

How are You Making Patient Safety **Real?**

Part I



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To Err is Human: Building a Safer Health System (IOM, 2000)

Five Years after *To Err is Human*
(Leape, L & Berwick DM, JAMA 2005)

Patient Safety at Ten:
Unmistakable Progress, Troubling Gaps
Gaps


(Wachter, R, Health Affairs, 2010)

2001 - 2006

IOM estimated 250,000 – 500,000 deaths in American hospitals.
Equivalent to 1,400 crashes of fully loaded 747s with no survivors.



Safety Real

Types of Preventable Adverse Events 

- Errors of Commission
 - Bowel injured during cholecystectomy
- Errors of Omission
 - Not administering beta-blocker per protocol
- Errors of Communication
 - Failure to tell patient to resume medications
- Errors of Context
 - Pt without resources to comply with orders
- Diagnostic Errors
 - Physician fails to recognize SIRS and orders PT consult

Methodology
New, Evidence-Based Estimate¹

- 4,252 records reviewed using IHI GTT
- Serious events found in between 15-21%
- 38 leading to death (0.85%)
- Major causes of death
 - Medication
 - Sepsis/Infection
 - Aspiration
 - Ventilator Assisted Pneumonia
 - Procedures
 - Pulmonary
 - Cardiac arrest/PE/Hematologic/Neuro

Final Analysis Revealed

- Premature deaths associated with preventable harm to patients estimated at more than **400,000 per year**
- Serious harm appeared to be 10- to 20-fold more common than lethal harm
- 44% of serious medical events were preventable

What might be going on?


- Methodology more robust
- Increased complexity of medical care
- Increased incidence of antibiotic resistant bacteria
- Overuse/misuse of medications
- Aging population
- Demands on resources for improved productivity and expensive technology
 - Encourages rapid patient turnover
 - Overuse of risky, invasive, revenue-generating procedures

Issues Related to Patient Harm in Anesthesia

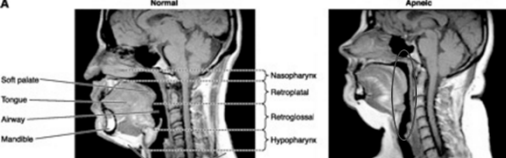


Obstructive Sleep Apnea

- Syndrome characterized by:
 - Periodic, partial, or complete obstruction in the upper airway during sleep
 - Repetitive arousal to restore airway patency
 - Sleep-associated
 - oxygen desaturation
 - episodic hypercarbia
 - cardiovascular dysfunction



A

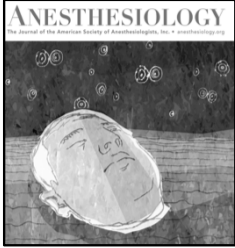


SPECIAL ARTICLES

Practice Guidelines for the Perioperative Management of Patients with Obstructive Sleep Apnea

An Updated Report by the American Society of Anesthesiologists Task Force on Perioperative Management of Patients with Obstructive Sleep Apnea

- Preoperative Evaluation
 - Review of the medical record
 - Patient-family interview
 - Screening protocol
 - Physical examination




- Review of the Medical Record
 - Higher BMI
 - Obesity
 - Hypertension
 - History of stroke, MI
 - Diabetes
 - Down's syndrome
 - Acromegaly
 - Neuromuscular disease; cerebral palsy
- Recommendations
 - History of difficult airway
 - Review of sleep studies

Category B

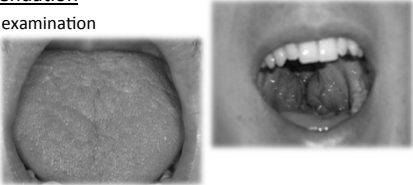
- **Patient-Family Interview**
 - Using screening protocols or questionnaires
 - Sensitivity 36 – 86%
 - Specificity 31 – 95%
 - Positive predictive values 0.30 – 0.82
 - Negative predictive values 0.30 – 0.82
 - **Recommendations**
 - Questions about
 - snoring
 - apnea during sleep
 - frequent arousals during sleep
 - morning headaches
 - daytime drowsiness

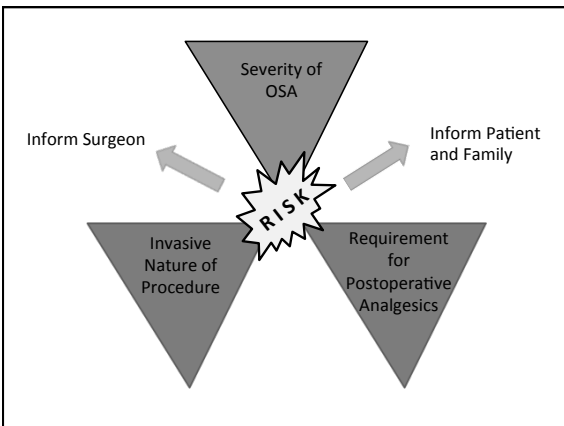
Category B




- **Physical Examination**
 - Key structures
 - Neck circumference
 - Tongue size
 - Nasal and oropharyngeal airway structures
 - Tonsil size
 - **Recommendation**
 - Airway examination

Category B






- In- or Out-Patient Management **Insufficient Evidence**
- **Recommendations**
 - Determine *before* at-risk patients undergo surgery
 - Factors to consider (patient/surgery)
 - Sleep apnea status
 - Anatomical and physiologic abnormalities
 - Status of coexisting diseases
 - Nature of surgery
 - Type of anesthesia
 - Need for postoperative opioids
 - Patient age
 - Adequacy of observation after discharge
 - Factors to consider (other)
 - Emergency airway equipment
 - Radiology services
 - Clinical lab services
 - Where to transfer in case of emergency



- Preoperative Preparation
 - Preoperative CPAP **Category B**
 - Preoperative noninvasive positive pressure ventilation (NIPPV) – other **Insufficient Evidence**
 - Mandibular advancement/oral appliances **Insufficient Evidence**
 - Preoperative weight loss **Insufficient Evidence**



Recommendations

- CPAP for severe OSA
- MA and oral appliances and weight loss, when feasible
- Pt with corrective airway = OSA until normal sleep study
- OSA = difficult airway until proven otherwise

- Intraoperative Management
 - Type of anesthesia **Insufficient Evidence**
 - Airway management **Insufficient Evidence**
 - Patient monitoring **Insufficient Evidence**

Recommendations

- Be mindful of medications that could compromise respirations in PACU
- Consider local anesthesia, PNB with or without sedation
- Capnography and other monitors of ventilation should be used with sedation
- CPAP or oral devices during sedation if patients had used them previously
- GA with secure airway > deep sedation
- Spinal/epidural for peripheral procedures
- Extubate when awake, when possible
- Full reversal of NMB
- Extubate, recover in lateral, semiupright, or other nonsupine positions

• Postoperative Management

– Postoperative analgesia

Insufficient Evidence

– Oxygenation (CPAP)

Category A-B

– Patient positioning

Category B

Insufficient Evidence

– Monitoring

Category B

Recommendations

- Consider regional anesthesia
- Watch opioids in neuraxial anesthesia
- Avoid continuous infusions in PCA
- Multi-modal analgesia (NSAIDS, TENS)
- Use caution with potentiating medications
- Supplemental oxygen until maintaining baseline O₂ saturation on room air
- Encourage reinstatement of CPAP/NIPPV
- Nonsupine positions
- Hospitalized patients – continuous pulse ox
- CPAP for continuous/severe obstruction

• Criteria for Discharge to Unmonitored Settings

Insufficient Evidence

Recommendations

- Patients at risk for OSA should be monitored until they are no longer at risk
- Observe respiratory status while unstimulated, preferably while sleeping



Making it Real

- Treat every patient as OSA
- Understand clinical guidelines related to OSA
- Lead the way: recognize OSA as a significant threat to patient safety

How are you keeping patients with obstructive sleep apnea safe?


Fire in the Operating Room

- Hundreds of fires occur in U.S. operating rooms each year, caused by igniting sources in alcohol vapor- or oxygen-enriched environments.

1. Ask if flammable materials, oxidizers and potential fire ignition sources will be used for the procedure.

2. Learn how to safely use these items together.

3. Know what actions to take if a fire does occur.



The 'fire triangle' shows the three elements needed to start a fire (oxygen + fuel + ignition source) and who is responsible for managing them.

- Learn to recognize early signs of fire.
- Have CO₂ fire extinguishers and saline or water solution available.
- Participate in OR team fire drills.

OR Fire Prevention Algorithm

Start Here

Is patient at risk for surgical fire?
Procedures involving the head, neck and upper chest (above T5) and use of an ignition source in proximity to an oxidizer.

NO → Proceed, but frequently reassess for changes in fire risk.

YES → Nurses and surgeons avoid pooling of alcohol-based skin preparations and allow adequate drying time. Prior to initial use of electrocautery, communication occurs between surgeon and anesthesia professional.

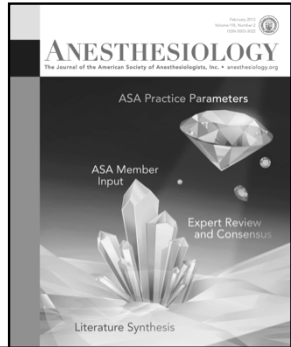
Does patient require oxygen supplementation?

NO → Use room air sedation.

YES → Secure airway with endotracheal tube or supraglottic device.
Although securing the airway is preferred, for cases where using an airway device is undesirable or not feasible, oxygen accumulation may be minimized by air insufflation over the face and open draping to provide wide exposure of the surgical site to the atmosphere.

Making it Real

- Education
- OR Fire Drills
- Preparation
- Prevention
- Management



How are you keeping patients safe from operating room fires?

Distractions


Distractions in the operating room are a threat to patient safety.

True or False

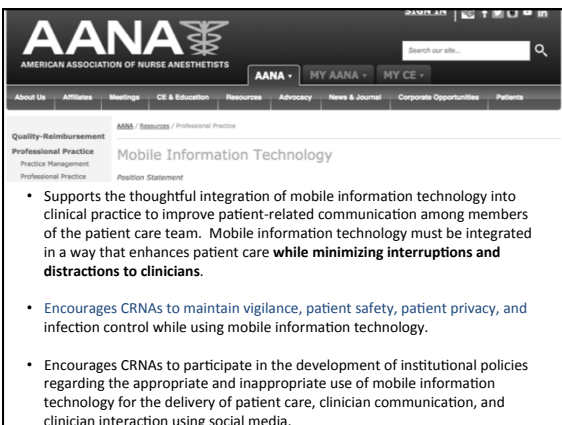


- **Distraction** - a factor that competes for your attention while you are focused on something else.
- **Pennsylvania Patient Safety Reporting System (Jan 10-May 13)**
 - 304 reports of events where distractions were implicated

- NOISE
- Technology
- Wireless devices
- Bluetooth devices
- Communication systems
- E-mail
- Texting
- Social media
- Internet
- Games
- Patient care activities
- Conversations
- Ventilation systems
- Metal equipment
- Power tools
- Equipment malfunction



Making it Real



AANA
AMERICAN ASSOCIATION OF NURSE ANESTHETISTS

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Mobile Information Technology

Position Statement

- Supports the thoughtful integration of mobile information technology into clinical practice to improve patient-related communication among members of the patient care team. Mobile information technology must be integrated in a way that enhances patient care **while minimizing interruptions and distractions to clinicians.**
- Encourages CRNAs to maintain vigilance, patient safety, patient privacy, and infection control while using mobile information technology.
- Encourages CRNAs to participate in the development of institutional policies regarding the appropriate and inappropriate use of mobile information technology for the delivery of patient care, clinician communication, and clinician interaction using social media.

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AORN Position Statement on Managing Distractions and Noise During Perioperative Patient Care

- Committed to advocating for a controlled environment in which distractions, noise, and interruptions are minimized.
- Believes that a multidisciplinary team approach is required to reduce distractions and the level of noise to create a safer environment for patients and perioperative team members.
- During critical phases of the surgical procedure, surgical team members should create a no-interruption zone where nonessential conversation and activities are prohibited.
- Interventions to limit distractions and to reduce noise in the administrative, behavioral, engineering, and biomedical domains should be considered.

How are you keeping patients safe from distractions in the operating room?

Residual Neuromuscular Blockade

Clinical Implications

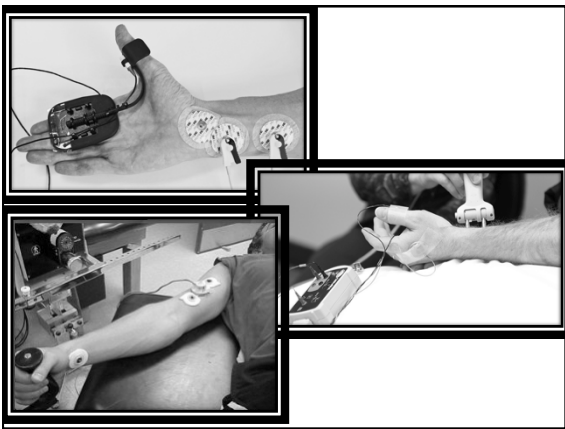
- Residual neuromuscular blockade (RNMB) is a relatively common but often undetected problem in the immediate post-operative period.
- Data suggests RNMB can contribute to morbidity in patients recovering from GA.
- Still a paucity of literature on this topic exists.

Definition (History)

- TOF >0.7 was generally accepted as evidence of adequate reversal.
- Patients with TOF >0.7 have been shown to:
 - Open eyes widely
 - Cough
 - Protrude the tongue
 - Sustain head lift for 5 seconds
 - Develop a forced vital capacity of at least 15 to 20 mL/kg
 - Demonstrate sustained tetanic stimulation without fade for 5 seconds

- Patients with TOF <0.9
 - Pharyngeal dysfunction
 - Increased risk of aspiration
- Currently, RNMB defined as
 - The presence of signs or symptoms of muscle weakness in the postoperative period after the intraoperative administration of a NMBD.
 - Breathe normally
 - Maintain a patent upper airway
 - Preserve protective airway reflexes
 - Swallow
 - Cough
 - Talk

- Requires
 - the measurement of TOF ratios using objective neuromuscular monitoring devices (TOF ratio >0.9–1.0)
 - careful assessment for adverse effects potentially attributable to the use of NMBDs
- The incidence of RNMB varies widely among studies, with reported frequencies ranging from 2% to 64%.



- ### Adverse Physiological Effects
- Effects on pharyngeal function
 - Swallowing and aspiration
 - Effects on airway muscles
 - Partial upper airway obstruction
 - Difficulty protruding tongue
 - Effects on hypoxic ventilatory drive
 - Can be significantly impaired by small degrees of residual paralysis
 - Due to impairment of carotid body chemoreceptor function by NMBDs (neuronal nicotinic receptors)

- Subjective symptoms (0.7)
 - Diplopia and visual disturbances
 - Decreased grip strength
 - Inability to maintain incisor teeth apposition
 - Inability to sit without assistance
 - Severe facial weakness
 - Difficulty speaking and drinking
 - Generalized weakness
- Subjective Symptoms (0.85 and 1.0)
 - Generalized fatigue
 - Visual problems remained (diplopia persisted for 45 to 90 minutes beyond the time when TOF ratios had recovered to 1.0)

- ### In Summary
- RNMB remains a clinical safety issue
 - Postoperative respiratory events are the most common adverse outcomes associated with residual paralysis reported in both observational and randomized clinical studies.

- ### Making it Real
- Use of shorter-acting NMBDs
 - Current clinical practice of tracheal extubation 5 to 10 minutes after administration of anticholinesterases may not allow sufficient time for adequate return of neuromuscular function.
 - Return of neuromuscular function to baseline should be documented before tracheal extubation.

How are you keeping patients safe from residual neuromuscular blockade?

Medication Errors

- The literature on perioperative medication error rates is sparse and consists largely of self-reported data.

PERIOPERATIVE MEDICINE

Evaluation of Perioperative Medication Errors and Adverse Drug Events

Karen C. Nanji, M.D., M.P.H., Amit Patel, M.D., M.P.H., Sofia Shaikh, B.Sc., Diane L. Seger, R.Ph., David W. Bates, M.D., M.Sc.

- Prospective observational study
- Anesthesia study staff observed randomly selected operations over an 8 month period
- Retrospective chart abstraction was performed to flag events that were missed by observation
- Examining incidence of medication errors and adverse events.

- One in 20 perioperative medication administrations included a medication error and/or adverse drug event.
- Every second operation resulted in the same.
- Greater than one third of the medication errors led to observed adverse drug events.
- The remaining two thirds had the potential for harm.

IV fluid, midazolam, lidocaine, propofol, fentanyl, rocuronium, succinylcholine, ondansetron, decadron, neostigmine, glycopyrrolate, hydromorphone, beta blockers, ephedrine, neosynephrine, antibiotics, anesthetic gas, oxygen

- Types of errors
 - Labeling (not labeling)
 - Wrong dose (based on weight)
 - Omitted medications/failure to act (no redose)
 - Documentation error
 - Monitoring error (redosing NMB w/o TOF)
 - Wrong medication



- Medications most commonly implicated
 - Propofol 25%
 - Phenylephrine 10%
 - Fentanyl 10%
- No significant difference existed between the event rates of
 - house staff (N = 68 events, 5.1% event rate)
 - nurse anesthetists (N = 111 events, 5.5% event rate)
 - attending anesthesiologists (N = 14 events, 4.5% event rate).

- Making it Real**
- Technology-based interventions
 - Bar code assisted syringe labeling systems
 - Changing processes related to documentation
 - Timing of documentation
 - Scan bar code to enter admin of med into chart
 - Reduce opportunities for workarounds
 - Disabling alarms
 - Connecting infusions to most proximal ports
 - Avoid unintentional bolus administration

How are you keeping patients safe from medication errors?

Whether its 100,000 or 400,000....



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- Dempsey JA, Veasey SC, Morgan BJ, O'Donnell CP (2010). Pathophysiology of sleep apnea. *Physiol Rev*; 90(1):47-112.
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How are You Making Patient Safety Real?

Part II



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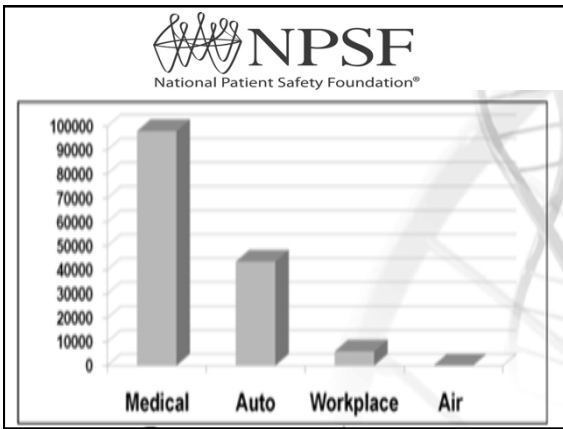
United States Department of Health & Human Services
AHRQ Agency for Healthcare Research and Quality
Advancing Excellence in Health Care www.ahrq.gov

What is patient safety, exactly?


“... discipline in the health care professions that applies safety science methods toward the goal of achieving a trustworthy system of health care delivery.”

“...an attribute of health care systems that minimizes the incidence and impact of adverse events and maximizes recovery from such events.”

Linda Emanuel, MD, PhD; Don Berwick, MD, MPP, et al.



Subcommittee Hearing (7/14/2014)- More than 1,000 preventable deaths a day is too many,

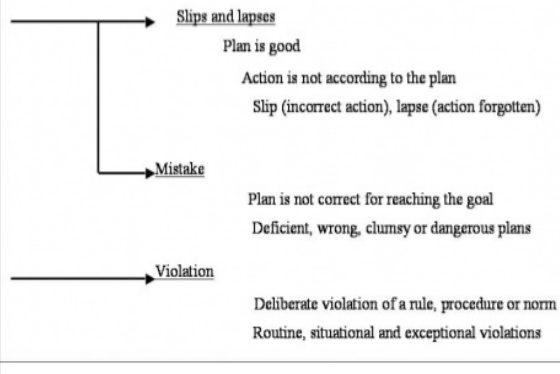


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Crossing the Quality Chasm

- Safe:** avoiding injuries to patients from the care that is intended to help them.
- Effective:** providing services based on scientific knowledge to all who could benefit.
- Patient-centered:** providing care that is respectful of and responsive to in-dividual patient preferences, needs, and values.
- Timely:** reducing waits and sometimes harmful delays for both those who receive and those who give care.
- Efficient:** avoiding waste, including waste of equipment, supplies, ideas, and energy.
- Equitable:** providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.

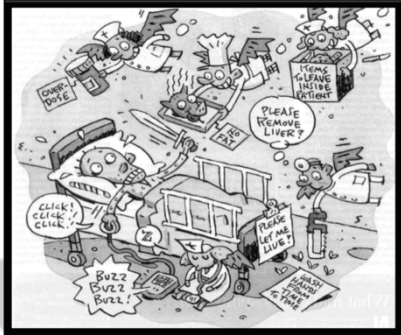
James Reason: Human Error



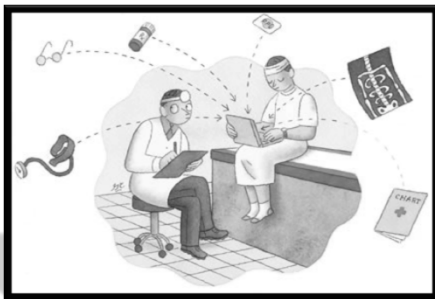
How can just one person make patient safety real?



No patient will be Harmed while under my care.



Ten Ways to Make Patient Safety Real



1: Improve Communication

1. Deal with people not positions
2. Everyone is important
3. Preoperative huddle
4. Engage the surgeon
5. Impart knowledge to others
6. Stay in the game (avoid distractions, close the loop)

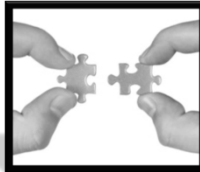


2: Refuse to Normalize Deviance

- Not using aseptic technique when starting lines
- Drawing up drugs for second case during first case
- Wearing scrubs outside the operating room suite
- Turning off monitor alarms
- Removing monitors at the end of a case before the patient is awake or extubated
- Resuscitation equipment not nearby during a block
- Doing an incomplete anesthesia machine check
- Doing superficial handoffs
- Reading, texting, surfing the internet during a case

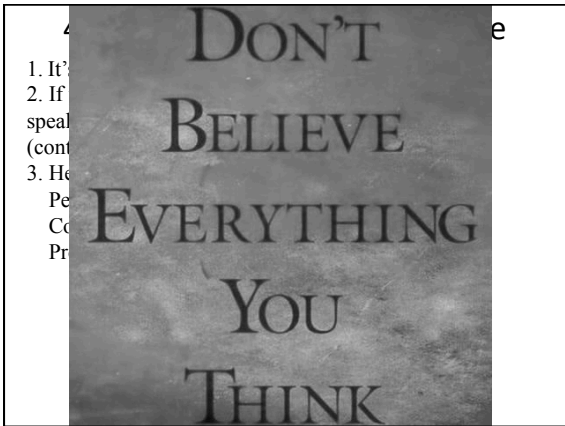
3: Standardize Care

- Standardize equipment
 - Anesthesia delivery systems
 - Medication pumps
 - EMRs
 - Resuscitation equipment
 - Therapeutics
- Procedures and documentation where best evidence dictates
- Transfer of care procedures




P	Procedure: Patient (Quick Scan): Position:
A	Anesthesia: Antibiotic: Airway: Allergies:
T	Temperature:
I	IVs & Other invasive lines:
E	ETCO ₂ (Ventilation):
N	Narcotics:
T	Twitches:


AANA Journal June 2013 Vol.81, No3, 225-232.



5: Report Errors and Near Misses

1. Appreciate the difference between human error as the cause of a problem and the symptom of a problem
2. Appreciate that success is often an illusion. Bad procedures often succeed and “success” can instill a false sense of confidence.
3. Seek out and engage in opportunities to share experiences with colleagues,





Chuck Biddle, PhD, CRNA
Professor, Department of
Nurse Anesthesia, VCU

Almost 10 years ago, nurse anesthetist Chuck Biddle had an experience he will never forget. By sharing his story online, he hopes others will remember, too.

ANESTHESIA
e-Nonymous

About Stories Archives Faculty Sign In




RAISING AWARENESS
of the overall safety health of our work environment

REGISTER SIGN IN

“ Anesthesia e-Nonymous was developed as a mechanism for anesthesia practitioners from around the country to get information about real-world clinical experiences whether they be adverse, near-miss or otherwise, in a timely manner. If we can help avoid harm to just one patient by sharing these stories, we have accomplished our goal. ”


Suzanne Wright, Ph.D., CRNA

6: Avoid Hindsight Bias



7: Create No Interruption Times and Zones

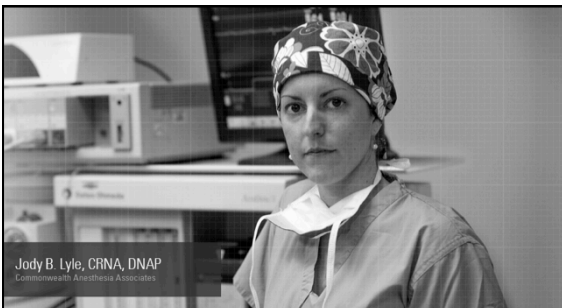
- Create and observe no interruption times
- Create and observe no interruption “zones”



The Sterile Cockpit

8: Embrace Team Training





Jody B. Lyle, CRNA, DNAP
Certified Registered Nurse Anesthetist

As a practicing nurse anesthetist, Jody Lyle is grateful for every hour of training she received in anesthesia crisis resource management at VCU. For Jody, simulation made it real.



9: Enhance Personal Wellness

- Connect
- Be Active
- Learn something new
- Give
- Live in the present



American Association of Nurse Anesthetists
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Park Ridge, IL 60068
www.aana.com

Patient Safety: Fatigue, Sleep, and Work Schedule Effects
Formerly Position Statement Number 2.17

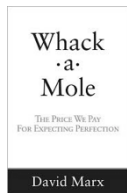
- Institutions should allocate proper staffing for round-the-clock operations as appropriate and specific to facility needs.
- CRNAs should be provided with break rooms for adequate rest breaks to foster alertness when on duty.
- Nurse anesthesia educational programs should provide education to their graduate students and clinical and academic faculty regarding sleep science, fatigue counter measures, circadian rhythm, fatigue, clinical performance and patient safety.

10: Support A Just Culture

How do we create a "Just Culture" of safety?

How do we deal with human fallibility?

What needs to change?



Our Passion is Making Patient Safety Real

How do we deal with human fallibility?

1. Human Error: Slips, Lapses and Mistakes
2. At Risk Behaviors: Normalization of Deviance
3. Reckless Behaviors: Conscious Disregard of Safety

Our Passion is Making Patient Safety Real

CONSOLE in cases of human error.



Our Passion is Making Patient Safety Real

COACH and COUNSEL at risk behaviors



**PUNISH
reckless
behaviors**



**The Top 10
Making Patient Safety Real**

1. Improve Communications
2. Refuse to Normalize Deviance
3. Standardize Care
4. Adopt a Questioning Attitude
5. Report Errors and Near Misses
6. Avoid Hindsight Bias
7. Create No Interruption Times & Zones
8. Embrace Team Training
9. Enhance your Personal Wellness
10. Support A Just Culture

Our Passion is Making Patient Safety Real

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