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Stanford MEDICINE

THE GROWING PRACTICE OF DENTAL ANESTHESIOLOGY AND SAFETY

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OBJECTIVES

- *The audience will review the history of dental anesthesia*
- *The audience will be able to describe the various ways in which anesthesia is currently provided for dental care*
- *The audience will review safety guidelines for the practice of dental anesthesia*

DISCLOSURES

- NO Financial Disclosure
- Have worked closely with a merican Academy of Pediatrics , California Society of Anesthesiologists American Society of Dentist Anesthesiologists , California Society of Dentists Anesthesiologists on dental safety

Six-year-old boy dies getting tooth extracted

Posted: 6:48 PM, Mar 30, 2016 **Updated:** 1:02 PM, Apr 02, 2016

By: Robert Santos

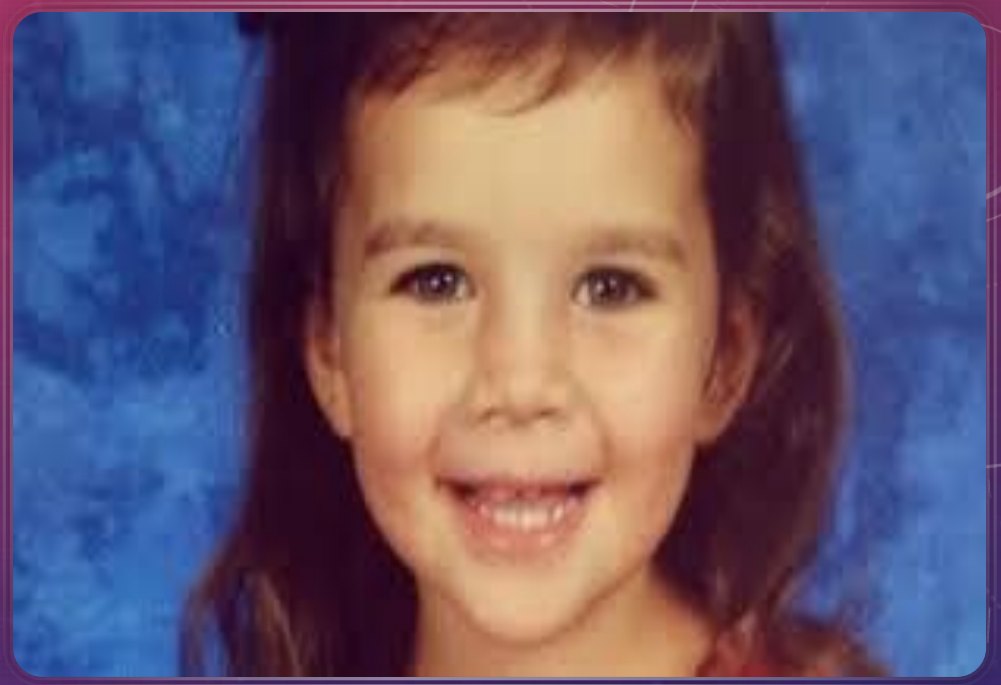
10News Leade Award

WAIT WHAT???

- Why the heck was no-one doing anything????

SINGLE OPERATOR MODEL

- One “Anesthesia Permit Holder” directs and anesthesia and performs the surgery/procedure
- Dental assistant “monitors”
- Confusing and variable terminology



Finley dies after “oral moderate sedation”

HISTORY OF DENTAL ANESTHESIA

- 1990's American Society of Dentist Anesthesiology
- New Dentist Anesthesiology Residency Programs
- OFMS residency now 6 years with 5 months of anesthesia + office based sedation
- Rise of the Single Operator/Surgeon Anesthetist/Anesthesia Team Model

22 yo old Jared

DENTIST ANESTHESIOLOGIST

- 3 years of residency after dental school
- 8 Dental Anesthesia residencies in the USA
- 1 in Toronto
- American Dental Association's National Commission on Recognition of Dental Specialties and Certifying Boards recognizes dental anesthesiology 2019

https://www.adba.org

https://www.ada.org/~/media/CODA/Files/Dental_Anesthesiology_Standards.pdf?la=en

SURGEON/ ANESTHETIST MODEL

- Oral surgeon or dentist perform procedure and anesthesia
- Dental assistants watch monitors
- Dental Assistants have minimal medical education and training

Salomen Barthos Jr.

SINGLE OPERATOR MODEL

- Dental Anesthesia Assistant National Certification Examination (DAANCE)
- **36 hours online education**

Pediatrics April 2018, VOLUME 141 / ISSUE 4 Family Partnerships Concerns Regarding the Single Operator Model of Sedation in Young Children Rita Agarwal, Anna Kaplan, Raeford Brown, Charles J. Coté

Table 1: Level of education required in Dental Paraprofessional Positions

Level of education	Basic	Advanced
Dental Assistant	High School	On-the job
Dental Anesthesia Assistant (DAANCE)	High School, 6 months practice	On-line education (36 hours), National Examination
Dental Sedation Assistant (California only)	High School, 12 months practice	On site hands on and online education, (110 hours) State Examination
Dental Hygienist	2-4-year	Associate or Bachelor's degree, National Certifying Exam

Pediatrics April 2018, VOLUME 141 / ISSUE 4 Family Partnerships
Concerns Regarding the Single Operator Model of Sedation in Young Children Rita Agarwal, Anna Kaplan, Raeford Brown, Charles J. Coté

PROBLEM:

- Different standard of care and practice in dental sedation
- State to State variability
- Excessive morbidity and mortality
- Lack of transparency

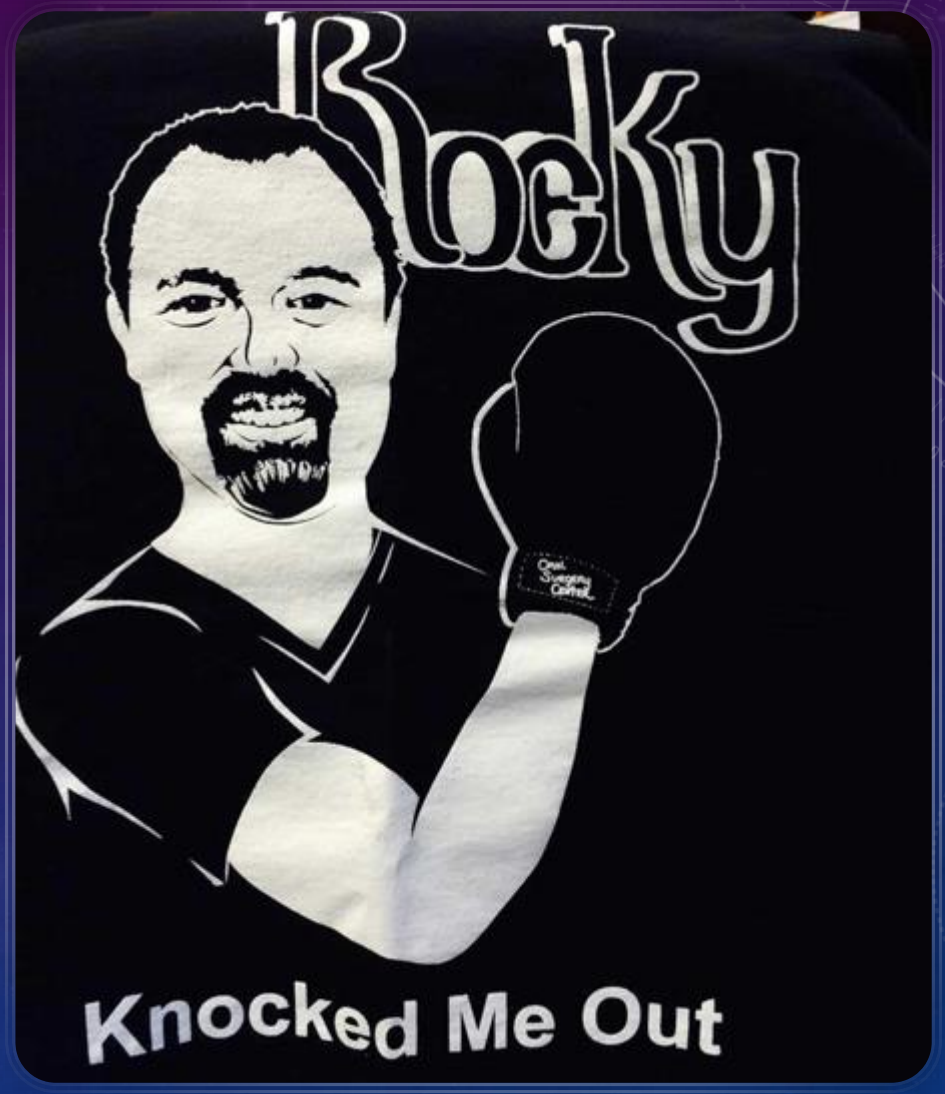
CURRENT STATE IN DENTISTRY

- States do not track deaths or adverse events
  - Mandatory Reporting Death or Hospital Transfer , Report to the Dental Board of California within 7 days:
  - "(A)the death …during the performance of any dental or dental hygiene procedure;
  - (B) the discovery of the death of a patient whose death is related to a dental or dental hygiene …
  - (C) except for a scheduled hospitalization, the removal to a hospital or emergency center for medical treatment of any patient …

https://www.saferanesthesia.com/california-dental-sedation-laws BPC Division 2, Chapter 4, Article 1, Section 1601.2

ANESTHESIA PERMIT HOLDERS?

- Oral Maxillofacial Surgeons
- Anesthesiologists, CRNAs, CAAs
- Dentist Anesthesiologist
- Dentist with "Anesthesia Permit"



WHAT IS THE INCIDENCE OF ADVERSE EVENTS?

Daleyza Hernandez-Avila

- NO-ONE knows:
  - Oral and Maxillofacial Surgery National Insurance Company study: death or serious neurologic injury = **1:348 602**
  - **One death every 4-6 weeks**

Pediatrics April 2018, VOLUME 141 / ISSUE 4 Family Partnerships Concerns Regarding the Single Operator Model of Sedation in Young Children

How **safe** is deep sedation or general **anesthesia** while providing **dental** care?.J Am Dent Assoc. 2015 Sep;146(9):705-8.

MORTAZAVI H, ET.AL. DEATH RATE OF DENTAL ANAESTHESIA. *J CLIN DIAGN RES*. 2017;11(6):2017/24813.10009

[Table/Fig-1]:

Comparison of dental anaesthesia- related mortality rates since 1955 [2,8-29].

Author	Type of anaesthesia	Death: People	Approximate mortality rate	Mortality rate per 1000000
Seldin [12]	General	15:2429148	1:161943	6.2
Seldin [13]	General, Local	59:7956627	1:134858	7.4
Driscol [14]	General	5:1575000	1:315000	3.2
Driscol [15]	General, Sedation, Local	11:5285570	1:480506	2
Tomlin [10]	General, Sedation, Local	29:7956000	1:274344	3.6
Lytle [16]	General	3:1295000	1:431666	2.3
Lytle [17]	General	0:1285000	0:1285000	-
Coplans [18]	General	56:14473000	1:258446	3.9
Lytle [19]	General	7:4700000	1:672000	1.4
D'Eramo [20]	General, Sedation, Local	2:2082805	1:1000000	0.9
Flick [21]	General, Sedation	1:151355	1: 151355	6.6
Nkansah [22]	General, Sedation	4:2830000	1:707500	1.4
Hunter [23]	General	0:1126	0: 11226	-
D'Eramo [8]	General, Sedation	0:1588365	0:1588365	-
Deegan [24]	General, Sedation	19:14206923	1:747000	1
D'Eramo [2]	General, Sedation, Local	2:1706100	1:853000	1.1
Lee [25]	General	0:22615	0: 22615	-
Rodgers [26]	Sedation	0:2889	0: 2889	-
Flick [27]	General, Sedation	2:115940	1:57970	17
D'Eramo [9]	General, Sedation, Local	1:1733055	1:1733000	0.5
Braidy [28]	Sedation	0:1167	0:1167	-
Rodgers [29]	Sedation	0:3320	0: 3320	-
Qiam [11]	General	2:34277	1:1639	610
Total	General, Sedation, Local	218: 71435282	1:327684	3

Total: 3:1,000,000

1:327,684

WakeUp Safe

- Started in 2005 as a component of the Society for Pediatric Anesthesia by Don Tyler MD
- The purpose of Wake up Safe is to improve processes of care and outcomes for newborns, infants, and children in the perioperative environment.
  - To define and measure Quality, and develop Quality Improvement Systems in Pediatric Anesthesia to develop ways of measuring quality in pediatric anesthesia care.
  - To provide data to allow research about adverse events in pediatric perioperative care.
  - Develop a registry, analyze and devise strategies to prevent of adverse events in pediatric perioperative care.
- **Wake Up Safe estimate: 0 : ~2million**

http://wakeupsafe.org

PEDIATRIC SEDATION RESEARCH CONSORTIUM

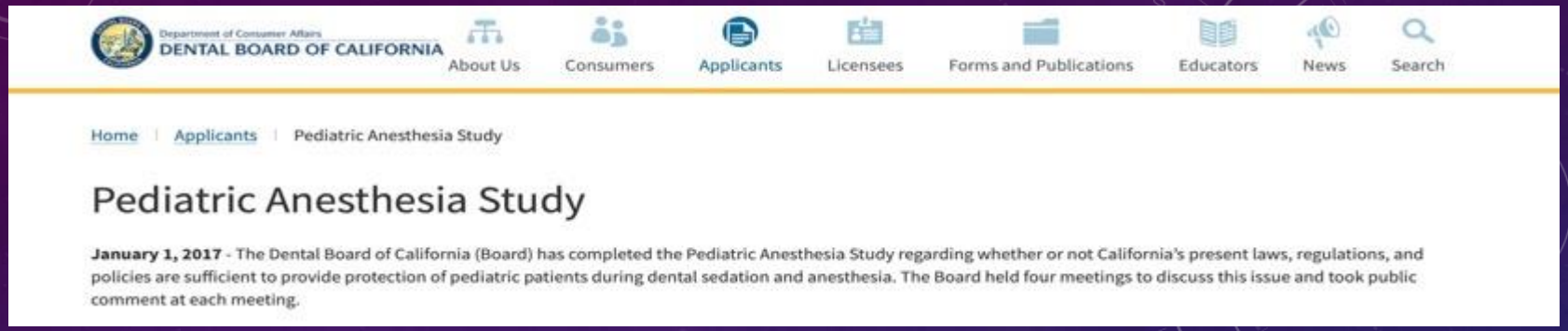
- NO anesthesia or sedation related deaths or serious adverse events in 500,000 reported cases
- Adverse events did occur, but were safely managed

CALEB'S LAW

- http://www.calebslaw.org

Part 1 :

1. Study by California Dental Board on Pediatric Dental Anesthesia Safety
2. Consent re different practice model
3. Epidemiological data collection



1. High quality pediatric outcomes **data**
2. Update definitions to follow ASA
3. Restructure the dental sedation and anesthesia permit system
4. Update equipment and records
5. Collect data that will allow the future study

https://www.dbc.ca.gov/formspubs/pediatric_recommendations.pdf

CALEB'S LAW

- http://www.calebslaw.org
- Part 2: Codifying CDB recommendations
  - Separate qualified provider
  - High quality data collection

CALEB'S LAW

DID NOT PASS

- Part 2: Codifying CDB recommendations
  - separate qualified provider
  - High quality data collection

Dental lobby prevails again: Grieving parents shelve Caleb's Law rather than dilute it

WHY DIDN'T CALEB'S LAW PASS?

- Limits Access to Care
- "Oh there's no proof that having a separate person providing sedation and anesthesia is actually safer in anesthesia "

GUIDELINES CHANGED!

- For Deep Sedation and General Anesthesia there must be one qualified independent anesthesia provider
- At least one other person who is PALS or APLES trained

AAOMS RESPONSE

"overly restrictive guidelines based on **hyperbole, opinion,** and fueled by **emotion……**will do significant harm by reducing access to care, **by increasing cost,** and limiting resources

Marvelena Rady

Preventable? Anesthesia for children can be deadly at dentist's office

On July 16, 2016, Marvelena Rady died while under general anesthesia at her dentist's office.

THE UNIQUE OMS ANESTHESIA TEAM MODEL HAS CONSISTENTLY BEEN PROVEN AS SAFE, EFFECTIVE AND AFFORDABLE..

- Mortality = 1:327,684
- 1 death every 4-6 weeks

Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology
Volume 123, Issue 2, February 2017, Pages 194-204.e10

OTHER ISSUES WITH DENTAL ANESTHESIA SEDATION

- Mykel received a “shot” from an anesthesiologist
- Did not wake up

'I JUST WANT ANSWERS': MOM DEVASTATED AFTER TODDLER DIES IN DENTAL PROCEDURE

APRIL 1, 2016, 11:05 AM PDT / SOURCE: TODAY
BY LINDA CARROLL

Dental caries in kids are epidemic levels,
AAPD: tooth decay common chronic childhood disease

Pediatrics December 2017, VOLUME 140 / ISSUE 6
Ethics Rounds Ethics Rounds: Death After Pediatric Dental Anesthesia: An Avoidable Tragedy? Helen Lee, Peter Milgrom, Colleen E. Huebner, Philip Weinstein, Wylie Burke, Erika Blacksher, John D. Lantos

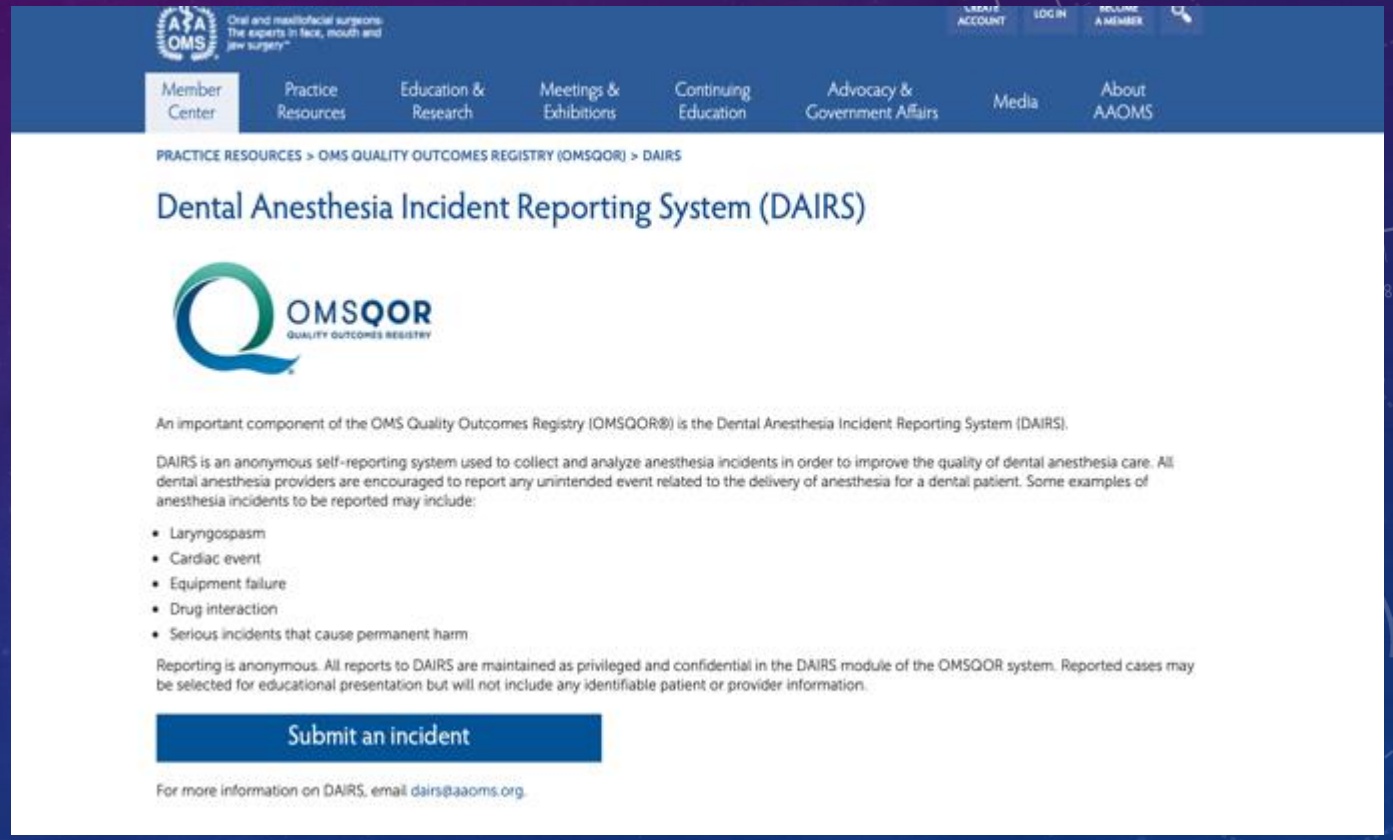
TODDLER WHO DIED AFTER DENTAL PROCEDURE WAS HOOKED UP TO EMPTY OXYGEN TANK AS STAFF MUTED HEART ALARM

JAN 2018

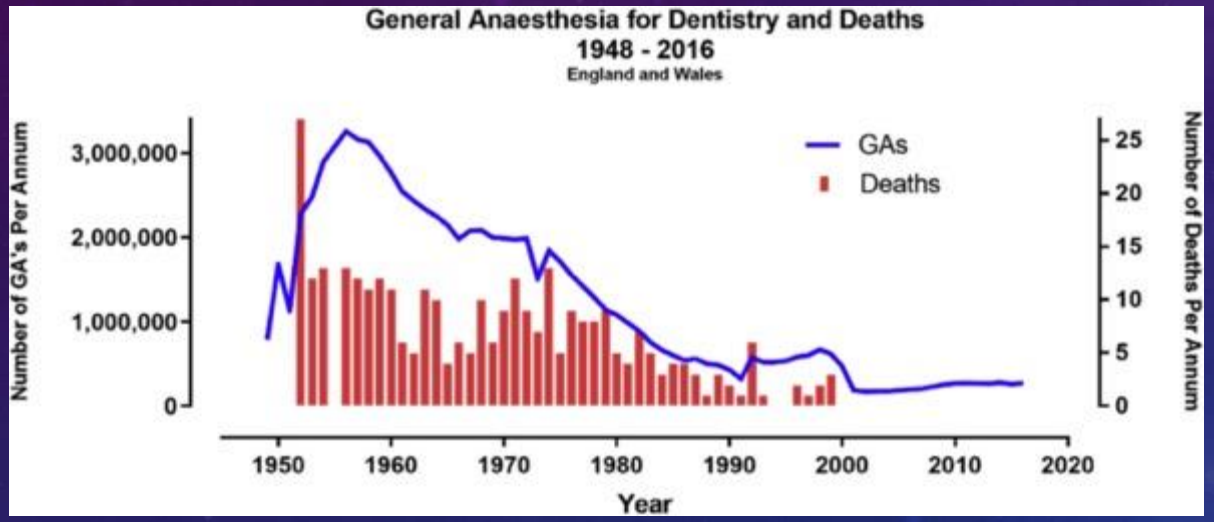
"the alarm went off an additional three to four times – each time silenced by the Kool Smiles staff member – until the staff member finally removed the monitor from Zion and stated that the device does not work on children,"

DENTAL ANESTHESIA INCIDENT REPORTING SYSTEM- DAIRS

- Voluntary
- “Modeled” on the Anesthesia Incident Reporting System
- No Denominator
- So far no data



DEATHS ASSOCIATED WITH GA FOR DENTISTRY 1948 – 2016: THE EVOLUTION OF A POLICY FOR GENERAL ANAESTHESIA (GA) FOR DENTAL TREATMENT, HELIYON JAN 2020



- "Prior to 2001 there is a strong correlation between the number of GA's per annum and deaths. Since 2001, when the UK government directed that all GAs for dentistry must be administered in a hospital with Intensive Care facilities the number of deaths per annum has reduced to nil."

SO WHAT CAN WE DO?

- EDUCATE, EDUCATE EDUCATE
- COLLABORATE
- Urge good DATA Collection Tools,
- Strong NROA guidelines that apply to all practitioners and all location
- Use SoMe to spread the word @ritaagarwal6

Updated Guidelines on Dental Sedation Address Concerns Over Safety for Pediatric Patients

For patients undergoing deep sedation, it is recommended that an independent skilled observer be present.

The American Academy of Pediatrics (AAP) has updated its guidance on sedation for dental procedures in children in a clinical report written in conjunction with the American Academy of Pediatric Dentistry.

The report, "Guidelines for Monitoring and Management of Pediatric Patients Before, During and After Sedation for Diagnostic and Therapeutic Procedures," will be published in the June 2019 issue of *Pediatrics*.

DENTAL ANESTHESIA AND SEDATION: WHERE ARE WE NOW?

by Agarwal, Rita, MD, FAAP, FASA | Feb 04, 2019 Leave a comment

In 2015, healthy, happy 6 ½ year Caleb Sears suffered a cardiac arrest in his oral surgeon's office after receiving midazolam, ketamine, propofol, fentanyl, and nitrous oxide, and became apneic. He later passed away. His devastated family could not understand how this tragedy had happened and set about trying to change California law that governs the administration and monitoring of anesthesia and sedation provided by

An Anesthesiologist's Thoughts on Dental Sedation Laws

5min read

COMMENTARY

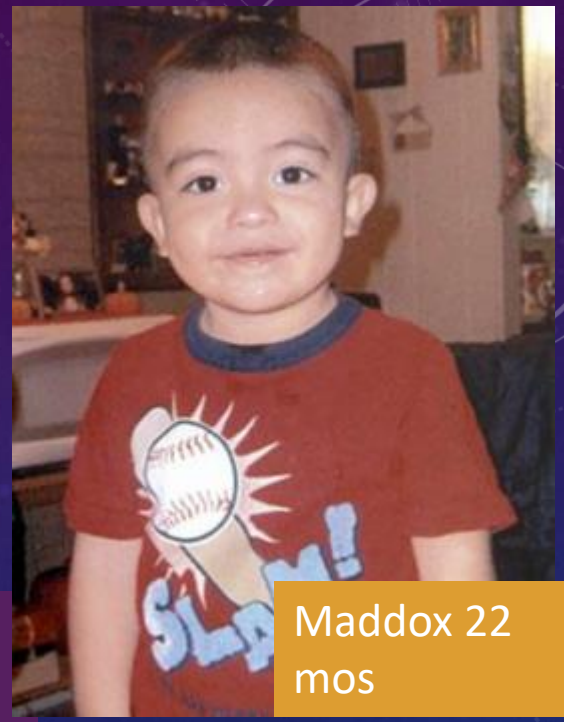
Dental Sedation Kills 4-Year-Old Who Might Have Been Saved By A Toothbrush

November 10, 2017 By Paul C. McLean

5 y.o Dylan Dill Man

8 y.o Raven

5 y.o Diamond



Maddox 22 mos

17 y.o Jennifer

51 y.o Corey

13 y.o Marissa