Odds and Ends to Improve Patient Care

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Old Poem: We fight not for what we fear in front of us; but for what we love behind us........

Sully, Shadow and Fozzie
Financial Disclosure

There is no financial conflicts with this presentation.

Lecturing about a topic does not constitute endorsement of any product. Please take the time to research each topic for more information.

Mentioning a product or company does NOT represent endorsement.

Think outside the BOX

We can no longer sit by the wayside, we must make ourselves better.

Multimodal
Synergy
Preemptive
Standard, Policy, Guideline,
Suggestion???

Zofran?
FDA and Codeine?
AFE – September 29, 2014 (presentation)
Dr. B Leighton, Cooper, Otto (abstract fall 2013)

41 G8P3-39 weeks at 31 min ACLS: Given A-OK at 1mg/8mg/30mg
Survived and left hospital with small neuro deficits

28 G2P1-39 weeks at ?? Min ACLS: Given A-OK at 0.8mg/4mg/30mg
Survived with no neuro issues

Thromboxane/serotonin

Use this in conjunction to current treatments.
At this time this is a adjunct to get the patient to return to circulation.
400 mg of riboflavin, 65 mg of caffeine and 325 mg Tylenol.
Surgical site infections cause significant morbidity and mortality in the postoperative period. Opening of the operating room door disrupts its filtered atmosphere, increasing contamination above the wound. We conducted a study of traffic in the operating room as a risk for infections. This is an observational study of recorded behaviors in the operating room. Data collected included number of people entering/exiting, the role of these individuals, and the cause for the event. A total of 3071 door openings were recorded in 28 cases. Traffic varied from 19 to 50 events per hour across specialties. The preincision period represented 30% to 50% of all events. Information requests accounted for the majority of events. Door openings increase in direct proportion to case length, but have an exponential relationship with the number of persons in the operating room. (Am J Med Qual. 2009;24:45-52)

Lynch et al., (2007), and Anderson et al., (2012) found multiple door openings disturb the positive pressure airflow in the room and an increase in personnel introduce bacterial contaminants into the air.

54% of door openings were for informational requests.

Patient Satisfaction
Prevention:
Can use several folded or rolled towels, or the inflated bladder of a blood pressure cuff for placement under the lower back to maintain normal curvature of the spine. It is also beneficial to place a pillow or loosely rolled blanket under the knees during all supine surgeries, which aids in removing the strain from the lower back and lumbar area.

"Hi, I'm, I'm, I'm ... You'll have to forgive me, I'm terrible with names."
Vocal Cord Dysfunction

Has your patient been short of breath and anxious in the PACU?

What did you do?

Versed may have been a better choice??

Remimidazolam? What’s next?

Do we Speak the same Language?

We have terms for Music, Nursing, Military and everything... so make sure we speak the same language...

So why is this important?

Words

Actual words are not paramount, their careful selection should NOT be slighted or overlooked

Be clear
Be Precise
Back Track here also!
When Fear is Not a Factor

Good Night’s Sleep Pre-op Reduces Post-op Complications

Fear causes tension
Tension causes pain
Pain causes more fear
Which causes more pain

Matthew Zinder, MS, CH, CRNA
Zinder Anesthesia, LLC
Tattoos

Professional inks may be made from iron oxides.

Lumbar Epidural Catheter Placement in the Presence of Low Back Tattoos: A Review of the Safety Concerns

Dawn Welliver, CRNA, MS; Mark Welliver, CRNA, DNP; Tammy Carroll, CRNA, MSN; Peggy James, MD

First article for Internal Journal of Environmental Research found burns from MRI as early as 2007 and 2009.


Prophylactic intravenous ondansetron and dolasetron in intrathecal morphine-induced pruritus: a randomized, double-blinded, placebo-controlled study).

Anesthesiology. 2010; 113(4)

30 minutes before injecting narcotic spinal or epidural
Aspirin (ASA, acetylsalicylic acid)

- The main mechanism of action of NSAIDs was clarified by Sir John Vane in 1971 who noted the inhibition of prostaglandin synthesis by aspirin.
- Irreversibly acetylates platelet COX1. Lasts for the life of the platelet (8-12 days).
- Antipyretic, antiplatelet drug for prevention of MI and ischemic stroke.
- Two great works out about stents and continuing therapy:
  - Eisenberg 2010
  - Newscome 2008
  - Dimitrova 2012
Aspirin is recommended as a lifelong therapy that should **NEVER** be interrupted for patients with cardiovascular disease. Clopidogrel therapy is mandatory for six weeks after placement of bare-metal stents, three to six months after myocardial infarction, and at least 12 months after placement of drug-eluting stents.

Electronic Aspirin

Mode of Action of Antiplatelet Agents

**Clopidogrel (Plavix™)**

For patients with acute coronary syndrome (unstable angina/non-Q-wave MI), clopidogrel should be initiated with a single 300 mg (600 mg) loading dose and then continued at 75 mg once daily.

Aspirin (75 mg-325 mg once daily) should be initiated and continued in combination with clopidogrel.

**Tranexamic Acid**

**FIBRINOLYSIS:**

Plasminogen → Plasmin

**dissolves**

Clot
Tranexamic Acid

A competitive inhibitor of plasminogen, and in high concentrations a non-competitive inhibitor of plasmin
Less transfusions — reported 50%

Trauma: Antifibrinolytic agent
Increased trauma survival in prospective analysis
Can’t have blood products, infused in same line
Give within 3 hours: 1gm in 250mL NS over 30 mins
Then start infusion of 1gm 250mL NS over 8 hours
Rapid: 12.5ml/hr
Further doses can be given, though not supported by literature

Spine surgery, 10 mg/kg up to 1000mg load followed by 1 mg/kg/hr. Infusion for duration of case

Adverse effects- are rare and mainly limited to
- Nausea, Vomiting & Diarrhea, Allergy and occasionally an Orthostatic reaction.
- There is a theoretical risk of an increased thrombotic tendency, like deep vein thrombosis, during prolonged treatment as with any fibrinolytic inhibitors

Contraindications -
- Severe renal insufficiency
- Active intravascular clotting
- Thromboembolic disease
- Color vision disorders

Tranexamic acid-associated seizures: A meta-analysis
Zheng Liu, Tao Xia
Department of Neurology, West China Hospital, Sichuan University, Chengdu, China

Open Archive | Epub Date: 2016-03-31
DOI: 10.1002/ajem.25466

Brian J. Eastridge, MD, FACS

Dr. Eastridge is Clinical Professor in the Department of Surgery at the University of Phoenix Health Science Center at San Antonio and the Trauma Medical Director at University Hospital in San Antonio. Dr. Eastridge served as Chief of the Joint Trauma System and a Trauma Consultant to the Army Surgeon General during his tenure on active duty.
Pre-operative
Alvimopan (Entereg)

Alvimopan
- μ-Opioid antagonist that is excluded from crossing the blood-brain barrier
- Blocks peripheral gastrointestinal side effects (e.g., ileus, constipation) without compromising CNS activity
- Oral dosing
  - Low systemic absorption
  - High α-receptor affinity
  - Appropriate for patients with chronic pain

Investigations by Augustine Biomedical Design
Ask the question??

Bair Hugger Linked to Burns From Hosing During Surgical Procedures

Third-degree burns due to intraoperative use of a Bair Hugger warming device

Misuse of Bair Hugger warming blankets could cause burn injuries

1. Failure to report 10 years after the 10-year period may be considered to have occurred in the 10 years after the 10-year period.
2. Failure to report 10 years after the 10-year period may be considered to have occurred in the 10 years after the 10-year period.
3. Failure to report 10 years after the 10-year period may be considered to have occurred in the 10 years after the 10-year period.
4. Failure to report 10 years after the 10-year period may be considered to have occurred in the 10 years after the 10-year period.
IV Starts? ---Pain Theory?

**Intradermal Lidocaine**

**Intradermal Saline:**

PKA?

**Bacteriostatic normal saline compared with buffered 1% lidocaine when injected intradermally as a local anesthetic to reduce pain during intravenous catheter insertion.**

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**Technology doesn’t have to be expensive or big and bulky**

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**Basic concepts--http://www.ivwatch.com**

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How crazy is the future?

The incidence of Clostridium difficile infection (CDI) has risen sharply over the last two decades. The number of cases among hospitalized adults tripled between 1993 and 2005 and more than doubled between 2001 and 2005. Mortality rates have also increased, coincident with the emergence of the hyper virulent NAP1/BI/027 strain.

Fecal microbiota transplantation (FMT or fecal transplantation) — has proved highly effective at eradicating C. difficile infection and restoring a healthy gut microbiota.

Quick, inexpensive and a 90 percent cure rate! Mayo Clinic numbers; March 2012

Mivacurium is back!

A Drug used for the treatment of Alzheimer’s and is a cholinesterase inhibitor. Complete action is unknown!

Rivastigmine, an acetyl cholinesterase inhibitor, may be administered orally or as a transdermal patch for treatment of Alzheimer’s disease and may interfere with neuromuscular blocking drugs.

Cost of Sugammadex

- 70kg man
  - 2mg/kg dose: 140mg, one 2mL vial = $84.93
  - 4mg/kg dose: 280mg, one 5mL vial = $155.55
  - 16mg/kg dose: 1120mg, two 5mL vials and one 2mL vial = $396.03
- Caveats
  - Neostigmine 5 mg and Robinol 1.0 mg = $300 - $400
  - Uncontracted prices from distributor
  - Patient cost usually approximately 3x this cost

Dose examples: ROC 1.2 mg/kg administered and three minutes later 16mg/kg of Sugammadex given, this provides faster onset/offset profile than suxx

Will this change the face of anesthesia?

PTT and PT

In response to the FDA’s requests, 4 additional studies were conducted examining the impact of sugammadex on coagulation. These investigations demonstrated a small increase in PTT and aPTT that occurred within minutes of administration, but resolved within an hour.

In addition, in a large study of patients undergoing hip or knee replacement surgery, no increase in bleeding or transfusion requirements was observed in patients randomized to receive sugammadex.
**Sugammadex - Bleeding**

- Increases PTT, PT/INR up to 25% for up to 1h in healthy volunteers
- In a study of patients with major lower extremity orthopedics surgery, PTT and PT/INR increases < 10% were noted (did NOT require transfusion)
- No difference in bleeding, anemia incidence
- Concomitant thromboprophylaxis in this study

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**Always Aware**

**Sugammadex and Hormonal Birth Control Interaction: Identifying and Educating Affected Patients Automatically through Health Link**

Sugammadex is a medication indicated for the rapid reversal of neuromuscular blockade induced by rocuronium and Vecuronium. It was recently added to the formulary and is restricted to use in the OR and ED. Sugammadex interacts with hormonal birth control, both oral and non-oral formulations, possibly resulting in temporary loss of efficacy of the birth control for up to seven days.

Beginning September 13, 2016 documentation of sugammadex administration by the provider will generate an automatic educational message for women of reproductive potential who are between the ages of 10 and 60 years old. The message informs them that they received sugammadex. It also provides information about the nature of the interaction and the need for back-up birth control for seven days. Condoms and spermicides are recommended.

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**Package insert**

**Merck**

**7.3 Interaction Potentially Affecting the Efficacy of Hormonal Contraceptives**

*In vitro binding studies indicate that BRIDION may bind to progestogen, thereby decreasing progestogen exposure. Therefore, the administration of a bolus dose of BRIDION is considered to be equivalent to missing dose(s) of oral contraceptives containing an estrogen or progestogen. If an oral contraceptive is taken on the same day that BRIDION is administered, the patient must use an additional, non-hormonal contraceptive method or back-up method of contraception (such as condoms and spermicides) for the next 7 days. In case of non-oral hormonal contraceptives, the patient must use an additional, non-hormonal contraceptive method or back-up method of contraception (such as condoms and spermicides) for the next 7 days.*
Hypotensive Thought Pattern

- What is your order for treating hypotension??
  - 0 fluids
  - 1 and 2: Neo and ephedrine
  - 3 methylene blue
  - 4 epi chip shots (5-10mcg) — Guy Weinberg Paper!
  - 5 vasopressin
  - What is 6 for you?
  - ?? Glucagon

Methylene Blue

- This is an age old drug; traditionally used for methemoglobinemia and as a tissue marker
- Recent evidence (mostly in cardiac surgery) shows that it may be a benefit for refractory hypotension
- Has been used with liver transplant for hypotension
- Reports of being used for patients on ACE inhibitors for refractory hypotension

Hemodynamic Effects of Methylene Blue

However, for a variety of clinical scenarios associated with an inflammatory response, methylene blue results in increases of systemic blood pressure, systemic vascular resistance (SVR), and myocardial contractility.

The application of methylene blue’s effects is also being studied in the management of numerous clinical scenarios, including:
- Vasoplegia
- Anaphylactic shock
- Septic shock
- Hypotension from ACE-i/ARBs
- Hemodialysis hypotension
- Cardiogenic shock
Glucagon

- Enhances the formation of cAMP.
- Used to increase myocardial contractility and heart rate in beta-blocker toxicity.
- Enhances automaticity in the nodal conduction system without increasing automaticity in the ventricles.

Dose:
- 1-5 mg IV slowly
- Infusion: 25–75 mcg/min

Dosing source: A Practical Approach to Cardiac Anesthesia by Frederick A. Hensley, Glenn P. Gravlee, Donald E. Martin

Glucagon must be reconstituted immediately prior to administration.

Dosing of Vasopressin

Intraoperative hypotension

- Dilute with 19 mL NS in a 20 cc syringe to create a concentration of 1 unit/mL.
- Administer 0.5 – 1 unit to treat hypotension in an adult.

Available products:
- Vasostrict Injection, Par Sterile Products 20 units/mL, 1 mL multi-dose vial, 25 count (NDC 42023-0164-25)

Reason for the Shortage

- American Regent discontinued vasopressin injection in early 2015.
- Par Sterile Products (formerly JHP) discontinued Pitressin injection in November 2014.
- Par Sterile Products introduced Vasostrict injection in November 2014. This is the only FDA-approved vasopressin injection.
- Fresenius Kabi will discontinue distributing vasopressin on March 15, 2015. A letter is available regarding this discontinuation.

See more at:
Fentanyl Patch

- Transdermal Patch
- Technology changing for delivery
- **On Demand?** : Fentanyl iontophoretic transdermal system provides a 40 mcg dose of fentanyl per activation on-demand
- Other fentanyl thoughts:
  - BUCCAL TABLET; BUCCAL SOLUBLE FILM; SUBLINGUAL TABLETS; NASAL SPRAY; SUBLINGUAL SPRAY

Antidote to Factor X inhibitors

**Praxbind (idarucizumab)**: for use in patients who are taking the anticoagulant Pradaxa (dabigatran) during emergency situations when there is a need to reverse Pradaxa’s blood-thinning effects.

Trial included 123 patients taking Pradaxa who received Praxbind due to uncontrolled bleeding or because they required emergency surgery. In this ongoing trial, based on laboratory testing, the anticoagulant effect of Pradaxa was fully reversed in 89 percent of patients within four hours of receiving Praxbind. In this patient trial, the most common side effects were low potassium (hypokalemia), confusion, constipation, fever and pneumonia.
New MH Drug? Ryanodex

The drug, an injectable suspension of dantrolene sodium, will be available in 250 mg single-use vials containing the active ingredient in a lyophilized powder.

According to Eagle Pharmaceuticals, Ryanodex can be prepared and administered in less than one minute, compared with 15 to 20 minutes for conventional dantrolene.

The cost for a patient receiving Ryanodex treatment for a MH crisis (based on 2.5mg/kg in a 70kg patient) is $1,610 versus $700 with generic dantrolene. This cost does not include additional doses of dantrolene that will be required.

This research and orphan drug status is leading to additional research... for example for heat stroke:

Olanzapine as an antiemetic:

Is an atypical antipsychotic that belongs to the thienobenzodiazepine class.

Olanzapine cost:

- Rapidly disintegrating tab 5mg: ~ $1.00
- Rapidly disintegrating tab 10mg: ~ $1.15
- Tab 5mg: $0.10
- Tab 10mg: $0.20
- IM injection: $25.25

We only have a very small amount of information about the use of olanzapine IV and none of it in the periop period. Most Studies looked at it as compared to Zofran.

Non-Pharmacologic Methods for PONV

- Acupuncture—really exciting information!
- Acupressure
  - over “P6” point of wrist (3cm prox. to distal wrist crease, between the tendons of palmaris longus and flexor carpi radialis)
  - over K-K9 acupuncture point (middle phalanx of 4th finger) applied bilaterally
- Alcohol Pad—Quease Eaze!

September 2013; Anesthesia and Analgesia: Aromatherapy as Treatment for Postoperative Nausea: A Randomized Trial
Hunt, Ronald MD*; Dienemann, Jacqueline PhD, RN†; Norton, H James PhD‡; Hartley, Wendy MSN, RN§; Hudgens, Amanda BSN, RNǁ; Stern, Thomas MD¶; Divine, George PhD#
Gem

Beef Anaphylaxis?

2009

Alpha-Gal
3% of food allergies

The Hygiene Hypothesis

The decreasing incidence of early infections due to sanitization, vaccination, and antibiotics lead to underdevelopment of TH1

And thus disproportionate TH2 activity

T cells are programmed in infancy, and perpetuate what they have learned.

Another example:

Ragweed… 40 different weeds

They share the same epitopes as latex that is IgE Mediated…. 

Wow.....
What do?

Avocados, Bananas, Hazelnuts and Chestnuts have in Common?

21% in common? (58%) 

Sulfa?

The sulfonamide chemical moiety is also present in other medications that are not antimicrobials:

- Thiazide Diuretics
- Loop diuretics
- Sulfonylureas
- COX-2 inhibitors

What if I can't eat vegetables from Grocery Store?

The power of an antidote
Lipid Rescue

- 20% lipid solution
- 1.5 ml/kg over 1 minute
- Follow immediately by an infusion at rate of 0.25 ml/kg/min (17.5 ml/min for a 70 kg adult)
- Repeat dose if no improvement - and double the infusion rate
- Max of 10 ml/kg???
- www.lipidrescue.org
- What about Propofol? (Propofol is 1%)
Many classes of compounds bind and inhibit Na channels

- Local anesthetics
- General anesthetics
- Ca channel blockers
- α2 agonists
- Tricyclic antidepressants
- Substance P antagonists
- Many nerve toxins

Droperidol ????
Increasing Food Allergy
A kiss in 2005—Teen Dies

Peanuts – peanut oil used in Fresenius propoven
  - (a propofol product from Europe showing up in hospitals in the U.S.)


- Mehta, 2014. Major finding: No allergic reactions were reported in patients with known food allergies who received propofol prior to undergoing endoscopy.
- Data source: A review of records from 100 food allergy patients who had endoscopies performed at the Mount Sinai Center for Eosinophilic Disorders from November 2004 to January 2014.

Antiseptics

Chlorhexidine digluconate is a common disinfectant
  - Home uses: mouthwash toothpaste, ointments, suppositories
  - Medical uses: swabs for disinfection prior to epidural/spinal anesthesia, surgical incisions, urinary catheterization

Chlorhexidine is becoming more recognized as a cause of perioperative anaphylaxis
Information You should know?

Average cost per minute of time in OR
$20-$80/min varies by case

Average PACU charge $4-8/min ***

Ranges by 30 minute time blocks

Desflurane

Time to extubation decreased with Desflurane: 20-25% decrease.

Dexter et al. Anesthesia Analg; 2010

What if you save 7 minutes on a basic case?
* $140 savings...wow....
### Cost

**Agent Cost Based on MAC**

**Enter Time in minutes:** 120

**Enter Fresh Gas Flow in L/min:** 2

**Vaporizer at 1 MAC for middle-aged adult**

<table>
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<th>Size of Molecular Cost of Generic bottle</th>
<th>ml</th>
<th>Cost/Unit</th>
<th>Cost/ml</th>
<th>Weight</th>
<th>Density</th>
<th>MAC 1 MAC</th>
<th>Cost of Desflurane</th>
<th>Cost of Sevoflurane</th>
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<td>240</td>
<td>$115.00</td>
<td>$0.48</td>
<td>168.04</td>
<td>1.465</td>
<td>6.00</td>
<td>$32.81</td>
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<td>250</td>
<td>$172.22</td>
<td>$0.69</td>
<td>200.05</td>
<td>1.520</td>
<td>2.10</td>
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</tbody>
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**Desflurane is bad for the environment**

![Desflurane product image](image.png)
Sevoflurane is slightly better

Sodium bicarbonate-based hydration prevents contrast-induced nephropathy: a meta-analysis

In this meta-analysis of 17 RCTs including 2,633 patients, pre-procedural hydration with NaHCO₃ reduced the incidence of CIN compared with hydration with NS.

Conclusion

Our meta-analysis suggested a significant benefit of using NaHCO₃-based hydration for prevention of CIN although the magnitude of the benefit may have been overestimated by earlier studies. However, the lack of any study to date showing superiority of saline-based hydration suggests that NaHCO₃-based hydration should be considered the optimal hydration in high-risk patients undergoing exposure to iodinated contrast.

Load is 3 ml/kg over 1 hour followed by 1 ml/kg per hour infusion.

Glass Particles Contamination...

Filter needle use with ampules

Do you do it correct?

Do I use Indigo or Methylene blue?

Big risks with both!
Economic Impact – for each incident of nausea/vomiting that is avoided:

Avoid resource utilization costs: Patients who vomit spend an average of 43 minutes longer in the PACU at a cost of $85 for nausea and $138 for vomiting.

Save the cost of rescue treatment: $283 (minimum) to treat patients who experience PONV

For surgical centers: PONV delays may result in an ambulance transfer to a hospital costing $300 - $900 and result in an admission costing $1,200 to more than $2,400 per day.

To Feed or Not to Feed.......  
- Do outpatients need to drink and eat postop?

Usually limit postop drinking & feeding after GA.

Non-pharmacologic Prevention of Surgical Wound Infection

- Maintaining Normothermia 36 degrees
- Supplemental Oxygen 80%
- Surgical Site Preparation
- Smoking off for 6 weeks
- Glucose Control -- 180
- Vascular Volume
- Pain Relief
- Hypercapnia
Perioperative clinical factors & immune function

- Supplemental perioperative oxygen improves postop outcomes
- $\text{FiO}_2$ of 0.8 doubles subcut $\text{O}_2$ tension & halves postop wound infection rate
- Supplemental $\text{O}_2$ ↓ PONV after laparoscopies & laparotomies
- Preconditioning w/O$_2$ may improve organ function after liver tx & outcome after spinal ischemia insults

Electricity....oh boy!!

Prisoners and shackles? Ear rings? Piercing?
Goes in and goes out...

**Bipolar**

Bipolar is a different type which prevents widespread tissue coagulation. Part held by surgeon is like a forceps, current entering one prong and leaving by the other. Thus no grounding plate required. Useful for example in neurosurgery where there is no convenient spot for a grounding plate, and greater precision is necessary.

Valleylab.com has an extensive educational presentation on all aspects of electro surgery.
Closed malpractice claims in the American Society of Anesthesiologists Closed Claims Database since 1985 were reviewed…..Mehta et al, May 2013.

Results: There were 103 OR fire claims (1.9% of 5,297 surgical claims). Electrocautery was the ignition source in 90% of fire claims. OR fire claims more frequently involved older outpatients compared with other surgical anesthesia claims (P < 0.01). Payments to patients were more often made in fire claims (P < 0.01), but payment amounts were lower (median $121,166) compared to nonfire surgical claims (median $250,000, P < 0.01). Electrocautery-induced fires (n = 93) increased over time (P < 0.01) to 4.4% claims between 2000 and 2009. Most (81%) electrocautery fires occurred during head, neck, or upper chest procedures (high-fire-risk procedures). Oxygen served as the oxidizer in 95% of electrocautery-induced OR fires (88% with open delivery system).

Most electrocautery-induced fires (n = 75, 81%) occurred during monitored anesthesia care. Oxygen was administered via an open delivery system in all high-risk procedures during monitored anesthesia care.

In contrast, alcohol-containing prep solutions and volatile compounds were present in only 15% of OR fires during monitored anesthesia care.

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**Woman badly burned after farting during surgery**

A patient who passed gas during an operation was badly burned when the gas ignited in an oxygen environment.

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**How Many Blades are there?**

Are you just a miller or Mac?
Lots!!!---14 types

- Cranwall
- Jackson
- Janeway
- Reduced Flange
- Macintosh
- Magill
- Miller
- Parrott
- Phillips
- Wisconsin
- Robert-Shaw
- Siker
- Soper
- Wisconsin-Hipple

Did you realize?

- There are nearly 50 basic airway tools...
- That doesn’t even count the multiple variations of these tools and other tools not cited in the May 2012 Airway update
  - Pick 3-6 and get really good!

New school of thought coming out!
Glide scope—2001 General Surgeon
Dr. Pacey Designed First scope

Verathon Stylet-60% curve
(90% Success rate)

What is our future?
Will there be an UBER AIRWAY?
In conclusion, our study demonstrated a reduced incidence of coughing in the lidocaine group for the time period of 4–8 min. There was a trend toward a reduced incidence of coughing after extubation, in which 4% lidocaine, rather than air, was used to inflate the tube cuff for the other measured time periods up to 15 min postextubation.

Seizures?

Things to think about?

End-tidal CO2 (ETCO2) is the measurement of CO2 at the very end of expiration. It is the maximum concentration of expired CO2.

Hyperventilation or low CO2 in the brain leads to spontaneous and asynchronous firing of neurons.

Sneezing with peribulbar

Photic sneeze reflex

Autosomal Dominant Compelling Helio-Ophthalmic Outburst reflex

- 25% of population evoked by the bright light.
- Trigeminal
The cornea is the clear, dome-shaped outer area of the eye. It lies in front of the colored part of the eye (iris) and the black hole in the iris (pupil). The outermost layer of the eyeball consists of the cornea and the white part of the eye (sclera). A corneal abrasion is basically a superficial cut or scrape on the cornea. A corneal abrasion is not as serious as a corneal ulcer, which is generally deeper and more severe than an abrasion.

To diagnose a corneal abrasion, a topical anesthetic with a yellow dye called fluorescein is placed into the eye. Under blue cobalt light, the part of the cornea abraded will be stained by the dye and is easily seen by the examiner. The size and depth of the abrasion can be easily seen under a special microscope called a slit lamp biomicroscope. If a microscope is not available, then a blue light called a Burton lamp may be used.

Topical nonsteroidal anti-inflammatory drugs (NSAIDs) such as diclofenac (Voltaren) and ketorolac (Acular) are modestly useful in reducing pain from corneal abrasions.

**Proparacaine:**

*DO NOT USE TETRACAINE*

**Dry Eyes?**

Verma et al. (1995) randomized 44 patients
Verma et al. (1997) randomized 38 patients
Shahinian et al. evaluated 34 patients
Dosing of Ephedrine

When treating hypotension, how much ephedrine should you give?

- Adults: 5-25 mg IV, 25-50 mg SC or IM
- Children: 0.5 mg/kg SC or IM

Because of tachyphylaxis, if a second IV dose of ephedrine is given, it is usually at a higher dose than the first dose.

- A study by Rothenberg et al. (1991) showed that ephedrine 0.5 mg/kg IM has an antiemetic effect in patients undergoing outpatient laparoscopies with general anesthesia.

Propofol

The benefit of a small dose propofol infusion (bolus of 1 mg/kg followed by an infusion at 20 mcg/kg/min), either by itself or in combination with other antiemetics, has been shown to reduce PONV.


20-30 mg Propofol

Propofol, in small doses (20 mg as needed), can be used for rescue therapy for patients in the direct care environment, for example, PACU, and has been found as effective as ondansetron.


Disability Insurance

- Who has it?

This is the single greatest and most important financial product to purchase!

Do you have a work policy? Is it a Gold policy or a typical work DI?

You want and must have a policy that says “IF YOU CAN NOT DO ANESTHESIA IT WILL PAY”

Max is 66% of income; This is a tax deductible expense? But do you really want to do that?

Is it time for bracelets?

Trentman TL, Frasco PE, Milde LN. 100% of brains sent to University can all effectively be a “brain tumor.” J Clin Anesth 2004;16:257-61.
Midwives and nurses are as good as docs -- and sometimes better, WHO finds!!

Cometto and colleagues around the world looked at all the studies they could find on the quality of care delivered by non-physicians. They settled on 53 that looked specifically at the quality of care delivered — and at how happy patients were with the care they got.

“The evidence shows there aren’t statistically significant differences,” Cometto said. “The quality of care they provide is comparable to physicians. In some cases, for specific services, they actually outperform physicians.”

The American Society of Anesthesiologists recently spoke out against what it sees as the overuse of nurse-anesthetists. “Somehow there has become the notion that you can take physician extenders and replace physicians,” said Dr. Jane Fitch, a former nurse anesthetist who is now a physician anesthesiologist. “We are really concerned about patient safety.”

http://www.nbcnews.com/health/midwives-nurses-are-good-docs-sometimes-better-who-finds-8C11506820

Maggie Fox NBC News
Oct. 31, 2013 at 6:32 PM ET

Regional:
“The majority of women stated that anesthetists were the main, and most reliable, source of their information regarding risks of regional Anaesthesia for Caesarean section” Cheng and Cyan Anesthesia Intensive Care- Feb 2007

Stages; First stage pain is from the uterine contraction and dilation of the cervix. Starts at T 11-12 the moves to T 11-12 to L1

The dilation of the cervix plays the key role in pain. Pain is also caused by the uterine contractions and exceeds 25 mmHg this pain travels via visceral afferent fibers accompanying the sympathetic nerves

Second stage: end of first stage to delivery of the baby. Pain is caused by the pain traveling via the pudendal nerves and the distention of the vagina, vulva and perineum trigger the sensation of pain
• The onset of perineal pain indicates the beginning of the second stage
 T10-S4
• Third stage is Delivery to when the placenta is expelled

Complication rate low for CNRA lumbar epidural injections

(Health Day)—Complication rates for fluoroscopic-guided lumbar epidural steroid injections (LESIs) performed by certified registered nurse anesthetists (CRNAs) are similar to physician rates cited in the literature, according to a study published online Jan. 27 in the Journal for Healthcare Quality.

• Donald E. Beissel, D.N.P., from Southwest Interventional Pain Specialists in Albuquerque, N.M., conducted a survey of CRNA pain practitioners. He collected data on the number of fluoroscopic-guided LESIs performed and each of 20 complications for a six-month period.
• Beissel found that participants practiced in urban (23 percent) and rural (77 percent) settings in office/clinic (31 percent), hospital (62 percent), and mixed (7 percent) practices. CRNAs had both master’s (62 percent) and doctoral (38 percent) degrees. Experience in performing fluoroscopic-guided LESIs ranged from one to 17 years and 50 to 12,000 procedures. For each complication, the rate of occurrence was below 1 percent, with the highest rates for bruising and vasovagal reactions. There were no cases of paralysis or death. There was no association between either practice setting or experience level and complication rates.

• “CRNAs were able to safely and effectively perform fluoroscopic-guided LESIs with complication rates similar to physician rates cited in the literature,” the authors write.
The Hill, March 22, 2017

Jeff Flake is a United States Senator representing the state of Arizona. Prior to his election to the U.S. Senate in 2012, he served in the U.S. House of Representatives from 2003-2012 representing the East Valley.

Impressed with the care my father received, I did some research and learned that the medical center where he was treated is a facility that allows certified registered nurse anesthetists (CRNAs) independent full practice authority. This means that, as advanced practice registered nurses (APRNs), CRNAs are not required to be supervised by a physician including an anesthesiologist when providing anesthesia to patients. This allows for much more timely access to care and was a large factor in my father’s quick and successful surgery.

However, I still wanted to learn more to better understand the challenges that CRNAs face at their jobs every day. One of the caregivers during the surgery was Mike Mackinnon, a CRNA who provided the anesthesia. I inquired further and was given permission to shadow Mr. Mackinnon for a day as he provided preoperative anesthetic care to his patients.

Can I be excused?  
... my brain is full!

Thank You!
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