<b>propofol</b>	<b>88%</b>	<b>neostigmine</b>	<b>52%</b>
<b>succinylcholine</b>	<b>80%</b>	<b>epinephrine</b>	<b>17%</b>

# Survey– Impact of Drug Shortages on Anesthesiologists and Their Patients

- **92% altered preferred drug for a procedure**
- **51% changed the procedure in some way**
- **10% postponed or cancelled procedures**
- **48% felt shortages resulted in a less optimal patient outcome (e.g., PONV)**
- **48% reported longer O.R. or recovery times**

# Propofol Shortage

- Propofol is the most frequently used drug to induce anesthesia and provide sedation for diagnostic and therapeutic procedures
- In mid-2009, multiple reports of propofol shortages from ASA members from many regions of the U.S.
- Cause: 2 of 3 U.S. manufacturers stopped production
- Lack of propofol resulted in the increased use of other induction agents leading to multiple unanticipated simultaneous shortages

# Effect on Patients

- **Use of other drugs for induction of anesthesia and sedation sometimes results in less optimal outcomes**
  - Prolonged awakening
  - Longer stay in recovery prior to discharge
  - Increased nausea and vomiting
- **Risk of improper handling if large vials were split for dosing multiple patients**

# FDA Action to Alleviate Propofol Shortage

- **ASA and FDA worked together to permit importation of European formulation of propofol**
- **Prompt FDA action relieved propofol shortages in many areas of the U.S.**

# Thiopental

- **Prior to propofol, thiopental was the most commonly used drug to induce anesthesia**
- **Thiopental has properties that make it the “drug of choice” for certain situations (e.g., neurosurgical procedures)**
- **Currently, no U.S. manufacturer (Jan 2011) and no exportation from Europe**

# Succinylcholine

- **Generic drug used for “rescue” (e.g., vocal cords close and unable to breathe for the patient)**
- **During general anesthesia, it is used for muscle relaxation when rapid onset and short duration paralysis is needed**
- **No replacement drug exists, especially for emergent situations (e.g., trauma patients)**

# Neostigmine

- **Used at the end of anesthesia to reverse a class of muscle relaxants/paralytics and permit the patient to breathe on their own**
- **Not having the drug may result in:**
  - respiratory insufficiency
  - prolonged intubation and mechanical ventilation

# Epinephrine and Norepinephrine

- **Used to raise the blood pressure and improve heart function**
- **Critical during major surgeries, cardiac resuscitation, and severe hypotension**
- **Epinephrine is the drug of choice for treating severe allergic reactions**

# Narcotics

- **Used to treat pain during surgery and afterward**
- **Difficulty arises when patients have an allergy to a specific narcotic and others are not available**
- **Use of unfamiliar narcotic may lead to inappropriate dosing by untrained personnel**

# Dexamethasone

- **Steroid used with induction of anesthesia**
- **Reduces post-op nausea and vomiting and reduces the amount of narcotic analgesics needed for pain relief after many types of surgery**

# Impact of Drug Shortages

- **Although anesthesiologists are trained to safely use multiple drugs and can often find alternatives for drugs in short supply, there are implications of these shortages:**
  - Decreased patient satisfaction (prolonged awakening, delayed discharge, nausea)
  - Adverse outcomes including death in extreme situations (e.g., trauma patients, unstable hemodynamics, airway emergencies)

# Increased Healthcare Costs

- **Longer procedure and recovery times drive up healthcare costs**
- **Societal and health system costs for cancelled or postponed cases**
- **When shortages occur, drugs can be obtained through a non-contracted supplier resulting in significantly increased prices**