

# NEW JERSEY DENTAL SOCIETY

## OF Anesthesiology



Disclosure:



DENTAL  
ANESTHESIA  
ONLINE

Patient Safety Through Education

[www.DAOce.org](http://www.DAOce.org)

Bosack, 2023

### The Risk of Sedation > Risk of the Procedure it facilitates.

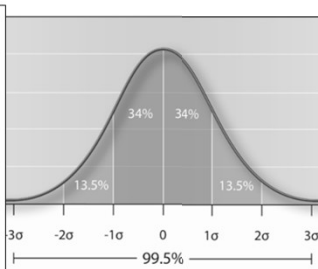


Quattrone, M. *Is the Physician Office the Wild, Wild West of Health Care?* J Amb Care Management 23:64-73, 2000.

#### The Wild West of Non-Operating Room Anesthesia

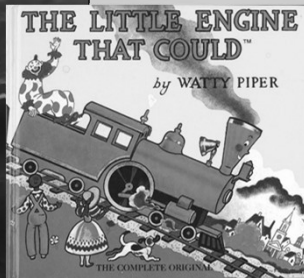
Emily Methangkool, MD, MPH, 2023  
MedPage Today

The Wild West of Non-Operating Room Anesthesia  
— Preserving patient safety is essential  
By Emily Methangkool, MD, MPH  
February 9, 2023



# On the Road to Improvement

1. What seems to be the (ongoing) problem with the airway?
2. Is the team anesthesia model valid?
3. Why does sedation (sometimes) fail?
4. Can we close the gap between the perception and reality of safety?



## 1. What seems to be the ongoing problem with airway?

(Besides patient selection and depth of sedation limit setting, etc.)

1. Better *real-time* monitoring
  - Continuous, pre-tracheal airway auscultation
  - Torso expansion monitoring
2. What interventions are really necessary?
  - Extra-glottic device? Intubation?
  - Should I deepen or lighten sedation?
3. Improve performance: define, prepare and rehearse workflow
  - Personal – stress, time urgency, **cognitive bias**
  - Team – able to act without prompt
  - Immersive learning – simple, shared, structured responses
4. Oxygenation: high flow vs. high pressure devices

**Human Factor  
Engineering**

# The Difficult Airway

## Anatomic



“Composite airway failure”

## Physiologic



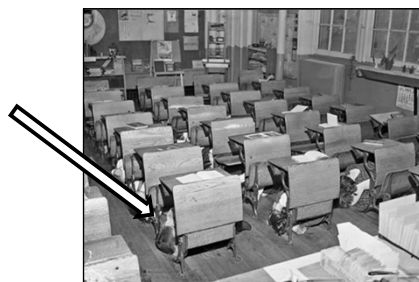
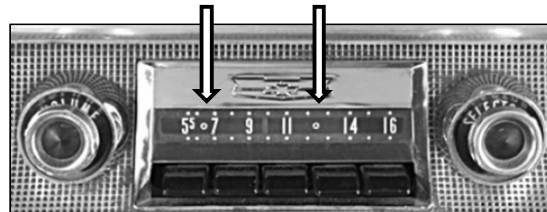
## Contextual



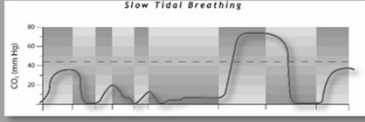
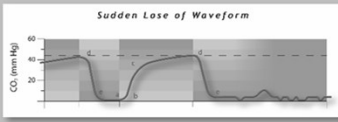
- Human factors
- Ability to tolerate distraction
- Paradox of choice
- Cognitive bias
- Skills and ability to perform



## 1. Real-time Monitoring

“early warning”



	<b>Ventilatory Depression</b> Physiologic Problem 	<b>Upper Airway Obstruction</b> Anatomic Problem 
	Decreased CO <sub>2</sub> sensitivity in brainstem	Partial or complete obstruction at base of tongue, soft palate due to loss of muscle tone and proprioception
<b>Manage</b>	<b>Stimulate patient, stop or reverse drugs</b> <b>Positive Pressure Ventilation</b>	<b>Triple airway maneuver, JAW THRUST</b> <b>Oral or naso pharyngeal airway, ++++</b>
Capnography		
SpO <sub>2</sub>	↓	↓
Pre-tracheal auscultation	↓	No sounds; snoring, gurgling, wheezing, crowing
Chest movement	Minimal to no chest rise	Paradoxical movement, sternal retraction chest collapse, abdominal rise
Feel air movement at mouth	Minimal to none, may hear with light chest pressure	None

## Monitoring ventilation (breathing)

### Pre-tracheal auscultation



1. Normal breath sounds
2. Adventitious breath sounds
3. Impending doom





## Monitoring ventilation (breathing)

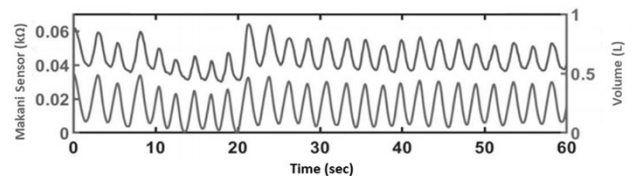
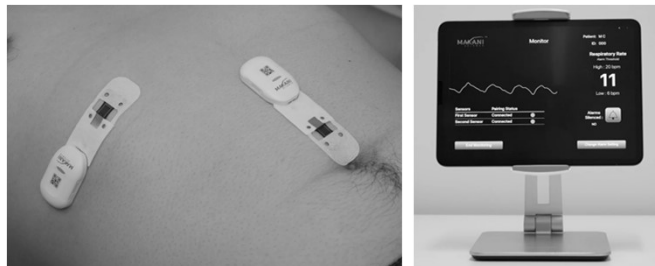
capnography : pre-tracheal auscultation

Able to detect....	Pre-tracheal auscultation	Side-stream <b>nasal</b> sampling capnography
Mouth breathing	<b>YES</b>	<b>No</b>
Slow, silent nasal breathing	<b>No</b>	<b>YES</b>
Slow, silent mouth breathing	<b>No</b>	<b>No</b>
Impending airway compromise	<b>YES</b>	Maybe
Wheezing	<b>YES</b>	<b>No</b>

## Makani Science Respiratory Monitoring System

**Directly measure torso expansion from breathing**

- Wireless
- Compact
- Real-time
- Accurate



[www.makaniscience.net](http://www.makaniscience.net)

Chu et. al., Nature Digital Medicine, 2019

## 2. What interventions will really work?

### Lost Airway and Ventilation Management

(During intubed moderate to deep sedation, open airway, spontaneous ventilation)

**NOTE TIME!** Silent airway / Flat EtCO<sub>2</sub> / ↓ SpO<sub>2</sub>

**PERFORM**

**1 Pack site, Suction, Jaw Thrust, Chin Lift**

**Pull Tongue Forward**

**KEEP MOUTH OPEN**

Consider attempts to awaken patient

**ASSESS – RECHECK – CONFIRM**

- Awaken your patient – look, listen
  - Responsiveness / Color / Flush
  - Breathing noise – cough, stridor, wheeze, wheeze
  - Ventilatory Effort?
- Other distraction
  - Check fire / abdominal wall movement
- Airway Patency – lightly press on chest and feel/look air movement – differentiate airway patency from ventilatory depression
  - SpO<sub>2</sub> saturation probe in place
  - EtCO<sub>2</sub> sampling line in place
  - Pre-ductal stethoscope working
- Confirm O<sub>2</sub> delivery to patient
  - Verify O<sub>2</sub> flow, delivery, connections

**2 Positive Pressure BMV**

Bag-Mask Ventilation with supplemental O<sub>2</sub>

~ in line CO<sub>2</sub> sampling connector ~

2-MAN ± NPA, OPA

Naso/Oropharyngeal airways

Indications to advance to and be successful with steps 3 or 4 are limited to failure of best effort PPV 1 airway and/or airway obstruction at or below the level of the glottis. If unable or unable to deepen the level of anesthesia necessary to facilitate these advanced maneuvers, attempts to awaken the patient should be considered. The current depth of sedation, muscle tone, severity and duration of hypoxemia should guide this decision. \*\*\*

**3 King LTS-D™ airway / i-gel™**

**4 Visualize larynx (DL, VL) ± intubate**

3 attempts

2mg/kg succinylcholine

911 – call for in office help

**EVALUATE**

**PATIENT CONDITION<sup>(\*)</sup>:**

- Depth of sedation
- Muscle tone: rigid / flaccid / breath-holding
- Duration of apnea prior to ↓SpO<sub>2</sub>
- Ability to tolerate hypoxemia

**POSSIBILITIES:**

**Tongue – Larynx – Lungs – Brain**

- Over sedation
  - Airway Obstruction – Tongue
  - Hyperventilation, apnea
- Laryngeal Obstruction
  - Laryngospasm – crowing
  - Laryngeal edema
    - Anaphylaxis
    - ACG angioedema
    - Trauma from repeated instrumentation
  - Foreign body: tooth, emesis
  - Oral mucous plug
  - Unrecognized pathology
- Bronchospasm
  - Asthma, allergy, aspiration
  - Negative pressure pulmonary edema
  - Flea
- Opioid-induced Rigidity
- Seizure / Hypoglycemia / Stroke

**MANAGEMENT PROMPTS**

- Laryngospasm – crowing, retraction
  - Suction, Trendelenburg, 8 side ↓
  - ~ 10-15mg/kg propofol
- Asthmatic bronchospasm – wheeze, silence
  - β<sub>2</sub> agonist, 10mg salbutamol
  - Other cause: connector with mask ventilation
  - Epi 1mg IV, 1.000, 0.3mg IM q5-10min prn

**1. PAINFUL STIMULI**

**2. NALOXONE (Narcan™) – 2.0mg IV, q5min prn**

**3. Aspiration (emesis, FB) – wheeze, silence, ↓SpO<sub>2</sub>**

• Suction, Trendelenburg, 8 side ↓

**4. Laryngeal Edema**

• Anaphylaxis – wheeze, rash, hypotension

• ACG angioedema – maintain airway

**5. Foreign Body (FB), OPA, mucous plug, tooth**

• Heimlich maneuver

• Suction/ventilator attempt OI

• Magill forceps / suction tube without tip

**FONA (front of neck access)**

To be considered when all other airway attempts have failed

**CANNOT INTUBATE, CANNOT OXYGENATE**

Laryngeal edema, foreign body above cords

### The first pass enigma



**1**

**Pack site, Suction, Jaw Thrust, Chin Lift**

**Pull Tongue Forward**

Ensure 100% O<sub>2</sub> delivery

**ATTEMPT TO KEEP MOUTH OPEN**

**2**

**Positive Pressure BMV**

Bag-Mask Ventilation with supplemental O<sub>2</sub>

~ in line CO<sub>2</sub> sampling connector ~

2-MAN ± NPA, OPA

Naso/oropharyngeal airways

**3**

**King LTS-D™ airway / i-gel™**

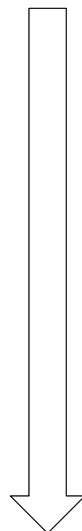
**4**

**Visualize larynx (DL, VL) ± intubate**

3 attempts

2mg/kg succinylcholine

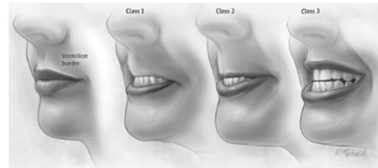
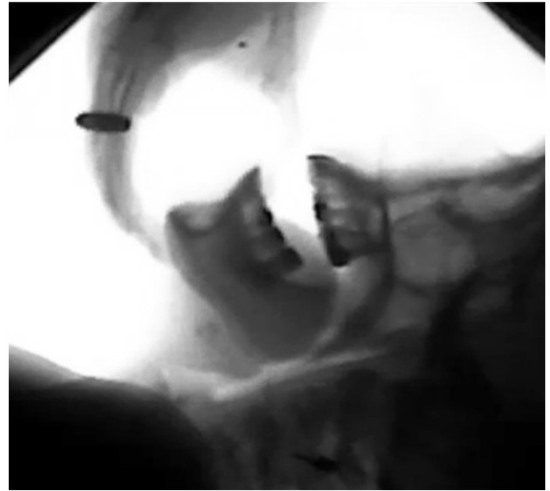
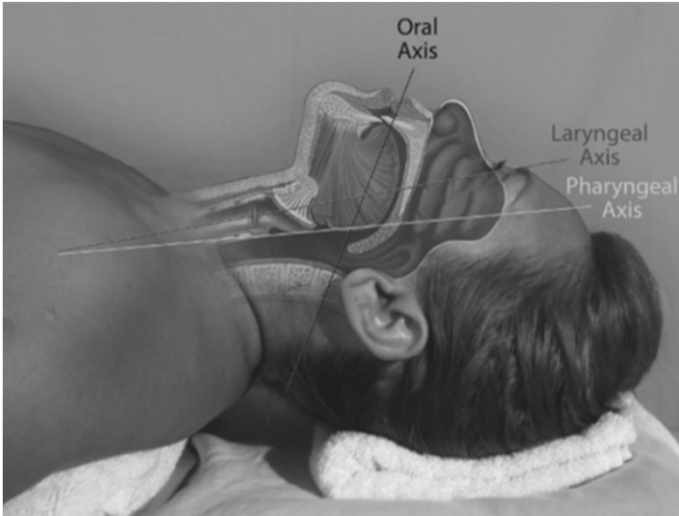
*frequent*

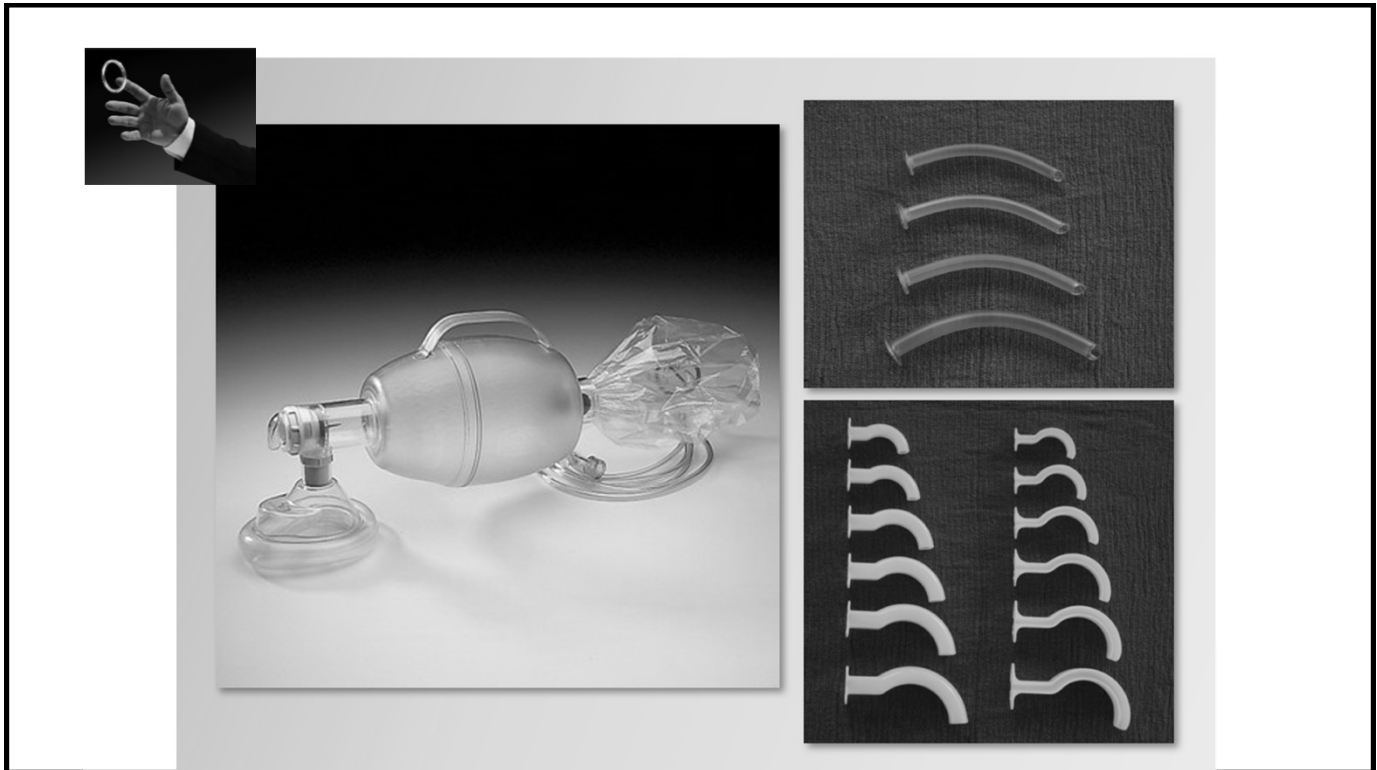


*infrequent*

**COMFORT LEVEL**

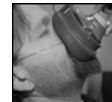






### 1. When will PPV not work?

- When you can't seal the mask to develop enough pressure to distend the airway (tongue)
- Laryngeal edema, FB, bronchospasm



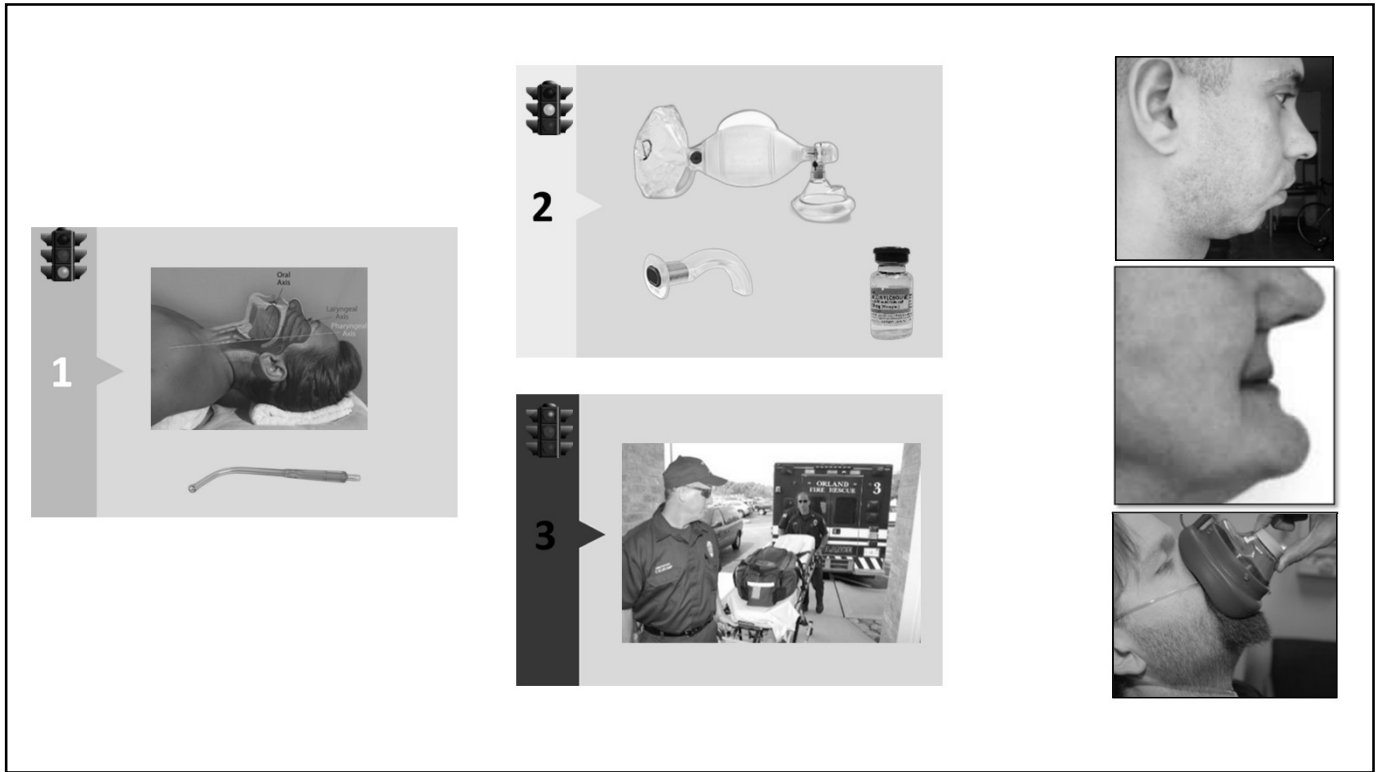
### 2. Will the extraglottic airway work in these cases?

- Maybe the King, but not the iGel (20cm H<sub>2</sub>O)

### 3. Why intubate?

- Laryngeal edema, FB, bronchospasm preventing maintenance of a physiologic SpO<sub>2</sub>

POSSIBILITIES :	
Tongue – Larynx – Lungs – Brain	
<b>1. Oversedation</b>	
a.	Airway Obstruction - Tongue
b.	Hypoventilation, apnea
<b>2. Laryngeal Obstruction</b>	
a.	Laryngospasm – crowing
b.	Laryngeal edema <ul style="list-style-type: none"> <li>• Anaphylaxis</li> <li>• ACE Inhibitor angioedema</li> <li>• Trauma from repeated instrumentation</li> </ul>
c.	Foreign body – tooth, emesis
d.	Clot, mucous plug
e.	Undiagnosed pathology
<b>3. Bronchospasm</b>	
a.	Asthma, allergy, aspiration
b.	Negative pressure pulmonary edema
c.	Fire
<b>4. Opioid-Induced Rigidity</b>	
<b>5. Seizure / Hypoglycemia / Stroke</b>	



Positive pressure ventilation has failed  
Quid nunc?

frequent ↓ infrequent	<b>1</b> Pack site, Suction, <u>Jaw Thrust</u> , Chin Lift Pull Tongue Forward Stimulate patient KEEP MOUTH OPEN	Why won't it work? 1. Apnea 2. Crowded airway, stiff neck 3. Obstruction at or below larynx
	<b>2</b> Positive Pressure BMV Bag-Mask Ventilation with supplemental O <sub>2</sub> ~ in line CO <sub>2</sub> sampling connector ~ 2-MAN ± NPA, OPA Naso/Oropharyngeal airways	1. Size-specific adjuncts unavailable 2. Cannot seal mask 3. > 20cm H <sub>2</sub> O pressure needed 4. Can't utilize airways 5. The anterior larynx 6. Obstruction at or below larynx
	Lighten or deepen ? <b>3</b> King LTS-D™ airway / i-gel™	1. size-specific extraglottic devices unavailable 2. Inadequate depth of sedation – reluctant airway 3. Poor technique 4. > 20cm H <sub>2</sub> O pressure needed (for i-gel) 5. Poor fit (altered glottic anatomy, FB) – can't seal 6. Obstruction at or below larynx
	<b>4</b> Visualize larynx (DL, VL) ± intubate 3 attempts 2mg/kg succinylcholine	1. Inadequate depth of sedation – reluctant airway 2. Cannot visualize larynx or pass ET 3. Altered laryngeal anatomy, FB

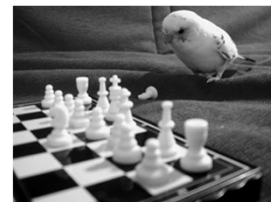
**PATIENT CONDITION\*\*:**

- Depth of sedation
- Muscle tone: rigid / flaccid / breath-holding
- Duration of apnea prior to ↓SpO<sub>2</sub>
- Ability to tolerate hypoxemia

**POSSIBILITIES:**

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  - b. Negative pressure pulmonary edema
  - c. Fire
- 4. Opioid-Induced Rigidity**
- 5. Seizure / Hypoglycemia / Stroke**



# ANESTHESIALAND

	Try to awaken	Paralyze
Skill, knowledge, proficiency and comfort level of sedation provider	Limited	Proficient
Degree of urgency	Low	High
Duration of compromise	Brief	Extended
Purposeful response to pain	Yes	No
Estimated "wake-up" time	Quick	Delayed
Condition of patient		Rigid
Intended level of sedation	Moderate	Deep / GA
Degree of obstruction	Partial	Complete
EGD successful ?	Yes	No
Did epinephrine help ? <small>(if indicated)</small>	Yes	No

## Airway Management

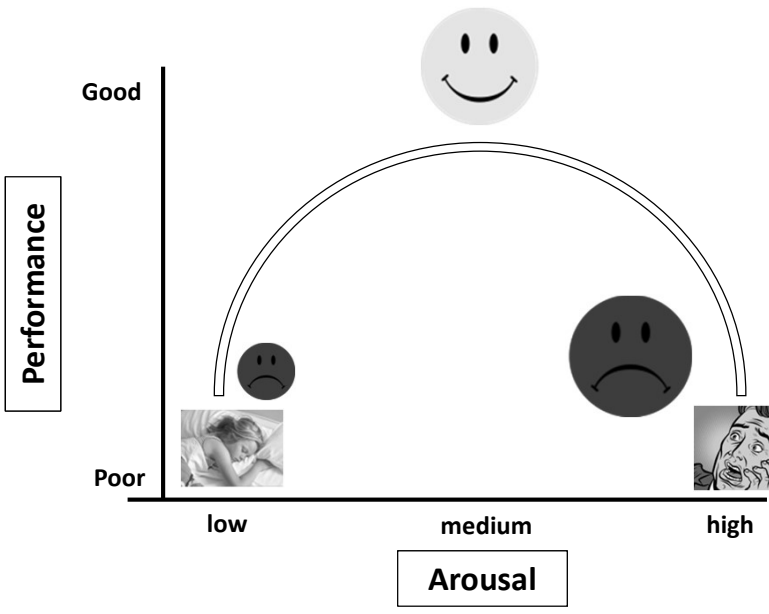
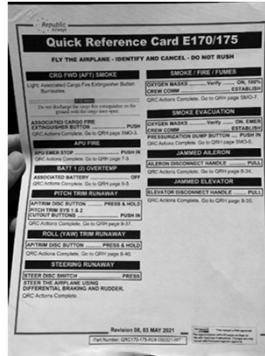
- Tell the team what is going on
- Call for help – "phone a friend"
- Give O<sub>2</sub> any way you can
- Use cognitive aids
- One time – best effort
- Awareness of time passage



- 20mg/cc
- 0.5-1mg/kg
- Respiratory stimulation
  - Low dose – peripheral carotid chemoreceptors
  - Higher dose – medullary respiratory centers (and CNS)
  - Onset 1 minute
  - Duration ~ 10 min
  - Increase tidal volume
  - Slight increase in resp. rate

### 3. Improve performance Prepare and rehearse workflow

Human Factor  
Engineering



Heart Rate	Physiological Reaction
60 BPM	
80 BPM	Normal resting Heart Rate
90 BPM	
115 BPM	Fine motor skills deteriorate
120 BPM	
145 BPM	Complex motor skills deteriorate
150 BPM	
175 BPM	Cognitive processing deteriorates Loss of peripheral vision (Tunnel vision) Loss of depth perception Loss of near vision Auditory exclusion
Above 175 BPM	Irrational fight or flee Freezing Submissive Behavior Voiding of bladder and bowel

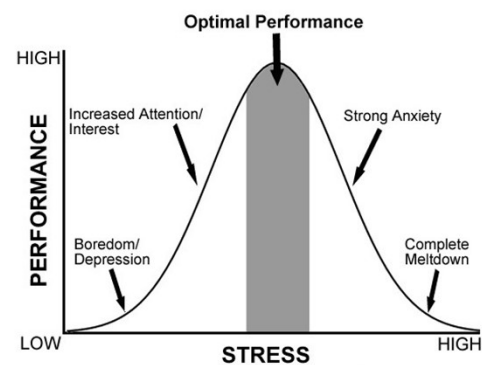
# Situational Paralysis

unable to think /act

- Failure to maintain focus on goals
  - “What is going to happen to me”
  - Versus “what will happen with the patient”
- Sub-optimal performance
  - Response to a perceived stress
  - No second chance, time urgency, life and death
- Sedation providers
  - Plenty of working memory = cognitive horsepower
  - Worry short-circuits the brain
  - Must prioritize and focus only on the next critical action

# How to stay calm to improve performance

- Stay positive
- Disconnect
- Limit caffeine
- Adequate sleep
- Squash negative self talk
- Reframe
- Focus on process, not outcome
- Box Breathing
- “partner” with your anxiety
- Use your support system (HINT: the team that you trained)





# Cognitive Bias

name it and tame it



## 3 keys to behavior change

### Direct the rider

- give clear direction, reduce mental paralysis

### Motivate the elephant

- find the emotional connection

### Shape the path

- Reduce obstacles, tweak the environment, make the journey go downhill



Go fever



## Group Think



## Cognitive Biases

- Anchoring
- Availability Bias
- Confirmation Bias
- Commission Bias
- Overconfidence
- Sunk Cost
- Paradox of Choice
- Prospect Theory
- Group Think....
- Go fever.....

1	<b>Anchoring</b> (Fixation error, tunnel vision)	Focusing on 1 issue at the expense of noticing, understanding and reacting to the whole situation	Attending to a monitor alarm, you are unaware that the patient has aspirated
2	<b>Availability BIAS</b>	Choosing a diagnosis because it is at the forefront of your mind, due to an emotionally charged experience in the past	Thinking a ↓SpO <sub>2</sub> is due to an upper airway obstruction, without consideration of laryngeal or bronchial trouble
3	<b>Premature Closure</b>	Accepting first plausible diagnosis prematurely and without verification, failure to consider other possibilities	Assuming bronchospasm in an asthmatic patient who cannot breathe, without regard to possibility of laryngeal obstruction
4	<b>Feedback BIAS</b>	Mis-interpretation of no feedback as positive feedback. Significant time elapses between action and consequence.	Thinking that epinephrine has corrected hypotension, but no proof of this exists.
5	<b>Confirmation BIAS</b> (posturing)	Seeking/accepting only that information that confirms your Dx or Tx, and subconsciously discounting contrary evidence	Repeatedly cycling BP measurements because you "do not believe" the low value on the monitor
6	<b>Framing effect</b>	Subsequent thinking is swayed by leading aspects of the initial presentation	Pre-sedation hysteria is "blamed" for post-sedation agitation, disregarding other plausible causes such as hypoxia, hypoglycemia, drug interaction, etc.
7	<b>Commission BIAS</b>	Tendency toward action rather than inaction. Performing un-indicated maneuvers, deviating from protocol. May be due to overconfidence, desperation, or pressure from others	Attempting intubation rather than focusing on better technique for PPV or placement of LMA
8	<b>Overconfidence BIAS</b>	Inappropriate boldness, not recognizing the need for help, belief that you are infallible. Hazardous attitudes. Dunning-Kruger effect, impulsivity, invulnerability	Delay in calling for help, because you "know you've got this"
9	<b>Omission BIAS</b>	Tendency toward inaction, due to fear of causing harm or falling with an unfamiliar procedure, conservative retreat. Game theory: deviation from appropriate decisions to conservatism as risk increases.	Failing to recognize failure of an initial airway maneuver and hesitating to perform the next airway intervention
10	<b>Sunk cost</b>	Unwillingness to retreat from a failing diagnosis, decision or maneuver, in order to validate prior action or decisions, esp. when so much time and resources have been spent. An inappropriate escalation of commitment. Go fever: being in a rush to get things done while overlooking potential problems.	Repeatedly attempting PPV with a BVM, in spite of dropping SpO <sub>2</sub>
11	<b>Zebra retreat</b>	Rare Dx figures prominently among possibilities, but provider is hesitant to pursue it	Hesitant to use vasopressin for recalcitrant hypotension in a patient taking ACE inhibitors unresponsive to epinephrine
12	<b>Psych-out error</b>	Medical causes for behavioral problems are missed in favor of a psychological diagnosis	Patient is combative and incoherent in recovery, failure to consider hypoxia
13	<b>Situational paralysis</b>	Unable to think/act due to overwhelming worry of doom in time-urgent, high stakes, no second chance situations	Having an LMA in hand, but unable to proceed with insertion
14	<b>Paradox of choice</b>	# of choices increase anxiety and response times and contributes to analysis paralysis	Unable to choose among BVM, LMA or intubation
15	<b>Prospect theory</b>	Fear of reprisal invites pursuit or persistence of futile efforts to avoid loss. Losses loom larger than gains.	Failure to recognize or accept ineffective PPV with BVM, delaying the call to 911
16	<b>Group think</b>	Dysfunctional group dynamic that prioritizes minimizing conflict and supporting harmony, conformity and cordiality without critical evaluation of alternative viewpoints. Actively suppressing dissenting viewpoints.	Anesthesia Assistants hesitant to speak up if they see something not quite right; steep hierarchy

## Contributors to Cognitive Bias

<b>Clinician</b>	<b>Patient</b>	<b>Systematic</b>	<b>External</b>
<ul style="list-style-type: none"> <li>• Cognitive Load</li> <li>• Fatigue</li> <li>• Emotions</li> </ul>	<ul style="list-style-type: none"> <li>• Complex</li> <li>• Incomplete information</li> </ul>	<ul style="list-style-type: none"> <li>• Schedule</li> <li>• Information flow</li> <li>• Information technology</li> <li>• Poor communication</li> </ul>	<ul style="list-style-type: none"> <li>• Overconfidence</li> <li>• Framing</li> <li>• Emotions</li> <li>• Anchoring</li> <li>• Loss aversion</li> </ul>

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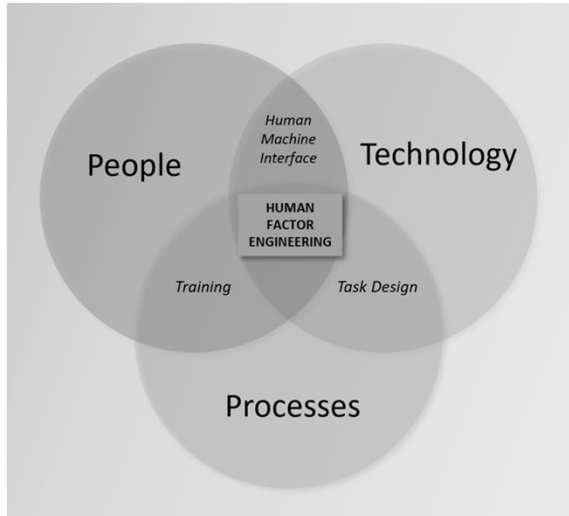
## Managing Cognitive Bias

<b>PERSONAL</b>	<b>SYSTEMATIC</b>
<ul style="list-style-type: none"> <li>• Acknowledgement / Awareness</li> <li>• Explore answers against intuition</li> <li>• Imagination - mindfulness</li> <li>• Education - Retraining</li> <li>• Use of “slow-down” strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Checklists</li> <li>• Team-based decision making</li> <li>• AI ?</li> <li>• Clinical decision support systems</li> <li>• Stopping / standing rules</li> </ul>

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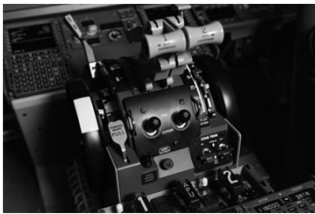
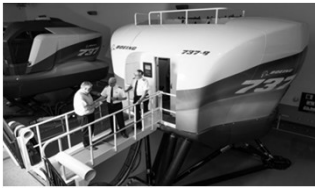
# Human Factor Engineering

*“making it easier to do the right things and harder to do the wrong things”*



**T**<sub>eam</sub>  
↓  
**SIMULATE**

## What is the BEST location for simulation?



## The AIRWAY Manikin

GOAL – every office acquires one



AIRWAY MANAGEMENT: learn, practice, master

- Anatomic knowledge
- Procedural proficiency
- Clinical judgement

1. Comprehend algorithms
2. Improves anatomic recognition
3. Team familiarity with devices and connections
4. Movement and hand-offs of devices
5. Practice protocols and task sequencing, FOREVER
6. Create muscle memory
7. Puts office on high alert that you prioritize safety
8. Create your own scenarios
9. Simple, shared structured responses

## IN SITU, self-guided, HIGHEST FIDELITY SIMULATION

Each assistant will act independently without prompt or waiting for others to act – they know their duties and positions.



The “Dance”

### Surgical Assistant

1. Tonsillar suction
2. Maintain chin lift
3. Administer drugs

### Chinner

1. Call out TIME
2. Check O<sub>2</sub> delivery
3. Get AMBU Bag

### Circulator

1. Bring airway tray
2. Document / Scribe
3. Draw up drugs



## Golden 4 Minutes

### 4 ways to monitor airway and breathing

- Pre-tracheal auscultation
- Chest rise
- EtCO<sub>2</sub>
- SpO<sub>2</sub>

1. Note the time, we've just begun
2. Lift and Suction – let O<sub>2</sub> get through
3. Keep mouth open so you can see
4. Airway; Breathing? – look for more
5. Bag-Valve-Mask – use to survive
6. Succinylcholine might be a fix
7. Call for help, consider compressions
8. Intubate





# ANTS

Anesthetists' Non-Technical Skills

Task Management	Planning and Preparing
	Prioritizing
	Identifying and utilizing resources
Team Working	Coordinating Activities
	Clear Communication, exchanging information
	Using authority and assertiveness
	Assessing capabilities
	Supporting others
Situation awareness	Gathering Information: Vigilance
	Recognizing, accepting and understanding
	Anticipating
Decision Making	Identifying Options
	Balancing risks and selecting options
	Reevaluating

Fletcher, G., et. al. Anaesthetists' Non-Technical Skills (ANTS): evaluation of a behavioural marker system. Br J Anaesthesia 90:580-8, 2003.

Flin, R. et. al. Anaesthetists' non-technical skills. Br J Anaesthesia 105:38-44, 2010.

If I miss one day of **PRACTICE**, I notice it.  
 If I miss two days, the critics notice it.  
 If I miss three days, the audience notices it.



Ignacy Jan Paderewski

## 4. High flow or High Pressure O<sub>2</sub> via the nares

- Open airway is the requirement
- O<sub>2</sub> moves in bulk flow (water from a hose)
- O<sub>2</sub> molecules diffuse passively from regions of high partial pressure to low partial pressure.

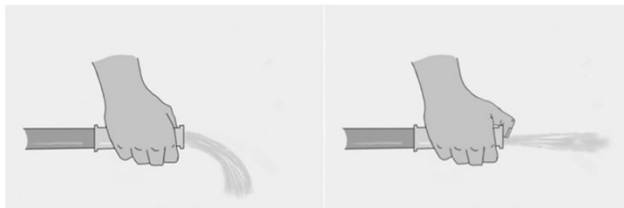


## High Flow Nasal Cannula (HFNC) - oxygenation

Vapotherm vs Optiflow



1. Washout upper airway anatomic dead space
2. Positive upper airway distending pressure
3. Reduce upper airway resistance (WOB)
4. ↓ inspiratory effort
5. Improve lung mechanics - Heat and humidify gas
6. ↑ FiO<sub>2</sub> without room air entrainment
7. Improved oxygenation





## 2. Is the team anesthesia model valid?

1. How much education is necessary?
2. Learning neither starts nor stops with a diploma?



*"Just how often do they call you Bad Dog?"*

Is the "Operator-Anesthetist" "Proceduralist-Directed" Model Distracted Anesthesia ?



**"Vigilance"**  
TEAM EFFORT





## The advantages are hidden in PLAIN SIGHT !



- It is a privilege, and NOT a distraction, to work in and continuously assess the airway
- It is not possible to do 2 jobs at once, but practitioners can rapidly shift attention when necessary
- FOCUSED LEARNING: Anesthesia assistants are trained to look for specific things and will get very good at it
- Dropping SpO<sub>2</sub>, changes in heart rate/rhythm, loss of capnographic tracing

THE WALL STREET JOURNAL

Friday, February 3, 2023 | A33

OPINION

### College Doesn't Need to Take Four Years

By Scott L. Wyatt  
And Adam C. Gianola

Americans who attend college are often told that it will take four years to complete. But that's not always true. Many students graduate in three years or less, and some even graduate in two years. This is because of a variety of factors, including the fact that many students take more than one course at a time, or that they take a gap year before starting college. In some cases, students may even graduate in less than a year. This is because of a variety of factors, including the fact that many students take more than one course at a time, or that they take a gap year before starting college. In some cases, students may even graduate in less than a year.



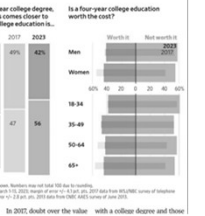
If the goal of these programs is to provide a high-quality education, then there is no reason why they should be limited to four years. In fact, there are many advantages to completing a degree in three years or less. For example, students can save money on tuition and room and board, and they can enter the workforce sooner. This is especially true for students who are interested in careers that require a four-year degree. In some cases, students may even be able to transfer credits from another institution, which can further reduce the time and cost of a degree.

### More Say Colleges Aren't Worth the Cost

By Douglas Belton

A majority of Americans don't think a college degree is worth the cost, according to a new Wall Street Journal/NORC poll. A new low in confidence in what has long been a hallmark of the American dream. The survey, conducted with NORC at the University of Chicago, a nonpartisan research organization, found that 60% of Americans think earning a four-year degree is a bad bet compared with 42% who still believe in the credential.

Specifically, in a survey among people ages 18-34, and people with college degrees are among those whose opinions have swung the most, pointing to a profound shift for higher education in the years ahead. In 2013, 57% of Americans were bullish on colleges, and 35% weren't. In 2022, 49% of Americans thought a four-year



## MORAINÉ VALUES: ACADEMICS

### Honors student chooses Moraine Valley, rejects 'community college' stigma

Honors students don't only go to Ivy League schools — in fact, they may even transfer to Harvard or Yale to complete their bachelor's degree after accumulating zero debt by attending their community college first. Tuition assistance programs, like Moraine Valley's Distinguished Scholar Tuition Waiver for high-achieving students, even cover the cost of in-district tuition. This is only one of many financial aid opportunities available to Moraine Valley students.

As a graduate of Amos Alonzo Stagg High School in Palos Hills, Demetrios (Demetri) Sacha was already familiar with Moraine Valley Community College. He did not always know, however, that the college offers an Honors Program and



Sacha spreads seed in Moraine Valley's Nature Study Area, a 40-acre reconstructed tallgrass prairie on the Palos Hills campus, as part of an honors biology class.

# Opinions are changing

THE WALL STREET JOURNAL

Monday, March 6, 2023 | B7

JOURNAL REPORT | INVESTING MONTHLY

## One Way U.S. Students Can Save Money On College Tuition: Head to Europe

Colleges in Europe are generally much less expensive, although going to school there may require a new mind-set

International students need to show they can cover living expenses, as determined by the German government, which this year were set at €11,208 (about \$11,950) a year. (In general, stu-

the guidance from counselors when enrolling or picking courses. The consistent message: Students must be proactive and figure things out themselves. Annie Atkins, 26, originally

Another contrast between public higher education in Germany and the U.S.: While Ms. Atkins says professors in her master's program are supportive, elsewhere observers say there can be an emotional distance between faculty and undergrads. "You are dropped into the deep end, and you sink or swim," says Eric Raymond, 36, a former student at Georgia College in Milledgeville, Ga., speaking of his time in Magdeburg, Germany. "There are lectures available to show up at, but there is no interaction, just lecture," he says. Mr.

<https://www.usnews.com> › News › Best States

### No College Degree? In These States, No Problem

Nov 13, 2017 — The state of California has the highest number of good jobs that don't require a bachelor's degree, according to report. (Getty Images).

<https://upgradedpoints.com> › finance › best-states-for-w...

### The Best States for Workers Without College Degrees [Data ...

The U.S. States That Pay the Most for Non-Degree Holders · Washington: \$53,090 · Massachusetts: \$52,923 · Alaska: \$52,902 · California: \$52,402 · District of ...

<https://www.edweek.org> › teaching-learning › 2022/08

### States Crack Open the Door to Teachers Without College ...

Aug 2, 2022 — But Arizona and Florida have gone one step further by lifting the requirement that teachers hold bachelor's degrees in certain instances.

<https://www.insidehighered.com> › news › 2022/06/03

### A state eliminates bachelor's degree requirement for many jobs

Jun 3, 2022 — The state of Maryland recently announced that it would no longer require a bachelor's degree in the hiring process for nearly half of its ...

<https://www.governor.pa.gov> › News

### Governor Shapiro Leads the Nation on Eliminating College ...

5 days ago — Governor Josh Shapiro's heartening move means that 65,000 state jobs no longer require a college degree, but that candidates will be free to ...

## Distractions.... in medical anesthesiology



- “self-initiated” distractions are common during maintenance of anesthesia
  - Short spurts of internet, text, reading
- Has NOT been associated with an increased risk of adverse events
- “may help maintain vigilance”
  - Vigilance latency was less in distraction cases
- “non-routine” events occurred in 51% of distraction and 71% of non-distraction cases!

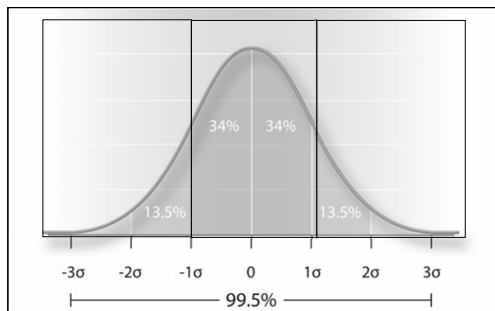
Slagle, JM., et. al. Prevalence of Potentially Distracting Noncare Activities and Their Effects on Vigilance, Workload, and Nonroutine Events during Anesthesia Care. *Anesthesiol* 128:44-54, 2018.

## Interestingly.....

“Medicare will pay for moderate sedation when rendered by the operating surgeon; therefore, it should not be bundled.....”

Coding Corner, AAOMS Today, Vol 21 (2), 2023.

### 3. Why does sedation sometimes FAIL



It is impossible to successfully sedate every patient.  
Hence, plan on it.

## Sedation success

The ability to safely complete the intended procedure, while *minimizing* pain, anxiety, recall, and the neuroendocrine stress response, and maintaining patient satisfaction.

	"Procedural" Sedation			
Level of sedation	Minimal (Anxiolysis)	Moderate (Conscious)	Deep	General Anesthesia
Recovery time				usable
Is airway needed?				ES
Is spontaneous ventilation adequate?	Yes	Yes	Maybe	Usually <b>NOT</b>
Is blood pressure and heart rate adequate?	YES	Usually	Usually	Maybe <b>NOT</b>

A basic premise of this continuum is that the loss of response to verbal and tactile stimulation is an important clinical milestone to the depth of anesthesia and the likelihood of adverse events

No thumbs up? No self-rescue.

Practice Guidelines for Moderate Procedural Sedation and Analgesia 2018. *Anesthesiology* 138:437-479, 2018.  
 A Report by the American Society of Anesthesiologists Task Force on Moderate Procedural Sedation and Analgesia, the American Association of Oral and Maxillofacial Surgeons,  
 American College of Radiology, American Dental Association, American Society of Dentist Anesthesiologists, and Society of Interventional Radiology.

# Causes of failed sedation

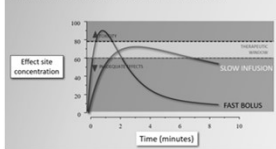
## Drugs

- **Inadequate local anesthesia**
- Inadequate analgesia
- Doses – too little, too much, technique
- (license, training, skill)
- Impatience – denying drug onset time
- Adverse side effects
- Stage II excitement
- Ketamine delirium
- Benzodiazepine disinhibition

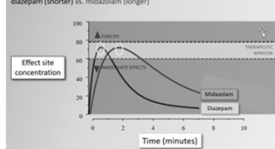
## Patient

- **Patient variability (drug response)**
- Patient Selection – resilience, reserve
  - Loss of upper airway tone
  - OSA; obesity
  - Psychiatric comorbidity
  - High anxiety
  - Unstable CV responses
- Preparation\*
  - Shared decision making
  - communication
  - “own their disease”
  - Engagement
- Illicit drug use – “co-ingestion”

FAST BOLUS vs SLOW INFUSION - propofol



Latency to peak effect



## Surgery

- Case selection
- Duration (4 hours max)
- Surgical acumen

## PREVENT

- Appropriate patient/case selection
- Align realistic expectations
- Pain control – profound local
- Realistic acceptance of provider limitations

## MANAGE

- Abandon sedation
- Deepen sedation / anesthesia\*
- Different drug
- Abandon surgery

## 4. Can we close the gap between the Perception and reality of safety?

- How much longer will organizations ignore safety opportunities
- When will we stop punishing and shaming human fallibility
- Accept our shortcomings and move forward
- Staying safe is quite difficult – value and reward are hard to identify
- Will increased oversight or accountability help?



Chronology of Events "A perfect Storm"  
*The Deep Sleep, 6000 Will Die or Suffer*  
*Brain Damage*  
(April 22, 1982)



## The Deep Sleep

April 22, 1982



## Can sedation in the dental office be safer?



Gauttrone, M. Is the Physician Office the Wild, Wild West of Health Care? *J Amb Care Manage* 2000;23:64-73.

Opinion > Second Opinions

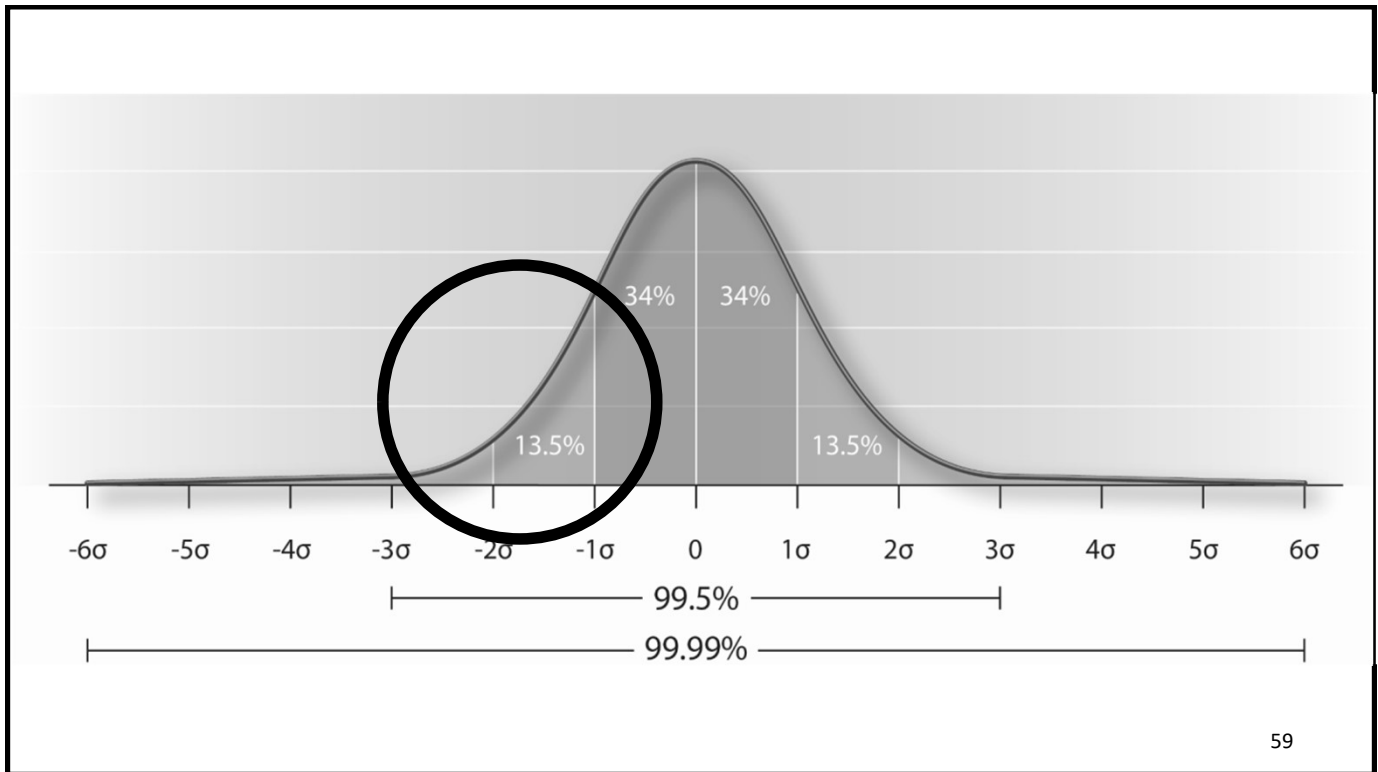
### The Wild West of Non-Operating Room Anesthesia — Preserving patient safety is essential

by Emily Methangkool, MD, MPH  
February 11, 2023

## HOW can this be improved ?



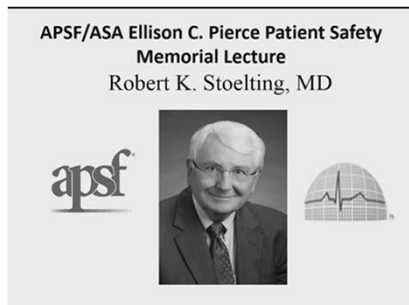
**Can We Close the GAP  
between  
Perception of Safety and Reality?**



59

## Knowing what to do and doing it are 2 totally different things

- Identifying risk is **NOT** the problem
- Recognizing the possible solution to safety risk is **NOT** the problem
- The problem is accepting and practicing intervention bundles that will reduce the risk of an adverse event



Boston, 2017

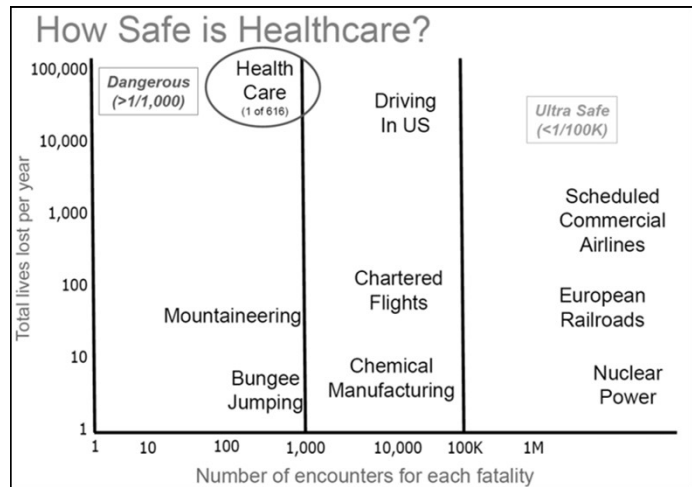
“Safety is doing the right thing because it makes sense. Evidence-based data is not necessary for the acceptance of a safety practice”.

Dr. Robert Stoelting

# Are we safe?

## Causes of death, US, 2013

1. CV
2. Cancer
3. Medical Error



- 98,000 patients die each year from medical error
- 1800/week, one 747 crash every other day
- There are ~ 20 Million flights/year

### 9 years later.....

2008 National Healthcare Quality Report, released by the Agency for Healthcare Research and Quality (AHRQ): Safety is getting WORSE, NOT BETTER.

Institute of Medicine. To Err is Human: Building a Safer Health System. Washington, DS: National Academies Press; 2000.

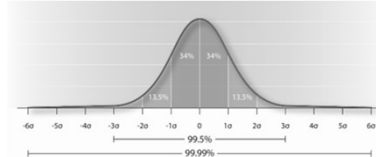
Agency for Healthcare Research and Quality. 2008 National Healthcare Quality & Disparities Report. <http://www.ahrq.gov/qual/qdr08.htm>. Accessed 6/20/2022.

# Safety

“protected from or not exposed to danger or risk, not likely to be harmed”

1. Are we safe?
2. Can we be safer?
3. How can safety be measured?
  - Closed claims ?
  - Registries ?
4. What does being safer look like ?

1. 1 misadventure is 1 too many
2. Rarities are insensitive to statistical analysis
3. Evidence not needed for acceptance of safety practice
4. Misses the how's and why's
5. Facilitates finger pointing



Safety is measured by the number and intensity of safety behaviors that a individual or group routinely participates in. It is not measured by outcomes.

2013





65

2016

**JADA** AUGUST 2016  
THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION

**CASE REPORT:**  
Patient Fire during Dental Office Visit

**ORIGINAL CONTRIBUTIONS**  
PR and Fluoride Sealants: Systematic Review, Clinical Practice Guideline 431, 472

The Frequency of Typical, Atypical Periapical Lesions 646

The Impact of Painful Temporomandibular Dysfunction 667

**COVER STORY:**  
**Informed Consent: Comprehension and Recollection in Adults** 605



2017

**DPSF** DENTAL PATIENT SAFETY FOUNDATION

Shared Learning  
from the Dental Patient Safety Foundation Reporting Tool

"What gets measured gets managed" is the DPSF philosophy to encourage reporting. All received information about patient safety events (unsafe conditions, near misses or adverse events) are contextually de-identified (full confidentiality is preserved), aggregated, analyzed and abstracted by selected experts from our DPSF committees. Reports are generated and disseminated as the only means to learn from our errors. The information in these peer-reviewed reports is provided for its educational value only, and does not purport to establish any legally binding standard of care. Feedback is encouraged.

**Case 2017.12A: Patient Fire during Dental Care**

**Situation:** An otherwise healthy 72 y/o female underwent intraoral preparation of a titanium post with a high speed irrigated drill while breathing N<sub>2</sub>O/O<sub>2</sub> (30:70 mixture) via nasal hood. An unnoticed spark ignited the oxidizer-enriched environment under the nitrous hood, triggering fire, burning vellus hair and skin. The mask was quickly removed and the fire was smothered. Patient was immediately transported by EMS to the local emergency department for definitive management of the second degree facial burns and monitoring of possible delayed pulmonary



**Patient fire during dental care**

A case report and call for safety

Robert J. Bonack, DDS, Mark E. Bralby, CCE, EIT, BS, Andrea M. VanCleave, DDS, MSD, Joel M. Weaver, DDS, PhD

**ABSTRACT**

**Background and Overview:** The risk is present whenever there is a convergence of fuel, oxidizer, and an ignition source, which is called the fire triangle. A heightened awareness of fire risks is necessary whenever a fire triangle is present. The authors provide a sentinel event case report of fire in a dental office.

**Case Description:** A 72-year-old woman received second-degree facial burns from a fire that ignited near the nasal hood supplying a nitrous oxide-oxygen mixture. The presumed ignition source was heat generated during the preparation of a titanium post with a high-speed irrigated carbide bur. The patient was transferred to the local emergency department and subsequently discharged after possible pulmonary complications were ruled out. The patient was then transferred to a regional burn unit and was discharged home with second-degree burns.

**Conclusions and Practical Implications:** When the source of a fuel cannot be removed from the immediate area, soaked with water, or covered with a water-soluble jelly, the dentist should stop the open flow of oxygen or nitrous oxide-oxygen mixtures to the patient for 1 minute before the use of a potential ignition source, and manual suction should be used to clear the ambient atmosphere of oxidizer-enriched exhaled gas.

**Key Words:** Dental fire, nitrous oxide, oxygen, fire triangle, ignition source, oxidizer-enriched atmosphere, facial burns.

JADA 2016;147(10):661-666  
<http://dx.doi.org/10.1016/j.jadl.2016.05.024>

**P**atient fire—that is, burning of substances on or in a patient during the delivery of dental care—is an infrequent but high-impact event that can result in disfigurement, disability, or death for both patients and dental staff members. To date, with only 1 dental-related case report in the literature to our knowledge,<sup>1</sup> the need for disseminating education about patient fire risk, prevention, and management cannot be overlooked. We add this case report to the literature to heighten awareness of the possibility of these preventable mishaps.

**CASE REPORT**

A 72-year-old patient arrived at her appointment to receive restorative dental care, which involved the preparation of a titanium post with a high-speed, irrigated dental drill. Her medical history included hypertension and hypothyroidism. A history of nasal polyps was noted, but she reported that it did not interfere with nasal breathing. As was customary before dental procedures, the patient applied a thin layer of petroleum jelly to her lips. A disposable nasal hood with scavenging was placed on the patient's face, and a 50% oxygen and 50% nitrous oxide mix was administered. The mask had not been wiped with any antibacterial agent.

As noted by the patient, approximately 30 minutes into the procedure, she felt intense heat on her nose and face. The heat was localized to the left side of her

**NEWS**

Girl's mouth allegedly set on fire by a dentist in what experts call a 'freak accident'

SHARE THIS - f t e ...

## Girl's mouth allegedly set on fire by a dentist in what experts call a 'freak accident'

"It's really unfortunate but at the same time really unheard of," said a spokesman for the American Dental Association.



**2020**

Dental experts are telling parents not to panic after a Las Vegas dentist allegedly set a fire in the mouth of a 5-year-old girl during a routine procedure, calling the incident an unprecedented "freak accident."

# DPSF

**DENTAL  
PATIENT SAFETY  
FOUNDATION**

[www.dentalpatientsafety.org](http://www.dentalpatientsafety.org)



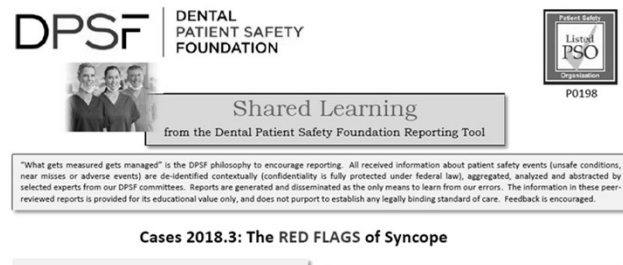
**Agency for Healthcare Research and Quality**  
Advancing Excellence in Health Care • [www.ahrq.gov](http://www.ahrq.gov)

P0198





- Create awareness
  - Improved visibility of safety initiatives
- Provide education
  - Practice advisories
  - Videos
  - Social media
  - Newsletters



## Trust, report, improve

From name, shame and blame culture

To

Trust and Respect

Sharing and learning from errors culture



# The reporting tool

## voluntary self-reporting

The screenshot shows the reporting tool interface with three buttons: "Introduction", "Report Confidentially" (with a question mark icon), and "Report Anonymously" (with a question mark icon). Below the buttons is the DPSF logo and the text "TM and © 2020 DPSF. All rights reserved." To the right is a confirmation email from DPSF™ titled "DPSF™ Confirmation". The email text reads: "Your case submission has been received by the Dental Patient Safety Foundation. Your case number is 10034. Thank You. The Dental Patient Safety Foundation." At the bottom of the email, it says "TM and © 2020 DPSF. All rights reserved."

## “Patient Safety Events”

- **Incidents** – patient safety events that reach a patient, whether or not harm was involved
- **Near misses (close calls)** – patient safety events that do not reach the patient
- **Unsafe Conditions** – circumstances that increase the probability of the occurrence of an incident or near miss.

1  
30  
300

Only a PSO can capture this data



1 – 30 – 300



# Shared Learning Reports

DPSF DENTAL PATIENT SAFETY FOUNDATION



Shared Learning  
from the Dental Patient Safety Foundation Reporting Tool

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Cases 2018.3: The RED FLAGS of Syncope



Case 2019.4A Nalbuphine Induced Opioid Withdrawal.pdf



Case 2020.4 Flawed EMR.pdf



Case 2018.8A Delayed Awakening.pdf



Case 2018.3 Red Flags of Syncope.pdf



Case 2018.3A Unmonitored Recovery.pdf



Case 2017.12 Wrong Site Surgery.pdf



Case 2018.2A Lost Airway.pdf



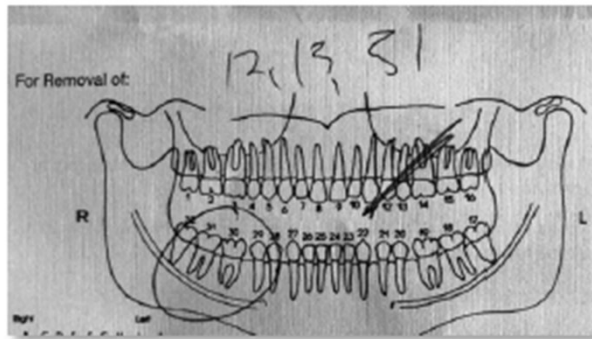
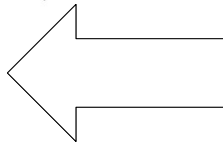
Case 2019.2 Epinephrine and  $\beta$  Blockers.pdf



Case 2018.1A Crossed O2-N2O Gas Lines.pdf



Case 2017.12A Patient Fire.pdf



## Is there a better way?

- Not so far, or PSOs would not exist
- Closed claims as our safety signal ?
  - No suit – no info (missed close calls)
  - Info is delayed
  - Most info is held secret
- Anesthesia Registries
  - Can't be a PSO
  - Will tell of frequency and severity
  - Will not reveal nuances of patient disease, evolving clinical circumstances or clinical judgment
  - Will not capture near miss

## Will this work ?

- History says YES
  - Australia, GB, Western Europe +++++
- This is the best system available on our planet at this time
- Dentistry has unique challenges
- NEED YOUR SUPPORT
- System works best with Culture of Safety



[www.dentalpatientsafety.org](http://www.dentalpatientsafety.org)

Your PSO is a learning lab, it is not a place to be punished.  
The DPSF fosters a culture of safety engineering.

Raise Awareness

Provide Education

## Letter to APSF from AMA

circa 1985

- Dear Ellison – your interest ....over patient safety is widely acknowledged and appreciated. I share with you the conviction that great strides can be made .....As I suggested to you over the telephone, ***I and others here at AMA have some reservations*** about the establishment of an anesthesia patient safety foundation.
- ...Creates another level of potential **bureaucracy**
- ..Diverse groups involved clearly would have **different agendas**
- ...Foundation might **send a signal to the public** and our adversaries, **that we are unsafe**
- Etc. + (**\$\$\$**) concerns

## What is the cost of doing nothing?

## How can I help?

1. Spread the word
2. Visit the website
3. Report often
4. *Practice Safety Behaviors*
5. Contribute



Introduction

Report Confidentially ?

Report Anonymously ?

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↓

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## Exercising safety behaviors

### Provider

1. Optimize self
2. **CE**
3. Conservatism
4. Depth setting
5. Checklists/SOP
6. Standardized practices
7. Report safety events !!!

### TEAM

1. CRM
2. **Education**
3. Rehearsal
4. Preparation
5. Unhurried schedule

### Organizations / Corporations other Foundations

1. Support PSO activities
2. Website links
3. Ad space in publications, mailers
4. Podium time
5. Exhibition space

## What is a Culture of Safety?

A culture of safety is a dynamic, social environment wherein all members have a shared perception of the importance of safety, all members feel comfortable communicating safety issues, all members are not occupied with errors, mistakes and failures and everyone can collectively learn from these experiences and opportunities for improvement.

A safety culture is a **trust culture** that values **trust** and accountability over blame and shame, as the only way to strengthen safety. It requires relentless time, commitment and effort to achieve a goal that can always be improved. A safety culture is never satisfied.

**Safety must exist for all, or no one is safe.**

Leading the way to patient safety since 2009

Home Learn More Login Support



**DENTAL ANESTHESIA ONLINE**  
Patient Safety Through Education

3 Modules — 70 Courses









**ADA CERP®** Continuing Education Recognition Program

Dental Anesthesia Online is an ADA CERP Recognized Provider.

ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply completion of credit hours by boards of dentistry. Concern or complaints about a CERP provider may be directed to the provider or to the Commission for Continuing Education Provider Recognition at ADA.org/CERP.

Patient Safety Through Education

Module	Section	Course #	Course Title	CE Hours
<b>Module I:</b> Anesthesia Assistant Training Program 	<b>I.</b>	101.1	Introduction to Anesthesia	1.00
		102.1	Pharmacology	1.50
		103.1	Anatomy and Physiology	1.50
		104.1	Patient Assessment	1.00
		105.1	Monitoring and Discharge	1.00
		106.1	Special Patients - Coexisting Diseases I	1.00
		107.1	Special Patients - Coexisting Diseases II	1.00
		108.1	Emergencies, Drugs, Algorithms, Scenarios Drills I	2.00
		109.1	Emergencies, Drugs, Algorithms, Scenarios Drills II	1.50
		110.1	Team Simulation - Hands-On, Assessment, Live Team Training	4.00
		201.1	Introduction, Upper Airway Obstruction, Ventilatory Depression	2.00
		202.1	Respirer	1.00
		203.1	Ingesterion	1.50
		204.1	Ingesterion	1.00
		205.1	Tachycardia	1.50
206.1	Bradycardia	1.00		
207.1	Chest Pain	1.50		
208.1	Allergy and Anaphylaxis	1.50		
209.1	Laryngospasm, Pulmonary Edema	1.50		
210.1	Aspiration, Bronchospasm	1.00		
211.1	Sudden Shortness of Breath	1.00		
212.1	Postoperative Recovery	1.00		
<b>Module II:</b> SIMMAN™ Team Sedation Training 	<b>II.</b>	301.1	Program Overview, The Sedation Continuum, The Sedation Team	1.00
		302.1	Human Factor Engineering, Crisis Resource Management & "No-Go" Simulation	1.50
		303.1	Improving Patient Safety: The Dental Patient Safety Foundation	1.00
		401.1	The Cardiovascular System - The Heart, ECG Interpretation	0.50
		402.1	The Cardiovascular System - Circulation, Determinants of Blood Pressure	1.00
		403.1	The Cardiovascular System - The Heart, ECG Interpretation	0.50
		404.1	The Respiratory System	1.00
		405.1	Essentials of Patient Assessment	1.00
		406.1	The Upper Airway	1.50
		501.1	Cardiovascular Disease	1.00
		502.1	Respiratory Disease	1.50
		503.1	Endocrine Disease	1.00
		504.1	Feeding Disorders: Obesity, Anorexia and Bulimia	1.00
		505.1	Neurologic Disease	1.00
		506.1	Psychological Disorders: Anxiety, Mood, Thought, Addiction, Substance Abuse	2.50
507.1	Malignancy	1.00		
<b>Module III:</b> Lifelong Learning 	<b>III.</b>	601.1	The Pediatric Patient	1.00
		602.1	The Elderly Patient	1.00
		603.1	Principles of Drug Action: IV fluids	1.00
		604.1	Local Anesthetics	1.50
		605.1	Nitrous Oxide	1.00
		606.1	Reopoids	1.00
		607.1	Opioids	1.00
		608.1	Propofol and Ketamine	1.00
		609.1	Drug Interactions	0.50
		610.1	Pharmacology: Drug	1.00
		611.1	Sedation Techniques - oral	1.00
		612.1	The Art of Ventilation	1.00
		613.1	Sedation Techniques - Intravenous	1.00
		614.1	Introduction, Physical Evaluation, the ABCD concept	1.00
		615.1	Technological Evaluation - Circulation, Blood Pressure and ECG	1.00
616.1	Technological Evaluation - Oxygenation, Pulse Oximetry	0.50		
617.1	Technological Evaluation - Ventilation, Capnography and Auscultation	1.00		
618.1	Parameters for Safe Discharge	0.50		
619.1	False Sedation	1.00		
620.1	Patient Flow	0.50		
621.1	Scenario	0.50		
622.1	Local Anesthetic Complications	1.50		
623.1	The Last Upper Airway	3.00		
624.1	Acute, chronic cognitive, behavioral and neuromuscular changes	2.00		
625.1	Nausea and Vomiting	0.50		
626.1	Respiratory Complications	1.50		
627.1	Cardiovascular Complications I - Rhythm Disorders	1.00		
628.1	Cardiovascular Complications II - Pressure Disorders	1.00		
629.1	Allergy and Anaphylaxis	1.00		
630.1	Non-routine Recovery	1.50		
631.1	Ventilator Complications	1.00		

*Thank You!*