Review of Medical and Dental Emergencies

PRESENTED BY:
JOSEPH RENZI, JR., M.A., D.D.S.
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History of Sedation and Anesthesia

- 1832 — Justus von Liebig discovered Chloral Hydrate

Side Effects
- "unapproved prescription sedatives such as Phenobarbital and Chloral hydrate"

History of Sedation and Anesthesia

- 1772 — Joseph Priestley synthesizes Nitrous Oxide
- 1844 — Wells demonstrates the use of Nitrous Oxide as an analgesic while extracting a tooth

- 1846 — First Demonstration of General Anesthesia at the Ether Dome at Mass General by Morton
History of Sedation and Anesthesia

▪ Late 1800’s—Commonly used Sedation Agent
▪ 1866—Jasper Newton “Jack” Daniel founded his distillery.

History of Sedation and Anesthesia

▪ 1956—Halothane is first used as a general anesthetic agent five years after it was originally synthesized
▪ Halothane was the first nonflammable general anesthetic agent which replaced diethyl ether and cyclopropane
▪ 1990—Sevoflurane is first used in clinical practice in Japan
▪ Today—Sevoflurane, Desflurane and Propofol are the major general anesthetic agents used along with Nitrous Oxide.
History of Sedation and Anesthesia

- 1980—Tony P., General Dentist in Costa Mesa, CA
  His actions precipitated the legislation of the GA/CS permit
  in the State of California in the late 1980’s

- Late 1990’s—Phillip Megdal Clinic, Santa Ana, CA
  The actions by the dentists in this office precipitated the
  legislating of the oral conscious Sedation Certificate.

Review of California Regulations regarding GA/CS Permits and Oral Conscious Sedation Certificates

- Section 1044.5. Facility and Equipment Standards.
  A facility in which oral conscious sedation is administered to patients pursuant to this article shall meet the standards set forth below.
  (a) Facility and Equipment.
  (1) An operatory large enough to adequately accommodate the patient and permit a team consisting of at least three individuals to freely move about the patient.
  (2) A table or dental chair which permits the patient to be positioned so the attending team can maintain the airway, quickly alter patient position in an emergency, and provide a firm platform for the management of cardiopulmonary resuscitation.
  (3) A lighting system which is adequate to permit evaluation of the patient’s skin and mucosal color and a backup lighting system which is battery powered and of sufficient intensity to permit completion of any treatment which may be underway at the time of a general power failure.
  (4) An appropriate functional suctioning device that permits aspiration of the oral and pharyngeal cavities. A backup suction device that can function at the time of general power failure must also be available.
  (5) A positive-pressure oxygen delivery system capable of administering greater than 90% oxygen at a 10 liter/minute flow for at least sixty minutes (650 liter “E” cylinder), even in the event of a general power failure. All equipment must be age-appropriate and capable of accommodating the patients being seen at the permit-holder’s office.
  (6) Inhalation sedation equipment, if used in conjunction with oral sedation, must have the capacity for delivering 100%, and never less than 25%, oxygen concentration at a flow rate appropriate for an age appropriate patient’s size, and have a fail-safe system. The equipment must be maintained and checked for accuracy at least annually.
Review of California Regulations regarding GA/CS Permits and Oral Conscious Sedation Certificates

1. Section 1043.3. Onsite Inspections
All offices in which general anesthesia or conscious sedation is conducted under the terms of this article shall, unless otherwise indicated, meet the standards set forth below. In addition, an office may in the discretion of the board be required to undergo an onsite inspection. For the applicant who administers in both an outpatient setting and at an accredited facility, the onsite must be conducted in an outpatient setting. The evaluation of an office shall consist of three parts:

(a) Office Facilities and Equipment. The following office facilities and equipment shall be available and shall be maintained in good operating condition: (1) An operating theatre large enough to adequately accommodate the patient on a table or in an operating chair and permit an operating team consisting of at least three individuals to freely move about the patient.

(b) Ancillary equipment, which must include the following, and be maintained in good operating condition:
(1) Age-appropriate oral airways capable of accommodating patients of all sizes.

2. (2) An operating table or chair which permits the patient to be positioned so the operating team can maintain the airway, quickly alter patient position in an emergency, and provide a firm platform for the management of cardiopulmonary resuscitation.

3. (3) A lighting system which is adequate to permit evaluation of the patient’s skin and mucosal color and a backup lighting system which is battery powered and of sufficient intensity to permit completion of any operation underway at the time of general power failure.

4. (4) Suction equipment which permits aspiration of the oral and pharyngeal cavities. A backup suction device which can operate at the time of general power failure must also be available.

5. (5) An oxygen delivery system with adequate full face masks and appropriate connectors that is capable of allowing the administering of greater than 90% oxygen at a 10 liter/minute flow at least sixty minutes (650 liter "E" cylinder) to the patient under positive pressure, together with an adequate backup system which can operate at the time of general power failure.

6. (6) A recovery area that has available oxygen, adequate lighting, suction, and electrical outlets. The recovery area can be the operating theatre.

oral conscious sedation

1. (b) Ancillary equipment, which must include the following, and be maintained in good operating condition:
(1) Age-appropriate oral airways capable of accommodating patients of all sizes.
2. (2) An age-appropriate sphygmomanometer with cuffs of appropriate size for patients of all sizes.
3. (3) A precordial/pretracheal stethoscope.
4. (4) A pulse oximeter.
Review of California Regulations regarding GA/CS Permits and Oral Conscious Sedation Certificates

conscious sedation

1. (7) Ancillary equipment:
2. (A) Laryngoscope complete with adequate selection of blades and spare batteries and bulb. (This equipment is not required for conscious sedation.)
3. (B) Endotracheal tubes and appropriate connectors. (This equipment is not required for conscious sedation.)
4. (C) Emergency airway equipment (oral airways, laryngeal mask airways or combitubes, cricothyrotomy device).
5. (D) Tonsillar or pharyngeal type suction tip adaptable to all office outlets.
6. (E) Endotracheal tube forceps. (This equipment is not required for conscious sedation.)
7. (F) Sphygmomanometer and stethoscope.
8. (G) Electrocardioscope and defibrillator. (This equipment is not required for conscious sedation.)
9. (H) Adequate equipment for the establishment of an intravenous infusion.
11. (J) Pulse oximeter.
12. (K) Capnograph and temperature device. A capnograph and temperature measuring device are required for the intubated patient receiving general anesthesia. (This equipment is not required for conscious sedation.)

1.(c) The following records shall be maintained:
(1) An adequate medical history and physical evaluation, updated prior to each administration of oral conscious sedation. Such records shall include, but are not limited to, an assessment including at least visual examination of the airway, the age, sex, weight, physical status (American Society of Anesthesiologists Classification), and rationale for sedation of the minor patient as well as written informed consent of the patient or, as appropriate, parent or legal guardian of the patient.
(2) Oral conscious sedation records shall include baseline vital signs. If obtaining baseline vital signs is prevented by the patient’s physical resistance or emotional condition, the reason or reasons must be documented. The records shall also include intermittent quantitative monitoring and recording of oxygen saturation, heart and respiratory rates, blood pressure as appropriate for specific techniques, the name, dose and time of administration of all drugs administered including local and inhalation anesthetics, the length of the procedure, any complications of oral sedation, and a statement of the patient’s condition at the time of discharge.
1. (b) Records. The following records shall be maintained:

(1) Adequate medical history and physical evaluation records updated prior to each administration of general anesthesia or conscious sedation. Such records shall include, but are not limited to the recording of the age, sex, weight, physical status (American Society of Anesthesiologists Classification), medication use, any known or suspected medically compromising conditions, rationale for sedation of the patient, and visual examination of the airway, and for general anesthesia only, auscultation of the heart and lungs as medically required.

(2) General Anesthesia and/or conscious sedation records, which shall include a time-oriented record with preoperative, multiple intraoperative, and postoperative pulse oximetry (every 5 minutes intraoperatively and every 15 minutes postoperatively for general anesthesia) and blood pressure and pulse readings, (both every 5 minutes intraoperatively for general anesthesia) drugs, amounts administered and time administered, length of the procedure, any complications of anesthesia or sedation and a statement of the patient’s condition at time of discharge.

(3) Written informed consent of the patient or if the patient is a minor, his or her parent or guardian.

1. (d) Oral conscious sedation

An emergency cart or kit shall be available and readily accessible and shall include the necessary and appropriate drugs and age- and size-appropriate equipment to resuscitate a nonbreathing and unconscious patient and provide continuous support while the patient is transported to a medical facility. There must be documentation that all emergency equipment and drugs are checked and maintained on a prudent and regularly scheduled basis. Emergency drugs of the following types shall be available:

1. Epinephrine
2. Bronchodilator
3. Appropriate drug antagonists
4. Antihistaminic
5. Anticholinergic
6. Anticonvulsant
7. Oxygen
8. Dextrose or other antihypoglycemic
Review of California Regulations regarding GA/CS Permits and Oral Conscious Sedation Certificates

1.(c) Drugs. Emergency drugs of the following types shall be available:
2.(1) Epinephrine
3.(2) Vasopressor (other than epinephrine)
4.(3) Bronchodilator
5.(4) Muscle relaxant (This is not required for conscious sedation.)
6.(5) Intravenous medication for treatment of cardiopulmonary arrest (This is not required for conscious sedation.)
7.(6) Appropriate drug antagonist
8.(7) Antihistaminic
9.(8) Anticholinergic
10.(9) Antiarrhythmic (This is not required for conscious sedation.)
11.(10) Coronary artery vasodilator
12.(11) Antihypertensive (This is not required for conscious sedation.)
13.(12) Anticonvulsant
14.(13) Oxygen
15.(14) 50% dextrose or other antihypoglycemic

Review of California Regulations regarding GA/CS Permits and Oral Conscious Sedation Certificates

1. The evaluation of an applicant for a permit shall consist of two parts:
2. (b) Demonstration of a Conscious Sedation. A dental procedure utilizing conscious sedation administered by the applicant must be observed and evaluated. Any conscious sedation technique that is routinely employed can be demonstrated. The patient shall be monitored while sedated and during recovery from sedation in the manner prescribed by section 1682 of the code. The applicant for a permit must demonstrate that he or she has knowledge of the uses of the equipment required by section 1043.3(a) and is capable of using that equipment.
3. (c) Simulated Emergencies. Knowledge of and a method of treatment must be physically demonstrated by the dentist and his or her operating team for the following emergencies:
   (1) Airway obstruction
   (2) Bronchospasm
   (3) Emesis and aspiration of foreign material under anesthesia
   (4) Angina pectoris
   (5) Myocardial infarction
   (6) Hypotension
   (7) Hypertension
   (8) Cardiac arrest
   (9) Allergic reaction
   (10) Convulsions
   (11) Hypoglycemia
   (12) Syncope
   (13) Respiratory depression
Review of commonly encountered emergencies

(1) Airway obstruction
(2) Bronchospasm
(3) Emesis and aspiration of foreign material under anesthesia
(4) Angina pectoris
(5) Myocardial infarction
(6) Hypotension
(7) Hypertension
(8) Cardiac arrest
(9) Allergic reaction
(10) Convulsions
(11) Hypoglycemia
(12) Syncope
(13) Respiratory depression

Airway obstruction
Bronchospasm

Bronchospasm
Bronchospasm

Emesis and aspiration of foreign material under anesthesia
Emesis and aspiration of foreign material under anesthesia

Angina pectoris
Cardiac Arrest

Hypotension
Hypotension

Hypertension
Allergic reaction

Convulsions
Respiratory depression

How to AVOID these emergencies

▪ COMMON SENSE APPROACH
▪ ANTICIPATE THE MISHAP, PREPARE FOR IT, TAKE ACTION TO AVOID
How to AVOID these emergencies

Airway Obstruction  Preventive Action
How to AVOID these emergencies

Bronchospasm

Preventive Action

Emesis and aspiration of foreign material under anesthesia

Preventive Action
How to AVOID these emergencies

Angina pectoris
Myocardial infarction
Cardiac arrest

Preventive actions

How to AVOID these emergencies

Hypotension/Syncope

- Hypovolemia
- Postural hypotension

Preventive Actions
How to AVOID these emergencies

**Hypertension**
Preventive Action

**Allergic reaction**
Preventive Actions
### How to AVOID these emergencies

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How to AVOID these emergencies

Respiratory depression
Preventive actions

Review of litigation cases

- Case 1
  - The tale of a General Dentist with disabled patient being treated under GA in a hospital setting.
Review of litigation cases

- Case 2
  - Patient is an uncooperative three year old child

Review of litigation cases

- Case 3
Review of litigation cases

- Case 4

Review of litigation cases

- Case 4 cont’
Review of litigation cases

- Case 5

QUESTIONS??????
For More Info

Jrenzi@jrenzidds.com