Jointly Provided by the American Society of Anesthesiologists (ASA) and the Society for Ambulatory Anesthesia (SAMBA).

American Society of Anesthesiologists

SOCIETY FOR AMBULATORY ANESTHESIA

Outpatient • Office Based • Non-Operating Room

SAMBA 2022 Annual Meeting

May 11 – 14, 2022

Arizona Biltmore, A Waldorf Astoria Resort

Phoenix, AZ

SYLLABUS

6737 West Washington Street, Suite 4210 · Milwaukee, WI 53214
Phone: (414) 488-3915 · Fax: (414) 276-7704 · www.SAMBAhq.org

PROGRAM INFORMATION

Target Audience

This meeting is designed for anesthesiologists, anesthesia providers, practitioners, nurses and administrators who work and specialize in ambulatory, office-based or non-operating room anesthesia.

About This Meeting

The purpose of this meeting is to educate and share information that will enable anesthesiology practitioners to provide the highest level of ambulatory anesthesia services and improve patient outcomes. Topics for this meeting were selected by various methods. Suggestions for topics were derived from evaluations of the 2021 and other previous Annual Meetings. In addition, the Annual Meeting Committee and Board members review the published literature with the highest impact on the specialty and solicit suggestions from members of SAMBA active in the clinical practice of ambulatory anesthesia. These suggestions were discussed with educators who attended previous SAMBA meetings.

Overall Learning Objectives

At the conclusion of this activity, participants should be able to:

- Describe and minimize the impact of COVID to their facilities and staff.
- Better evaluate patients for outpatient anesthesia to minimize cancellations and need to transfer to higher level of care.
- Discuss how to cogently use narcotics in an outpatient setting.
- Evaluate their practice for safe and effective use of midazolam in the outpatient setting.
- Describe and evaluate their practice for the possibility of having a 23-hour stay for procedures previously only done in the hospital.

ACCME Accreditation and Designation Statements

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of American Society of Anesthesiologists and the Society for Ambulatory Anesthesia. The American Society of Anesthesiologists is accredited by the ACCME to provide continuing medical education for physicians.

Accreditation Information

The American Society of Anesthesiologists designates this live activity for a maximum of 19.75 *AMA PRA Category 1 Credits*™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Maintenance of Certification in Anesthesiology® program and MOCA® are registered trademarks of The American Board of Anesthesiology®. MOCA 2.0® is a trademark of the American Board of Anesthesiology®.

This activity offers up to 19.75 CME credits, of which 3.00 credits contribute to the patient safety CME component of the American Board of Anesthesiology's redesigned Maintenance of Certification in Anesthesiology® (MOCA®) program, known as MOCA 2.0®. Please consult the ABA website, www.theABA.org, for a list of all MOCA 2.0 requirements.

Commercial Support Acknowledgement

The CME activity is supported by an educational grant from Medtronic.

Disclaimer

The information provided at this activity is for continuing medical education purposes only and is not meant to substitute for the independent medical judgment of a healthcare provider relative to diagnostic and treatment options of a specific patient's medical condition.

Disclosure Policy

The American Society of Anesthesiologists remains strongly committed to providing the best available evidence-based clinical information to participants of this educational activity and requires an open disclosure of any potential conflict of interest identified by our faculty members. It is not the intent of the American Society of Anesthesiologists to eliminate all situations of potential conflict of interest, but rather to enable those who are working with the American Society of Anesthesiologists to recognize situations that may be subject to question by others. All disclosed conflicts of interest are reviewed by the educational activity course director/chair to ensure that such situations are properly evaluated and, if necessary, resolved. The American Society of Anesthesiologists educational standards pertaining to conflict of interest are intended to maintain the professional autonomy of the clinical experts inherent in promoting a balanced presentation of science. Through our review process, all American Society of Anesthesiologists education activities are ensured of independent, objective, scientifically balanced presentations of information. Disclosure of any or no relationships will be made available for all educational activities.

CME Claim

Post-conference, you should have received an email from the American Society of Anesthesiologists to claim credit. Please follow these directions to complete the evaluation, claim credit, and print a certificate.

Please note you must claim your credits for this course by December 31, 2022. You will NOT be able to claim credits after this date.

PROGRAM SCHEDULE

WEDNESDAY, MAY 11 2022	
Time	**Event**
7:00pm – 9:00pm	**Cocktail Welcome Reception**

THURSDAY, MAY 12, 2022	
Time	**Event**
6:30am – 7:30am	**Networking Breakfast & Sponsored Breakfast Symposium**
7:30am – 7:45am	**Welcome & Introductions** BobbieJean Sweitzer, MD, FACP, SAMBA-F, FASA & Steven Butz, MD, SAMBA-F
7:45am – 9:00am	**COVID-19 Update** *Moderator: Leopoldo V. Rodriguez, MD, MBA, FAAP, FASA, SAMBA-F* Arnaldo Valedon, MD, FASA, SAMBA-F, MBA Candidate 2023
9:00am – 9:30am	**Status of the ASC Industry** *Moderator: Arnaldo Valedon, MD, FASA, SAMBA-F, MBA Candidate 2023* William Prentice
9:30am – 10:00am	**Pro/Con #1: We Should NEVER Cancel a Case for Hypertension** *Moderator: Michael Walsh, MD, SAMBA-F* Alvaro Andres Macias, MD, FASA (Pro); Michael O'Rourke, MD, FASA (Con)
10:00am – 10:45am	**Break with Exhibitors**
10:45am – 11:30am	**Pediatric Ambulatory Anesthesia Panel** *Moderator: Steven Butz, MD, SAMBA-F* Marjorie P. Brennan, MD & Chhaya Patel, MD, SAMBA-F
11:30am – 12:00pm	**Pro/Con #2: Midazolam for All Patients?** *Moderator: Michael Walsh, MD, SAMBA-F* Mary Ann Vann, MD (Pro) & Dawn J. Schell, MD (Con)
12:00pm – 1:00pm	**Sponsored Lunch Symposium: Acacia Pharma - *A Short-Acting Sedative for Procedures 30 Minutes or Less*** Randall D. Ostroff, MD
12:00pm – 1:15pm	**Lunch Break**
1:15pm – 2:15pm	**Panel on Ophthalmic Anesthesia** *Moderator: Steven Butz, MD, SAMBA-F* Steven Gayer, MD, MBA, FASA; Dawn J. Schell, MD; Alecia Stein, MD
2:15pm – 2:45pm	**Pro/Con #3: We Should NEVER Use Narcotics in Outpatient Procedures** *Moderator: Michael Walsh, MD, SAMBA-F* Michael V. Presta, DO (Pro) & Girish P. Joshi, MBBS, MD, FCAI, SAMBA-F (Con)
2:45pm – 3:30pm	**Networking Break**
3:30pm – 4:30pm	**Nuts and Bolts of a 23-Hour Stay** *Moderator: Tina Tran, MD* Michael R. Hicks, MD, MBA, MHCM, FACHE; Niraja Rajan, MD, SAMBA-F; Arnaldo Valedon, MD, FASA, SAMBA-F, MBA Candidate 2023
4:30pm – 5:00pm	**DVT Prophylaxis in the ASC** *Moderator: Steven Butz, MD, SAMBA-F* Alvaro Andres Macias, MD, FASA

Program Schedule *continued on next page*

PROGRAM SCHEDULE *continued*

THURSDAY, MAY 12, 2022 CONT.	
Time	**Event**
5:00pm – 7:00pm	**Exhibits Open & Cocktail Reception with Exhibitors**
6:00pm – 7:30pm	**Moderated Poster Session** Kara M. Barnett, MD, FASA & David Beebe, MD

FRIDAY, MAY 13, 2022	
Time	**Event**
7:00am – 8:00am	**Breakfast with Exhibitors**
7:00am – 8:00am	**Sponsored Breakfast Symposium: Pacira** **Fact or Myth: EXPAREL in Orthopedics – A Surgeon and Anesthesia Perspective** JP Ouanes & Ryan Simovitch
8:00am – 9:15am	**Ambulatory Anesthesia Hot Topics Rapid Fire Panel** *Moderator: Simon Lee, MD* **Sugammadex:** Catherine Tobin, MD **Parkinson's DS and Ambulatory Anesthesiology:** Mary Ann Vann, MD **Disruptive Surgeons:** Michael R. Hicks, MD, MBA, MHCM, FACHE **Difficult Airway:** Julius Pawlowski, MD **OBA:** Fred Shapiro, DO, FASA
9:15am – 9:45am	**Pro/Con #4: Pre-Op Testing (HCG)** *Moderator: Michael Walsh, MD, SAMBA-F* Kenneth Cummings, MD, MS, FASA (Pro) & Victor Davila, MD (Con)
9:45am – 10:15am	**How to Practice "Peri-Operative Medicine" in the ASC** *Moderator: Steven Butz, MD, SAMBA-F* Beverly K. Philip, MD, FACA, FASA, SAMBA-F
10:15am – 11:00am	**Break with Exhibitors**
11:00am – 12:00pm	**Audience Initiated Inquiries: Patient Selection in Ambulatory Anesthesia** *Moderator: Basem B. Abdelmalak, MD, FASA, SAMBA-F* **NORA:** Basem B. Abdelmalak, MD, FASA, SAMBA-F **ASC:** Leopoldo V. Rodriguez, MD, MBA, FAAP, FASA, SAMBA-F **Pediatric:** Amgad Saied, MD **Outpatients:** BobbieJean Sweitzer, MD, FACP, SAMBA-F, FASA **OBA:** Meghan C. Valach, MD
12:00pm – 1:00pm	**Sponsored Lunch Symposium: Fisher & Paykel Healthcare**
12:00pm – 1:00pm	**Lunch Break**
1:00pm – 2:00pm	**Ambulatory Regional Anesthesia Panel** *Moderator: Basem B. Abdelmalak, MD, FASA, SAMBA-F* Alberto Ardon, MD, MPH; Michael O'Rourke, MD, FASA; Hanae K. Tokita, MD, FASA
2:00pm – 2:45pm	**Break with Exhibitors**
2:30pm – 5:30pm	**Sponsored Anesthesia Regional Workshop - *Ultrasound-Guided Regional Block Techniques for Accelerating Same-Day Discharge by Albert Einstein College of Medicine-Montefiore Medical Center, in Joint Providership with Sterling Ops***

Program Schedule *continued on next page*

PROGRAM SCHEDULE *continued*

FRIDAY, MAY 13, 2022 CONT.

Time	Event
2:45pm – 4:45pm	**PBLDs/Ask the Experts** *Moderator: Basem B. Abdelmalak, MD, FASA, SAMBA-F* **Group 1:** • **Dilemmas in Pre-Op Evaluation of Ambulatory/NORA Patients:** Kenneth Cummings, MD, MS, FASA • **ICDs in the ASC: Practical Considerations and Real World Management:** Victor Davila, MD • **Diagnosis, Management and Treatment of MH in a Free Standing Hospital Based ASC; What Should be Present in an ASC to Prepare for a Case or a Comparison Between the Different Types of Dantrolene and Which Makes Most Sense to Stock:** Julius Pawlowski, MD • **Ambulatory Pediatric Anesthesia:** Amgad Saied, MD **Group 2:** • **Ask the Expert on Regional / Acute Pain in a Fireside Chat Type Format:** Alberto Ardon, MD, MPH • **Pediatric Obesity and OSA for Ambulatory Surgery:** Kumar Belani, MBBS, MS, FACA, FAAP, SAMBA-F & Chhaya Patel, MD, SAMBA-F • **ICU NORA:** Kunal Karamchandani, MD, FCCP, FCCM • **Corneal Transplant Under GA:** Mary Ann Vann, MD

SATURDAY, MAY 14, 2022

Time	Event
7:00am – 8:00am	**Sponsored Breakfast Symposium: Fresenius Kabi**
7:00am – 8:00am	**Breakfast with Exhibitors**
8:00am – 9:00am	**2022 ASA/SAMBA Management of the Difficult Airway Guidelines** *Moderator: Steven Butz, MD, SAMBA-F* Basem B. Abdelmalak, MD, FASA, SAMBA-F & Jeffrey Apfelbaum, MD, SAMBA-F
9:00am – 10:00am	**Ambulatory Anesthesia Literature Year in Review** *Moderator: Simon Lee, MD* Girish P. Joshi, MBBS, MD, FCAI, SAMBA-F
10:00am – 10:45am	**Break with Exhibitors**
10:45am – 12:00pm	**Cases from the Real World** *Moderator: Michael Walsh, MD, SAMBA-F* Catherine Tobin, MD, Tina Tran, MD & Meghan C. Valach, MD
12:00pm – 1:30pm	**SAMBA Annual Business Luncheon Supported by PAJUNK Medical Systems**
1:30pm – 2:30pm	**ASA Update** *Moderator: Basem B. Abdelmalak, MD, FASA, SAMBA-F* Beverly K. Philip, MD, FACA, FASA, SAMBA-F
2:30pm – 3:45pm	**Updates on NORA** *Moderator: Simon Lee, MD* • **Robotic Bronchoscopy and Ventilation Strategies for Navigation Biopsies:** Basem B. Abdelmalak, MD, FASA, SAMBA-F • **ICU NORA:** Kunal Karamchandani, MD, FCCP, FCCM • **Cutting-Edge Technologies for Gastrointestinal Therapeutic Endoscopy:** Michael V. Presta, DO
5:15pm – 8:00pm	**Social Event: Aunt Chiladas** • Buses depart resort at 5:00pm and 5:10pm • First bus departs Aunt Chiladas at 7:45pm

PROGRAM PLANNING COMMITTEE

Basem B. Abdelmalak, MD, FASA, SAMBA-F
Annual Meeting Co-Chair
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Novelty, OH

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Assistant Professor
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Faculty *continued on next page*

FACULTY *continued*

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American Society of Anesthesiologists
Schaumburg, IL

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Ambulatory Surgery Center Association
Chicago, IL

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Hershey, PA

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Envision Physician Services
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Johns Hopkins University, School of Medicine
Fulton, MD

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Beth Israel Deaconess Medical Center
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Megan Sage
Coordinator
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Milwaukee, WI

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

COVID-19 Update

Arnaldo Valedon, MD, FASA, SAMBA-F, MBA Candidate 2023

05/12/2022
7:45am - 9:00am MST


2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022
COVID-19 UPDATE: LESSONS LEARNED
Leopoldo V. Rodriguez, MD, MBA, FAAP, FASA, SAMBA-F
Chair, ASA Committee on Ambulatory Surgical Care
Immediate Past-President, SAMBA
Assistant National Medical Director, Ambulatory Anesthesiology, Envision Healthcare / AmSurg
Medical Director, Surgery Center of Aventura
Arnaldo Valedón, MD, FASA, SAMBA-F, MBA '23
President Elect, International Association for Ambulatory Surgery
Past President, SAMBA
Medical Director Outpatient Perioperative Services, WellSpan Health

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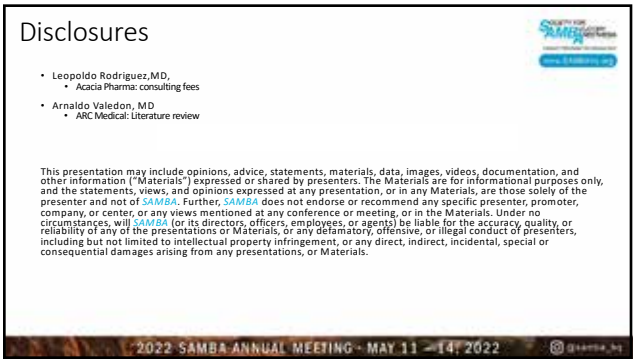
Disclosures
Leopoldo Rodriguez,MD,
Acacia Pharma: consulting fees
Arnaldo Valedon, MD
ARC Medical: Literature review
This presentation may include opinions, advice, statements, materials, data, images, videos, documentation, and other information ("Materials") expressed or shared by presenters. The Materials are for informational purposes only, and the statements, views, and opinions expressed at any presentation, or in any Materials, are those solely of the presenter and not of SAMBA. Further, SAMBA does not endorse or recommend any specific presenter, promoter, company, or center, or any views mentioned at any conference or meeting, or in the Materials. Under no circumstances, will SAMBA (or its directors, officers, employees, or agents) be liable for the accuracy, quality, or reliability of any of the presentations or Materials, or any defamatory, offensive, or illegal conduct of presenters, including but not limited to intellectual property infringement, or any direct, indirect, incidental, special or consequential damages arising from any presentations, or Materials.
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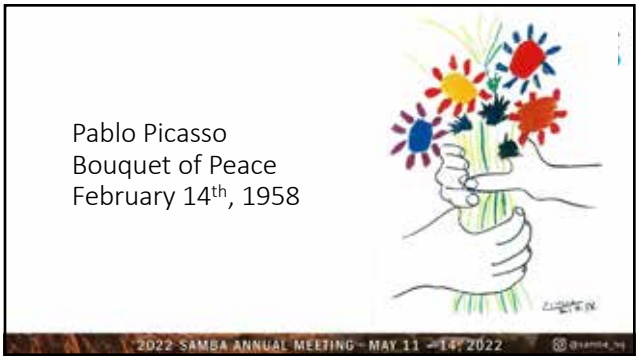
Pablo Picasso
Bouquet of Peace
February 14th, 1958
2022 SAMBA ANNUAL MEETING - MAY 11 – 14, 2022

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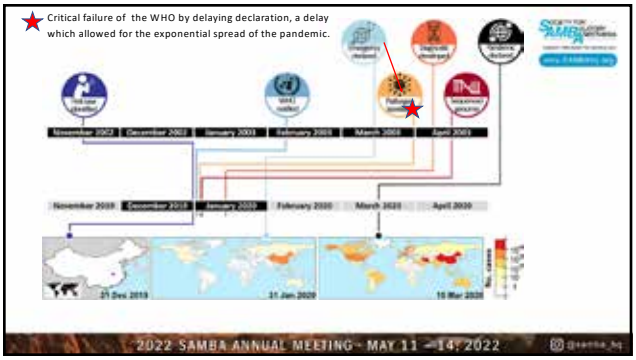
Critical failure of the WHO by delaying declaration, a delay which allowed for the exponential spread of the pandemic.
2022 SAMBA ANNUAL MEETING - MAY 11 – 14, 2022

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238 million cases, 4.8 million deaths
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World Health Organization
WHO Coronavirus (COVID-19) Dashboard
Overview
Measures
Table View
Data
More Resources

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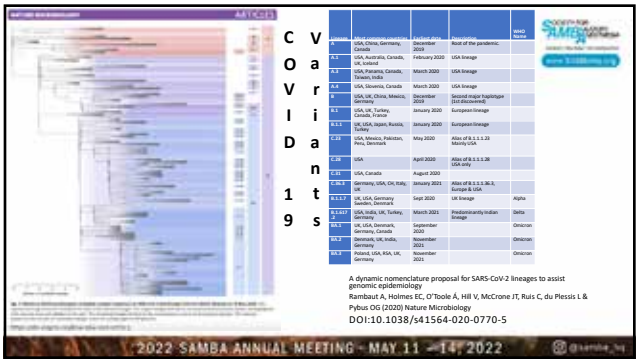
COVID19 variants
A dynamic nomenclature proposal for SARS-CoV-2 lineages to assist genomic epidemiology
Rambaut A, Holmes EC, O'Toole Á, Hill V, McCrone JT, Ruis C, du Plessis L & Pybus OG (2020) Nature Microbiology
DOI:10.1038/s41564-020-0770-5
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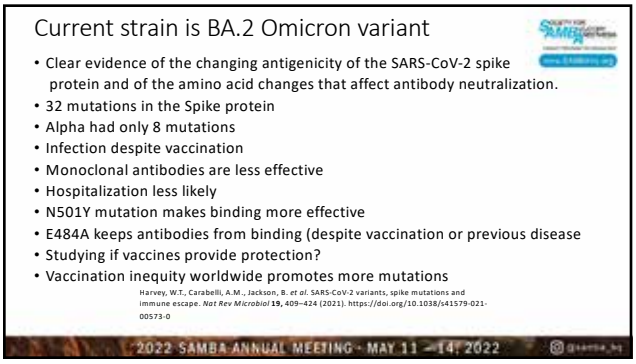
Current strain is BA.2 Omicron variant
• Clear evidence of the changing antigenicity of the SARS-CoV-2 spike protein and of the amino acid changes that affect antibody neutralization.
• 32 mutations in the Spike protein
• Alpha had only 8 mutations
• Infection despite vaccination
• Monoclonal antibodies are less effective
• Hospitalization less likely
• N501Y mutation makes binding more effective
• E484A keeps antibodies from binding (despite vaccination or previous disease
• Studying if vaccines provide protection?
• Vaccination inequity worldwide promotes more mutations
Harvey, W.T., Carabelli, A.M., Jackson, B. et al. SARS-CoV-2 variants, spike mutations and immune escape. Nat Rev Microbiol 19, 409–424 (2021). https://doi.org/10.1038/s41579-021-00573-0
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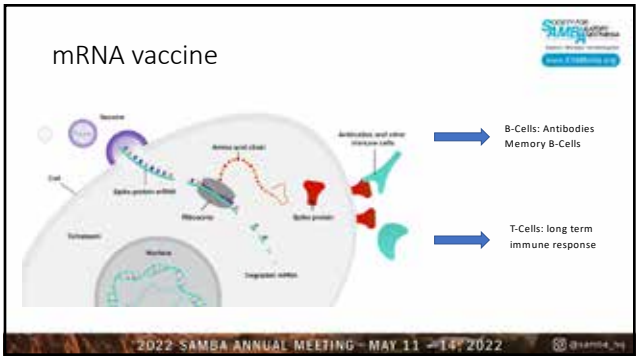
mRNA vaccine
B-Cells: Antibodies
Memory B-Cells
T-Cells: long term immune response
2022 SAMBA ANNUAL MEETING - MAY 11 – 14, 2022

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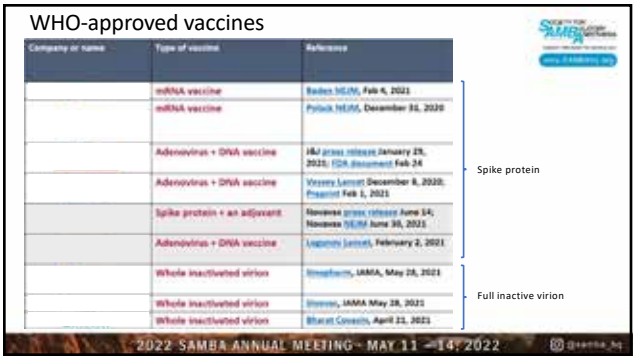
WHO-approved vaccines
Company or name
Type of vaccine
Reference
mRNA vaccine
mRNA vaccine
Adenovirus + DNA vaccine
Adenovirus + DNA vaccine
Spike protein + an adjuvant
Adenovirus + DNA vaccine
Spike protein
Whole inactivated virion
Whole inactivated virion
Whole inactivated virion
Full inactive virion
2022 SAMBA ANNUAL MEETING - MAY 11 – 14, 2022

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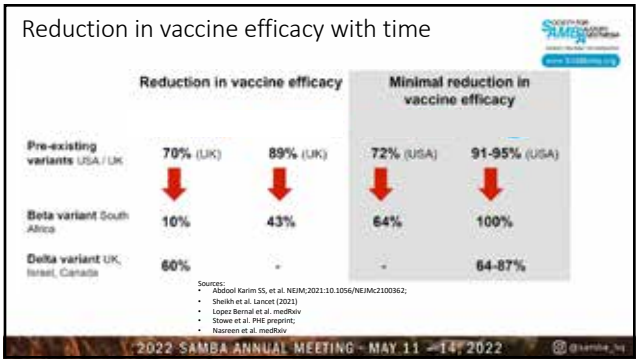
Reduction in vaccine efficacy with time
Reduction in vaccine efficacy
Minimal reduction in vaccine efficacy
Pre-existing variants USA / UK
70% (UK)
89% (UK)
72% (USA)
91-95% (USA)
Beta variant South Africa
10%
43%
64%
100%
Delta variant UK, Israel, Canada
60%
64-87%
Sources:
Abdool Karim SS, et al. NEJM;2021:10.1056/NEJMc2100362;
Sheikh et al. Lancet (2021)
Lopez Bernal et al. medRxiv
Stowe et al. PHE preprint;
Nasreen et al. medRxiv
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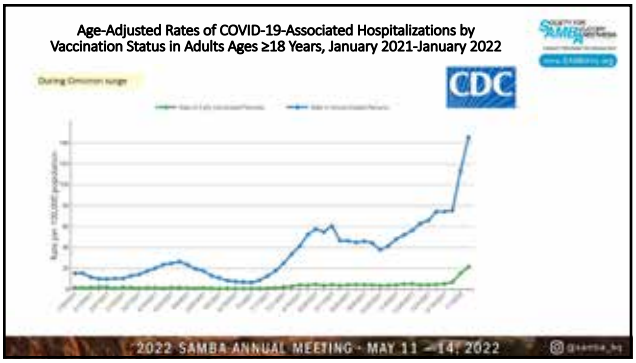
Age-Adjusted Rates of COVID-19-Associated Hospitalizations by Vaccination Status in Adults Ages ≥18 Years, January 2021-January 2022
CDC
2022 SAMBA ANNUAL MEETING - MAY 11 – 14, 2022

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Boosters?

- Vaccination with either a short or long interval between two doses was associated with a considerably reduced risk of SARS-CoV-2 infection (asymptomatic and symptomatic) in the short term, but this protection waned after 6 months, during a period when the delta variant predominated.
- The highest and most durable protection was observed in participants who received one or two doses of vaccine **after a primary infection**.
- Strategic use of booster doses of vaccine to avert waning of protection (particularly in double vaccinated, previously uninfected persons) may reduce infection and transmission in the ongoing response to Covid-19.

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Recommendations

- 140,231 unvaccinated patients undergoing surgery in 116 countries, 1,674 hospitals
- 3,127 had a COVID-19 infection before surgery.
- **Increased risks of mortality and morbidity**—especially with pulmonary complications–up to 7 weeks post COVID diagnosis, regardless of being asymptomatic or symptomatic, older or younger than 70, having major or minor surgery, or undergoing elective or emergency surgery.
- Symptomatic patients at ≥ 7 weeks were at increased risk for complications versus patients without symptoms.
- Mortality data is summarized in the table below.
  https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/epdf/10.1111/anae.15458

Interval Between COVID Diagnosis and Surgery	30-day Mortality Rate for Elective Patients (%, CI)*
No COVID Diagnosis	0.82 (0.57-0.87)
0-2 weeks	3.09 (1.04-4.54)
3-4 weeks	2.29 (1.06-3.53)
5-6 weeks	2.38 (0.87-3.93)
≥7 weeks	0.84 (0.20-1.07)

16

Recommendations

1. Elective surgery should be delayed for 7 weeks after a SARS-CoV-2 infection in unvaccinated patients that are asymptomatic at the time of surgery.
2. The evidence is insufficient to make recommendations for those who become infected after COVID vaccination. Although there is evidence that, in general, vaccination reduces post-infection morbidity, the effect of vaccination on the appropriate length of time between infection and surgery/procedure is unknown.
3. Any delay in surgery needs to be weighed against the time-sensitive needs of the individual patient.

17

Recommendations

4. If surgery is deemed necessary during a period of likely increased risk, those potential risks should be included in the informed consent and shared decision-making with the patient.
5. Extending the above delay should be considered if the patient has continued symptomatology not exclusive of pulmonary symptoms.
6. Any decision to proceed with surgery should consider:
   - The severity of the initial infection
   - The potential risk of ongoing symptoms
   - Comorbidities and frailty status
   - Complexity of surgery

18

In practice ASCs have been timing surgery:

Based on the symptom - and severity-based categories, elective surgery should be postponed:

- **Four weeks for an asymptomatic patient** or recovery from only mild, non-respiratory symptoms.
- **Six weeks** for a **symptomatic** patient (e.g., cough, dyspnea) **who did not require hospitalization**.
- **Eight to ten weeks** for a **symptomatic** patient who is **diabetic, immunocompromised, or hospitalized**.
- **Twelve weeks for a patient who was admitted to an intensive care unit** due to COVID-19 infection.

19

Lessons learned from a facility point of view

JAMA Network

From: **Nine Lessons Learned From the COVID-19 Pandemic for Improving Hospital Care and Health Care Delivery**

JAMA Intern Med. 2021;181(9):1161-1163. doi:10.1001/jamainternmed.2021.4237

- Repurpose hospital areas to expand areas of care: Preop, PACU
- Canceled elective surgery and used A.C.S. criteria to determine the timing of surgery.
- Canceled all outpatient appointments.
- Rapid discharge of patients to prevent infection.
- Transfer patients to other hospitals with less COVID-19
- Reassignment of staff
- Same-day "emergency" credentialing

20

Non-Medical effects of the COVID-19 Pandemic

21

COVID-19 impact on society

Five major global impacts by SARS-CoV-2:

1. Increase in Poverty to ~ 150 Million Extreme Poor by 2021.
2. Increase in hunger: 161 million more suffer from food insecurity.
3. Misinformation:
   a. Miracle cures
   b. New world order
   c. Conspiracy theories
   d. Political instability & protests restrictions.
4. Disparities in access to vaccination, and treatment, which was reflected by disparities in mortality.

22

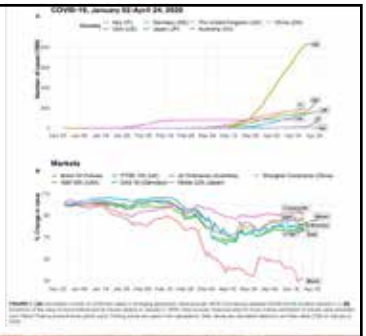
- June 2020, World Bank stated, COVID-19 to Plunge Global Economy into Worst Recession since World War II.
- Decreased demand for oil > cheap oil
- COVID-19 triggered a steep increase in debt, specially in developing economies.
- As the virus spreads, the markets continue to be volatile.
- The most impact has been on manufacturing, and the service industry, especially in developed countries.

Pak, A., Adegboye, OA., Adekunle, A., Rahman, KM., McBryde, ES., Eisen, DP.

Economic Consequences of the COVID-19 Outbreak: the Need for Epidemic Preparedness.

Frontiers in Public Health. May 20, 2020.

doi: 10.3389/fpubh.2020.00241



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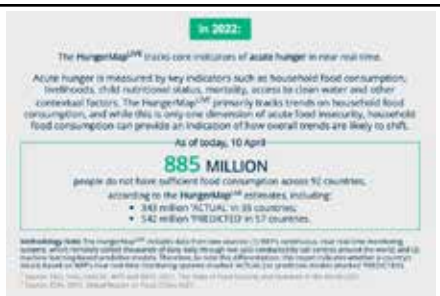

https://hungermap.wfp.org

24

Looking back: 3 most important new technological developments

- Vaccines.
  - December 2019: 1st case reported
  - 11 days later: full COVID sequence identified
  - November 2020: 1st vaccination by Pfizer / BioNTech
- Diagnostics
  - PCR available within 2 weeks;
  - Few weeks later, rapid antigen tests,
  - Antibody testing
- New treatments:
  - Recovery trial with Dexamethasone
  - REGEN-COV antibody
  - Tocilizumab in severe covid
  - Molnupiravir decreases death by ~50%
- Trials to demonstrate some drugs don't work:
  - Ivermectin
  - Convalescent plasma
  - Lopinavir / Ritonavir
  - Favipiravir
  - Hydroxychloroquine

25

Society

1. Infectious diseases are a whole society issue
2. The vaccine paradigm has been transformed for emergencies
3. Weaknesses in vaccine manufacturing and equitable distribution require change
4. Trust is one of the most delicate but critical requirements for an effective pandemic response.
5. Agility and speed will be the new basis for differentiation.
6. Government policy matters—but individual behavior sometimes matters more.
7. Schools are the true fulcrum for the functioning of society.
8. Work will never be the same.
9. Economic stimulus works, but only in concert with strong public-health measures.
10. Whether we experience these problems again will depend on the investments and institutions we establish now.

McKinsey & Company - Healthcare Systems & Services Practice
Ten lessons from the first two years of COVID-19
by Matt Craven, Mark Staples, and Matt Wilson

26

Pandemic & the supply chain disruption

New York Times

27

Supply chain

Home school & work → No demand for cars → No need for chips for cars

Increased demand for larger homes, electronic hardware

Government packages → Increased purchasing power → Increase in demand for goods → Dry $ supply → Government lowers interests → Increase lending → Increase $ supply

Chips for electronics → Pandemic ends → Increased demand For cars → Decreased supply of chips for cars → Decreased supply → Increased prices

Ongoing labor and material shortages, intermittent plant closures, and shipping delays.

Ports could not process the increased shipping volumes

Transportation systems were strained by restrictions on air travel and quarantine requirements on vessel crews and interstate truck drivers.

28

Semper imitatum, nunquam idem

Physician anesthesiologists are the perioperative medicine specialists who assess and modify risk factors to decrease complications and implement evidence-based medicine to decrease discharge time and postoperative visits to the ER and/or post-discharge hospitalizations.

29

PERIOPERATIVE COMPLICATIONS AND POST-OPERATIVE MORTALITY

Perioperative COVID-19+ Conversion

To Worry or Not to Worry?

30

PERIOPERATIVE COMPLICATIONS AND POST-OPERATIVE MORTALITY

CURRENT EVIDENCE

Patients undergoing surgery who have SARS-CoV-2 infection confirmed within 7 days before or 30 days after surgery have worse morbidity and mortality post-operatively[1,2].

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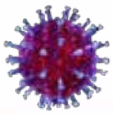
PERIOPERATIVE COMPLICATIONS AND POST-OPERATIVE MORTALITY

- Retrospective analysis of 1128 patients s/p surgery 1-1 and 1-31, 2020 [3]
  - 74·0% had emergency surgery
  - 24·8% had elective surgery.
  - SARS-CoV-2 infection was confirmed preoperatively in 26·1% patients.
    - **30-day mortality: 23·8%.**
    - **Pulmonary complications: 51·2% of 1128 patients**
      - **30-day mortality in these patients was 38·0%.**



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PERIOPERATIVE COMPLICATIONS AND POST-OPERATIVE MORTALITY

Important Notes

- Even though the mortality and pulmonary complications showed higher statistical significance for emergency cases, patients having elective surgery still had a mortality rate of 18.9% overall

- From this group, **a higher percentage of mortality was observed in who had a post-operative diagnosis as opposed to preoperatively.**
  - Pulmonary complications for such outpatients followed the same pattern
  - Thrombotic complications have also been observed post-operatively with increased incidence in COVID -19 patients[2,4].

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PERIOPERATIVE COMPLICATIONS AND POST-OPERATIVE MORTALITY

Retrospective study of 10,940 surgical patients in different hospital settings[5]:
COVID-19 infection positivity was an independent risk factor for increased perioperative mortality but not complications

- Overall mortality rates:
  - Cohort with COVID-19 : 14.8%
  - Cohort without COVID-19: 7.1%
- Limitations
  - Patient outcomes could not be compared by clinical severity of COVID-19 infection.
  - Could not determine specific types of surgery or whether the surgery was elective, urgent, or emergent.

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PERIOPERATIVE COMPLICATIONS AND POST-OPERATIVE MORTALITY

- **In adjusted analyses, 30-day mortality was associated with[2]:**
  - *Male sex*
  - *Age 70 years or older*
  - *American Society of Anesthesiologists status 3–5 versus 1-2*
  - *Malignant versus benign or obstetric diagnosis*
  - *Emergency versus elective surgery*
  - *Major versus minor surgery*

35

Am J Surg. 2022 Feb; 223(2): 380-387.
Published online 2021 Apr 14. doi: 10.1016/j.amjsurg.2021.04.005
PMCID: PMC8045424
PMID: 33849701

Increased complications in patients who test COVID-19 positive after elective surgery and implications for pre and postoperative screening

- Prospective study: 90,093 patients undergoing elective surgery at 170 VA hospitals across US
- Patient groups:
  - First positive COVID-19 test:
    - Within 30 days after surgery (COVID[-/+])
    - Before surgery (COVID[+/–])
    - Negative throughout (COVID[–/–]).
- Cumulative incidence, risk factors for and complications of COVID[-/+] estimated

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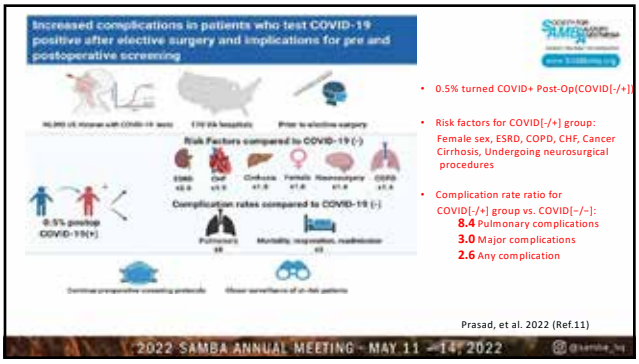

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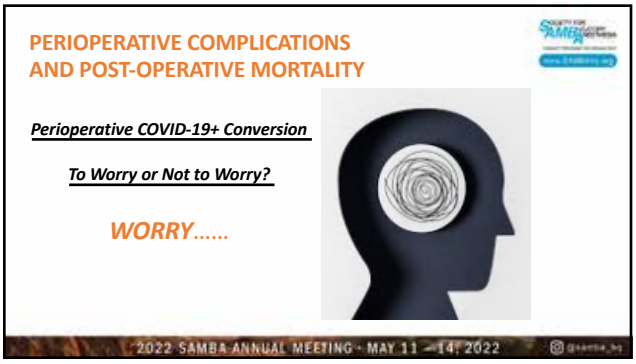

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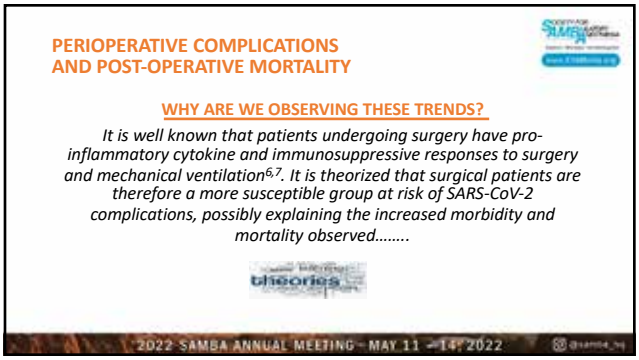

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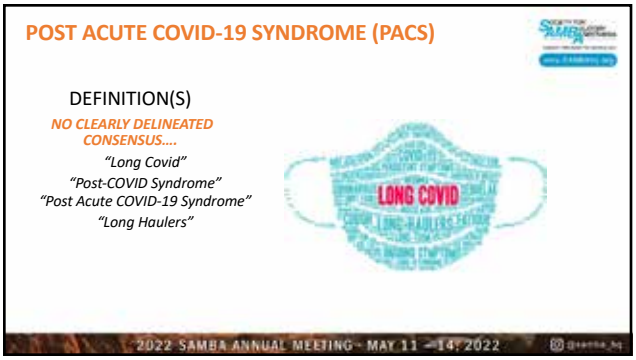

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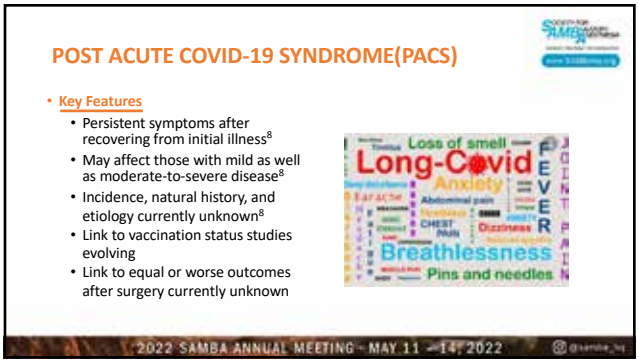

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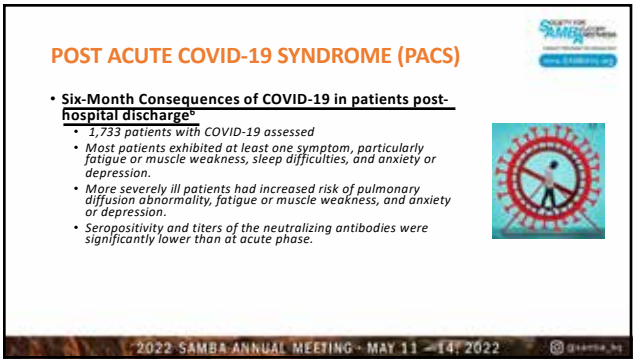

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POST ACUTE COVID-19 SYNDROME (PACS)

- **Two-month Outcomes Among Patient Hospitalized with COVID-10[9]**
  - *1,648 patients hospitalized with COVID-19 in Michigan.*
  - *Nearly 1 in 3 patients died during hospitalization or within 60 days of discharge.*
  - *For most patients who survived, ongoing morbidity, including the inability to return to normal activities, physical and emotional symptoms, was common.*

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POST ACUTE COVID-19 SYNDROME (PACS)

Role of COVID-19 Vaccination in PACS

Anecdotal Reports/Informal Patient and Clinicians' Surveys

- About 40% of the 577 long-covid patients contacted by the group Survivor Corps* said they felt better after getting vaccinated.
- Sub-set of patients of at Columbia University Medical Center: approximately 30-40% of "brain fog" and gastrointestinal problems most commonly-resolved symptoms post-vaccination**

*Grassroots movements connecting COVID-19 Survivors to support all medical, scientific and academic research. https://www.survivorcorps.com/
**https://www.pbs.org/newshour/health/vaccines-may-help-some-long-covid-patients

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POST ACUTE COVID-19 SYNDROME (PACS)

Role of COVID-19 Vaccination in PACS

- Small UK study: about 23% of long-COVID patients had an "increase in symptom resolution" post-vaccination, compared with about 15% of those who were unvaccinated[10].
- No difference in response was identified between Pfizer-BioNTech or Oxford-AstraZeneca vaccine[10].
- Receipt of vaccination was not associated with a worsening of Long Covid symptoms, quality of life, or mental wellbeing[10].

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POST ACUTE COVID-19 SYNDROME (PACS)

Role of COVID-19 Vaccination in PACS

- **Several leading theories for why vaccines could alleviate the symptoms of PACS:**
  - *vaccines may clear up leftover virus or fragments?*
  - *vaccines may interrupt a damaging autoimmune response?*
  - *vaccines may "reset" the immune system in some other way?*

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PACS

SUMMARY

Many unknowns….BUT

1. Prevalence is increasing
2. Can affect patients with both mild, moderate or severe infections
3. It may have an effect of surgical outcomes
4. Vaccination *MIGHT* help decrease symptoms

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CASE #1
WOULD YOU DO THIS PATIENT IN YOUR ASC?

- 72 y/o male scheduled for resection of scalp malignant melanoma under general anesthesia
  - History:
    - COVID-19 5 weeks ago requiring high flow oxygen, antibody therapy, and antivirals. Patient recovered well and went home 9 days after initial diagnosis.
    - Other: Arthritis, glaucoma, DVT 12 year ago
  - BMI 29. Vitals stable with POX 96% at PMD's office. Lungs are clear, and rest of exam is unremarkable
  - Meds: Truspot, PRN Tylenol, Daily asa 81mg
  - Would you like any more history?

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1. YES, PROCEED

2. YOU CAN'T BE SERIOUS..!!
OF COURSE NOT!!

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avaledon@verizon.net
leopoldorodriguez@icloud.com

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REFERENCES

1. Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study. www.thelancet.com Published online May 29, 2020 https://doi.org/10.1016/S0140-6736(20)31182-X

2. Doglietto F, Vezzoli M, Gheza F, et al. Factors Associated With Surgical Mortality and Complications Among Patients With and Without Coronavirus Disease 2019 (COVID-19) in Italy. *JAMA Surg*. 2020;155(8):691-702. doi:10.1001/jamasurg.2020.2713.

3. COVIDSurg Collaborative. Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study [published correction appears in Lancet. 2020 Jun 9:;]. *Lancet*. 2020;396(10243):27-38. doi:10.1016/S0140-6736(20)31182-X

4. Sorogl P, Villa C, Ciuffi A, Gubertini G, Broggi M. Long lasting hypercoagulability after subclinical COVID-19. *J Thromb Thrombolysis*. 2020;50(4):822-824. doi:10.1007/s11239-020-02215-3

5. Haffner MR, Le HV, Saiz AM, et al. Postoperative In-Hospital Morbidity and Mortality of Patients With COVID-19 Infection Compared With Patients Without COVID-19 Infection. *JAMA Netw Open*. 2021;4(4):e215697. doi:10.1001/jamanetworkopen.2021.5697

6. . Besnier E, Tuech JJ, Schwarz L. We asked the experts: Covid-19 outbreak: is there still a place for scheduled surgery? "Reflection from pathophysiological data". *World J Surg* 2020; **44**: 1695–98.

7. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with2019 novel coronavirus in Wuhan, China. *Lancet* 2020; **395**: 497–506

8. Long COVID/POST COVID:https://www.idsociety.org/covid-19-real-time-learning-network/disease-manifestations--complications/post-covid-syndrome/

9. Chopra, V, et al. Sixty-Day Outcomes Among Patients Hospitalized With COVID-19. https://doi.org/10.7326/M20-5661

10. Arnold, DT, et al. Are vaccines safe in patients with Long COVID? A prospective observational study. https://doi.org/10.1101/2021.03.11.21253725

11. Prasad NK, Lake R, Englum BR, et al. Increased complications in patients who test COVID-19 positive after elective surgery and implications for pre and postoperative screening. *Am J Surg*. 2022;223(1):160-167. doi:10.1016/j.amjsurg.2021.04.003

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Status of the ASC Industry

William Prentice

05/12/2022
9:00am – 9:30am MST

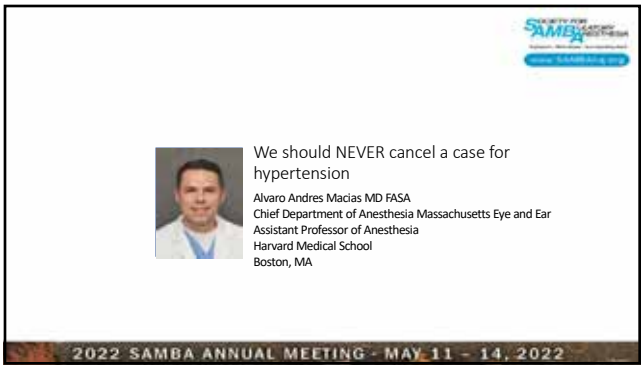
HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Pro/Con #1: We Should NEVER Cancel a Case for Hypertension

Alvaro Andres Macias, MD, FASA (Pro)
Michael O'Rourke, MD, FASA (Con)

05/12/2022
9:30am – 10:00am MST


We should NEVER cancel a case for hypertension
Alvaro Andres Macias MD FASA
Chief Department of Anesthesia Massachusetts Eye and Ear
Assistant Professor of Anesthesia
Harvard Medical School
Boston, MA
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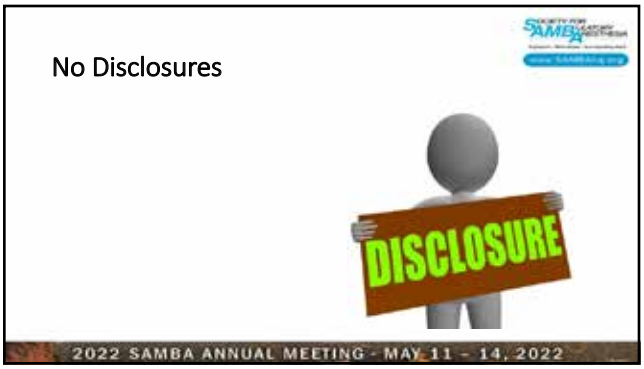
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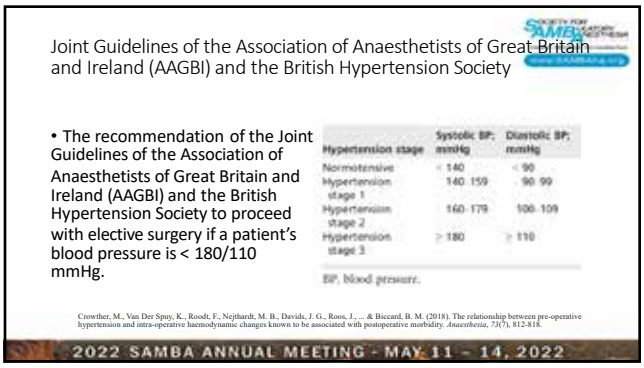
Joint Guidelines of the Association of Anaesthetists of Great Britain and Ireland (AAGBI) and the British Hypertension Society
• The recommendation of the Joint Guidelines of the Association of Anaesthetists of Great Britain and Ireland (AAGBI) and the British Hypertension Society to proceed with elective surgery if a patient's blood pressure is < 180/110 mmHg.
Hypertension stage
Systolic BP; mmHg
Diastolic BP; mmHg
Normotensive
< 140
< 90
Hypertension stage 1
140-159
90-99
Hypertension stage 2
160-179
100-109
Hypertension stage 3
≥ 180
≥ 110
BP, blood pressure.
Crowther, M., Van Der Spuy, K., Roodt, F., Nejthardt, M. B., Davids, J. G., Roos, J., ... & Biccard, B. M. (2018). The relationship between pre-operative hypertension and intra-operative haemodynamic changes known to be associated with postoperative morbidity. Anaesthesia, 73(7), 812-818.
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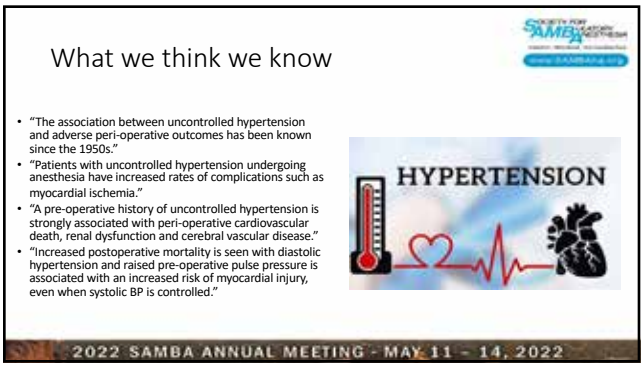
What we think we know
• "The association between uncontrolled hypertension and adverse peri-operative outcomes has been known since the 1950s."
• "Patients with uncontrolled hypertension undergoing anesthesia have increased rates of complications such as myocardial ischemia."
• "A pre-operative history of uncontrolled hypertension is strongly associated with peri-operative cardiovascular death, renal dysfunction and cerebral vascular disease."
• "Increased postoperative mortality is seen with diastolic hypertension and raised pre-operative pulse pressure is associated with an increased risk of myocardial injury, even when systolic BP is controlled."
HYPERTENSION
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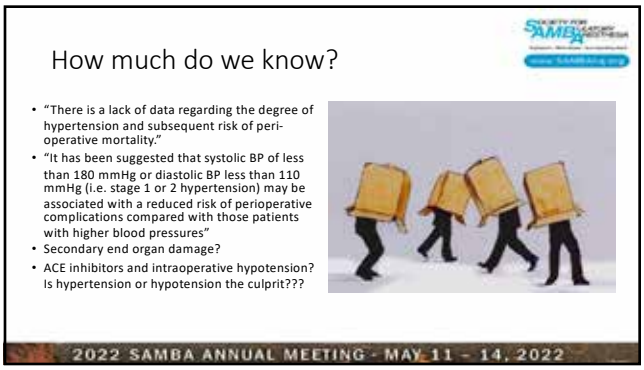
4


How much do we know?
• "There is a lack of data regarding the degree of hypertension and subsequent risk of peri-operative mortality."
• "It has been suggested that systolic BP of less than 180 mmHg or diastolic BP less than 110 mmHg (i.e. stage 1 or 2 hypertension) may be associated with a reduced risk of perioperative complications compared with those patients with higher blood pressures"
• Secondary end organ damage?
• ACE inhibitors and intraoperative hypotension? Is hypertension or hypotension the culprit???
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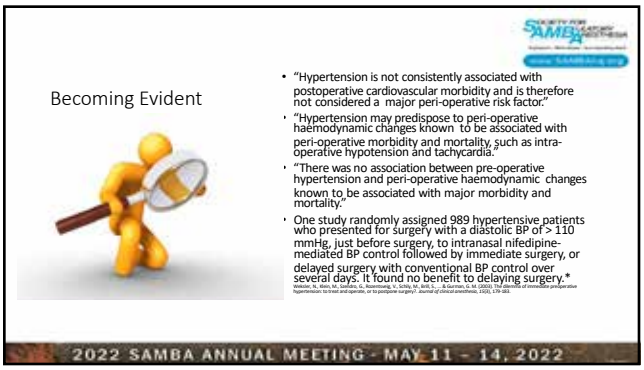
Becoming Evident
• "Hypertension is not consistently associated with postoperative cardiovascular morbidity and is therefore not considered a major peri-operative risk factor."
• "Hypertension may predispose to peri-operative haemodynamic changes known to be associated with peri-operative morbidity and mortality, such as intra-operative hypotension and tachycardia."
• "There was no association between pre-operative hypertension and peri-operative haemodynamic changes known to be associated with major morbidity and mortality."
• One study randomly assigned 989 hypertensive patients who presented for surgery with a diastolic BP of > 110 mmHg, just before surgery, to intranasal nifedipine-mediated BP control followed by immediate surgery, or delayed surgery with conventional BP control over several days. It found no benefit to delaying surgery.*
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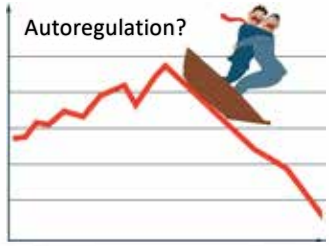
6

Are fluctuations the answer?

Autoregulation?



Does phenylephrine = O2

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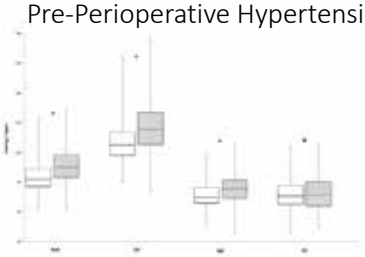
Pre-Perioperative Hypertension



Ward versus pre-induction blood pressure and heart rate measurements bpm: beats per minute, MAP: mean arterial pressure, SBP: systolic blood pressure, DBP: diastolic blood pressure, HR: heart rate, p<0.01, p= 0.022, ward blood pressure (empty rectangles), pre-induction blood pressure (gray rectangles).

Crowther, M., Van Der Spuy, K., Roodt, F., Nejthardt, M. B., Davids, J. G., Roos, J., ... & Biccard, B. M. (2018). The relationship between pre-operative hypertension and intra-operative haemodynamic changes known to be associated with postoperative morbidity. *Anaesthesia*, *73*(7), 812-818.

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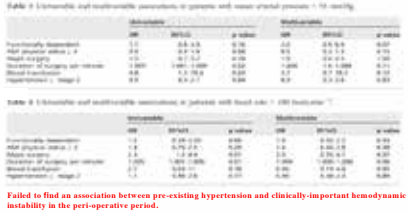
Pre-Perioperative Hypertension

An intra-operative mean arterial pressure of < 55 mmHg occurred in 59 (18.2%) patients, of which 25 (42.4%) were hypertensive. Intra-operative tachycardia (heart rate> 100 beats.min 1) occurred in 126 (38.9%) patients, of whom 61 (48.4%) were hypertensive



Failed to find an association between pre-existing hypertension and clinically-important hemodynamic instability in the peri-operative period.

Crowther, M., Van Der Spuy, K., Roodt, F., Nejthardt, M. B., Davids, J. G., Roos, J., ... & Biccard, B. M. (2018). The relationship between pre-operative hypertension and intra-operative haemodynamic changes known to be associated with postoperative morbidity. *Anaesthesia*, *73*(7), 812-818.

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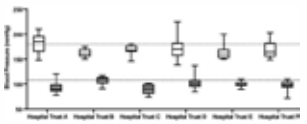
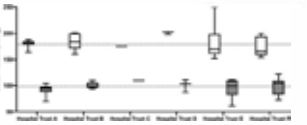
Cancelation Rates



Regional systolic (○) and diastolic (■) blood pressure variation of cancelled patients in 2013. The hashed lines refer to 180 systolic and 110 mmHgdiastolic, which is the safe limit set out in the Association/BHS guidelines.



Regional systolic (○) and diastolic (■) blood pressure variation of cancelled patients in 2018. The hashed lines refer to 180 systolic and 110 mmHgdiastolic, which is the safe limit set out in the Association/BHS guidelines.

Soni, S., Shah, S., Chaggar, R., Saini, R., James, E., Elliot, J., ... & Hartle, A. (2020). Surgical cancellation rates due to peri-operative hypertension: implementation of multidisciplinary guidelines across primary and secondary care. *Anaesthesia*, *75*(10), 1314-1320.

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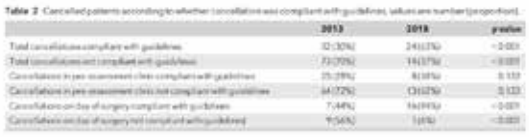

Soni, S., Shah, S., Chaggar, R., Saini, R., James, E., Elliot, J., ... & Hartle, A. (2020). Surgical cancellation rates due to peri-operative hypertension: implementation of multidisciplinary guidelines across primary and secondary care. *Anaesthesia*, *75*(10), 1314-1320.

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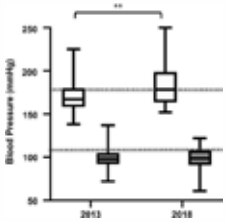
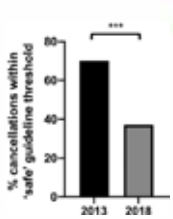


Comparison of systolic (○) and diastolic (■) blood pressures deemed unsafe for surgery in each evaluation. The hashed lines refer to 180 systolic and 110 mmHg diastolic, which is the safe limit set out in the Association/ BHS guidelines. ** p < 0.01.



Comparison of cancellations within the 'safe' guidelines threshold (i.e. systolic BP < 180 mmHg and/or diastolic BP < 110 mmHg) over a 1- month period before and after the guideline publication in 2016. *** p < 0.001.

Soni, S., Shah, S., Chaggar, R., Saini, R., James, E., Elliot, J., ... & Hartle, A. (2020). Surgical cancellation rates due to peri-operative hypertension: implementation of multidisciplinary guidelines across primary and secondary care. *Anaesthesia*, *75*(10), 1314-1320.

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Con: We Should NEVER Cancel a Case for Hypertension

Michael O'Rourke, MD, FASA
Associate Professor, Loyola University Chicago
Anesthesiologist, Edward Hines, Jr VA Hospital
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@Dr_M_ORourke

1

Disclosures

- **I have no actual or potential conflict of interest in relation to this presentation.**
- **My words are my own and do not represent the official views of the Veteran Health Administration or the United States government**

2

I acknowledge:

- 160/100 → 180/110

3

Never?

4

Severe Asymptomatic Hypertension

- "Hypertensive Urgency"
- BP ≥180/≥120 mmHg

5

Severe Asymptomatic Hypertension

- Acute head injury or trauma
- Generalized neurologic symp… …isual disturbances
- Focal neurologic symptoms t…
- Fresh flame hemorrhages, e… performed, as these are con… …t funduscopy is …l can rarely be associated with hypertensive encephal…
- Nausea and vomiting, which…
- Chest discomfort or pain, wh… …tion
- Acute, severe back pain, whi…
- Dyspnea, which may be due…
- Pregnancy, as such patients … …evelop eclampsia
- Use of drugs that can produce a hyperadrenergic state, such as cocaine, amphentamines, phencyclidine, or monoamine oxidase inhibitors, or recent discontinuation of clonidine or, less commonly, other antihypertensive agents

UpToDate: Management of severe asymptomatic hypertension (hypertensive urgencies) in adults

6

Severe Asymptomatic Hypertension

- Management is Controversial: Hours vs Days

7

Intraoperative Hypotension

- Patients with HTN are more likely to have hemodynamic instability intraoperatively

8

Severe Asymptomatic Hypertension

- 56 y/o blind man with hypertension presents for Rotator Cuff Repair
- Patient lost medication organizer 9 days before surgery
- Had been taking medications based on tactile discrimination from a bag
- Preoperative BP 222/124

9

Teachable Moment

- Given that HTN is prevalent and better treatment can dramatically improve a patient's health, should this time be used to optimize BP meds?

10

Postoperative hypertension

- Associated with adverse outcomes
- Stroke, MI, Arrhythmias, Bleeding

11

OK to proceed if:

- Patient has no signs or symptoms of end organ damage
- Patient has no major cardiovascular risk factors
- Scheduled surgery is low or intermediate risk
- Intraoperative hypotension is avoided

12

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Pediatrc Ambulatory Anesthesia Panel

Marjorie Brennan, MD
Chhaya Patel, MD, SAMBA-F

05/12/2022
10:45am – 11:30am MST

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Small Adults, Big Problems: Pediatric Crisis at the Ambulatory Surgery Center!

Chhaya Patel, MD, SAMBA-F
Assistant Professor of Anesthesiology and Pediatrics
Emory University School of Medicine
Children's Healthcare of Atlanta

Children's Healthcare of Atlanta EMORY UNIVERSITY

1

Disclosures

- I have NONE!

2

Learning Objectives

- **Identify early characteristics and recommend a process for rapid identification of pediatric emergencies including local anesthesia toxicity, operating room fire, anaphylaxis, and airway obstruction**
- **Review life-threatening emergencies and their management at Ambulatory Surgery Center**
- **Identify and update knowledge on current guidelines for the management of pediatric emergencies**

3

Pediatrics at ASC

- 22.5 million procedures and surgeries were performed at ambulatory surgery centers. less than 1% transfer rate!
- Increasing number of pediatric cases at Ambulatory Surgery Centers
- Pediatric anesthesiology is inherently higher risk than adult anesthesia due to differences in the physiology in children
- Anesthesia providers performed most of these cases without specialty training in pediatric

4

Emergency

- Despite proper staffing, equipment and careful patient selection
- Can cause serious disruption to a surgical schedule
- Advances in anesthetic care are allowing more complex cases and patients with comorbidities
- Limited staff and resources, make ASC's more vulnerable to inadequate response

5

Local Anesthetic Systemic Toxicity (LAST)

- Ramesh and Boretsky discovered that 68% of LAST events occurred under general anesthesia
- Children less than 3 years old make up 71% of the reported pediatric LAST cases
- Highest reported blocks being penile, caudal, and local infiltration
- Bupivacaine was used in 67% of the reported LAST cases

6

LAST Diagnosis

- *Classically neurologic signs precede the cardiovascular signs, but not always*
- *CNS: apnea, seizure, altered level of consciousness*
- *CV: EKG (wide QRS, ST segment changes, peaked or inverted T), significant bradycardia, asystole, v tach, hypotension, cardiac arrest*

7

LAST Treatment

- Request Intralipid kit
- Secure airway, ventilation with 100% oxygen, Confirm & monitor EKG, BP, and SaO2
- Seizure treatment: Midazolam 0.05-0.1 mg/kg IV
- Treat hypotension with small doses of Epinephrine 1 mcg/kg

Intralipid Dosing

- Bolus Intralipid 20% 1.5 mL/kg over 1 min
- Start infusion 0.25 mL/kg/min
- Repeat bolus every 3-5 min up to 4.5 mL/kg total dose until circulation is restored
- MAX total Intralipid 20% dose: 10 mL/kg over first 30 min

8

Recommendations

- Utilize ultrasound
- Lowest effective dose of LA
- Incremental injections and frequent aspirations
- Full monitors for >10 minutes after the nerve block
- Ultrasound will not eliminate the risks due to artifacts and loss of needle visualization

9

Anaphylaxis in children

- Anaphylaxis is a systemic allergic reaction of sudden onset after exposure to an allergen
- The incidence of anaphylactic reactions is less than the adult population with an incidence of 1:37000 pediatric anesthetics
- Antibiotics, Neuromuscular blocking agents, Chlorhexidine, and latex are the most frequently cited triggers

10

Clinical Features

- I (Mild) Cutaneous signs
- II (Moderate) Measurable but not life-threatening symptoms
- III (Life threatening) Life threatening symptoms: Severe hypotension, tachycardia or bradycardia, arrhythmias Bronchospasm, high airway pressure
- IV (Cardiac arrest) Cardiac and/or respiratory arrest Most commonly presents as pulseless electrical activity

11

Symptoms	Differential diagnoses
Cutaneous signs: Hives, flushing, erythema, urticaria, angioedema	Direct histamine release
	Venous obstruction
	Head down position
	C1-esterase deficiency
	Mastocytosis
	Cold-induced anaphylaxis
Hypotension	Hypovolemia
	Peripheral vasodilation by drugs/ neuraxial blockade
	Sepsis
	Embolism: thrombotic, air, amniotic
	Vasovagal
	Cardiogenic shock
High airway pressure/Respiratory compromise: Wheeze, stridor, dyspnea	Circuit malfunction
	Misplaced/kinked airway device
	Tension pneumothorax
	Asthma/Bronchospasm
	Airway foreign body
	Aspiration

Australia and New Zealand College of Anaesthetists. Perioperative Anaphylaxis Management Guidelines

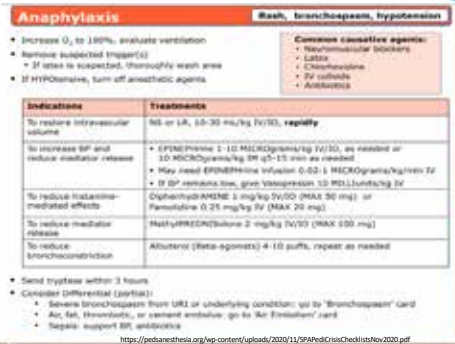
12

Management of Anaphylaxis

- Timely recognition, removal of triggering agent, and administration of fluid and epinephrine are the mainstays of treatment
- Arrange for transfer to a hospital with to the potential for recurrence even if the initial episode has been treated satisfactorily
- Refer to a specialized anesthetic allergy testing center for follow-up

13

SPA Pedi Crisis



https://pedsanesthesia.org/wp-content/uploads/2020/11/SPAPediCrisisChecklistsNov2020.pdf

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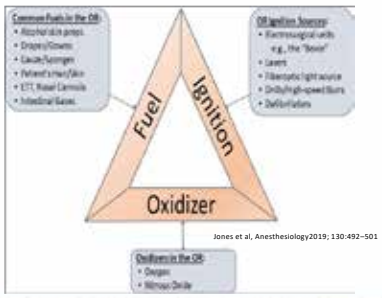
Operating Room Fire

- 650/year
- Media attention and increasing number of surgical liability claims
- 8% of fires in <16yrs



Jones et al, Anesthesiology2019; 130:492–501

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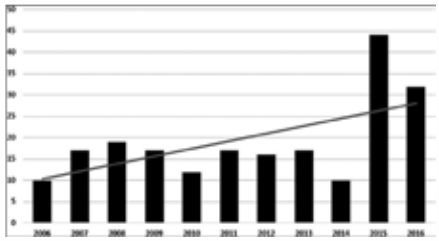
Annual incidence of operating Room Fires Surgical Devices



Anesthesiology. 2019;130(3):492-501. doi:10.1097/ALN.0000000000002598

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Surgical Fires

Equipment involved

- 70%: Electrosurgical device
- 10%: Laser
- 20% Other: Fiberoptic light source, defibrillator, high speed burrs, etc.

Oxidizer and fuels

- 75%: Oxygen enriched atmosphere
- 4%: Alcohol based prep solutions

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Comparison of Alcohol *vs.* Non–Alcohol-based Preps

Drying Time	Non–Alcohol-based Fires	Alcohol-based Fires	*P* value
None	0% (0/40)	22% (13/60)	<0.001
3 min	0% (0/40)	10% (6/60)	0.08

All fires with the alcohol-based prep were ignited after the "drying time" with a 2-s activation of a standard monopolar "Bovie" pencil. No fires were ignited with a non–alcohol-based prep. Reproduced from Jones *et al*.[62]

18

Operating Room Fires

- Tonsillectomy, Eye surgery, and Head Neck surgery
- Monitored Anesthesia Care
- Fire risk assessment during surgical timeouts
- Complete elimination of fire risk is impossible as these components are key to a successful surgery

19

Prevention Strategy

- Fraction of inspired oxygen (FiO2) less than 30% for any open delivery system
- Avoid nitrous oxide
- Use a sealed gas delivery system-cuffed endotracheal tube (ETT)
- Flammable skin prep must dry before draping
- Minimize drapes around the airway
- Gauze and sponges moistened
- Close communication between surgeon and anesthesiologist
- Monitor inspired and exhaled oxygen
- For laser procedures, use a laser-resistant tracheal tube and cuff filled with saline or indicator dye

20

Fire in the Airway

For a fire in the airway or breathing circuit, ASAP:

- Remove the tracheal tube
- Stop the flow of all airway gases
- Disconnect breathing circuit
- Remove all flammable and burning materials from airway
- Pour saline or water into the patient's airway

21

Fire in the Airway

After the airway or breathing circuit fire is extinguished:

- Reestablish ventilation by mask
- Avoid supplemental O_2 & N_2O, if possible
- Extinguish and examine ETT to assess for fragments
- Consider rigid bronchoscopy to assess injury & remove debris

22

Non-Airway Fire

For a fire elsewhere on or in the patient, immediately

- Stop the flow of all airway gases
- Remove all drapes, flammable and burning material from the patient
- Extinguish all burning materials in, on or around the patient with saline or water
- Assess for smoke inhalation injury if patient not intubated

ASA Practice Advisory for the Prevention & Management of OR Fires. Anesthesiology 2013; 118 (2): 271-90

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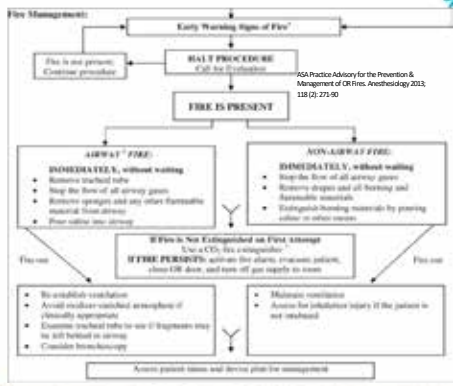


ASA Practice Advisory for the Prevention & Management of OR Fires. Anesthesiology 2013; 118 (2): 271-90

24

Laryngospasm

- Reflex glottic closure due to activation of glottic musculature
- Usually activated during the excitation stage (Stage 2) of general anesthesia
- Protective airway mechanism
- Paradoxical motion of chest wall and abdomen

25

When Does Laryngospasm Occur?

Schreiner M: Anesth 85:475-80,1996

- -Induction 72%
- -Emergence 23%
- -Other 5%

Flick R: Ped Anesth 18:289-96,2008

- -Induction 46%
- -Emergence 44%
- -Maintenance 10%

26

Laryngospasm: Is it really a crisis??

Pediatric Closed Claims Database (CCDB)

- *Airway obstruction including LS was the most common respiratory event*

Pediatric Perioperative Cardiac Arrest (POCA) Registry

- *LS was the most common respiratory cause of Anesthesia Related Cardiac Arrest (ARCA) (11/53 = 21%)*

27

Laryngospasm: Risk Factors

- Age
- Prematurity
- URI
- Comorbidities
- Airway surgery
- Inexperienced provider
- Environmental smoke

29

Laryngospasm Risk Factors: URI Symptoms

Von Ungern-Sternberg:Lancet 376;773-83, 2010

30

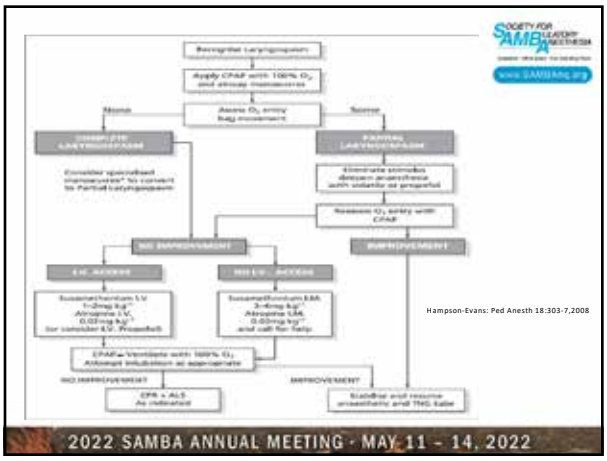
Mitigate Risk Factors

- Sevoflurane
- IV induction
- Use face mask when appropriate, over LMA or ETT

When ETT required:

- Insure adequate depth before DL with deep anesthesia
- Awake extubation

31



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Emergency Preparedness

- Preparation for emergencies in the ambulatory surgery setting is requirement for accreditation agencies
- Simulation-based training increases emergency response preparedness through practice using "real-life" scenario
- Crisis checklist, mobile app, cognitive aids, and emergency manuals

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Response Goal

- Unique for each Center
- Effective preparedness includes creating a standard response algorithm, role delegations for staff, and requires consistent simulation-based drills
- Stabilize the patient for transfer to a higher-acuity facility for further testing, medications, and interventions

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Recommendations

- Frequently scheduled simulation drills to optimize response to rare events
- Debrief, provide feedback, and performance evaluation
- Emphasize importance of communication, teamwork, and documentation

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Thank You!

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Controversies in Pediatric Anesthesia

Marjorie P Brennan MD, MPH

Children's National Hospital

1

Disclosures

- no relevant financial relationships with commercial interests

2

Learning Objectives

- Discuss challenges of obesity in the freestanding ASC versus a hospital ambulatory department
- Debate if narcotic free practice is a goal and discuss steps to minimize opioids at an ambulatory surgery center
- Discuss efficacy of parental presence in reducing anxiety of pediatric Patients During Anesthesia Induction

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A "Big" Problem

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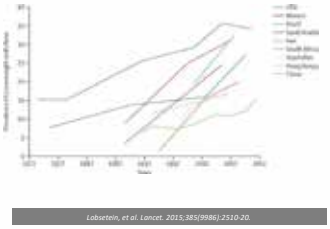

Lobstein, et al. Lancet. 2015;385(9986):2510-20.

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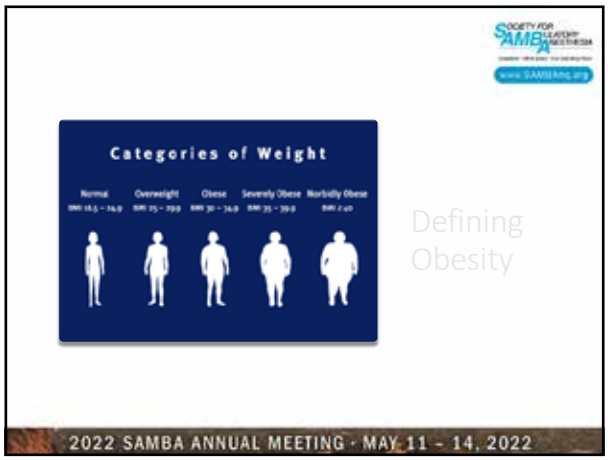
Categories of Weight
Normal
Overweight
Obese
Severely Obese
Morbidly Obese
Defining Obesity
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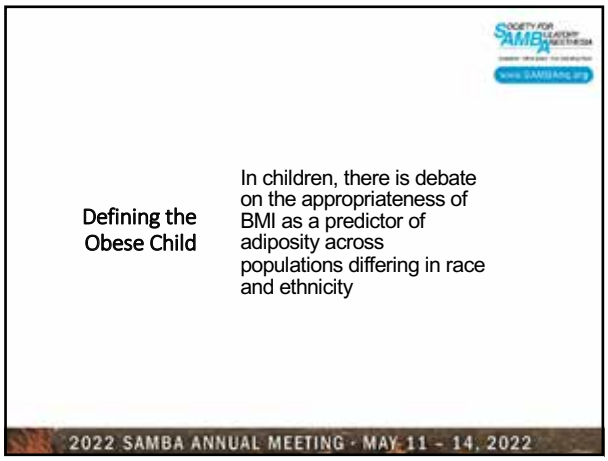
Defining the Obese Child
In children, there is debate on the appropriateness of BMI as a predictor of adiposity across populations differing in race and ethnicity
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BMC Pediatrics
BMI is a poor predictor of adiposity in young overweight and obese children
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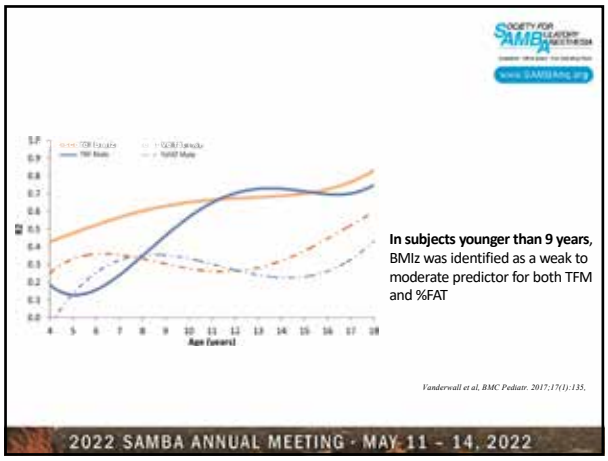
In subjects younger than 9 years, BMIz was identified as a weak to moderate predictor for both TFM and %FAT
Vanderwall et al. BMC Pediatr. 2017;17(1):135.
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CDC
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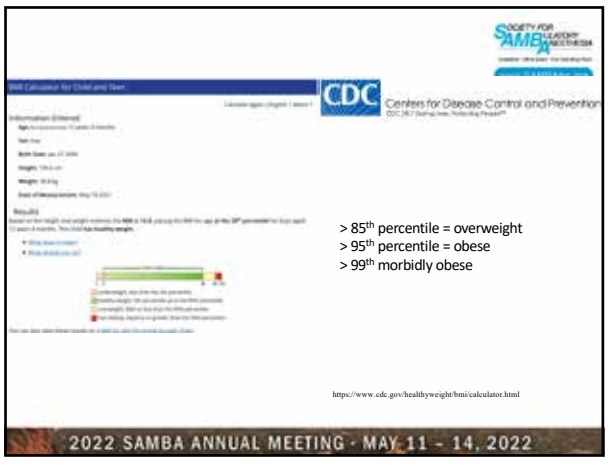
CDC
Centers for Disease Control and Prevention
> 85th percentile = overweight
> 95th percentile = obese
> 99th morbidly obese
https://www.cdc.gov/healthyweight/bmi/calculator.html
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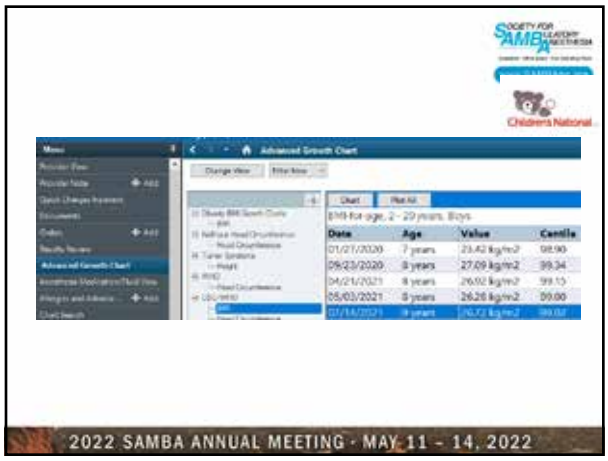

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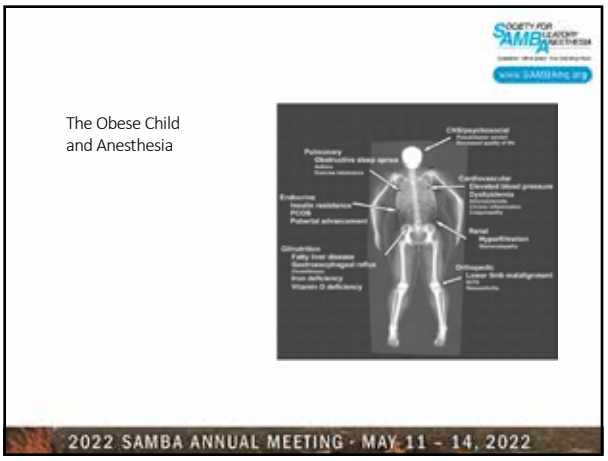

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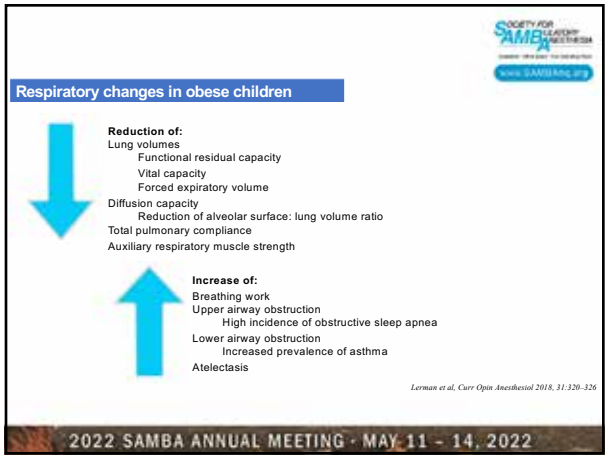

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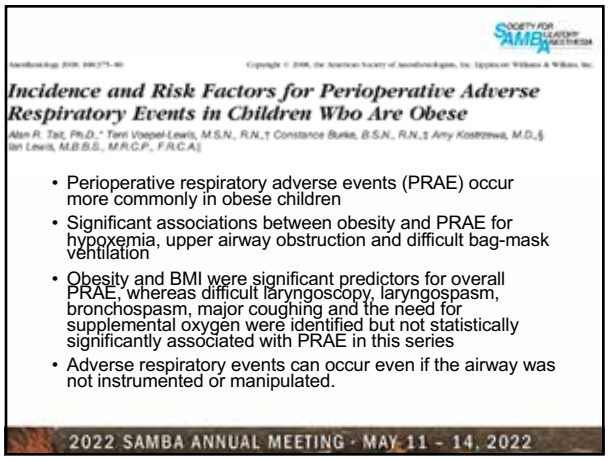

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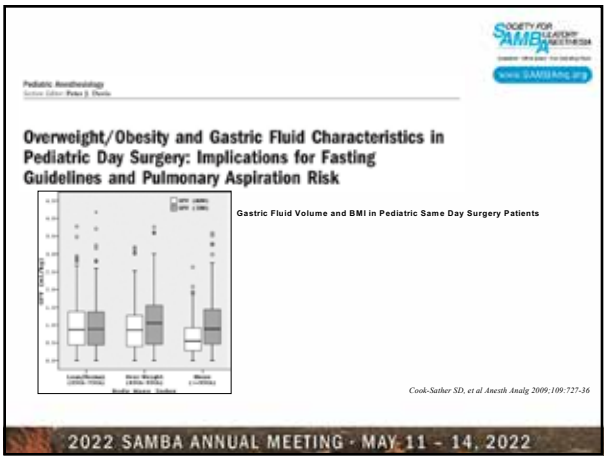

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Technical Challenges

- Airway Management

Mask Airway:
-Challenging

Intubation:
-Usually OK

Supraglottic Airway:
-Usually OK

Moon TS, et al. J Anesth (2019) 33: 96
Tuan Y, et al, Arch Med Sci 2017;13:183–190

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Children's National ASC Guidelines for Obese Children

- Young children (≤ 9 yr.)
  < 98 BMI %ile-for-age
- < 95 BMI %ile-for-age for airway
- Adolescents (> 8 yr.)
  BMI < 30 for airway surgery
  BMI < 35 for non-airway surgery
- No co-morbidities / OSAS
- *Exceptions by consultation*

Note that these are *not* national standards.
BMI, body mass index; *OSAS*, obstructive sleep apnea syndrome.

20

Children's National ASC Guidelines for Obese Children

- ASA Class 2
- No co-morbidity
  - No reactive airway disease
  - No syndromes
  - No OSA

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OFA: The Latest Trend

22

OFA: Opioid Free Anesthesia

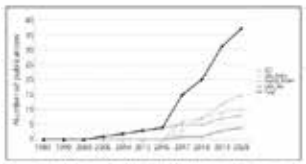

Figure 1.—Number of PubMed Indexed publications on OFA per year, according to the type of paper.
RCT: randomized clinical trial; Obs: Retro: observational and retrospective studies; ExpOp: NSRev: expert's opinion and non-systematic reviews; SRev: MA: systematic reviews and meta-analyses.

2021 Bugada et al, Edizioni Minerva Medica

23

OFA

- What is the rationale for opioid free techniques?
- Is there evidence that OFA can improve perioperative outcomes?

24

Rationale for OFA

- Limits of Opioids
  - Dose-dependent side effects
  - Dose-dependent hyperalgesia
  - Opioid crisis

25

OFA-defined

- The association of drugs and /or techniques that allow good quality general anesthesia with no need for opioids
  - NMDA antagonists: ketamine, lidocaine, magnesium sulfate
  - Sodium channel blockers: local anesthetics
  - Anti-inflammatory drugs (NSAID, dexamethasone)
  - Alpha-2 antagonists (dexmedetomidine, clonidine)

2019, Beloeil

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Pediatric Anesthesiology

ORIGINAL CLINICAL RESEARCH REPORT

In Pursuit of an Opioid-Free Pediatric Ambulatory Surgery Center: A Quality Improvement Initiative

Amber M. Franz, MD, MEng, Lynn D. Martin, MD, MBA, David E. Liston, MD, MPH, Gregory J. Latham, MD, Michael J. Richards, BM, and Daniel K. Low, BM, BS

Anesthesia and Analgesia March 2021

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Dexmedetomidine

Effect of Dexmedetomidine on Sevoflurane Requirement and Emergence Agitation in Children Undergoing Ambulatory Surgery

Effect of single-dose dexmedetomidine on emergence agitation and recovery profiles after sevoflurane anesthesia in pediatric ambulatory surgery

No Delay to Discharge

The effect of intraoperative dexmedetomidine administration on length of stay in the post-anesthesia care unit in ambulatory surgery: A hospital registry study

Emergence agitation prevention in paediatric ambulatory surgery: A comparison between intranasal Dexmedetomidine and Clonidine

Delay

29

Opioid-Free Techniques

- Disadvantages: no alternatives have been discovered or synthesized that are as potent analgesics or generally effective to treat pain. Techniques are complicated and expose children to multiple medications
- Advantages: Reducing opioids facilitates postoperative recovery. Perioperative opioids increase the risk of chronic opioid use and the excessive prescription of opioids produces home reservoirs resulting in accidental intake, diversion, misuse, and abuse

30

J Am Coll Surg. 2018 October ; 227(4): 411–418. doi:10.1016/j.jamcollsurg.2018.07.659.

Opioid-Prescribing Guidelines for Common Surgical Procedures: An Expert Panel Consensus

Heidi N. Overton, MD[a],
Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, MD.

- When alternatives exist for opioid analgesia, such as regional nerve blocks, of course the alternatives should be used, and in cases that are not appropriate for opioid analgesia, opioids should not be used, but in many instances there are no practical or effective alternatives.,
- Use multimodal analgesia, limit narcotic prescriptions in teenagers and use recommended prescriptions

31

What do you mean I can't be there when he goes to sleep?

32

Parental Presence

- Not all operating suites allow parents to be present for the anesthetic induction
- Of those that do, some children and parents are either transported to the operating room directly or into a preop induction area

33

Preoperative parental anxiety predicts behavioural and emotional responses to induction of anaesthesia in children

Joan C. Bevan MD FRCPC(A),
Celeste Johnston RN-EBA, Margaret J. Haig MD FRCPC,
Guy Tousignant MD FRCPC, Simon Lucy MD FRCPC,
Vanessa Kenon BA, Irene K. Assimes MD,
Ruben Curnaza MD

Children of anxious parents were more anxious if their parents were present during induction of anesthesia

34

Parental Presence during Induction of Anesthesia

Physiological Effects on Parents

Zeev N. Kain, M.D.,* Alison A. Caldwell-Andrews, Ph.D.,† Linda C. Mayes, M.D.,‡ Shu-Ming Wang, M.D.,§ Dawn M. Krivutza, M.A.,‖ Megan E. LoDolce, M.A.‖

Pediatric Anesthesia 2006 16: 627–634 doi:10.1111/j.1460-9592.2006.01843.x

Predicting which children benefit most from parental presence during induction of anesthesia

ZEEV N. KAIN MD MBA*, LINDA C. MAYES MD*†, ALISON A. CALDWELL-ANDREWS PHD§, HALEH SAADAT MD*, BRENDA McCLAIN MD* AND SHU-MING WANG MD*

*Department of Anesthesiology, Center for the Advancement of Perioperative Health, †Department of Pediatrics, ‡Department of Child Psychiatry and §Department of Psychiatry, Yale University School of Medicine, New Haven, CT, USA

35

Parental Presence

Who benefits?

- Older children (greater than 4 years)
- Low levels of activity in their temperament
- Parents who were calm and who value preparation and coping skills

36

Parental Presence

- Orientation to the new environment for parents is important
- Support and instruction should be provided when in the induction area to understand the sequence of events and how they can best support their child

37

Summary

- Well-defined evidence-based selection criteria for pediatric patients undergoing surgery in a free-standing ASC will ensure safety of ambulatory surgery.
- Very obese children pose logistical and medical challenges
- Some teenagers with high BMI may simply have a high muscle mass, however, and may be considered on an individual basis.
- The role of the patient information screening team at an ASC is extremely important developing and enforcing patient selection guidelines.

38

Summary

- Appropriate selection may allow some children to be efficiently and safely managed with an opioid-free intraoperative and postoperative analgesic regimen.
- Parental presence is beneficial in appropriately selected patients

39

Thank you!

40

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Pro/Con #2: Midazolam for All Patients?

Mary Ann Vann, MD (Pro)
Dawn Schell, MD (Con)

05/12/2022
11:30am – 12:00pm MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Every Patient should receive Midazolam

Mary Ann Vann MD FASA
Boston, MA

1

Midazolam is a super drug

- Amnesia
- Sedation
- Less Pain
- Less nausea
- Synergy, decreased need for other drugs
- Lower costs
- Easier airway
- Reversibility
- No additional cognitive dysfunction

Without a significant downside!!!

2

Right Dose

Too much of a good thing isn't always good…

Safety and Benefit with proper dosing

(but even at higher doses it doesn't do the harm you may think it would….)

3

Evidence the Naysayers ignore

- Procedural sedation (conscious sedation) has shown great benefits of midazolam with minimal side effects
- Larger doses of midazolam administered during conscious sedation than we usually use
- If the midazolam doesn't cause problems in those cases, then isn't it **something else** that anesthesiologists give that is the problem?

4

Avoiding a Terrible Event

IOW: SHE **REMEMBERED** EVERYTHING!!

5

Amnesia is good

- Pts desire anxiolysis prior to surgery - BMC Psych 2022
- Anterograde and Retrograde amnesia
- Doesn't necessarily impair memory (brain connectivity)
  - Functional MRI - Anesthesiology 2021
  - Midaz ↑functional activity 20 areas, ↓8 areas
  - Ketamine ↑2 areas, ↓17 areas

6

Sedation

- Clin Respir J 2017: EBUS under **midazolam alone** did not reduce diagnostic yield compared to Propofol +/- midaz, w lower costs

Colonoscopy

- A&A 2009: Effect of Adding Midazolam +/- Fentanyl to Propofol -- better operating conditions, No increase in rate of complications, No prolongation of early recovery times
- Am J Gastroenterol 2006: Propofol + fentanyl and/or midazolam and **moderate** levels of sedation - no loss of satisfaction and shorter recovery times compared with propofol alone (titrated to deep sedation)

7

Pain reduction

J Orthop Surg Res 2017: The effect of midazolam on pain control after knee arthroscopy

Systematic review and meta-analysis

- Substantially reduced pain scores
- Decreased number of patients requiring analgesics
- Decreased analgesic consumption
- Longer time to first analgesic

8

Pain reduction

A&A 2004: Sedation with Midazolam Leads to Reduced Pain After Dental Surgery

- Midaz until sedated (up to 10mg) vs. local only
- Lower pain scores at 8 hours, longer time to first analgesic, less analgesic consumption, better pt global assessment

Hernia 2011: Midazolam enhances postoperative analgesic effects of diclofenac when used before the onset of pain

9

Less PONV after GA

A & A March 2016 – 2 articles + Editorial

- 2 reviews/meta-analysis (12 RCTs, 16 RCTs)
- Midazolam given preop, or preop **+** intraop
- Administration of IV midazolam significantly reduced nausea, vomiting and rescue antiemetic administration during first 24 hours
- Similar for women, high risk surgeries, use of N2O, different anti-emetic drug prophylaxis

10

Less PONV after GA: Editorial

Greene, Nathaniel H.; Habib, Ashraf S.

- Midazolam has a clinically relevant antiemetic effect
- Additional work is needed before we confidently use midazolam **solely(??)** for its prophylactic antiemetic effect
- We should continue to use midazolam as appropriate for its anxiolytic effect; we might be killing 2 birds with 1 stone!

11

Decreased need for other drugs

A & A 2009: Mixed-Effects Modeling of the Influence of Midazolam on Propofol Pharmacokinetics

In the presence of midazolam:

- Propofol concentrations are increased (by 25%)
- But also decrease more rapidly after termination of the propofol infusion than when propofol is given as sole drug
- Clinical significance unknown (!!)

12

Lower Costs with Midazolam

- Quicker wake up
- Less Pain
- Less Nausea and Vomiting
- No increase in LOS
- Need lesser amounts of other drugs
  - Which also speeds wakeup!!!

13

Easier Airway !!!!

A&A 2019: Midazolam Premedication Facilitates Mask Ventilation During Induction of General Anesthesia

- RCT: Midaz (0.035 mg/kg, max 3mg) 3 min before transfer to OR vs. placebo (97 pts, 49 Midaz) ---- OR team blinded
- Significantly lower mask ventilation difficulty score
- Significantly lower incidence of difficult mask in Midaz pts

14

Reversibility

Dig Dis Sci 2014: Significant and safe shortening of the recovery time after flumazenil-reversed midazolam sedation

- After 5mg Midazolam +/- fentanyl (887/1506)
- Median dose flumazenil: 0.2mg on arrival to RR
- Recovery time decreased from 2 hours to 64 min
- >98% Pts pleased with shorter recovery time

15

No⬆ in Cognitive Dysfunction

A&A 2021: Midazolam Premedication Immediately Before Surgery Is Not Associated With Early Postoperative Delirium

- Retrospective analysis of data from 3 studies using Confusion Assessment Method
- Age >65 yrs, 1266 pts, 909 Midaz vs 357 none
- No association was found between premedication with midazolam and incident delirium on the morning of the first postoperative day in the matched dataset

16

No⬆ in Cognitive Dysfunction

A&A 2009: Early Cognitive Impairment After Sedation for Colonoscopy: The Effect of Adding Midazolam and/or Fentanyl to Propofol

- 200 pts, elective colonoscopy, CogState testing before sedation, at discharge
- All pts had ⬇ cognitive function at D/C – but level of changes between baseline and discharge were not significantly different between the two groups.

17

No⬆ in Cognitive Dysfunction

A&A 2020: Effect of Midazolam in Addition to Propofol and Opiate Sedation on the Quality of Recovery After Colonoscopy

- RCT: Midaz or placebo w Propofol +/- opiate
- Outcome: Postoperative Quality of Recovery Scale (PostopQRS), day 3 post colonoscopy
- No evidence of any significant differences in recovery in the cognitive domain of the PostopQRS, overall quality of recovery as measured by the PostopQRS, or emergence and hospital discharge times

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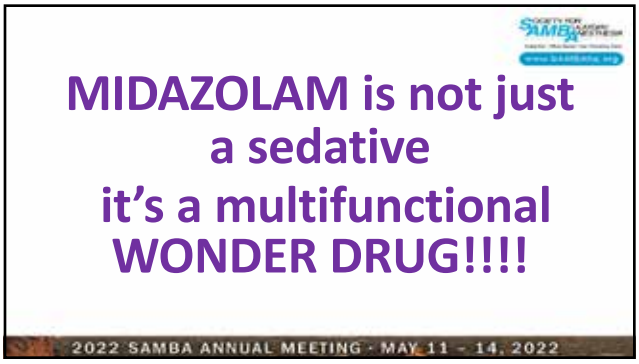
MIDAZOLAM is not just
a sedative
it's a multifunctional
WONDER DRUG!!!!
2022 SAMBA ANNUAL MEETING · MAY 11 – 14, 2022

19


Thank you!!
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20


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21

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MAY 11 - 14, 2022

Midazolam for No One

Dawn Schell, MD
Director of Anesthesia
Cole Eye Institute
Cleveland Clinic
Cleveland, OH

1

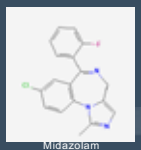
Midazolam

- Anxiolytic introduced into practice 1982
- Short-acting benzodiazepine
  - Enhances the effect of GABA on the GABA-A receptors producing sedation/anxiolysis
- Elimination half-life of 1.8-6.4 hours
- Onset 1-5 minutes, up to 9-11 minutes to reach full clinical effect
- Poor oral absorption-50% bioavailability

2

Disadvantages/Side Effects

- Anterograde amnesia, sometimes profound
- Respiratory depression
- Psychomotor dysfunction, especially in elderly
- Increased time to discharge
- Delirium/post-operative cognitive dysfunction (POCD)



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Anterograde Amnesia

- Some patients relate amnestic periods of hours to days. Is it good for patients to be amnestic for the better part of a day?
- We know that few patients follow our directions about having someone stay with them for 24 hours
- Will patients forget perioperative instructions given to them, undertake a task where recall is critical?
- Some patients uncomfortable with not remembering the entire events of the day

4

Respiratory Depression

- Even with low doses, some hypopnea and low saturations in patients administered midazolam
- Doses of 0.5 mg or 2 mg pre-op increased incidence of O_2 sats <94% in pre-op period
- Respiratory depression exacerbated by intra- or post-op opioids

5

Psychomotor Dysfunction

- Psychomotor function impaired by midazolam in young healthy volunteers for up to 60 min
  - Impaired driving ability
- Persistent decrease in alertness in 36% of study subjects 60 min after administration
- Benzodiazepine use in elderly increases risk for falls, hip fractures

6

Delayed Recovery and Discharge when Combined with GA

- Time to discharge 20-30 min longer in elderly patients administered midazolam as pre-med (0.5, 2.0 mg)
- Time to discharge increased in children given oral midazolam as premed (0.5 mg/kg)
- No improvement in post-op recovery satisfaction with midazolam

7

Post-Operative Cognitive Dysfunction (POCD) and Delirium

- Association of delirium with post-op administration of benzodiazepines
- Post op delirium associated with increased risk of subsequent diagnosis of cognitive decline or dementia

8

Delirium/POCD Prevention

Several groups have released recommendations about optimizing perioperative brain health.

- Fifth International Perioperative Neurotoxicity Working Group
- American Society for Enhanced Recovery and Perioperative Quality Initiative
- Perioperative Brain Health Expert Panel
- ASA Perioperative Brain Health Initiative

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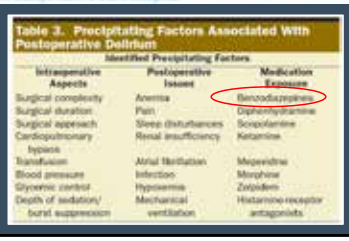

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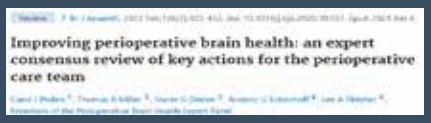


ASA Perioperative Brain Health Initiative

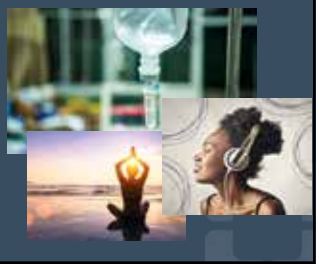
Recommendation:

"Routine cognitive screening raises awareness amongst the perioperative care team and can result in some simple changes in behaviour such as reduced use of benzodiazepines."

12

Alternatives to Midazolam

- Propofol/Lidocaine
- Dexmedetomidine
- Non-pharmacologic therapies
- Remimazolam?



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Propofol

- Inadequate doses of propofol often used
- Propofol 20 mg as effective as midazolam for premedication/anxiolysis
- Psychomotor reflexes for driving return to baseline 60 min after discontinuation of propofol infusions

Safety and driving ability following low-dose propofol sedation

14

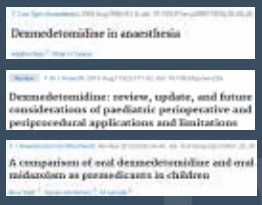
Lidocaine

- IV lidocaine 1.5 mg/kg improves success of LMA placement and decreases coughing and airway obstruction
- During bronchoscopy, IV lidocaine 1.5 mg/kg suppresses cough better than LT lidocaine
- Decreases dose of propofol needed for sedation in endoscopies

15

Dexmedetomidine

- Anxiolysis without respiratory depression
- May be organ protective
- Associated with less POCD
- Especially useful in children
  - Can be given intranasally, orally, IM or IV
  - May also prevent emergence delirium
- Can cause bradycardia and rare sinus arrest, hypotension
- Longer time of onset and offset



Dexmedetomidine in anaesthesia

Dexmedetomidine: review, update, and future considerations of paediatric perioperative and perprocedural applications and limitations

A comparison of oral dexmedetomidine and oral midazolam as premedicants in children

16

Non-pharmacologic Therapies

- Verbal reassurance/distraction
- Relaxation techniques
  - Cognitive behavioral therapy
  - Biofeedback
  - Hypnosis
- Acupuncture
- Music

17

Remimazolam?

- Ultra-short acting benzodiazepine
- Faster time of onset and recovery profile than midazolam
- Organ-independent metabolism to inactive metabolites
- Whether better than propofol remains to be seen

Remimazolam for anaesthesia or sedation

18


Sometimes it's better to keep it simple…
sometimes
LESS IS MORE

19


Cleveland Clinic
Every life deserves world class care.

20

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Panel on Ophthalmic Anesthesia

Steven Gayer, MD
Dawn Schell, MD
Alecia Stein, MD

05/12/2022
1:15pm – 2:15pm MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Preoperative Care of the Cataract Patient

Dawn Schell, MD
Director of Anesthesia
Cole Eye Institute
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Cleveland, OH

1

Frequency of Cataract Surgery

- Most common procedure performed in Medicare patients
- 2-4 million cataract procedures annually in US
- 28 million cataracts annually worldwide
- 60,000 cataract surgeries performed each day worldwide

2

Vision impairment is associated with many adverse consequences

3

Safety of Cataract Surgery Well-known: Mortality is 0.014%

Despite documented safety and risks of delaying cataract surgery, there are still many obstacles to patients accessing timely surgery

4

THE VALUE OF ROUTINE PREOPERATIVE MEDICAL TESTING BEFORE CATARACT SURGERY

- Published **2000** NEJM
- No difference in outcomes when preoperative testing (labs, ECGs) was eliminated
- **No preoperative testing is indicated for cataract surgery!**

5

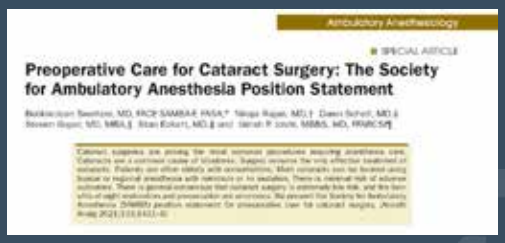
Preoperative Medical Testing in Medicare Patients Undergoing Cataract Surgery

Follow-up article in NEJM 2015 assessed whether costs of pre-op testing had decreased in the 10 years following publication of sentinel article

- 53% of patients still had at least one pre-op test done
- expenditures on testing 42% higher the month of cataract surgery

6

SAMBA Position Statement


Ambulatory Anesthesiology

SPECIAL ARTICLE

Preoperative Care for Cataract Surgery: The Society for Ambulatory Anesthesia Position Statement

7

Is There Ever a Reason to Cancel/postpone Cataract Surgery?

- MI within the past 30 days
- Percutaneous coronary interventions
  - Without stenting 14 days
  - With stenting 30 days
- Arrhythmias with hemodynamic compromise
- Decompensated CHF
- Acute serious pulmonary conditions
- CVA or TIA within the past 3 months
- Acute HTN with end organ dysfunction
- Diabetic ketoacidosis/hyperosmolar coma

8

Does Acute HTN Warrant Cancellation of Cataract Surgery?

- HTN most common reason surgery is postponed
- Little evidence to support that HTN increases risk of perioperative adverse events
- BP on DOS is not reflective of baseline
- Patients should take their anti-hypertensives the DOS
- SAMBA recommends that cataract surgery should be delayed only for patients with malignant hypertension defined as elevated blood pressures with acute end-organ damage

9

Should BP Be Treated the Day of Surgery to Normalize?

- Accuracy and reliability of preop BP readings have been questioned by many
- Increasing evidence that acute correction of BP perioperatively may be more harmful
- Postoperative Quality Initiative-insufficient data that altering preop BP lowers perioperative risk
- SAMBA recommends against lowering BP preoperatively

10

Do Anti-Platelet and Anti-Coagulants Need to Be Stopped Before Surgery?

- Several studies confirm safety of continuing these medications peri-operatively
- Topical and sub-tenon's anesthesia are safe in anti-coagulated patients
- If you are using retro-bulbar block for cataract surgery, need to consider bleeding risks
- SAMBA recommends continuation of anti-platelet and anticoagulant meds peri-operatively in cataract surgery

11

When Can Patients with Recent Coronary Stents Undergo Cataract Surgery?

- ACC/AHA recommend 30 days for bare metal stents and 6 months for DES
- Most agree these times can be liberalized if patients continue DAPT peri-operatively
- SAMBA recommends that patients can have cataract surgery 30 days after stent placement as long as DAPT is continued uninterrupted throughout the perioperative period

12

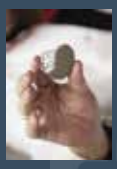
Does Newly Discovered Atrial Fibrillation Warrant Cancellation of Cataract Surgery?

- Atrial fibrillation is not an ischemic rhythm
- If rate is controlled, and patient does not have clinical compromise, no indication to cancel surgery
- SAMBA recommends that cataract surgery not be delayed in patients with newly discovered atrial fibrillation as long as the patient is asymptomatic with stable hemodynamics

13

Can Patients with Cardiac Implantable Electronic Devices (CIEDs) Be Safely Cared for in a Free-Standing ASC?

- CIED's should be interrogated within 6 months for ICDs and 12 months for PPMs
- Cataract surgery does not interfere with CIEDs
- SAMBA recommends familiarity with CIED functionality and against reprogramming or using a magnet during cataract surgery



14

Does Hyperglycemia Warrant Cancellation of Cataract Surgery?

- No evidence to support delaying surgery for any specific blood glucose or HgA1c
- SAMBA Guidelines for Perioperative Glucose Management
- SAMBA recommends delaying cataract surgery only in patients with ketoacidosis or hyperosmolar hyperglycemic non-ketotic syndrome or significant hypoglycemia

15

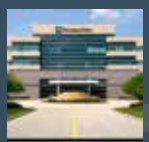
Should There Be a Weight Limit for Cataract Surgery in a Free-Standing ASC?

- The weight limitations for cataract surgery should be based on the weight limit of the stretcher at each individual center
- SAMBA recommends that providers establish and follow institutional guidelines for obese patients at their individual centers

16

Can a PS-IV Patient Undergo Cataract Surgery at a Free-standing ASC?

- Cataract surgery is extremely low risk and requires minimal sedation
- Similar stress to dental procedures
- SAMBA recommends that PS-IV patients can safely undergo cataract surgery with minimal to no sedation in a free-standing ASC



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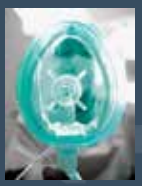
Does the Need for GA Alter the Risks of Cataract Surgery?

- No available studies comparing risk of GA with MAC for cataract surgery
- Overall risks for most procedures are unchanged by type of anesthesia performed, so unlikely that there is increased risk with GA with currently available airways and drugs
- SAMBA recommends weighing risks of medical comorbidities in deciding when to use GA



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2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Challenges in Ambulatory Pediatric Ophthalmic Anesthesia

Alecia L. Sabartinelli Stein, MD
Associate Professor of Clinical Anesthesia
Associate Program Director of Anesthesia Residency Program
Director of Simulation Curriculum – UM/JMH Center for Patient Safety
Department of Anesthesiology, Perioperative Medicine and Pain Management
University of Miami - Miller School of Medicine

UNIVERSITY OF MIAMI

1

Disclosures

- none

2

Learning Objectives

- Compare and contrast of the anatomy of the infant and pediatric vs. adult eye and orbit.
- Identify the characteristics unique to children undergoing ophthalmologic procedures in an ambulatory setting.
- List the different available techniques for the extremely anxious child with a history of multiple exposures to the perioperative environment.
- Anticipate and plan for the challenged surrounding pediatric ophthalmic anesthesia.

Anesthesiology, 2021

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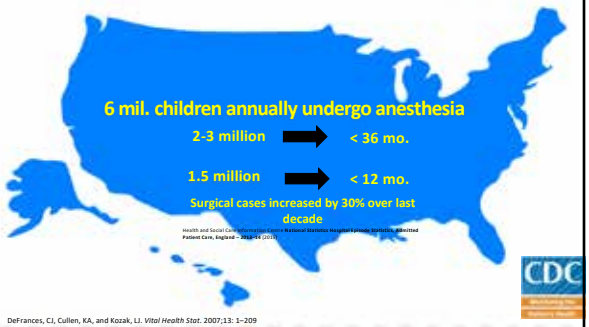

DeFrances, CJ, Cullen, KA, and Kozak, LJ. *Vital Health Stat.* 2007;13: 1–209

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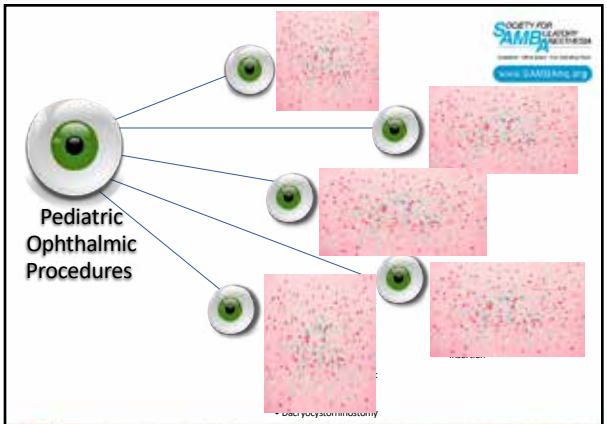

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The Developing Eye
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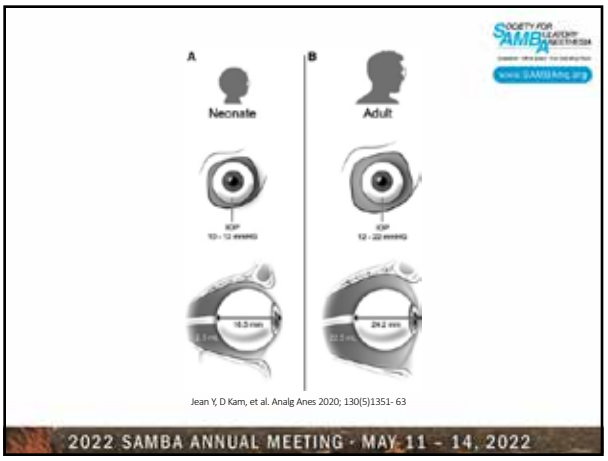
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Neonate
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Jean Y, D Kam, et al. Analg Anes 2020; 130(5)1351- 63
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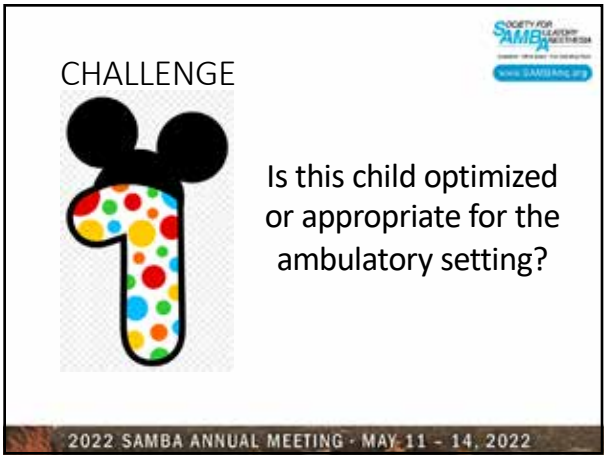
CHALLENGE
Is this child optimized or appropriate for the ambulatory setting?
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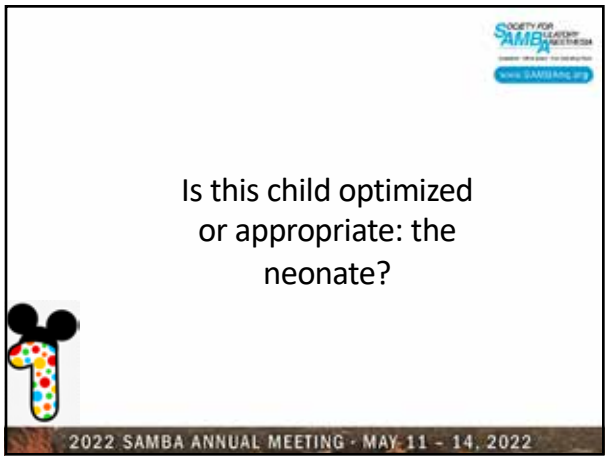
Is this child optimized or appropriate: the neonate?
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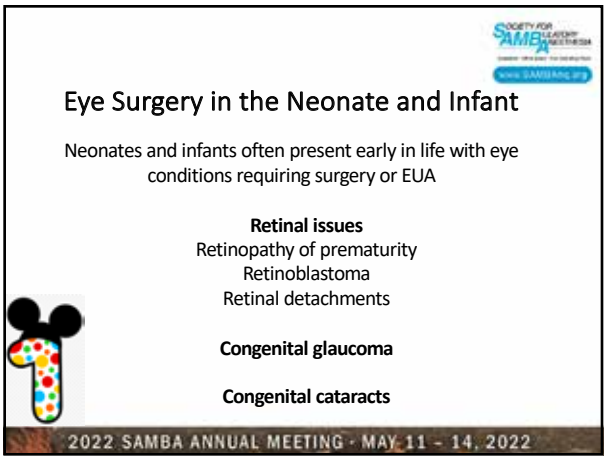
Eye Surgery in the Neonate and Infant
Neonates and infants often present early in life with eye conditions requiring surgery or EUA
Retinal issues
Retinopathy of prematurity
Retinoblastoma
Retinal detachments
Congenital glaucoma
Congenital cataracts
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Eye Surgery in the Neonate and Infant

Post gestational age?
Weight?
Comorbidities?
Staffing resources/Need for post op monitoring?
Postop disposition?
Facility resources?

13

Is this child optimized or appropriate: the syndromic child?

14

Craniofacial syndromes
(Goldenhar, Treacher-Collins)

Noonan Syndrome

Mucopolysaccharidosis

Trisomy 21

Neurobehavorial Implications: developmental delay, autism or deafness co-diagnoses

Marfan Syndrome

Mucopolysaccharidosis
(Hunter's/Hurlers)

15

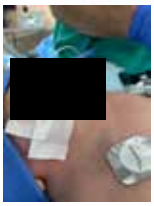
- Syndromic neonates, infants, pediatric patient are commonly schedule for eye procedures
  - What is the syndrome

Is a Pediatric Anesthesiologist warranted?

- Need for post op monitoring?
- Postop disposition?
- Facility resources? (trach'd, need for post op ventilation?)

16





17

Cavuoto, et al, 2014

18

Challenge

The Repeat Offender

19

Pediatric Ophthalmic Procedures

Ophthalmologic examination
- General examination
- Fundoscopy
- IOP measurements
- F/U retinoblastoma

Posterior Chamber/Retinal
- Vitrectomy/vitreoretinal surgery
- Retinopathy of prematurity, laser, intravitreal injection of chemo agents
- Electroretinography

Anterior Chamber
- Glaucoma/reduction of IOP
  - Goniotomy
  - Trabeculectomy/trabeculotomy
- Cataract:
  - Lensectomy +/- artificial lens insertion

20

Challenge: The Repeat Offender

Case study:
4 wk healthy infant with white out reflex in Left Eye

Anesthetic exposures: range 10-30 times until "discharged"

EUA's every 6wk – 2months (early/acute phase)
MRI every 6m – 1 year
Sibling surveillance

More surveillance EUA's (last maintenance)
With lasering, intravitreal chemo injections

21

Challenge: The Repeat Offender

Severe anxiety, fear of hospital environment
Mask intolerance
Emergence delirium

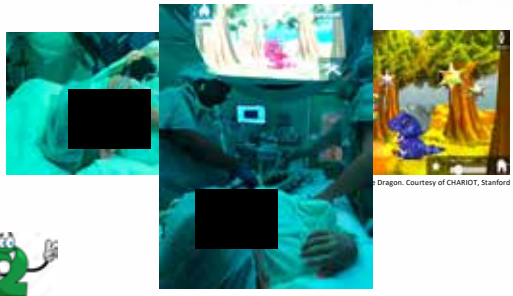
Down-stream claustrophobia
Symptoms of PTSD

Preoperative anxiolysis: challenge

Creative techniques:
Difference combinations of pharmacologic anxiolytics
Hide agents in juice box
VR distraction technology
Child life specialists

22

Challenge: The Repeat Offender



Dragon. Courtesy of CHARIOT, Stanford

23

24

Challenge: The Repeat Offender

25

Challenge

Choice of Anesthesia Technique

26

MAC sedation?
Mask anesthesia?
IV?
Airway device?
Deep extubation?
Wake up?

27

CHALLENGE

Traumatic Eye Injury

28

The Open Globe

Case: 5-year-old healthy boy with traumatic eye injury

Story:
Playing with a tazor gun (?!?!)
Running with pencil
Brother shot patient with a BB gun
Dad hooked kid with a fish-hook

Booked for emergent surgery, corneal laceration repair, foreign body removal

NPO status: waffles & bacon at 8:00am

IV?
Inhalational induction?
IOP fluctuations?

29

30

Challenge

Environment

31

Perioperative environment

32

Perioperative environment

Electroretinography

Retinograms require complete blackout
Preop blindfolding
Intraoperative darkness

33

Lam B, C Mendoza-Santiestaban, A Gonzalez, et al. *J. Vis. Exp* 2020 (), e61734

34

Postoperative Environment

Adjustable sutures for strabismus
Awake for postop check
Sedated for adjustment
Where?

Gas bubble
Kids lie flat x 2 hrs
Where?

Extended postop monitoring
Workflow?
Where, what level of monitoring?

35

Citations

- Health and Social Care Information Centre National Statistics Hospital Episode Statistics, Admitted Patient Care, England – 2013–14 (2015)
- DeFrances, CJ, Cullen, KA, and Kozak, LJ. *Vital Health Stat.* 2007;13: 1–209
- Lam B, C Mendoza-Santiestaban, A Gonzalez, et al. Electroretinogram recording for infants and children under anesthesia to achieve optimal dark adaptation and international standards. *J. Vis. Exp.* (), e61734, doi:10.3791/61734 (2020)
- Jean Y, D Kam, S Gayer, et al. Regional Anesthesia for Pediatric Ophthalmic Surgery: A Review of the Literature. Analg Anes 2020; 130(5)1351- 63
- Augusteyn RC, Nankivil D, Mohamed A, Maceo B, Pierre F, Parel JM. Human ocular biometry. *Exp Eye Res*.2012;102:70–75.
- Dawson DG, Watsky MA, Geroski DH, Edelhauser HF. Cornea and sclera. In: Tasman W, Jaeger EA, eds. *Duane's Foundations of Clinical Ophthalmology*. Philadelphia, PA: Lippincott Williams & Wilkins, 2006.
- Park DJ, Karesh J. Topographic anatomy of the eye: an overview. In: Tasman W, Jaeger EA, eds. *Duane's Foundations of Clinical Ophthalmology*. Philadelphia, PA: Lippincott Williams & Wilkins, 2006.
- Dahmani S, H Delivit and J Hilly. Emergency Delirium in Children: an Update. Current Opinion in Anaestersiology, 2014, v 27(3):309-15.
- Banchs RJ and J Lerman, Preoperative Anxiety Management, Emergence Delirium, and Postroperative Behavior. Anesthesiology Clinics, 2014, v 32(1):1-23.
- Cavuoto K, Rodriguez, L, et al. General Anesthesia in the Pediatric Population. Current Opinion – Ophthalmology 2014, 25: 411-16.

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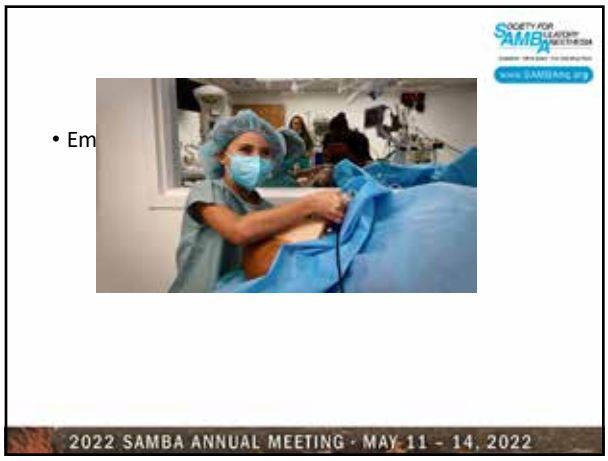

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Pro/Con #3: We Should NEVER Use Narcotics in Outpatient Procedures

Michael V. Presta, MD (Pro)
Girish P. Joshi, MBBS, MD, FCAI, SAMBA-F (Con)

05/12/2022
2:15pm – 2:45pm MST

We Should NEVER Use Narcotics In Outpatient Surgery (Pro)

Michael Presta, DO
Associate Professor
GI Lab Director Anesthesia Services
Director NORA Rotation
Department of Anesthesiology and Perioperative Medicine

1

Disclosure

I have no actual or potential conflict of interest in relation to this program/presentation.

2

Learning Objectives

- Understand the impact of the opioid epidemic on healthcare and anesthesia practice.
- Understand the benefits of opioid free anesthesia (OFA) in all phases of outpatient care.
- Understand how OFA with multimodal techniques, enhanced recovery pathways, and regional anesthesia are key tools as we work towards optimal opioid stewardship and the ideal of effective analgesia without undesirable sequelae.

3

Ambulatory Surgery Issues

- Surgicenter @ 10th street & and McDowell Road Phoenix, Arizona, in 1970 (Banner Health).
- 35+ million annual cases and counting.
- Nausea and vomiting is the most frequent cause of hospital admission after ambulatory surgery.
- It can be so debilitating that some patients have rated it more seriously than postoperative pain.
- Studies have identified risk factors such as perioperative opioid utilization as a strong contributing factor for both prolonged PACU (Chung et al.) and unexpected admission (Fortier et al).

Mauermann E, Clarner D, Rubboli W, Bandschapp O. Association between intra-operative fentanyl dosing and postoperative nausea/vomiting and pain: A prospective cohort study. Eur J Anaesthesiol. 2019 Nov;36(11):871-880. doi: 10.1097/EJA.0000000000001081. PMID: 31567573.

Fortier, J., Chung, F. & Su, J. Unanticipated admission after ambulatory surgery — a prospective study. Can J Anaesth 45, 612 (1998). https://doi.org/10.1007/BF03012088

Chung F, Mezei G. Factors contributing to a prolonged stay after ambulatory surgery. Anesth Analg. 1999 Dec;89(6):1352-9. doi: 10.1097/00000539-199912000-00004. PMI

4

Why This Matters To Us?

https://www.asahq.org/advocating-for-you/opioid-crisis

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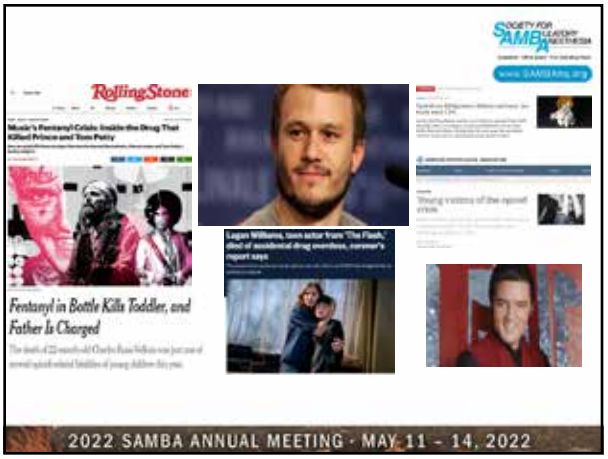

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Why Do We Use Opioids?

- Opioids were primarily used initially because of their safe intraoperative profile (lowered hypnotics or inhalational agents)
- Provide the basis of postoperative pain control
- Approximately 99% of all surgical patients in the USA receive opioids perioperatively at some point during their care (Kessler et al. 2013).
- 75% had pain they rated as moderate/extreme during the immediate post-surgical period (Gan et al. 2014)
- Immediate (substandard)→chronic effects→healthcare burden

7

Benefits Of Opioid Free Anesthesia

- Time is money and a reduction in PACU times will relieve bottleneck traffic promoting increased throughput. (decreased inpatient admissions)
- Reduces opioid-induced hyperalgesia/tolerance.
- Helps to reduce postoperative opioid consumption.
- Reduces risk of opioid-related side effects.
  - Nausea/Vomiting
  - Respiratory depression/OSA
  - Constipation/ileus/opioid induced bowel distension
  - Dysphoria/altered mental status
  - Cognitive/sleep dysfunction
  - Urinary retention
  - Pruritus
- Regional anesthesia is thought to decrease the stress response (Muncey et al 2020)

8

What Do We Do First?

Standardization of Outpatient Procedure (STOP) Narcotics: A Prospective Non-Inferiority Study to Reduce Opioid Use in Outpatient General Surgical Procedures

"multi-pronged analgesia bundle integrating patient education, health care provider education, and intra-/postoperative analgesia focused on multi-modal pain control strategies and opioid-reduced prescriptions."

"a standardized pain care bundle significantly decreased opioid prescribing without an increase in patient-reported postoperative pain."

9

So How Do We Actually Do It?

Demystifying the barriers to implementation

The Veterans Health Administration (VHA) is the largest integrated health care system in the United States, providing care at 1,293 health care facilities, including 171 VA Medical Centers and 1,112 outpatient sites of care of varying complexity (VHA outpatient clinics) to over 9 million Veterans enrolled in the VA health care program.

- Goal is to mitigate the stress response after surgery
- ERAS protocols are associated with decreased costs
- 20-30% reduction in length of stay (rapid recovery)
- 40-50% reduction in postoperative complications

10

So, Who Are The Players

Keepke, E.J., Manning, E.L., Miller, T.E. et al. The rising tide of opioid use and abuse: the role of the anesthesiologist. Perioper Med 7, 16 (2018). https://doi.org/10.1186/s13741-018-0097-4

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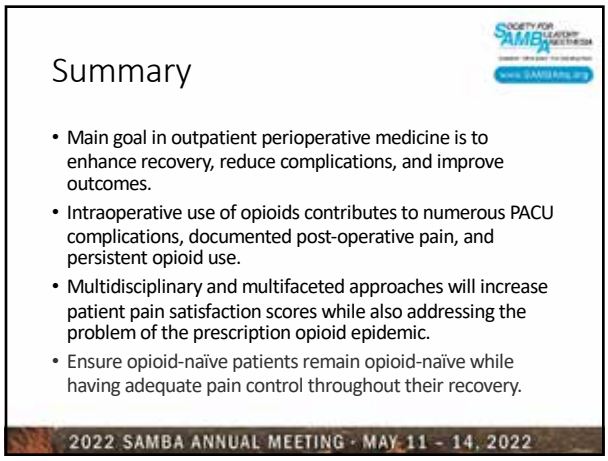
Summary
• Main goal in outpatient perioperative medicine is to enhance recovery, reduce complications, and improve outcomes.
• Intraoperative use of opioids contributes to numerous PACU complications, documented post-operative pain, and persistent opioid use.
• Multidisciplinary and multifaceted approaches will increase patient pain satisfaction scores while also addressing the problem of the prescription opioid epidemic.
• Ensure opioid-naïve patients remain opioid-naïve while having adequate pain control throughout their recovery.
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Pro/Con: We should never use narcotics in outpatient procedures

Girish P. Joshi, MB, BS, MD, FFARCSI
Professor of Anesthesiology and Pain Management
University of Texas Southwestern Medical Center, Dallas, TX

Disclosure: Baxter International Inc.

1

"The modern tendency in anaesthesia is towards specialization, complexity, and polypharmacy. The more drugs are used, the more difficult does it become to attribute changes in the patient to their true cause."

Noel Alexander Gillespie (1904-1955)
British Journal of Anaesthesia 22:192,1950

2

Opioid-Free Anesthesia

Just because we can,
does it mean we should?

3

Opioid-Free Anesthesia Does NOT Reduce Postoperative Opioids

Impact of Enhanced Recovery After Surgery and Opioid-Free Anesthesia on Opioid Prescriptions at Discharge From the Hospital: A Historical-Prospective Study
Brandal D, et al: Anesth Analg 2017; 125: 1784-92

- Reduced intraoperative opioid use did not influence postoperative opioid prescribing
- Need to focus on discharge prescribing practices

4

Opioid-Free Anesthesia: Controversies

- Optimal drug combination is unclear
- Optimal drug dosing is unclear
  - Administered as fixed dose infusions
  - Cannot be titrated to patient needs
- Timing of discontinuation is unclear
- Drugs have a ceiling effect with small therapeutic index for safety
- Require equipment, which can be burdensome and costly

Shanthanna H, et al: Anesthesiology 2021; 134: 645-59

5

Consensus Guidelines on the Use of Intravenous Ketamine Infusions for Acute Pain Management From the American Society of Regional Anesthesia and Pain Medicine, the American Academy of Pain Medicine, and the American Society of Anesthesiologists
Schwenk ES, et al: Reg Anesth Pain Med 2017

- No role of single bolus dose
- Recommended for opioid-tolerant patients undergoing painful surgical procedures when regional analgesia is not possible
- Adverse effects: hallucinations, nightmares
  - Avidan MS, et al: Lancet 2017; 390: 267-75; Vlisides PE et al: Br J Anaesth 2018; 121: 249-59
- Contraindications: Poorly controlled CV disease, hepatic dysfunction, high intracranial and intraocular pressures, active psychosis, pregnancy

6

Dexmedetomidine: Not as Safe as You Think

- Promoted as having no respiratory effects
  - Similar upper airway collapsibility as propofol, regardless of level of sedation
  - Can cause upper airway obstruction
- Prolonged risk hypotension requires hemodynamics monitoring after treatment cessation (i.e., PACU and beyond)

Upper Airway Collapsibility during Dexmedetomidine and Propofol Sedation in Healthy Volunteers
A Randomized Randomized Crossover Study
Lodenius A, et al, Anesthesiology 2019; 131: 962-73

Discharge Readiness after Propofol with or without Dexmedetomidine for Colonoscopy
A Randomized Controlled Trial
Edokpolo LU, et al: Anesthesiology 2019; 131: 279-86

Perioperative adverse events attributed to α2-adrenoceptor agonists in patients not at risk of cardiovascular events: systematic review and meta-analysis
Demiri M, et al: Br J Anaesth 2019;123:795-807

7

Intravenous lidocaine: it's all about a risk-benefit analysis

Intravenous lidocaine: benefits require better evidence, and potential risks apply to all team members
Anaesthesia 2021; 76: 717–722

The use of intravenous lidocaine for postoperative pain and recovery: international consensus statement on efficacy and safety
Foo I, et al: Anaesthesia 2021; 76: 238-50

Do not use at the same time as, or within the period of action of, other LA interventions, particularly nerve blocks

Unlicensed intravenous lidocaine for postoperative pain: always a safer 'licence to stop' than to start
Pandit JJ, McGuire N: Anaesthesia 2021; 76: 156-60

8

Interaction between magnesium sulfate and neuromuscular blockers during the perioperative period. A systematic review and meta-analysis
Laura Rodríguez-Rubio Phd, MD, Julián Solís García del Pozo Phd, MD, Eduardo Nava Phd, MD, Joaquín Jordán Phd
J Clin Anesth 2016; 34: 1524-34

Influence of the perioperative administration of magnesium sulfate on the total dose of anesthetics during general anesthesia. A systematic review and meta-analysis
Laura Rodríguez-Rubio, PhD MD, Eduardo Nava, PhD MD, Julián Solís García del Pozo, PhD MD, Joaquín Jordán, PhD
J Clin Anesth 2017; 39: 129-38

Magnesium sulphate enhances residual neuromuscular block induced by vecuronium
T. Fuchs-Buder and E. Tassonyi

Intravenous magnesium re-establishes neuromuscular block after spontaneous recovery from an intubating dose of rocuronium: a randomised controlled trial
Grégory A. Hans, Besongo Bosenge, Vincent L. Bonhomme, Jean F. Brichant, Ingrid M. Venneman and Pol C. Hans
Eur J Anaesthesiol 2012; 29: 95-99

9

General anesthetic techniques for enhanced recovery after surgery: Current controversies

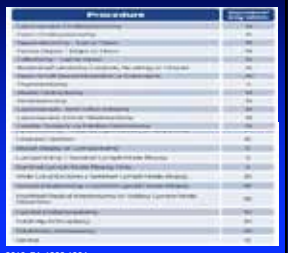
Girish P. Joshi, MBBS, MD, FFARSCI, Professor of Anesthesiology and Pain Management

- Opioids remain an integral part of perioperative care because of their high analgesic efficacy
- Opioids reduce propofol and inhalation anesthetic requirements
  - Most of the MAC/propofol reduction occurs at modest opioid doses
    - Egan TD: Br J Anaesth 2019 ;122: e127-e135
- Opioids mitigate hyperdynamic responses to surgical insult
- Opioid-sparing NOT Opioid-free is the best approach

10

Multimodal Analgesia: Best Practice

- "Basic" analgesic regimen
  - Acetaminophen + NSAID + Dexamethasone + Local/regional analgesia
- Additional analgesic intervention only if basic analgesics not adequate
- Consider balance of efficacy and adverse event profile of the intervention
- Consider balance between invasiveness of the technique and consequences of pain



Joshi GP, Kehlet H, et al: Br J Anaesth 2017; 119: 720-2; Joshi GP, et al: Anaesthesia 2019; 74: 1298-1304
opioidprescribing.info

11

SUMMARY

- Clinical benefits of opioid-sparing approach outweigh the challenges and limitations associated with opioid-free strategies
  - Benefits of opioid-free strategies are questionable and there are concerns of potential adverse effects
- Optimal multimodal technique should include combination of acetaminophen, NSAID, dexamethasone and loco/regional analgesia with opioids used for rescue

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HANDOUTS

Nuts and Bolts of a 23-Hour Stay

Michael R. Hicks, MD, MBA, MHCM, FACHE
Niraja Rajan, MD, SAMBA-F
Arnaldo Valedon, MD, FASA, SAMBA-F, MBA Candidate 2023

05/12/2022
3:30pm – 4:30pm MST

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Nuts and Bolts of 23 hour stay ASCs

Tina Tran, MD, session moderator

Johns Hopkins SOM, Dept of Anesthesiology and Critical Care Medicine

SAMBA, May 2022

1

Learning Objectives

- Recognize the important administrative, financial, and regulatory considerations for 23 hour stay ASCs
- Describe the important considerations for patient education, recovery and discharge from 23 hour stay ASCs
- Identify the staffing, equipment and logistical considerations for 23 hour stay ASCs

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Panelists

Dr. Arnie Valedon

Dr. Mike Hicks

Dr. Niraja Rajan

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23 Hour Stay ASCs: Administrative, Financial and Regulatory Considerations

- Arnaldo Valedon, MD, FASA, SAMBA-F, MBA Candidate 2023
- Medical Director Outpatient Perioperative Services
- WellSpan Health

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23 Hour Stay ASCs: Staffing, Equipment, and Logistical Considerations

- Michael Hicks, MD, MBA, MHCM, FACHE
- National Medical Director HCA Healthcare Ambulatory Surgery Division

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23 Hour Stay ASCs: Patient Education, Recovery and Discharge

- Niraja Rajan, MD SAMBA-F
- Associate Professor of Anesthesiology Penn State Health

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Nuts and Bolts of a 23-Hour Stay

Staffing, equipment, and logistical considerations

National Medical Director, HCA Ambulatory Surgery Division

Diplomate of the American Board of Anesthesiology

Diplomate of the American Board of Preventive Medicine (Clinical Informatics)

1

Why 23-hour stay?

- Provide an option between typical ASC care and hospital care
- Better experience for patient (safety, convenience, cost)
- Expand opportunities for ASCs
- Create capacity in acute care facilities

Requires thoughtful approach for patient and procedure selection, staffing competencies and the unique logistical requirements of functioning in an environment typically designed for day-only care

Caveat if you are considering adding this service – heavily dependent on state law, regulations, payer characteristics, politics, staff availability, etc.

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2

23-Hour Stays – All about workflows

ASC workflows are designed for patients going home in a few hours with

Modifications are required for stays exceeding a few hours – adding staffing hours is necessary but insufficient to provide safe patient care

Trouble – while rare – can occur by failing to account for workflow changes that differ from normal day only care – e.g., the lack of readily available backup help, available items at the bedside or easily accessible, location of telephones, medications, etc.

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Staffing

Fundamental staffing questions – number, ratio, skills

- Number of staff to provide routine and crisis care AT NIGHT (no help)
- Minimum staff of 2 – is this enough? Depends!
- Skills needed
  - RN for basic patient care (monitoring, med administration, pain management, wound management, etc.)
  - Some debate on 2nd caregiver skills – mostly another RN (interchangeable)
  - Labor costs & staffing shortages leading to discussion of alternatives
  - RN + LVN, RN + MA/EMT/paramedic, RN plus "warm body"
  - Constrained by state/federal law, accreditors, practice acts, etc.

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Staffing questions for your ASC

Are overnight staff possess skills and competencies needed without onsite backup?

- Routine and emergency care
- Physical therapy or other special needs (e.g., joint replacement)

If using outside staff for nights are they familiar with the ASC?

Effect of overnight staffing needs on morale, availability for day shifts, etc.

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Staffing – physician care

Which physician is in charge of overnight care?

- Surgeon, anesthesiologist, primary care
- Non-procedure related issues (i.e., "medical care")
- Who is available for consultation – e.g., anesthesiologist who performed case or on-call physician at hospital?
  - Must be member of medical staff
- What if consultation is needed? Transfer?

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Staffing – Regulatory and accreditation issues

State specific requirements (e.g., licensure for overnight stays, room size, use of PACU, diversion risk prevention, nursing board requirements, etc.)

- When does the 23-hour period begin? Admission or induction of anesthesia?

AAAHC Medicare Deemed Status – Chapter 20

Joint Commission – no specific chapter/standards applicable - essentially all elements applicable for other procedural care apply

7

Equipment and logistical issues

- Mostly related to workflow design and staffing levels, skills and services
- For example, If only 2 staff present are items available at bedside?
  - Communication devices – is staff tethered to wired phone at nursing station? What happens during crisis if both caregivers are involved in resuscitation or other high intensity event?
  - Medication management (procurement, wasting/witnessing if only one licensed clinician, etc.)
- Visitors? How are they managed?
- Patient meals?
- SECURITY – many ASCs are in areas with little foot traffic after hours
  - Does the staff feel safe?

8

Is it all worth it?

Benefits include potential expansion of case volume and market share

- Cases requiring extended stay plus "halo" volume

May be offset by lack of reimbursement, increased costs, staff morale, etc.

Outmigration from hospital may cannibalize health system revenue?

Alternative is standard ASC care with "recovery center"

- Licensed facility
- Hotel arrangement

9

Discussion

10

Patient Education, Recovery and Discharge

Niraja Rajan MD FAAP SAMBA-F
Associate Professor of Anesthesiology and Perioperative Medicine
Penn State Health
Medical Director
Hershey Outpatient Surgery Center

1

Disclosures

- None

2

Learning points

- Discharge planning starts at scheduling
- Patient education is part of discharge planning
- Prehabilitation
- Enhanced recovery pathways

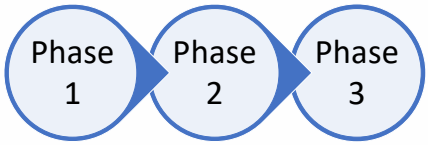
3

Successful discharge planning

- Patient meets discharge criteria
- Patient expectations managed
- Management plan for minor postoperative complications
- Caregiver and social considerations
- Postoperative follow-up appointments/information
- Recovery and rehabilitation plan

4

Discharge Criteria



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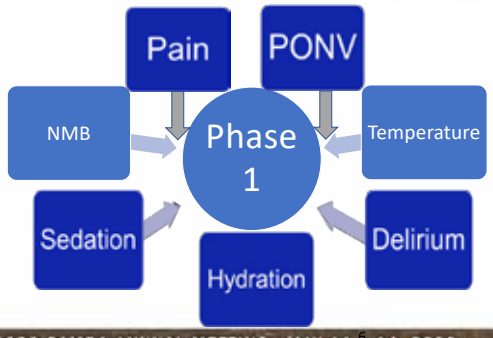
Phase 1 recovery



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RECOVERY
"We're waiting for the anesthetic to wear off. Why don't you have a seat in the waiting room until he comes down."
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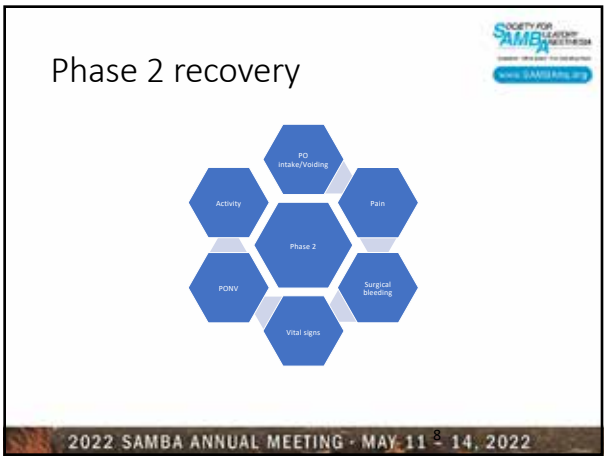
Phase 2 recovery
PO intake/Voiding
Pain
Surgical bleeding
Vital signs
PONV
Activity
Phase 2
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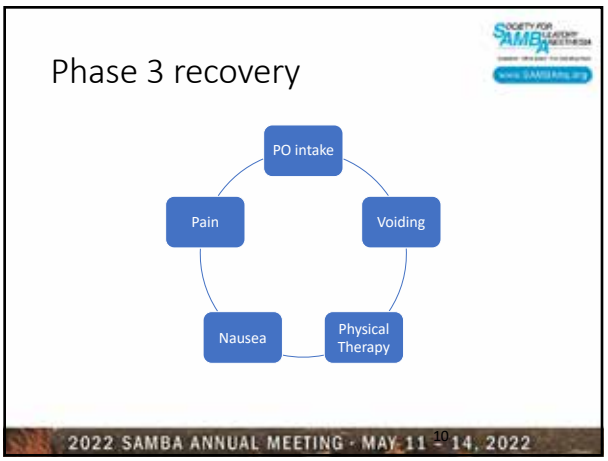
8


SURGERY
RECOVERY
"We've combined the recovery area with the gift shop...just in case your visitors want to pick up a little souvenir."

9


Phase 3 recovery
PO intake
Voiding
Physical Therapy
Nausea
Pain
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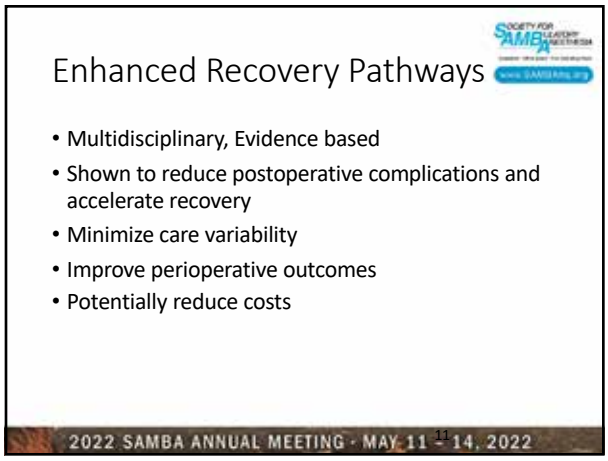
Enhanced Recovery Pathways
• Multidisciplinary, Evidence based
• Shown to reduce postoperative complications and accelerate recovery
• Minimize care variability
• Improve perioperative outcomes
• Potentially reduce costs
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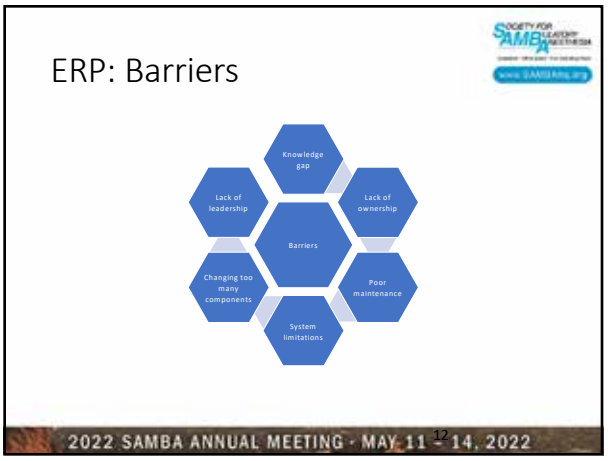
ERP: Barriers
Knowledge gap
Lack of ownership
Poor maintenance
System limitations
Changing too many components
Lack of leadership
Barriers
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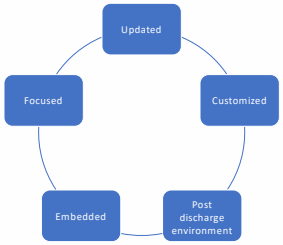
ERP: Considerations



13

Enhanced recovery after surgery review and urology applications in 2020

BJUI Compass, Volume: 1, Issue: 1, Pages: 5-14, First published: 17 March 2020, DOI: (10.1002/bco2.3)

14

Enhanced postoperative recovery: good from afar, but far from good?

Anaesthesia, Volume: 75, Issue: S1, Pages: e54-e61, First published: 05 January 2020, DOI: (10.1111/anae.14860)

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Prehabilitation

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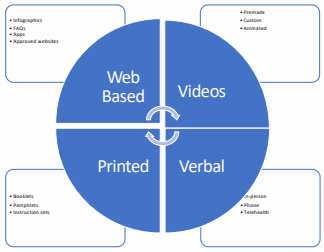
Patient Education

- Health literacy
- Overall literacy
- Types of material
- Reminders
- Assess comprehension
- Simple and short
- Patient perspective

20

Patient Education



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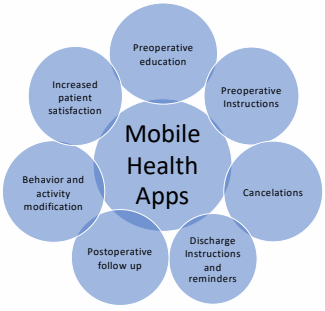


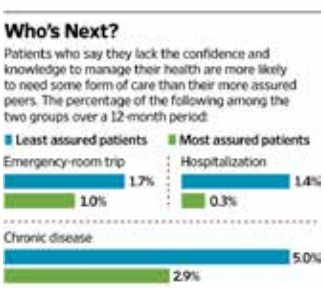
24

Mobile Health App Limitations

- Privacy concerns
- Limited use by elderly
- Limited use by higher socioeconomic groups
- Practitioner resistance
- Too many apps!

Figure 2. Model of patient and health care professional motivation and barriers toward the use of perioperative apps and possible strategies to counteract barriers (original figure, cartoons adapted from various studies5,44-48).

De La Cruz Monroy MF, Mosahebi A. The use of smartphone applications (apps) for enhancing communication with surgical patients: a systematic review of the literature. Surg Innov. (2019) 26:244–59. doi: 10.1177/1553350618819517



Summary

- Discharge planning begins at the time of scheduling
- Prehabilitation
- Patient education
- Expectation setting
- Enhanced Recovery Pathway

References

- http://erassociety.org
- 1.Rodriguez LV, Bloomstone JA, Maccioli GA. Outcomes in ambulatory anesthesia: measuring what matters [published online March 16, 2019]. Anesthesiol Clin. 2019;37(2):361-372.
- 2.Parrish AB, O'Neill SM, Crain SR, et al. An Enhanced Recovery After Surgery (ERAS) protocol for ambulatory anorectal surgery reduced postoperative pain and unplanned returns to care after discharge. World J Surg. 2018;42(7):1929-1938.
- 3.Wilson CJ, Mitchelson AJ, Tzeng TH, et al. Caring for the surgically anxious patient: a review of the interventions and a guide to optimizing surgical outcomes [published online June 2, 2015]. Am J Surg. 2016;212(1):151-159.
- 4.Kalogera E, Dowdy SC. Enhanced recovery pathway in gynecologic surgery: improving outcomes through evidence-based medicine. Obstet Gynecol Clin North Am. 2016;43(3):551-573.
- 5.Vetter TR, Goeddel LA, Boudreaux AM, Hunt TR, Jones KA, Pittet JF. The Perioperative Surgical Home: how can it make the case so everyone wins? BMC Anesthesiol. 2013;13:6.
- 6.Liebner LT. I can't read that! Improving perioperative literacy for ambulatory surgical patients. AORN J. 2015;101(4):416-427.
- 7.De Oliveira GS Jr, Jung M, Mccaffery KJ, McCarthy RJ, Wolf MS. Readability evaluation of Internet-based patient education materials related to the anesthesiology field [published online April 23, 2015]. J Clin Anesth. 2015;27(5):401-405.
- 8.Wong K, Mohan R, Yi PH, Hansen EN. Evaluating patient education material regarding unicompartmental knee arthroplasty [published online June 4, 2015]. Knee. 2016;23(1):157-161.
- .

- 9.Xu D, Zhu X, Xu Y, Zhang L. Shortened preoperative fasting for prevention of complications associated with laparoscopic cholecystectomy: a meta-analysis [published online January 12, 2017]. J Int Med Res. 2017;45(1):22-37.
- 10.Pai SL. Editorial: Perioperative pharmacological management: from prescription medications to dietary supplements. Curr Clin Pharmacol. 2017;12(3):132-134.
- 11.Apfelbaum JL, Silverstein JH, Chung FF, et al. Practice guidelines for postanesthetic care: an updated report by the American Society of Anesthesiologists Task Force on Postanesthetic Care. Anesthesiology. 2013;118(2):291-307.
- 12.Maurice-Szamburski A, Augier P, Viarre-Oreal V, et al; for PremedX Study Investigators. Effect of sedative premedication on patient experience after general anesthesia: a randomized clinical trial. JAMA. 2015;313(9):916-925.
- 13.Joshi GP, Kehlet H, PROSPECT Working Group. Guidelines for perioperative pain management: need for re-evaluation. Br J Anaesth. 2017;119(4):703-706.
- 14.Joshi GP, Schug SA, Kehlet H. Procedure-specific pain management and outcome strategies [published online May 9, 2014]. Best Pract Res Clin Anaesthesiol. 2014;28(2):191-201.
- 15.Pereira L, Figueiredo-Braga M, Carvalho IP. Preoperative anxiety in ambulatory surgery: the impact of an empathic patient-centered approach on psychological and clinical outcomes. Patient Educ Couns. 2016;99(5):733-738.
- 16.van Eck CF, Toor A, Banffy MB, Gambardella RA. Web-based education prior to outpatient orthopaedic surgery enhances early patient satisfaction scores: a prospective randomized controlled study. Orthop J Sports Med. 2018;6(1):2325967117751418.
- 17.Wright JP, Moses K, Idrees K. Making the case for importance of health literacy in the surgical population. JAMA Surg. 2018;153(8):745-746

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Here to Stay or Here for the Day? Important Considerations for Overnight Stay in Ambulatory Surgicenters:

Administrative, Financial, and Regulatory

Arnaldo Valedón, MD, FASA, SAMBA-F, MBA '23
Medical Director Outpatient Perioperative Services, WellSpan Health
President Elect, International Association for Ambulatory Surgery
Past President, SAMBA

1

DISCLOSURES

- Past Chair of the AAAHC Board of Directors, serves on the AAAHC governance, and is a current surveyor
- ARC Medical: Literature review consultation

2

OBJECTIVES

Regulatory
- Review of national, state, and local regulations to be considered when patients are scheduled for overnight stay at an ambulatory surgery center (ASC)

Administrative
- Discuss salient standards that must be met in order to provide safe and efficient care at an ASC for overnight care

Financial
- Discuss key aspects of reimbursement when considering programs for overnight stay at an ASC

3

REGULATORY

CMS: Conditions for Coverage (CfCs)

- **Important Sources of information**
  - General: https://www.cms.gov/Regulations-and-G
  - Conditions for coverage: https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&sid=38af2161b33de70fc35286fdbee57ca6&rgn=div5&view=text&node=42:3.0.1.1.3&idno=42#PartTop
- **Definitions**
  - 1982: 42 CFR 416.2 Definition for: Ambulatory surgical center, covered surgical procedures, and Facility services.
    - 42 CFR 416.40-49 (CfCs): Health/safety standards all ASCs must meet. Covered topics include: requirements for the ASC's governing body and management, provision of surgical services, and keeping of medical records.
  - 2009: 42 CFR 416.2 Definition for: Ambulatory surgical center
    - 42 CFR 416.2; 42 CFR 416.41-43; 416.49-52: Health and safety standards all ASCs must meet. Covered topics include: requirements for the ASC's governing body and management; provision of surgical services; patient rights; infection control; patient admission, assessment and discharge.
  - 2011: 42 CFR 416: Contains the patients' rights requirements for ASCs. Covered topics include: timing of patients' rights information, grievance procedures, and disclosure of physician financial interest or ownership in the ASC facility.

4

REGULATORY

- Federal Regulations-cont'd
  - **There should be no planned overnight stays in an ASC for Medicare patients**. Any overnight stay for a Medicare patient should only result from unanticipated conditions requiring continued observation or care within the capability of the ASC and should be neither a planned nor routine occurrence[1]
  - Two-Midnight Rule[2]
    - CMS identified high rates of error for hospital services rendered in a medically-unnecessary setting (i.e., inpatient rather than outpatient) in recent years.
    - CMS also observed a higher frequency of beneficiaries being treated as hospital outpatients and receiving extended "observation" services.
    - Inpatient admissions would generally be payable under Part A if the admitting practitioner expected the patient to require a hospital stay that crossed two midnights and the medical record supported that reasonable expectation.
    - Medicare Part A payment was generally not appropriate for hospital stays expected to last less than two midnights.

5

REGULATORY

STATE REGULATIONS: 23 HR AND 59 MIN EXCEPTION/APPLICATION?

STATES WITH 24 HOURS STAY[5]

Florida	Nebraska	Pennsylvania
Wisconsin	Wyoming	California
Utah (<3 pts, 10cm-6sml)	Missouri	Washington
	Kansas	

STATES WITH EXTENDED RECOVERY

- Oregon-48 hrs
- Colorado-72 hrs with convalescent center license
- Arizona –for patients with expected uncomplicated recovery
- Connecticut-3-21 days; no active recovery center license holders in the state
- Illinois-23 hours[6]
- Oklahoma-23 hrs but starts at the completion of surgery

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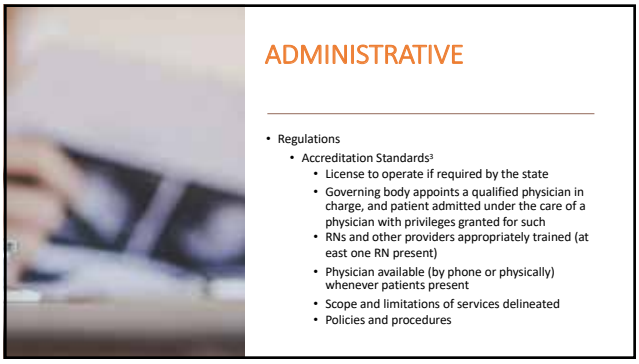
ADMINISTRATIVE
• Regulations
• Accreditation Standards[3]
• License to operate if required by the state
• Governing body appoints a qualified physician in charge, and patient admitted under the care of a physician with privileges granted for such
• RNs and other providers appropriately trained (at east one RN present)
• Physician available (by phone or physically) whenever patients present
• Scope and limitations of services delineated
• Policies and procedures

7


ADMINISTRATIVE
• Regulations
• Accreditation Standards Cont'd[3]
• Eligibility for admission
• Clinical responsibilities for each patient
• Provision of emergency services
• Transfer agreements and arrangements
• Staffing requirements (in sufficient numbers)
• Isolation procedures
• Clinical records indicating overnight care
• Food services and refreshments
• Privacy and safety provisions
• Integral part of QI

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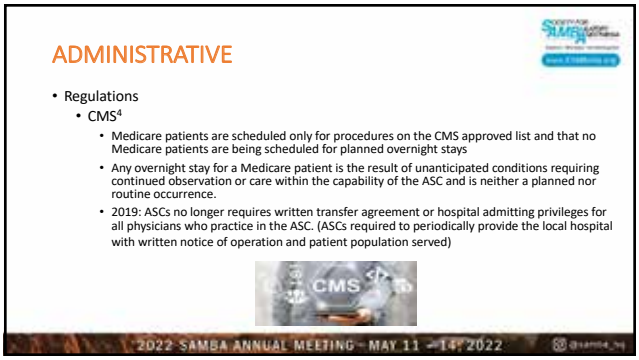
ADMINISTRATIVE
• Regulations
• CMS[4]
• Medicare patients are scheduled only for procedures on the CMS approved list and that no Medicare patients are being scheduled for planned overnight stays
• Any overnight stay for a Medicare patient is the result of unanticipated conditions requiring continued observation or care within the capability of the ASC and is neither a planned nor routine occurrence.
• 2019: ASCs no longer requires written transfer agreement or hospital admitting privileges for all physicians who practice in the ASC. (ASCs required to periodically provide the local hospital with written notice of operation and patient population served)
CMS
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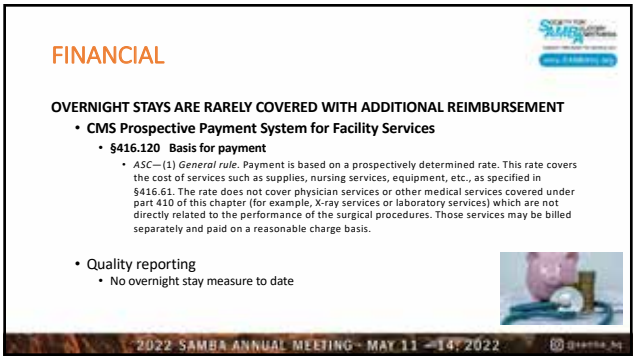
FINANCIAL
OVERNIGHT STAYS ARE RARELY COVERED WITH ADDITIONAL REIMBURSEMENT
• CMS Prospective Payment System for Facility Services
• §416.120 Basis for payment
• ASC—(1) General rule. Payment is based on a prospectively determined rate. This rate covers the cost of services such as supplies, nursing services, equipment, etc., as specified in §416.61. The rate does not cover physician services or other medical services covered under part 410 of this chapter (for example, X-ray services or laboratory services) which are not directly related to the performance of the surgical procedures. Those services may be billed separately and paid on a reasonable charge basis.
• Quality reporting
• No overnight stay measure to date
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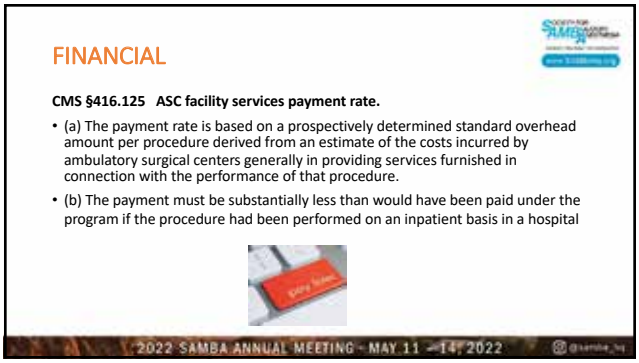
FINANCIAL
CMS §416.125 ASC facility services payment rate.
• (a) The payment rate is based on a prospectively determined standard overhead amount per procedure derived from an estimate of the costs incurred by ambulatory surgical centers generally in providing services furnished in connection with the performance of that procedure.
• (b) The payment must be substantially less than would have been paid under the program if the procedure had been performed on an inpatient basis in a hospital
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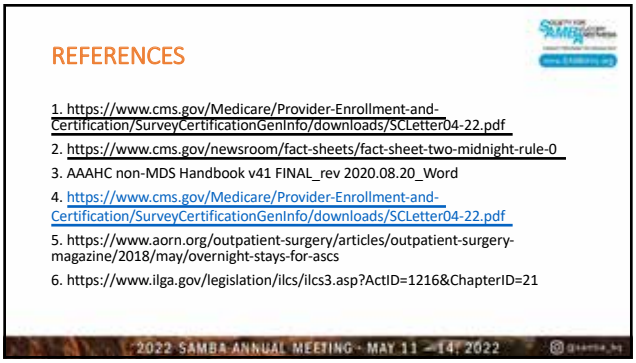
REFERENCES
1. https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/downloads/SCLetter04-22.pdf
2. https://www.cms.gov/newsroom/fact-sheets/fact-sheet-two-midnight-rule-0
3. AAAHC non-MDS Handbook v41 FINAL_rev 2020.08.20_Word
4. https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/downloads/SCLetter04-22.pdf
5. https://www.aorn.org/outpatient-surgery/articles/outpatient-surgery-magazine/2018/may/overnight-stays-for-ascs
6. https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1216&ChapterID=21
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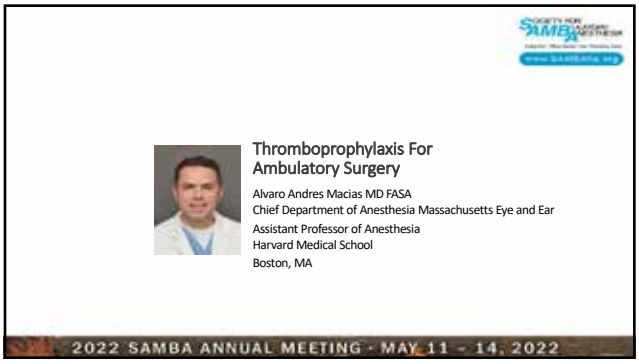
HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

DVT Prphylaxis in the ASC

Alvaro Andres Macias, MD, FASA

05/12/2022
4:30pm – 5:00pm MST


Thromboprophylaxis For Ambulatory Surgery
Alvaro Andres Macias MD FASA
Chief Department of Anesthesia Massachusetts Eye and Ear
Assistant Professor of Anesthesia
Harvard Medical School
Boston, MA
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No Disclosures
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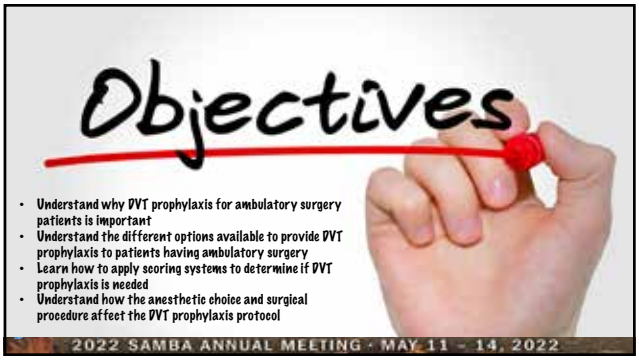
Objectives
Understand why DVT prophylaxis for ambulatory surgery patients is important
Understand the different options available to provide DVT prophylaxis to patients having ambulatory surgery
Learn how to apply scoring systems to determine if DVT prophylaxis is needed
Understand how the anesthetic choice and surgical procedure affect the DVT prophylaxis protocol
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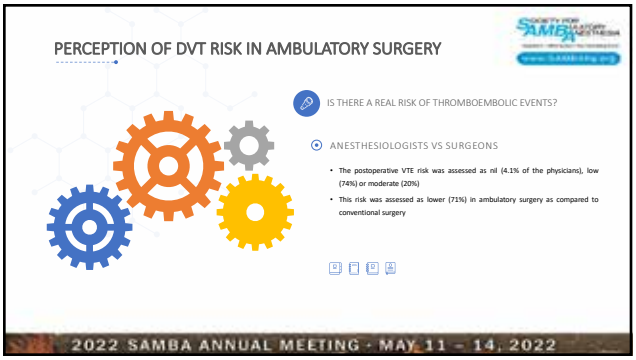
PERCEPTION OF DVT RISK IN AMBULATORY SURGERY
IS THERE A REAL RISK OF THROMBOEMBOLIC EVENTS?
ANESTHESIOLOGISTS VS SURGEONS
The postoperative VTE risk was assessed as nil (4.1% of the physicians), low (74%) or moderate (20%)
This risk was assessed as lower (71%) in ambulatory surgery as compared to conventional surgery
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PERCEPTION OF DVT RISK IN AMBULATORY SURGERY
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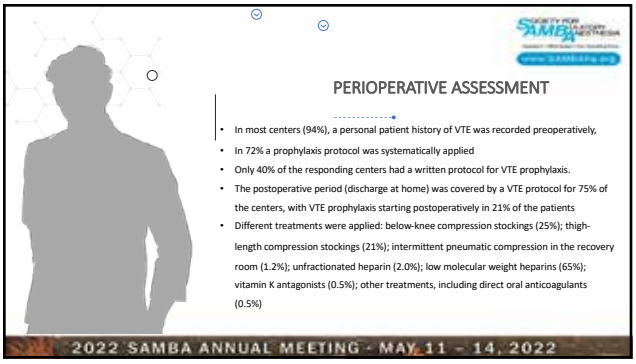
PERIOPERATIVE ASSESSMENT
In most centers (94%), a personal patient history of VTE was recorded preoperatively,
In 72% a prophylaxis protocol was systematically applied
Only 40% of the responding centers had a written protocol for VTE prophylaxis.
The postoperative period (discharge at home) was covered by a VTE protocol for 75% of the centers, with VTE prophylaxis starting postoperatively in 21% of the patients
Different treatments were applied: below-knee compression stockings (25%); thigh-length compression stockings (21%); intermittent pneumatic compression in the recovery room (1.2%); unfractionated heparin (2.0%); low molecular weight heparins (65%); vitamin K antagonists (0.5%); other treatments, including direct oral anticoagulants (0.5%)
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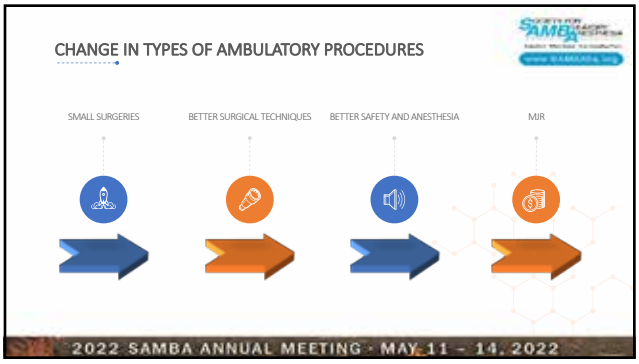
CHANGE IN TYPES OF AMBULATORY PROCEDURES
SMALL SURGERIES
BETTER SURGICAL TECHNIQUES
BETTER SAFETY AND ANESTHESIA
MIR
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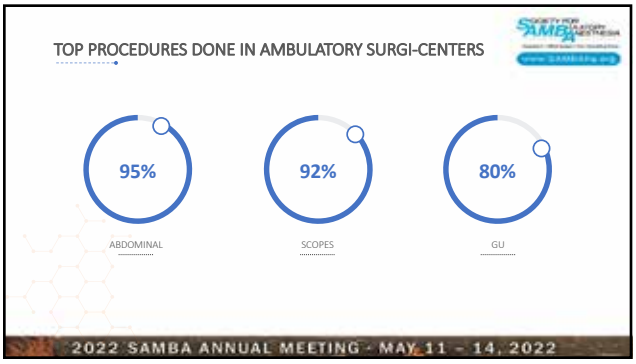
TOP PROCEDURES DONE IN AMBULATORY SURGI-CENTERS
95%
ABDOMINAL
92%
SCOPES
80%
GU
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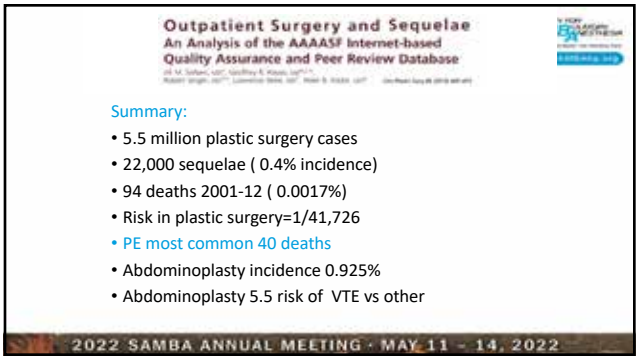
Outpatient Surgery and Sequelae
An Analysis of the AAAASF Internet-based Quality Assurance and Peer Review Database
Summary:
• 5.5 million plastic surgery cases
• 22,000 sequelae (0.4% incidence)
• 94 deaths 2001-12 (0.0017%)
• Risk in plastic surgery=1/41,726
• PE most common 40 deaths
• Abdominoplasty incidence 0.925%
• Abdominoplasty 5.5 risk of VTE vs other
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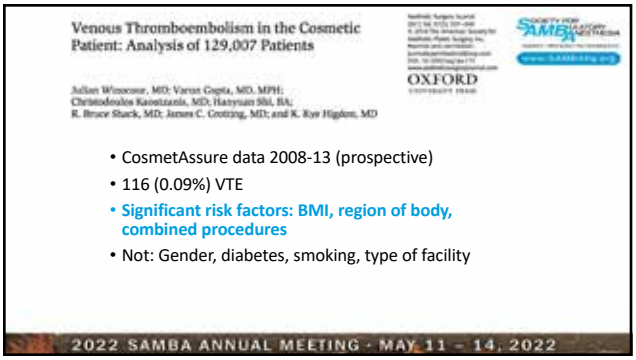
Venous Thromboembolism in the Cosmetic Patient: Analysis of 129,007 Patients
OXFORD
• CosmetAssure data 2008-13 (prospective)
• 116 (0.09%) VTE
• Significant risk factors: BMI, region of body, combined procedures
• Not: Gender, diabetes, smoking, type of facility
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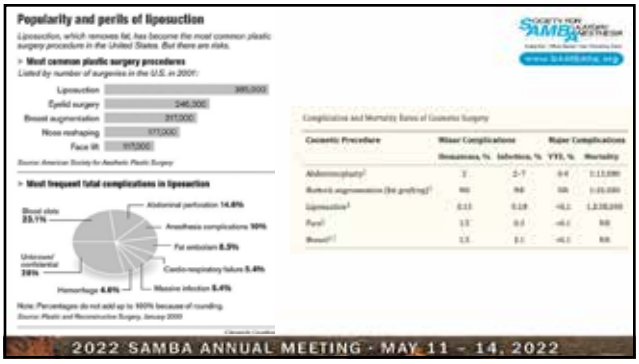
Popularity and perils of liposuction
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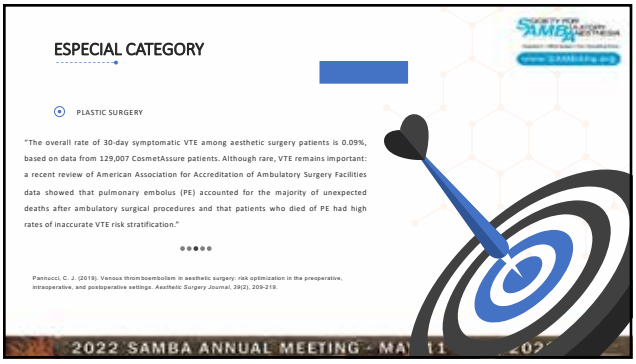
ESPECIAL CATEGORY
PLASTIC SURGERY
"The overall rate of 30-day symptomatic VTE among aesthetic surgery patients is 0.09%, based on data from 129,007 CosmetAssure patients. Although rare, VTE remains important: a recent review of American Association for Accreditation of Ambulatory Surgery Facilities data showed that pulmonary embolus (PE) accounted for the majority of unexpected deaths after ambulatory surgical procedures and that patients who died of PE had high rates of inaccurate VTE risk stratification."
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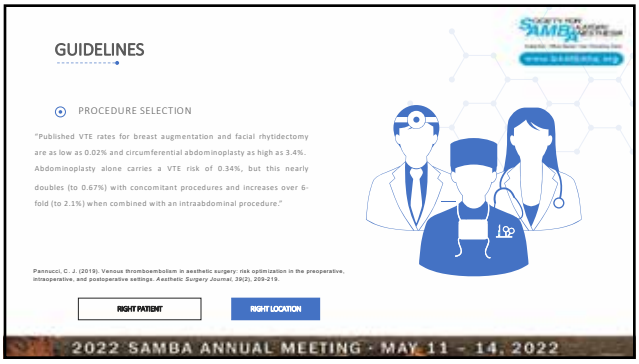

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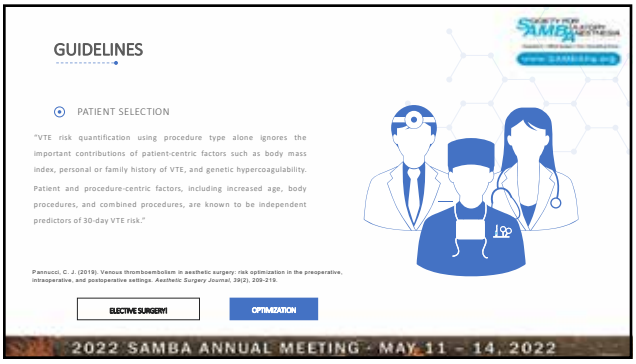

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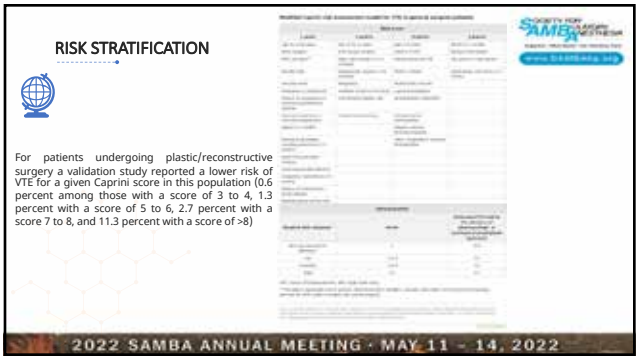

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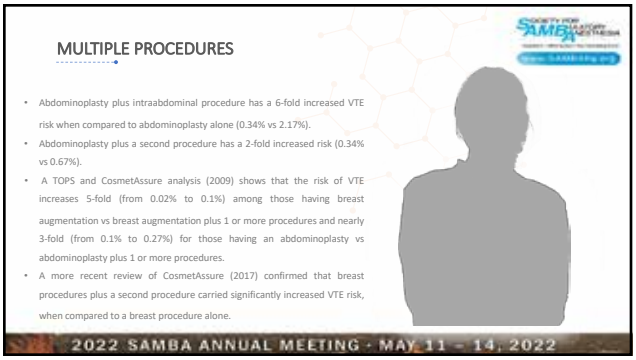

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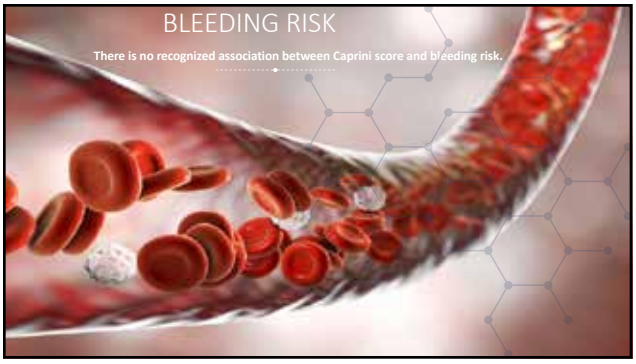

21

BLEEDING RISK

- The American Association of Plastic Surgeons explicitly recommend against providing chemical prophylaxis to all plastic surgery inpatients, as this practice has an unfavorable risk/benefit relationship.
- Both the American Society of Plastic Surgeons and the American Association of Plastic Surgeons recommend individualized VTE risk stratification with provision of prophylaxis based on Caprini score, as opposed to explicit reliance on procedure type.

22

BLEEDING RISK & PROPHYLAXIS

- General/abdominal/ pelvic surgery – 1 percent
- Bariatric surgery – <1 percent
- Plastic and reconstructive surgery – 0.5 to 1.8 percent
- Vascular surgery – 0.3 to 1.8 percent

23

RECOMMENDATIONS

American Society of Plastic Surgeons VTE Task Force Recommendations (2011)

1. Risk stratification: "Should consider completing a 2005 Caprini RAM…to stratify patients into a VTE risk category based on their individual risk factors."

For elective surgery patients with Caprini scores of 7:
"**Should consider utilizing risk reduction strategies such as limiting OR times, weight reduction, discontinuing hormone replacement therapy and early postoperative mobilization.**"
3. For body contouring or abdominoplasty under general anesthesia with procedure time >60 minutes:
a. Caprini score 3-6: "Should consider the option to use postoperative low molecular weight heparin or unfractionated heparin."
b. Caprini score >=3: "Should consider the option to utilize mechanical prophylaxis…for non-ambulatory patients."
c. Caprini score >=7: "Should strongly consider the option to use extended [duration] low molecular weight heparin postoperative prophylaxis."

American Association of Plastic Surgeons Consensus Panel (2016)

1. "**We recommend using non-general anesthesia when appropriate. When possible, consideration should be given to using monitored anesthesia care, local anesthesia with sedation, or neuraxial anesthesia instead of general anesthesia.**"
2. "**We recommend using intermittent pneumatic compression to prevent perioperative venous thromboembolism events in plastic surgery patients…intermittent pneumatic compression is superior to elastic compression stockings.**"
3. "We recommend all plastic and reconstructive surgery patients should be risk-stratified for perioperative venous thromboembolism risk using a 2005 Caprini score."
4. "We do not recommend adding chemoprophylaxis to intermittent pneumatic compression for venous thromboembolism prophylaxis in the general non-risk stratified plastic surgery population."
5. "**We recommend that surgeons consider chemoprophylaxis on a case-by-case basis in patients with Caprini score greater than 8.**"
6. "We do not recommend adding routine chemoprophylaxis for venous thromboembolism prophylaxis in non-risk stratified patients undergoing…body contouring."

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RECOMMENDATIONS

IPC reduces plasminogen activator inhibitor-1 (PAI-1), thereby increasing endogenous fibrinolytic activity

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Ambulatory Anesthesia Hot Topics Rapid Fire Panel: Sugammadex

Catherine Tobin, MD

05/13/2022
8:00am – 9:15am MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Sugammadex

Dr. Catherine Tobin

SNAP talks

May 13th 8am-9:15am

1

Basic Facts

- Reverses rocuronium and vecuronium (amino steroidal NMB's)
- Modified cyclodextrin that antagonizes thru encapsulation.
- Dosing based on actual body weight (not ideal) and depth of block.
- If at least 2/4 twitches. 2mg/kg
- If ¼ twitch, of 0/4 with post tetanic twitches 4mg/kg
- If 0/4 twitch and no post tetanic, (can't intubate or ventilate) 16mg/kg

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2

Pregnancy and Lactation…. (Statement April 2019)

Pregnancy:

- Early: AVOID (Sugammadex encapsulates progesterone, progesterone is critical need more studies before we know it is safe)
- Term/or NEAR Term: USE WITH CAUTION (safe for Maternal under C section for example, however lactation success data not there)

Lactation: If established ok, if new to breast feeding or term pregnancy avoid

Patients of child bearing age: SAFE, counsel if on birth control.

PATIENTS FOR WHOM BENEFIT MAY OUTWEIGH THEORETICAL OR UNKNOWN RISKS TO FERTILITY, PREGNANCY, OR LACTATION

- Can't intubate/Ventilate and sugammadex would reverse NMB.
- Patients on cholinesterase inhibitors reaching a ceiling effect but who remain at an elevated risk for inadequate reversal, ii i.e. postoperative residual neuromuscular blockade due to high-dose magnesium therapy, or Myasthenia gravis.

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3

Birth Control

- If an oral contraceptive is taken on the same day that sugammadex 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.
- Avoid if on birth control….
- Our hospital has something that auto-populates and it is in writing and given the patient in PACU.

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4

Anaphylaxis

- If from Rocuronium:
- Some case reports support treatment with Sugammadex.
- However, recent study did not support and in vitro does not support.

(Platt PR, Clarke RC, Johnson GH, Sadleir PHM. Efficacy of sugammadex in rocuronium-induced or antibiotic induced anaphylaxis. A case-control study. *Anaesthesia* 2015;70:1264-7)

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Anaphylaxis from Sugammadex

A review of 33 cases.

In 93% onset time is first 5 minutes (signs and symptoms)

Incidence-not well established

High side 1 in 2,500 (0.039%)

Treatment: 1st line: Epinephrine (In study, 25% of cases did not get it)

(steroids, histamine blockers, albuterol, order tryptase to confirm)

Arslan, Baris; Sahin, Tuna; Ozdogan, Hatice Sugammadex and anaphylaxis, Journal of Anaesthesiology Clinical Pharmacology: Apr–Jun 2021 - Volume 37 - Issue 2 - p 153-159.

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6

Ok to use in dialysis patients?

- Not approved in ESRD…..
- The elimination half-life of sugammadex for adults with normal renal function is approximately 2 hours, with over 90% excreted within 24 hours, primarily in urine.
- The Sugammadex/Roc/Vec complex is hydrophilic and excreted unchanged in the urine.

7

Sugammadex in ESRD: too early for a "free-pass"

- Can J Anaesth. 2021 Feb;68(2):264-265.
- Paredes S, Porter SB, Porter IE 2nd, Renew JR. Sugammadex use in patients with end-stage renal disease: a historical cohort study. Can J Anaesth. 2020 Dec;67(12):1789-1797.

8


medicina

Efficacy and Safety of Sugammadex for the Reversal of Rocuronium-Induced Neuromuscular Blockade in Patients with End-Stage Renal Disease: A Systematic Review and Meta-Analysis

- Recovery is slower
  "Sugammadex may effectively and safely reverse rocuronium-induced NMB in patients with ESRD, although the recovery time to a TOF ratio of 0.9 may be longer in patients with ESRD than those with normal renal function"

9

Already gave Sugammadex (4mg/kg) Need paralysis again, now what?

- Give succinylcholine or cisatracurium 1st choice..

Minimum Waiting Time	NMBA and Dose to be Administered
5 minutes	1.2 mg/kg rocuronium
4 hours	0.6 mg/kg rocuronium or 0.1 mg/kg vecuronium

10

Peds? Yes it is Ok….

- "Safety and effectiveness in patients younger than 2 years of age have not been established"
- Not approved in kids under 2years old….
- When I asked my peds colleagues at work, they "use it all the time in kids under 2, even the neonates!)

11

Bradycardia is a known, but rare side effect

- Some studies suggest 1-2% in adults, one study up to 7%, maybe higher in peds.
- Case reports of asystole.
- In 2008 sugammadex was approved in Europe, in United States 2015. Delays were due to concerns for anaphylaxis and bradycardia.
- Give drug over 30 seconds.
- If needed treat with anti-cholinergic or ephedrine.
- Just be aware!

- Kapoor MC. Cardiovascular adverse effects of sugammadex. J Anaesthesiol Clin Pharmacol. 2020 Oct-Dec;36(4):469-470. doi: 10.4103/joacp.JOACP_132_20. Epub 2020 Sep 29. PMID: 33840925; PMCID: PMC8022047.

12

Money, Money, Money

My hospital now limits us:

Criteria for use: (At my institution)

- ASA score of 3 or 4
- Upper abdominal or thoracic surgery
- BMI over >40 kg/m^2

13

References

- https://www.soap.org/assets/docs/SOAP_Statement_Sugammadex_During_Pregnancy_Lactation_APPROVED.pdf
- Arslan, Baris; Sahin, Tuna; Ozdogan, Hatice Sugammadex and anaphylaxis, Journal of Anaesthesiology Clinical Pharmacology: Apr–Jun 2021 - Volume 37 - Issue 2 - p 153-159.
- Platt PR, Clarke RC, Johnson GH, Sadleir PHM. Efficacy of sugammadex in rocuronium-induced or antibiotic induced anaphylaxis. A case-control study. *Anaesthesia* 2015;70:1264-7)
- Magoon R, Kashav R, Kohli JK. Sugammadex in end-stage renal disease: too early for a "free-pass". Can J Anaesth. 2021 Feb;68(2):264-265. doi: 10.1007/s12630-020-01860-9. Epub 2020 Nov 16. PMID: 33200322.
- Kim YS, Lim BG, Won YJ, Oh SK, Oh JS, Cho SA. Efficacy and Safety of Sugammadex for the Reversal of Rocuronium-Induced Neuromuscular Blockade in Patients with End-Stage Renal Disease: A Systematic Review and Meta-Analysis. Medicina (Kaunas). 2021 Nov 17;57(11):1259. doi: 10.3390/medicina57111259. PMID: 34833477; PMCID: PMC8622972.
- Kapoor MC. Cardiovascular adverse effects of sugammadex. J Anaesthesiol Clin Pharmacol. 2020 Oct-Dec;36(4):469-470. doi: 10.4103/joacp.JOACP_132_20. Epub 2020 Sep 29. PMID: 33840925; PMCID: PMC8022047.

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Ambulatory Anesthesia Hot Topics Rapid Fire Panel: Parkinson's DS and Ambulatory Anesthesiology

Mary Ann Vann, MD

05/13/2022
8:00am – 9:15am MST

2022 SAMBA ANNUAL MEETING
MAY 11 – 14, 2022

Parkinson's Disease and Ambulatory Anesthesia

Mary Ann Vann MD, FASA
Boston, MA

1

Parkinson's Disease Info

- Most often in patients older than 50 ~~60~~
- 1-2% of all adults older than 65
- 13/100K people in US
- 60K new cases each year
- More men than women

- **PROGRESSIVE**

2

Parkinson's Disease Info

Risk factors/causes

- Genetics
- Head Injuries
- Exposure to pesticides/heavy metals
  - AGENT ORANGE -- VETERANS

3

Parkinson's Disease: Progression

- Stage 1: Tremor, posture, facial expressions
- Stage 2: + Rigidity, difficulty walking
- Stage 3: + Loss of balance, slowness, falls
- Stage 4: +Walks with walker, can't live alone
- Stage 5: +Wheelchair or bedridden, hallucinations or delusions

Unified Parkinson's Disease Rating Scale (UPDRS)

4

Parkinson's Disease: Manifestations

- Muscle **rigidity**
- **Tremor at rest**
- Bradykinesia
- **Postural instability** >> gait disturbance
- **Orthostatic Hypotension**
- **Neurocognitive dysfunction**: Depression, sleep disorders
- Dementia
- **Difficulty swallowing**
- Leading **cause of death** is **Aspiration Pneumonia**

5

Parkinson's Disease: Pathology

- Due to decreased levels of Dopamine in the brain (basal ganglia)
- Less dopamine = enhanced excitatory effects of AcetylCholine
- Need to increase dopamine levels but there are adverse peripheral effects

6

Parkinson's Ds. Medications

- Dopamine Precursors
- Dopamine Agonists
- Monoamine Oxidase Inhibitors
- Catechol-O-methyltransferase (COMT) inhibitors
- AntiCholinergics
- Prolactin Inhibitors

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Levodopa/Carbidopa combinations

Usual First Line treatment + Most commonly prescribed

- Levodopa, converted to Dopamine after crossing BB barrier
- Carbidopa does not cross BBB, inhibits decarboxylating enzyme in periphery
  - *GI ABSORPTION (no IV)**
  - *Short acting
  - *Schedule NOT interval

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Levodopa/Carbidopa: Side effects

- Decreased myocardial NE stores
- Peripheral vasoconstriction
- **Orthostatic Hypotension**
- Patients may become desensitized to levodopa over time
- Dyskinesia

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Dyskinesia

- Chorea-like movement induced by Levodopa
- Case reports
  - 20mg **Ketamine** relieved tremor, attenuated dyskinesia
  - Dyskinesia disappeared after **midazolam** during conscious sedation (1 mg after dyskinesia increased during procedure done w Midaz 1.5mg sedation)
  - 2 (1990s) - **Propofol** reported to worsen dyskinesia

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Parkinsons Ds: Alternate Dosing

Levodopa/Carbidopa gel for infusion into the jejunum

- Endoscopically placed NJ tube – Dosing trial
- Permanent Percutaneous Endoscopic Jejunostomy Tube with Pump
- Improved Quality of Life: More time without symptoms (**ON** Time), with less Dyskinesia
- Perioperative management????
- If infusion D/Ced for period of time, need neurologic consult for replacement therapy****

Drug Des Devel Ther. 2020

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Parkinson's Ds: 2nd Line Treatments

- Progression of disease****
- To treat side effects of Levodopa/Carbidopa
- Younger patients, alternate treatments

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Parkinson's Medications

Dopamine Agonists

- Pramipexole
- Ropinole
- **Rotigotine (patch)******
- Bromocryptine
- ***Apomorphine - Rescue**
  - Short acting
  - Injected subcutaneously
  - Now also sublingual film
  - Nausea and Vomiting

Marketed to patients for improvement during OFF periods

13

Parkinson's Medications

MAO – B Inhibitors

- Selegine
- Rasagiline
  - (MAO-B) less degradation of DA in brain, increased sympathetic outflow

COMT Inhibitors (decrease breakdown of DA)

- Entacapone
- Tolcapone

Amantidine **

14

Parkinson's Ds: Newest Drugs

- Inhaled LevoDopa (Inbrija): Improved patients' movement during **OFF** periods – used in addition to regular meds
  - Up to 5x/day
- Safinamide (Xadago) MAO-B
- Istradefylline (Nourianz) acts on the adenosine receptor, which modulates the dopaminergic system, but is not directly dopaminergic
  - Prolongs action of Levodopa/carbidopa

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Parkinson's Ds: Perioperative Medication Management

- Patient should take **scheduled doses** prior to surgery and any missed dose immediately after surgery
- Always **BRING MEDICATION WITH THEM**

16

Parkinson's Disease + Anesthesia

Increased risk of perioperative events

- Levodopa ½ life short, no meds for 6-12 hours can affect **ventilation**
  - Respiratory failure due to weakness and rigidity
- Autonomic dysfunction: salivation, dysphagia, aspiration risk, hypotension
- Higher risk of postop confusion, hallucinations
- ? Ability to follow instructions on medications pre and post-op

17

Parkinson's Ds: Anesthesia Drugs

Avoid/ Caution:

- Metoclopramide, prochlorperazine (anti dopaminergic)
- Haldol (worsens symptoms)
- Fentanyl, Remifentanil (rigidity)

18

Parkinson's Disease + Anesthesia

Is Regional Better?

19

Patient Selection

Is your facility prepared to care for a patient with severe Parkinson's symptoms due to discontinuation of medications?

- Intubation, ventilation
- Administration of rescue medications
- Transfer

20

Real Case

- 66 year old man presents for Colonoscopy at the Endoscopy center (in medical office bldg)
- He takes **2*** Anti-Parkinson's medications
- He arrives at 12:45 for 1:30pm case
- I meet him in the procedure room
- He has not taken ANY Parkinson's medications since the evening before

21

Real Case

What are the issues?

- Is he Eligible for anesthesia at this location?
- What is his current physical state?
- What are our options?

22

Real Case

- What are the issues?
  - He is ineligible by the patient selection criteria
  - He also did not receive proper medication instructions
  - He feels weak
  - Risks of hypoventilation and aspiration
  - Moderate sedation is NOT a good option
- Patient brought his medications with him

23

Real Case

What happened?

- Delayed case, patient took his medications
- Patient felt better
- Nurse described him as a "different person"
- Colonoscopy was done 2 hours late

24

DBS for Parkinson's Ds

What is it?

- Intracranial electrode(s), fixed to skull
- Extension Cable
- Implanted Pulse Generator (usually located in chest or abdomen)
- **To correct the chemical imbalance**

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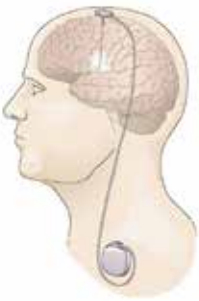

NIH National Institute of Neurological Disorders and Stroke

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Perioperative Management of DBS

- Preop CXR to trace leads
- Risk to patient if leads conduct electrical current, etc. to brain
- **Turn off stimulator (*may cause akinesis*)**
- Electrocautery: Bipolar, dispersal pad placement
- Defibrillators and AICDs: away from neurostimulator, lowest energy, careful with magnet
- Turn On **ASAP**

BJA 2009

27

Perioperative Managem

- Preop CXR to trace lead
- Risk to patient if l rrent, etc. to brain
- Turn off *tremor*)
- El ersal pad placement
- s: away from neurostimulator, eful with magnet
- T

Continue regular medications

BJA 2009

28

Thank you!!

29

30

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Ambulatory Anesthesia Hot Topics Rapid Fire Panel: Disruptive Surgeons

Michael R. Hicks, MD, MBA, MHCM, FACHE

05/13/2022
8:00am – 9:15am MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Disruptive Behavior

Practical Strategies for Meaningful Intervention

National Medical Director, HCA Ambulatory Surgery Division

Diplomate of the American Board of Anesthesiology

Diplomate of the American Board of Preventive Medicine (Clinical Informatics)

1

Definitions of disruptive behavior

- Many formal definitions (TJC, AHA, AMA, ANA, etc.)
- Depends on perspective – spectrum from clearly egregious to subtle "eye of the beholder" behaviors
- In some environments (like health care) disruptive behaviors have been normalized – they are taken for granted as acceptable
- Any behavior that undermine a safety culture, undermines or contrary to organizational mission and values

2

Addressing disruptive behavior

Conditions that allow disruptive/disrespectful behaviors are rooted in organizational culture
- Culture requires constant work – leadership, transparency, consistency, trust

Level set expectations from the beginning
- Upon application to the medical staff or time of hire
- Clearly delineate expected and prohibited behaviors – code of conduct, medical staff bylaws, policy/procedures, reporting mechanisms, etc.
- Reinforce with regular education and review BY ALL COLLEAGUES as part of staff review, employee evaluation, ongoing professional practice evaluation, etc.

Make quick interventions when needed – it benefits everyone!

Unfortunately, we can't assume that our colleagues know the difference between acceptable and unacceptable behaviors. Modeling behaviors is part of the healthcare educational process for good and bad…

An ounce of prevention is worth more than a pound of cure

3

Addressing disruptive behavior

Establish a communications strategy before you need it
- Who (dept chief, HR, medical director, etc.)
- How
  - Informal (collegial)
  - Formal
- Useful tools
  - TeamSTEPPS
  - DESC
  - SBAR
  - Coaching – both informal and formal

4

Addressing disruptive behavior

A few words of caution
- Sometimes the behavior may be a sign of other significant needs
- Not excusing the behavior, regardless of reason it is unacceptable
  - We may discover other underlying issues - personal relationship challenges like divorce, family or personal illness, substance abuse, psychological stress, etc.
  - Occasionally may even a retaliatory response
- Regardless, the behavior must stop

Many hope that behavior will resolve itself, more likely it becomes normalized – regardless, it creates an environment that damages the culture and sets the stage for patient and staff harm

5

Approaches to consider

Collegial or coaching conversation/intervention
- Appropriateness depends on the circumstance
  - Unusual behavior for the individual ("out of character") or unusual circumstance
- Better applied early
- Collegial does not mean undocumented or lack consequences
- If this doesn't work early then it rarely works at all

- Formal approaches
  - Depend on relationship (employee, independent medical staff, etc.)
  - Follow the rules – notice provisions, documentation, etc.
  - Approach it as a team and not as an individual
    - E.g., medical director speaking on behalf of the MEC/GB; supervisor on behalf of company

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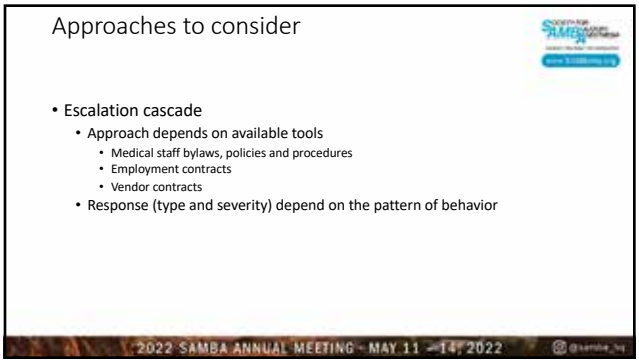
Approaches to consider
• Escalation cascade
• Approach depends on available tools
• Medical staff bylaws, policies and procedures
• Employment contracts
• Vendor contracts
• Response (type and severity) depend on the pattern of behavior
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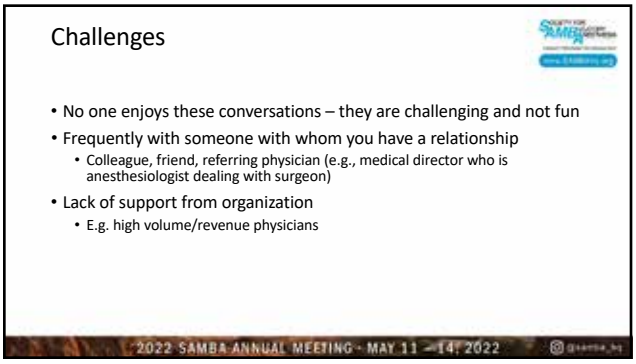
Challenges
• No one enjoys these conversations – they are challenging and not fun
• Frequently with someone with whom you have a relationship
• Colleague, friend, referring physician (e.g., medical director who is anesthesiologist dealing with surgeon)
• Lack of support from organization
• E.g. high volume/revenue physicians
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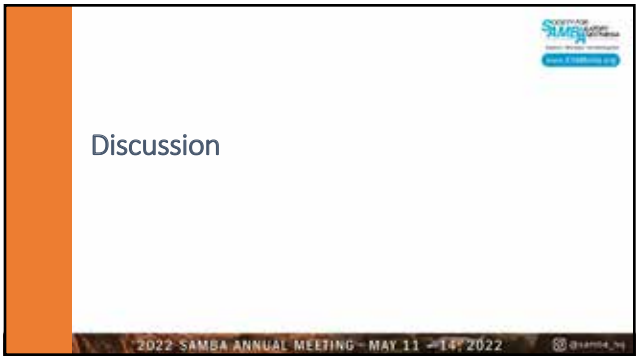
Discussion
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9

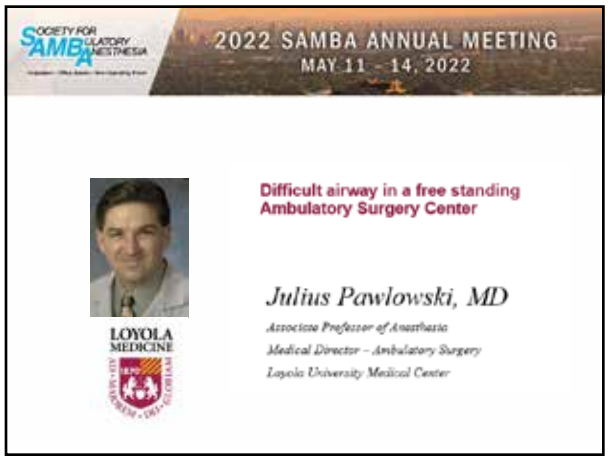
HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Ambulatory Anesthesia Hot Topics Rapid Fire Panel: Difficult Airway

Julius Pawlowski, MD

05/13/2022
8:00am – 9:15am MST


SOCIETY FOR AMBULATORY ANESTHESIA
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MAY 11 - 14, 2022
Difficult airway in a free standing Ambulatory Surgery Center
Julius Pawlowski, MD
Associate Professor of Anesthesia
Medical Director – Ambulatory Surgery
Loyola University Medical Center
LOYOLA MEDICINE

1


Difficult Airway in Ambulatory Surgery
Unanticipated difficult airway is always a possibility
Difficult Airway Algorithms
Identify the emergency situation early
Calling for help early
Changing technique or equipment in a timely fashion
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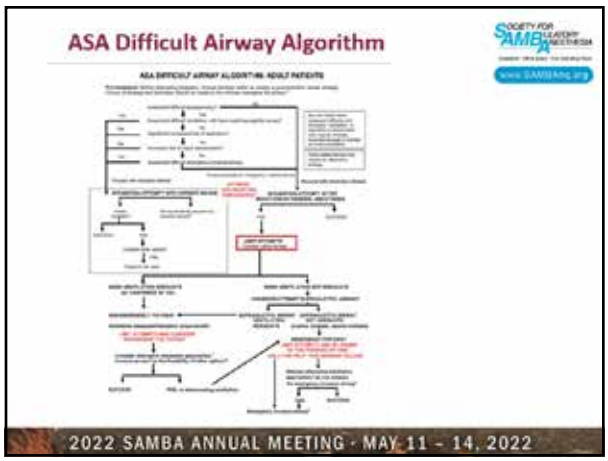
2


ASA Difficult Airway Algorithm
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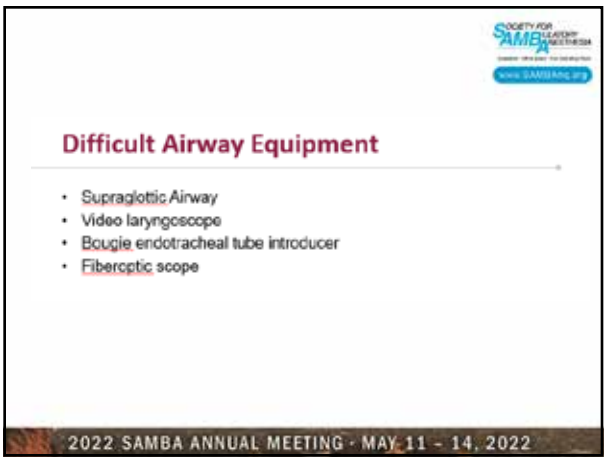
Difficult Airway Equipment
Supraglottic Airway
Video laryngoscope
Bougie endotracheal tube introducer
Fiberoptic scope
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4


References
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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Ambulatory Anesthesia Hot Topics Rapid Fire Panel: OBA

Fred Shapiro, DO, FASA

05/13/2022
8:00am – 9:15am MST

MASSACHUSETTS EYE AND EAR | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

OFFICE BASED ANESTHESIA:
Safety and Outcomes Research

Fred E. Shapiro DO, FASA
Associate Professor of Anaesthesia,
Harvard Medical School
Boston, MA

1

Disclosure

- I have no financial relationships to disclose

2

The Institute for Safety in Office-Based Surgery

- Non-profit organization established 2009
- Purpose:
  - Promote patient safety and outcomes research
  - Design tools for advanced detection and prevention of adverse events
  - Collaborate across ALL subspecialties
  - Educate physicians and patients
  - Generate evidence-based standard of care for safer office based practice

www.isobs.org

"to promote patient safety in office-based surgery and to encourage collaboration, scholarship, physician and patient education"

3

Objectives

- History and Background
- Safety and Outcomes Research
- Future direction

4

MASSACHUSETTS EYE AND EAR | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

October 16, 1846

5

Ether Monument, Boston, MA

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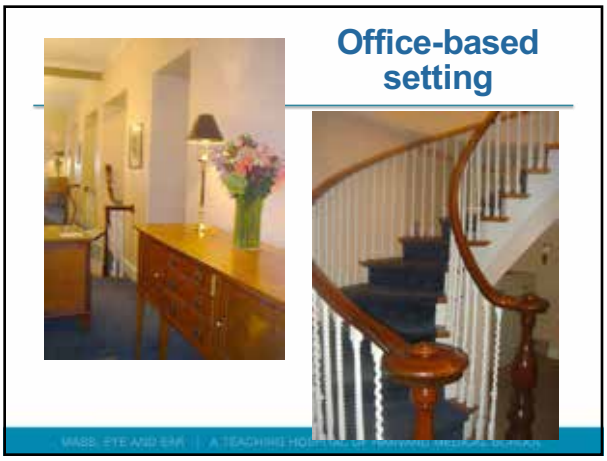
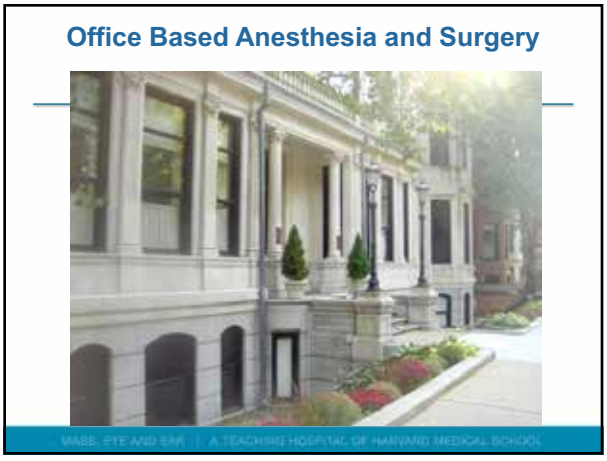
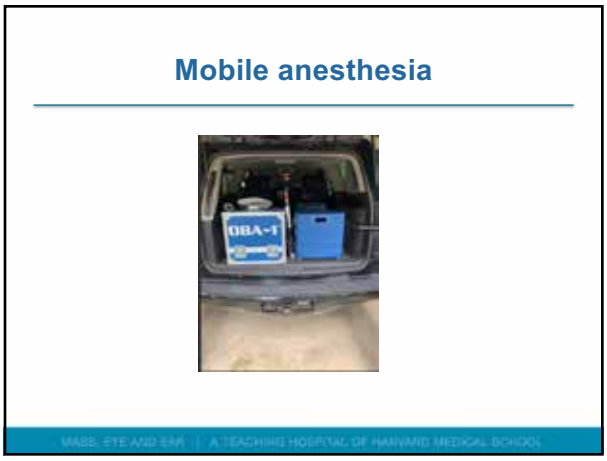

Office-based setting

8

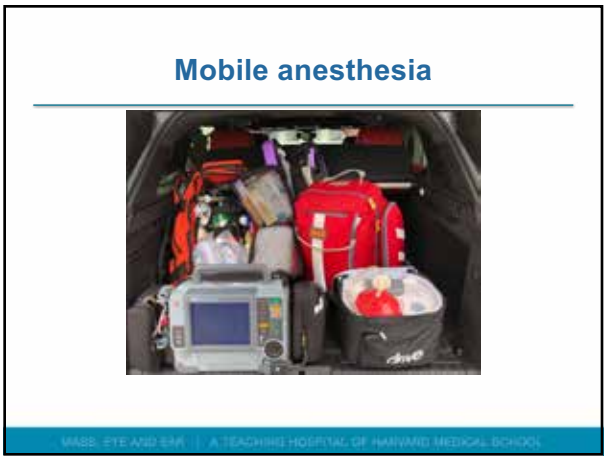
9


Office Based Anesthesia and Surgery

10


Mobile anesthesia

11


Mobile anesthesia

12

Mobile anesthesia

13

Dental office: March 24, 2022

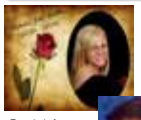
14

"Wild Wild West of Healthcare"

- Lack of uniform regulation of office based practice
- Increasing number and variety of cases
- Increasing complexity of cases and patients
- Sedation by anesthesia and non-anesthesia personnel
- Widely publicized fatalities and malpractice claims

15

Recent Media Attention: High-Profile Events



Teen died of malignant hyperthermia during breast surgery; parents suing surgeon and anesthesiologist for not recognizing MH and having enough dantrolene stocked in outpatient surgery center

Eight-year-old died after receiving three times the prescribed amount of sedation medication for a routine checkup and an emergency developed thereafter

25-year-old died due to possible hypoxia and lack of monitoring after Propofol administration for wisdom tooth extraction

Three-year-old died of possible apnea after general anesthesia for tooth extraction

Joan Rivers died of hypoxia and cardiac arrest after Propofol administration for endoscopic procedure for vocal changes and acid reflux

Dr. Henry Patel, a cardiologist, while under anesthesia for a dental implant, and never regained consciousness

16

Exponential growth

- Office-based surgery (OBS) has grown significantly in the last 30 years.
- Outpatient procedures (USA) expected to increase:
  - 129 million (2018) → 144 million (2023)
  - offices ~ 24-35% of the volume. (1,2)
- ~3x growth from 2005, ASA estimated 10 million office procedures. (3)

1. US Outpatient Surgical Procedures Market by Surgical Procedure Type, Patient Care Setting- US Forecast to 2023. January 2019. Accessed April 16, 2021. https://www.researchandmarkets.com/research/lfnn6x/united_states?w=5.
2. Plastic Surgery Statistics Report. ASPS National Clearinghouse of Plastic Surgery Procedure Statistics. American Society of Plastic Surgeons. 2018. Accessed April 16, 2021. https://www.plasticsurgery.org/documents/News/Statistics/2018/plastic-surgery-statistics-full-report-2018.pdf
3. Rubinstein IS. The statistics (chapter 2). In: Shapiro FE, editor. *Manual of office-based anesthesia procedures*. Philadelphia: Lippincott, Williams and Wilkins;2007. p. 9-10.

17

MASSACHUSETTS EYE AND EAR

HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

Safety and Outcomes Research

18

Office-Based Anesthesia: Safety and Outcomes

Fred E. Shapiro, DO,* Nathan Punwani, MD,† Noah M. Rosenberg, MD,‡ Arnaldo Valedon, MD,§ Rebecca Twersky, MD, MPH,‖ and Richard D. Urman, MD, MBA¶ (Anesth Analg 2014;119:276-85)

- Lack of randomized controlled trials
- Enhanced quality of care:
  - proper procedure and patient selection
  - provider credentialing
  - facility accreditation
  - patient safety checklists (cognitive aids)
  - professional society guidelines

19

journal

Ambulatory Surgical Risk

A Comparison between office and other ambulatory practices: Analysis from the National Anesthesia Clinical Outcomes Registry

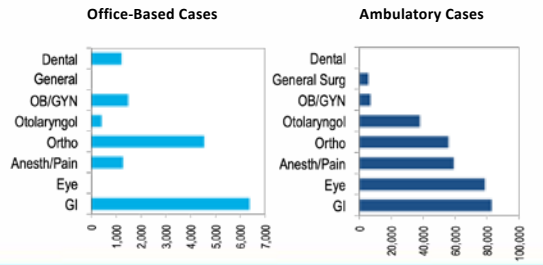
- 23 million Anesthesia cases, 2010 - 2014
- 180,000 office vs 4.6 million ASC
- Statistically significant differences in patient demographics, procedure types, and reported events

20

A Comparison Between Office and Ambulatory Practices: Analysis from the National Anesthesia Clinical Outcomes Registry

Samir R. Jani, MD, MPH, Fred E. Shapiro, DO, Hubert Kordylewski, James H. Diaz, MD, MPH, Alan D. Kaye, MD, PhD, Richard P. Dutton, MD, MBA, Richard D. Urman, MD, MBA

Most active specialties (2013)



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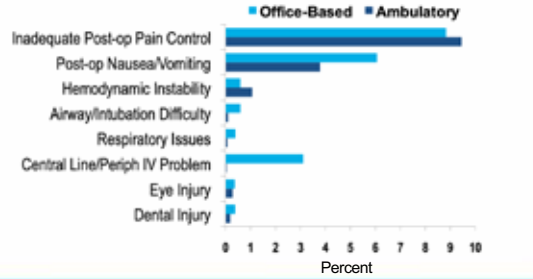
A Comparison Between Office and Ambulatory Practices: Analysis from the National Anesthesia Clinical Outcomes Registry

Samir R. Jani, MD, MPH, Fred E. Shapiro, DO, Hubert Kordylewski, James H. Diaz, MD, MPH, Alan D. Kaye, MD, PhD, Richard P. Dutton, MD, MBA, Richard D. Urman, MD, MBA

NACOR Reported Outcomes (2010-14 combined)



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ASHRM

The assessment of a growing mobile anesthesia practice from 2016 to 2019: A retrospective observational cohort study of 89,999 cases comparing ambulatory surgery (ASC) and office-based surgery (OBS) centers using a high-fidelity, anesthesia-specific electronic medical record (EMR)

- Retrospective data **~90,000 patients** in growing anesthesia practice from **2016-2019**
- Data extracted from **administrative claims and electronic medical records**
- Segregated into ASC and OBS

J Healthc Risk Manag. 2022;1–9. doi:10.1002/jhrm.21499

23

ASC and OBS 2019 (Annualized)

Volume	ASC	OBS	Total	% OBS
Number of Procedures	31,428	8,954	40,382	22.2%
Complication Rate	0.0727%	0.1268%	0.0847%	

24

ASC and OBS 2019 (Annualized)

	ASC	OBS
Average Age	52.6	58.5
Average ASA Status	2.10	2.24
Average Number of Procedures per MD per Year	661	167
Average Number of Procedures per Office per Year	4,490	176

25

Most Common Procedures ASC vs OBS 2019

ASC		OBS	
Procedure Name	% of 2019 annualized Total	Procedure Name	% of 2019 annualized Total
Cataract removal	38.9%	Colonoscopy	17.3%
Epidural Steroid Injection (lumbar)	20.1%	Prostate Biopsy	15.5%
Arthroscopy (shoulder)	13.8%	Angiogram (upper extremity)	13.4%
Arthroscopy (knee)	11.4%	Cystoscopy	8.8%
Microdiscectomy (lumbar)	5.2%	Uterine Fibroid Embolization	7.8%

26

Future Directions

- Suggestion: Field would benefit if everyone undertakes research and publishes
- Develop best practices, safety protocols and benchmarks

27

SAMBA OBA Symposium

28

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Pro/Con #4: Pre-Op Testing (HCG)

Kenneth Cummings, MD, MS, FASA (Pro)
Victor Davila, MD (Con)

05/13/2022
9:15am – 9:45am MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Preoperative HCG Testing: PRO

Ken Cummings, MD, MS, FASA
Associate Professor of Anesthesiology
Director, Pre-Anesthesia Consultation Clinics
Cleveland Clinic

1

Disclosures

2

What I Am Advocating*

Mandatory, universal preoperative hCG testing for patients who are capable of being pregnant

3

Overview

- Background and rationale for universal hCG testing
- Financial considerations
- Policy considerations

4

Pregnancy and Anesthesia

The Good, the Bad, and the Ugly

5

The Good (Experience)

- No modern anesthetics are known teratogens at clinically-relevant doses
- Many non-elective surgeries occur during pregnancy without obvious ill effect

6

The Bad (Uncertainty)

- 2012 ASA Practice Advisory concluded ***insufficient evidence to conclude if anesthesia causes harm in pregnancy***
- Do anesthetics have ***effects on neurodevelopment*** and if so, when?
- Surgery **DOES pose some risk to pregnancy** and may expose the fetus to teratogens

Apfelbaum JL, et al. Anesthesiology 2012; 116(3):522-38.
ACOG Committee Opinion No. 775 Obstet Gynecol. 2019 Apr;133(4):e285-e286.

7

The Ugly (Legal Stuff)

- ASA Closed Claims database reports 7 claims for miscarriage after surgery
  - Not tested or tested but not checked

Apfelbaum JL, et al. Anesthesiology 2012; 116(3):522-38.

8

How Good Are These Tests?

- Timing is key
- All rely on β-hCG
- Levels rise after implantation (6-12 days)
- Urine β-hCG at 14 days: Sens./Spec. > 99%
- Quantitative serum tests accurate at 6-10 days

O'Connor RE, et al. Amer J Emerg Med 1993 Jul;11(4):434-6.
Lararenko GC, et al. CJEM. 2001 Oct;3(4):292-5.

9

Is It Worth the Cost?

- Orthopedic ASC, elective cases
- 2588 tests over 12 months
- 5 positive tests (0.19%)
  - 1 ectopic pregnancy
- Cost per pregnancy: $3273

Kahn RL, et al. Anesth Analg. 2008 Apr;106(4):1127-31

10

Is It Worth the Cost?

- Elective gyn procedures at 5 Canadian hospitals
- 5477 tests over 13 months
- 33 positive tests (0.6%)
- Cost per pregnancy: $3568 CAD (~$2800 USD)

Douglas WR, et al. Clin Obstet Gynecol Reprod Med 2015; 1: doi: 10.15761/COGRM.1000112

11

Is It Worth the Cost?

- Orthopedic ASC, elective cases
- 4723 DOS urine hCG tests over 23 months
- 7 positive tests (0.15%)
- Cost per pregnancy: $1005

Hutzler L, et al. Bull Hosp Jt Dis (2013). 2014;72(2):164-6.

12

Is it Worth the Cost?

- What is the frequency of unrecognized pregnancy?
  - Literature: 0.2% – 2.2%
- What is the cost of detecting one pregnancy?
  - $1000-$3000
- What is the dollar value of unrecognized pregnancy?

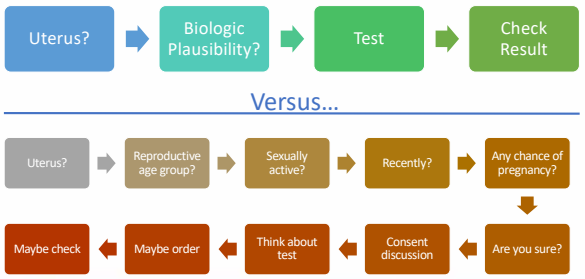
13

Is it Worth the Cost?

YES

14

Universal is Simpler



15

Ethical Issues—Policy Creation

- Nonmaleficence vs. Autonomy
- It's surgery, not a buffet
- Disclosure of test results
  - Who discloses a positive test to the patient?
  - Who is allowed to know?
- Special groups
  - Minors – legal requirements
  - Institutionalized / nonverbal patients

Clinical Ethics in Anesthesiology: A Case-based Textbook. Ch 14, pp. 79-83.

16

Take-Home Points

- Surgery poses an unknown risk to a developing fetus
- Cost/benefit favors benefit of testing
- Universal testing is a more reliable process
- Make sure to check the test results and have a policy to deal with positive tests

17

We should never get a preoperative pregnancy test.

Victor R. Davila, M.D. FASA
Associate Professor of Anesthesiology
Ohio State University

1

Disclosures

- None.

2

3

Why

- It is unnecessary
- It creates a major hassle; often leading to case delays
- "Elective" surgery is often not really elective.

4

What are the concerns with anesthesia

- Fetal Demise
- Fetal malformations

5

Teratogenic effects of Anesthetic Agents

Three stages of teratogenicity:

1. All or none stage: between conception and implantation
2. Organogenesis: 18-58 days after conception
3. Growth: Organ size or function

6

Teratogenic effects of Anesthetic Agents

Three stages of teratogenicity:

1. All or none stage: between conception and implantation
2. Organogenesis: 18-58 days after conception
3. Growth: Organ size or function

7

No anesthetic agent has been identified that is a definite human teratogen

8

Anesthetic agents

- ❑Inhalational Anesthetics
- ❑Induction Agents
- ❑Neuromuscular blocking agents
- ❑Local Anesthetics
- ❑Opiates
- ❑Benzodiazepines
- ❑NSAIDS

9

Anesthetic agents

- ❑Inhalational Anesthetics OK
- ❑Induction Agents
- ❑Neuromuscular blocking agents
- ❑Local Anesthetics
- ❑Opiates
- ❑Benzodiazepines
- ❑NSAIDS

Inhalational Agents

- No clinical data have linked inhalational agents with teratogenic outcomes
- N_2O inhibits methionine synthase (oxidizes B12) but does not impact fetus after brief exposure.

10

Anesthetic agents

- ✓Inhalational Anesthetics OK
- ✓Induction Agents (Ketamine)
- ❑Neuromuscular blocking agents
- ❑Local Anesthetics
- ❑Opiates
- ❑Benzodiazepines
- ❑NSAIDS

Induction Agents

- No clinical data have linked Etomidate, Propofol or Thiopental with teratogenic outcomes.
- Ketamine can cause uterine contractions in early pregnancy.

11

Anesthetic agents

- ✓Inhalational Anesthetics OK
- ✓Induction Agents (Ketamine)
- ✓Neuromuscular blocking agents OK
- ❑Local Anesthetics
- ❑Opiates
- ❑Benzodiazepines
- ❑NSAIDS

Neuromuscular Agents

- Do not cross the placenta.
- Safe (unless you hurt the mother.)

12

Anesthetic agents

- ✓ Inhalational Anesthetics OK
- ✓ Induction Agents (Ketamine)
- ✓ Neuromuscular blocking agents OK
- ✓ Local Anesthetics OK
- ❑ Opiates
- ❑ Benzodiazepines
- ❑ NSAIDS

Local Anesthetics

- Almost no placental drug transfer
- No teratogenic effects

13

Anesthetic agents

- ✓ Inhalational Anesthetics OK
- ✓ Induction Agents (Ketamine)
- ✓ Neuromuscular blocking agents OK
- ✓ Local Anesthetics OK
- ✓ Opiates OK
- ❑ Benzodiazepines
- ❑ NSAIDS

Opiates

- Experience with recovering addicts and pregnant patient treated for acute pain fail to show adverse outcomes
- In ASC only given a few doses.
- Multimodal pain improves these outcomes.

14

Anesthetic agents

- ✓ Inhalational Anesthetics OK
- ✓ Induction Agents (Ketamine)
- ✓ Neuromuscular blocking agents OK
- ✓ Local Anesthetics OK
- ✓ Opiates OK
- ✓ Benzodiazepines OK
- ❑ NSAIDS

Benzos

- Previous retrospective studies found an association with oral clefts. (When moms would often be taking diazepam at home.)
- SINCE DISCREDITED in better, more recent studies.

15

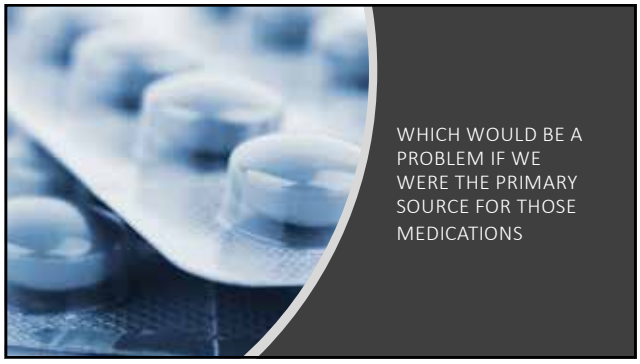
Anesthetic agents

- ✓ Inhalational Anesthetics OK
- ✓ Induction Agents (Ketamine)
- ✓ Neuromuscular blocking agents OK
- ✓ Local Anesthetics OK
- ✓ Opiates OK
- ✓ Benzodiazepines OK
- ❑ NSAIDS

NSAIDS

- Aspirin and Ibuprofen may be associated with increased risk for gastroschisis. Even though prospective studies have failed to show an association.
- Naproxen with oral clefts

16



WHICH WOULD BE A PROBLEM IF WE WERE THE PRIMARY SOURCE FOR THOSE MEDICATIONS

17

Anesthetic agents

- ✓ Inhalational Anesthetics OK
- ✓ Induction Agents (Ketamine)
- ✓ Neuromuscular blocking agents OK
- ✓ Local Anesthetics OK
- ✓ Opiates OK
- ✓ Benzodiazepines OK
- ✓ ~~NSAIDS~~

NSAIDS

- Aspirin and Ibuprofen may be associated with increased risk for gastroschisis. Even though prospective studies have failed to show an association.
- Naproxen with oral clefts
- Considered safe in first trimester

18

What are the concerns with anesthesia

- Fetal Demise
- Fetal malformations

19

What are the concerns with anesthesia

- Fetal Demise
- Fetal malformations

20

Unnecessary hassle

- Patients can now "opt-out"
- Case delays from unavailable urine samples.
- Not accounted for in the studies alluded to that demonstrate a very "low cost."
  - They also don't account for the grey hair on my head.

21

"Elective Surgery" is often not really elective.

Ask patients to test themselves when it is a truly elective procedure.

22

Most anesthesiologists agree that anesthesia is generally safe during pregnancy. Opting out of testing would not otherwise be a thing.

23

Thank you

Victor R. Davila, M.D., FASA
Ohio State University

24

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

How to Practice "Peri-Operative Medicine" in the ASC

Beverly K. Philip, MD, FACA, FASA, SAMBA-F

05/13/2022
9:45am – 10:15am MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

How to Practice Peri-Operative Medicine in the ASC

Beverly K. Philip, MD, FASA, SAMBA-F
2021 President,
American Society of Anesthesiologists
Past President, Society for Ambulatory Anesthesia
Immediate Past President,
International Association for Ambulatory Surgery
Professor of Anaesthesia, Harvard Medical School
Founding Director, Day Surgery Unit,
Brigham and Women's Hospital, Boston, USA

1

COI Disclosures

Beverly K. Philip, M.D.

None

2

What is Perioperative Medicine

Perioperative medicine emphasizes the importance of an integrated, planned, and personalized approach to patient care before, during, and after any surgical procedure involving anesthesia.

The goal is to improve the patient experience, reduce postoperative complications, reduce facility stay and reduce early re-admissions following surgery.

{ANZCA}

3

Need for Integrated Periop Approach: ASCs

Admissions or Readmissions within 24 Hr
Adults Mid-Atlantic US
0.1% = 0.07% hospital + 0.04% ICU

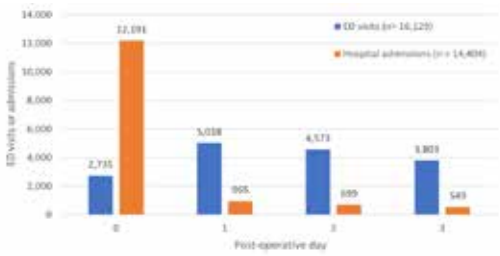
Risk for Unplanned Admission	Odds Ratio
Age >50	1.53
ASA III/IV vs. II	1.45/ 1.88
Comorbidity: COPD/ DM/ TIA	2.63/ 1.62/ 2.48
Procedure: resp/digestive/musculoskel	2.92/ 2.66/ 2.53
Anesthetic: GA+PNB/ MAC vs. GA	1.79/ 0.37
RA+sedation vs. GA	NS
ASC individual facility	to 3.7

N=211,389

4

Timing of ED Admissions and Visits

Adult AS Ontario, Canada



N=484,670

5

ED Visits after Ambulatory Surgery

Ontario, Canada

Reasons for ED Visits	% of Visits
Acute pain	16.8
Hemorrhage and hematoma	14.2
Retention of urine	6.9
Attention to surgical dressings and sutures	5.0
Constipation	3.1
Infection	2.7
Vomiting	1.5

N=14,950

6

Perioperative Medicine

Not just for major surgery.

Optimization of patient experience ***essential*** to the Outpatient and ASC environments

1- identification of acceptable patient/procedure risk.
2- optimization of patient for specific surg+anes
3- improving patient "population" health

7

Preoperative Assessment Process Reduces DOS Cancellation Rate HOP

Surgical practices use criteria list for pathway eligibility:
- Comprehensive Preop Assessment {CPA}
  - Assessment by NP or PA
  - Teaching by RN
  - Supervised by anesthesiologist or specifically-trained FP
- Nurse Screening {NS} 24% of all assessments
  - Health review & teaching by telephone
  - Application for NS denied ~10%.

DOS cancellation rate, %
n=15,133

No prior assessment	2.02
CPA	0.48
NS	0.60

8

Patient Selection - The Teachable Moment Smoking Cessation

Patients seen in preop clinic.
*Referral to smoking cessation program: brochures; smokers' helpline; nicotine patch replacement.
Vs. Routine brief smoking cessation advice.

	Intervention	Routine
Cessation DOS (≥ 3 wk)	14.3%	3.6%
Cessation @ 30 da	28.6%	11%
**Counseling, hotline, varenicline.		
Cessation @12 mo	42.4%	26.2%

9

Improving Population Health Periop Digital Lifestyle Interventions

reducing alcohol consumption, improving dietary intake, increasing physical activity, smoking cessation

Engagement rates by format
- Text message interaction 31-81%
- Game and web-based 40-90%

High patient acceptability & satisfaction 80s%
But
Low recruitment rates
Reluctance for randomization
Majority of studies found drop-off in usage of interventions after surgery:
- Activity 91% before to 65% post-discharge

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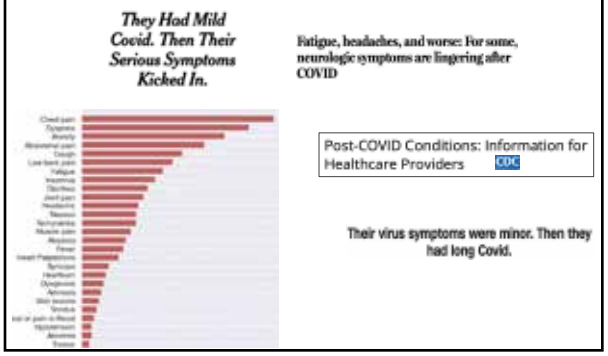
New Population 'Un'-Health Issue: Post-Covid Syndrome

~30% >1 mo; 68% 6 mo



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Advanced AS: Joint Replacements Anemia Correction

For ASCs, need for avoid transfusions.
1- Patient (& surgeon) selection
2- Health improvement.
Preferred 4-6 wks – Dx & Tx:
oral/IV iron; erythropoietin
Ultra-short treatment pathways
- 2-5 days before surgery - IV iron; erythropoietin.
- 1-3 days - IV Iron, erythropoietin; B12 ; folate.
  -- Tx regimen effective independent cause of anemia

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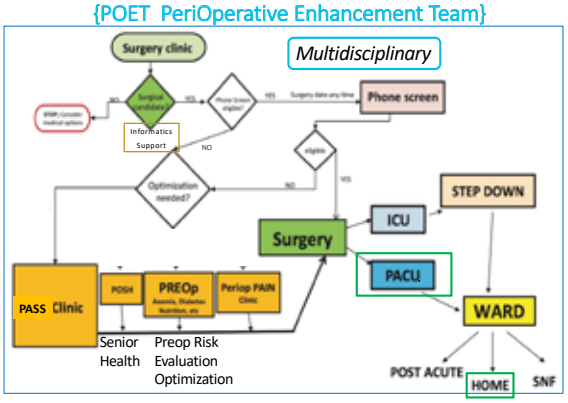
Integrated Perioperative Medicine Process
{POET PeriOperative Enhancement Team}



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Implementation of Perioperative Medicine in ASCs: Non-Clinical Process Management

Contracting and Billing
Scheduling: Optimal Block Schedule, Utilization
Lean Management: Inventory, Waste
Sterile Processing and Infection Control
Human Resources: Privileging, Diversity, Harassment
Education and Training: Staff and Facility
Emergency Preparedness
Risk Management and Quality Improvement

Manual of Practice Management for Ambulatory Surgery Centers. Rajan N, ed. *SAMBA*
ASCA Online education

14

Enhanced Recovery Pathways

ERPs for ASCs ≠ ERPs for Inpatients

Science – Based, Patient – Focused Care

15

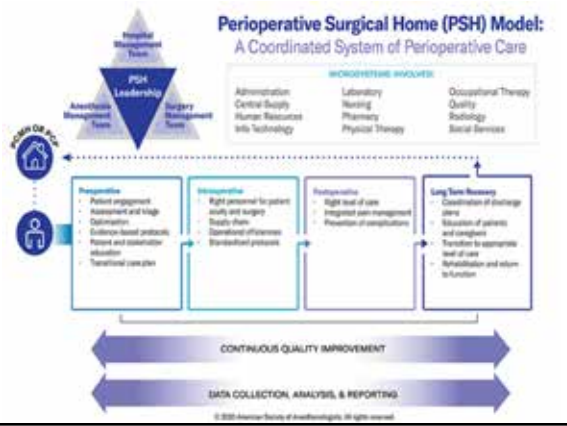
Implementation of Perioperative Medicine: Integrated Process Management

Perioperative Surgical Home

"the PSH initiative should enable an institution to
increase caseload
increase the quality of care for each case
improve patient satisfaction
decrease relative costs

Multidisciplinary team

16



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Implementation of PSH in ASCs
Laparoscopic Cholecystectomy
KaiserPerm standard vs integrated/PSH

	n= 878	n=1082	
Preoperative wait time (min)	121 [1002, 189]	80 [60, 139]	<.001
Surgical case length (min)	59 [51, 67]	59 [52, 66]	.8
Postoperative recovery time (min)	193 [151, 327]	124 [95, 221]	<.001
Unplanned hospital admission (%)	8.5% (5.8–11)	1.7% (0.6–2.8)	<.001
PONV in PACU/phase 2 unit (%)	22% (18–26)	12% (9.2–14.8)	<.001
7-day ER visit	5.4% (3.2–7.6)	5.0% (3.1–6.9)	.066

18

PSH with 23-Hour Stay
Freestanding Oncologic ASC

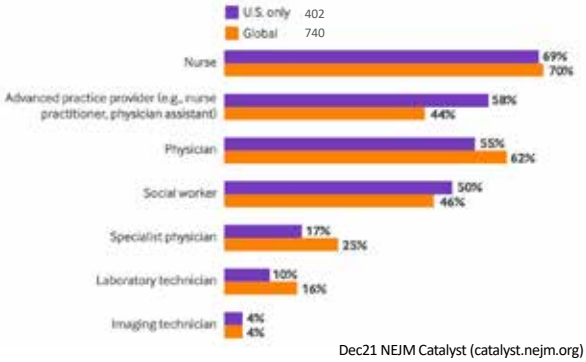
Selected surgeries: Mastx, Thyroidx, MIS hystx, prostx.

- Facility prep: *Multidisciplinary*
  Protocol devel, Electronic order sets, Staff education.
- Preop components:
  Pt selection, Comorbid optimization, Pt Education.
  Hydration, PONV proph, Multimodal analg (incl RA).
- Intraop:
  Fluid maint, Multimodal analg, PONV.
- Postop:
  Multimodal analg. Ambulation, Full diet.

QI Overall: ↓ intraop opioid, ↓ PONV, ↓ time orals.
Iterative protocols & ↑ compliance.

19

Extended Recovery? Physician-Led Care at Home
Clinicians Providing Home-based Care



Dec21 NEJM Catalyst (catalyst.nejm.org)

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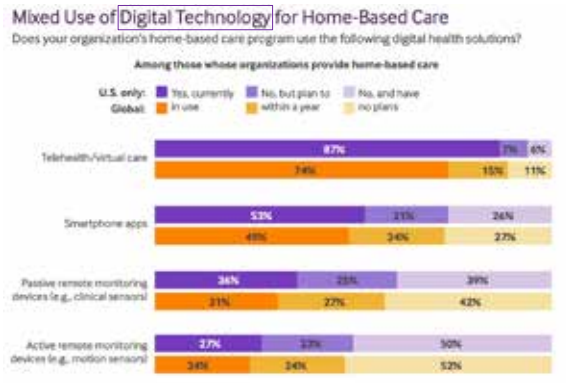
Mixed Use of Digital Technology for Home-Based Care
Does your organization's home-based care program use the following digital health solutions?



Base: U.S. only – 402; Global – 740
Dec21 NEJM Catalyst (catalyst.nejm.org)

21

Perioperative Physician as Leader
Opportunities
ASC and Anesthesiology and Beyond

Join - and Get Involved.

Pathways for Opportunities to Lead, Through:

- Anesthesiology subspecialty societies - **SAMBA**
- Anesthesiology state and national societies
- State and national medical societies

Also,

- ASC, Hospital and healthcare system leadership
- State and national elected governments

22

Leadership Education: Interested?
ASA Leadership Academy

M1 - *What You Can Do to Advance Your Career*
M2 •Center for Physician Leadership Excellence (CPLE)
Personality Assessment

- Self-guided analysis of your assessment report
- Expanded leadership learning into:
  Advanced human relations skills
  Recognizing & integrating emotional intelligence
  Facilitation and negotiation
  Ethical decision-making
  Giving effective feedback
- Personal improvement plan ← assessment feedback

https://www.asahq.org/education-and-career/leadership-development/leadership-academy

23

ASA Executive Physician Leadership Program
Sept. 15-18, 2022 Northwestern University

Session Topics:
Conflict Resolution
Creating Inclusive Cultures for Courageous Conversations
Building a Comprehensive DEI Strategy
High Impact Negotiations
Influence without Authority
Leading in Uncertain Times
Strategy Formulation, Implementation and Change
Understanding the Changing Healthcare Landscape

25.5 AMA *Category 1* CME. Certificate of Completion, NW University.
https://www.asahq.org/meetings/executive-physician-leadership-program

24

Executive Physician Leadership Program II:
Transformational Skills Development

Five-day program.
Designed for those who have taken EPLP-1,
or who have senior executive leadership positions.

Session Topics
Values-based leadership
Health care economics and policy
Design thinking
Communicating change in organizations
Advanced negotiations and conflict resolution

25

How to Practice Peri-Operative Medicine in the ASC

Thoughts today:
The need exists in the ASC (and OP) environment
Value of patient assessment
- for the procedural episode
- for the good of the patient

Integrated perioperative processes
- Enhanced recovery pathways, ERAS, &
- Perioperative Surgical Home

Extended Recovery at Home
Non-medical Roles of the Perioperative Physician
The Perioperative Physician as Leader

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How to Practice Peri-Operative Medicine in the ASC

Perioperative medicine is the future of anaesthesia, if our specialty is to thrive.
(Grocott and Pearse)

Perioperative Physicians Demonstrate Value
Especially
In Ambulatory Surgery Settings

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Ambulatory Regional Anesthesia Panel

Alberto Ardon, MD, MPH
Michael O'Rourke, MD, FASA
Hanae K. Tokita, MD, FASA

05/13/2022
1:00pm – 2:00pm MST

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Severe Postoperative Pain: Who is at Risk?

Alberto E Ardon MD MPH
Assistant Professor, Senior Associate Consultant
Mayo Clinic
Jacksonville FL

@albertoardonmd

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Disclosures

- I have no financial or other interests to disclose

2

Objectives

- After participating in this lecture, the audience will be able to:
  - Discuss the consequences of severe acute postoperative pain
  - Identify perioperative factors that can influence postoperative pain
  - Describe mechanisms that help identify patients at risk for severe postoperative pain

3

Patient Outcomes

Abola et al: Anesth Analg 2018; 126(6):1874-1882.

4

Severe Postoperative Pain

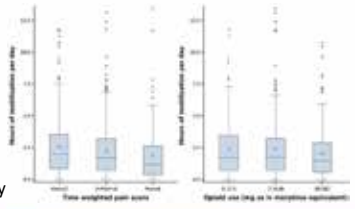
Can lead to:

- Poor mobility
- Decreased ventilation
- Chronic pain
- Chronic opioid use

5

Pain and Mobilization

- 673 pts abdominal surgery
- Association -0.12 (p=0.009) with postop pain scores
- No association with postop opioid use
- All postop complications occurred in pts who spent <1.7h/day sitting/standing
- Avg mobilization was 2h/day



Rivas et al: Anesthesiology 2022; 136: 115-26.

6

Assessing Risk

Timing	Pre-operative	Intra-operative	Postoperative	Recovery (>3 mo postop)
Events	Patient preparation for surgery	Scheduled surgical injury	Acute post-operative pain	Chronic postop pain
		Response to injury, plasticity underlying chronification		
Assess Risk Factors	Biophysical Surgical approach Age Sex Centralization Genetic variation	Opioid dependence Nociceptive sensitivity Tendency toward pain	Psychosocial Anxiety, depression Sleep disturbance Pain catastrophizing Somatization	Healthcare access Coping strategies Social support
	Biophysical and psychosocial testing, support and treatment			
Treatment	Individual procedural risk stratification	Minimally invasive techniques and decreased duration		

Regional anesthesia
Multimodal analgesia
Minimize opioid-induced hyperalgesia

Redrawn from Hen et al: Chronic postoperative pain: Anaesthesia 2021, 76 (Suppl 1), 8-17

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Preoperative Pain Evaluation

Gatti. World J Surg Surg Res 2018; Vol 1 Article 1048.

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8

Preoperative Pain Testing?

- Quantitative sensory testing (QST)
- Preoperative psychometric evaluation

- May predict
  - 4-54% of variance in postop pain experience
  - Development of chronic post surgical pain

Werner MU et al. Anesthesiology 2010; 112(6):1494-1502.

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9

Psychometric Testing and Postop Pain

- 149 TKAs

TABLE 2. Correlation Between Preoperative Variables and Visual Analog Scale Pain at Followup

Psychometric Variable	1 Month	3 Months	6 Months	12 Months
State-Trait Anxiety Index	.21	.23	.16	.38**
Beck Depression Inventory	.13	.22	.13	.43**
McGill Pain Questionnaire-sensory	.29*	.20	.13	.06
McGill Pain Questionnaire-affective	.26	-.06	.10	.13
McGill Pain Questionnaire-total score	.22	.09	.16	.11
Perceived Stress Scale	-.17	-.08	.02	-.06

Brander et al. Clin Orthop Rel Res 2003; 416:27-36.

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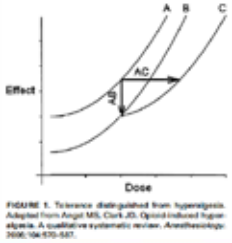
Preoperative Opioids

- Tolerance (A to C)
- Hyperalgesia (A to B)



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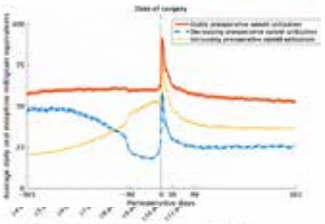
Preoperative vs Postoperative Opioids

- 57,019 chronic opioid users
- Opioid use postop days 91-365
  - Incidence of persistent opioid use
  - Average daily dose
- Weaning opioids preoperatively decreases risk of postoperative opioid use and daily dosage



Rishel et al: Anesthesiology 2021; 135:1015-26.

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Perioperative Opioids

Larach et al: Anesthesiology 2022; 136(4): 594-608.

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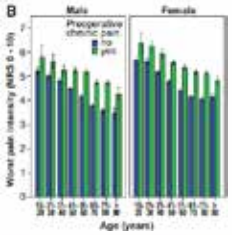
Preoperative Chronic Pain

- 22,963 pts undergoing various surgeries
- Chronic Pain
- Age
- Gender



Gerbershagen et al: Anesthesiology 2014; 120:1237-45.

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Pain and Surgery Type

- >115,000 patients from 105 hospitals
- "worst pain" on POD1
- Outpatient procedures that had median score >=6:
  - Calcaneus ORIF; ankle fusion/reconstruction
  - Single or 2-level spinal fusion
- Some laparoscopic surgeries had pain equivalent to TKA:
  - Appendectomy
  - Extrauterine pregnancy
  - Gastric band

Gerbershagen et al: Anesthesiology 2013; 934-944.

15

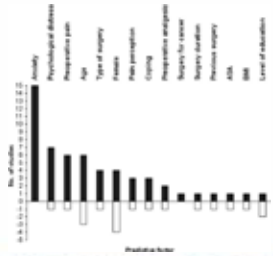
Early Associations

- Among patients who underwent GA (n=1416)
- Predictors of severe postoperative pain
  - Age (younger)
  - Gender (female)
  - Surgical Procedure (abdominal/orthopedic)
  - Preoperative pain severity (numerical scale)
  - Preoperative anxiety measure (Amsterdam scale [APAIS])

Kalkman et al: Pain 2003; 105:415-423.

16

Early Associations



- Systematic Review of Literature to assess predictors for severity of postop pain

Ip et al: Anesthesiology 2009; 111(3):657-77.

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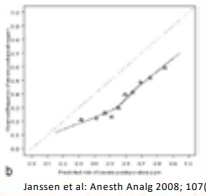
Multifactorial Models

- Gender, age, type of surgery, incision size, preoperative pain score, anxiety score
- Included ambulatory surgery



Janssen et al: Anesth Analg 2008; 107(4):1330-9.

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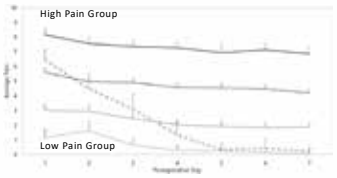
Predicting Pain Trajectory

- Postop pain trajectory groups for 7 days in 360 patients
  - High pain group
    - Women
    - Younger
    - High anxiety/depression
    - Pain catastrophizing
    - NOT procedure type



Vasilopouls et al: Anesthesiology 2021; 134: 421-34.

19

Predicting Persistent Postop Pain

- 300 pts after TKA
- Incidence of persistent pain and disability 12 months after surgery: 16%
- Predictors at 6 or 12 months:
  - Preoperative pain intensity
  - Trait (predisposition to) anxiety
  - Expected pain
- Final model:
  - Preoperative pain
  - Expected pain

Rice et al: Br J Anaes 2018; 1-9. https://doi.org/10.1016/j.bja.2018.05.070

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Summary

- Severe postop pain can lead to impaired recovery and increased risk of chronic pain
- Risk factors for increased postoperative pain are varied (biophysical and psychosocial) and multifactorial
- Correlations between anxiety, depression, preoperative pain, and postoperative pain exist, but assessing potential degree of impact is difficult and/or impractical

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Management of the Ambulatory Chronic Pain Patient and Perioperative Analgesia

Michael O'Rourke, MD, FASA
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Anesthesiologist, Edward Hines, Jr VA Hospital
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@Dr_M_ORourke

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Disclosures

- **I have no actual or potential conflict of interest in relation to this presentation.**
- **My words are my own and do not represent the official views of the Veteran Health Administration or the United States government**

2

Objectives

- Highlight key considerations in the preparation of a patient with chronic pain for ambulatory surgery
- Discuss benefits of continuing buprenorphine perioperatively for ambulatory surgery
- Explain benefits of multimodal analgesia versus opioid therapy for postoperative pain control

3

Preoperative Preparation

Set reasonable expectations for pain control with patients before the day of surgery

Good preoperative pain control is important!

Optimize pain medication regimen

Preoperative Management of Opioid and Nonopioid Analgesics: Society for Perioperative Assessment and Quality Improvement (SPAQI) Consensus Statement

https://doi.org/10.1016/j.mayocp.2020.06.045

4

Chronic Opioid User

3 Goals:

- Provide Analgesia
- Prevent withdrawal
- Avoid inducing opioid use disorder

5

Buprenorphine

Special article

Buprenorphine management in the perioperative period: educational review and recommendations from a multisociety expert panel

Buprenorphine management in the perioperative period (ASRA) 2021

6

Multimodal Analgesia

The use of several classes of analgesics with varying mechanisms of action to:

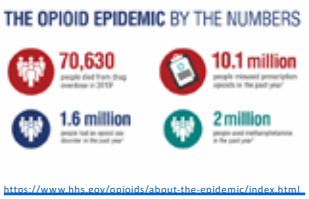
- Improve pain control
- Decrease reliance on opioids
- Reduce opioid side effects
- Reduce side effects associated with each class of medication

Goldberg SE, et al. Practical management of a regional anesthesia-driven acute pain service. Adv Anesth 2017;35(1):191-211.

7

Decrease Reliance on Opioids

- 2017: Public Health Emergency declared by US HHS
- Decrease reliance on opioids perioperatively
- Decrease long term opioid use after surgery



https://www.hhs.gov/opioids/about-the-epidemic/index.html

8

Multimodal Analgesia

A. Acetaminophen
B. Nonsteroidal Anti-Inflammatory drugs (NSAIDs)
C. Regional anesthesia or Local Anesthetics

D. Gabapentanoids
E. N-methl-D-aspartate receptor modulators

9

Acetaminophen

- Most commonly used analgesic in the perioperative period
- Few contraindications
- Unless contraindicated, we prescribe routinely for inpatient and outpatient surgery
- Oral or intravenous

10

Nonsteroidal Anti-inflammatory Drugs (NSAIDs)

- Cox-2-inhibitors (celecoxib)
- Ketorolac

- Effective
- Often administered routinely similar to acetaminophen

11

Nonsteroidal Anti-inflammatory Drugs (NSAIDs)

- Bone Healing
- Coronary Artery disease
- Chronic Kidney disease
- Gastrointestinal ulcers
- Bleeding Risk

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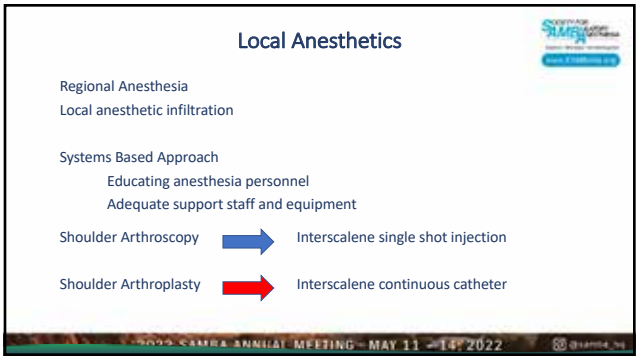

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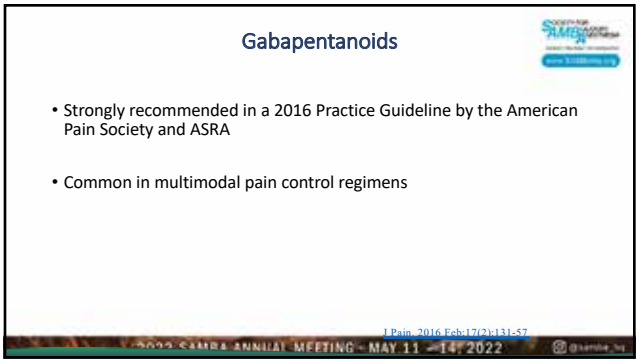

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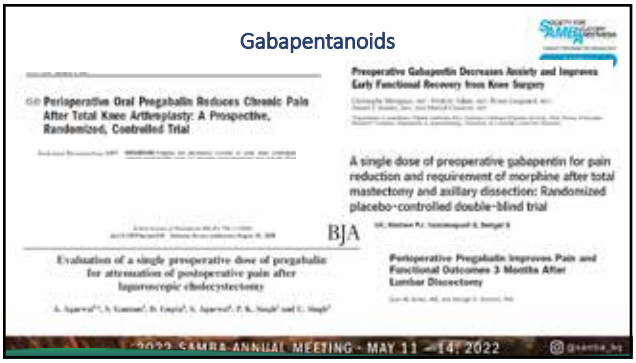

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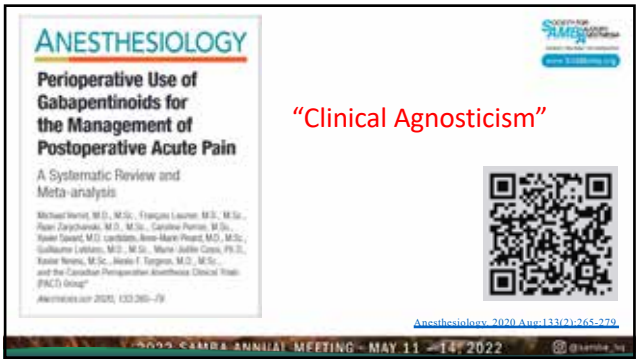

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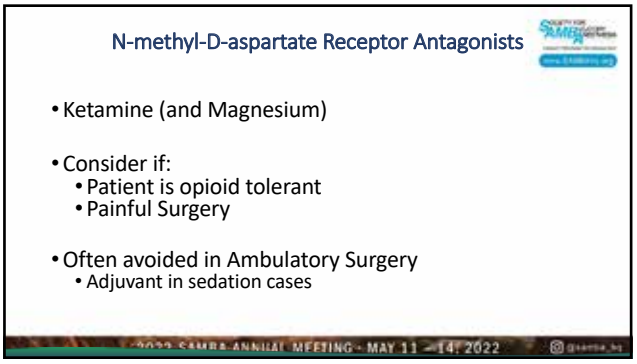

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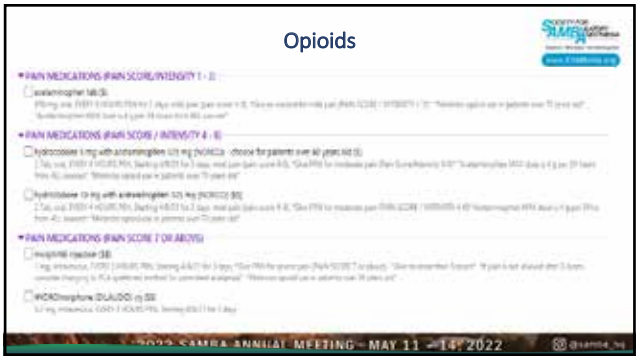

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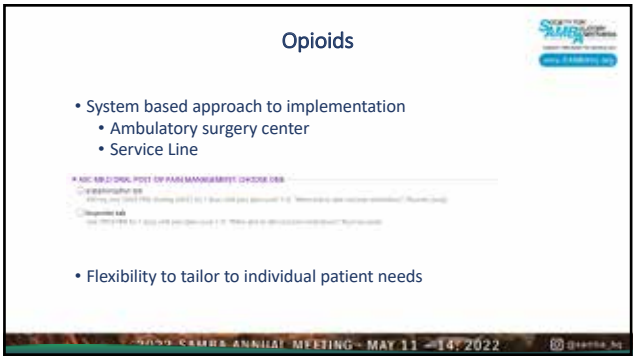

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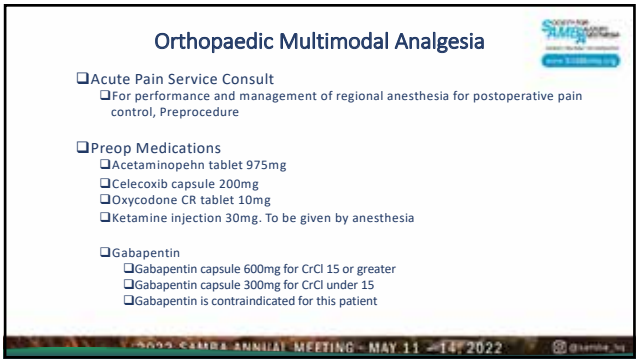

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Lessons learned as a regional anesthesia director

Hanae Tokita, MD, FASA
Director of Anesthesia, Josie Robertson Surgery Center
Associate Attending, Department of Anesthesiology & Critical Care Medicine
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Disclosures

- I own stock in Butterfly Network, Inc.

2

Guiding questions

How do you formulate, implement, and "sell" a brand-new regional block service in an ASC?

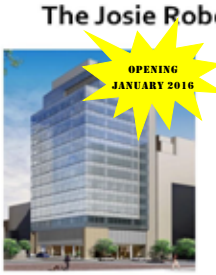
What are some of the key workflow issues needed to jumpstart a regional block program?

How do you define success? How do you sustain ongoing success?

3

4

The Josie Robertson Surgery Center (JRSC)



- Short stay ambulatory surgery hospital
- Case mix:
  - 64% Outpatient
  - 36% Ambulatory extended recovery (AXR)
- Designed for optimal patient experience and operational efficiency

NOT licensed inpatient beds!!---
"1 midnight" limit

5

Proposed "complex" cancer surgeries at JRSC

- **Breast**: Mastectomy +/- implant-based reconstruction
- **Gynecology**: Robotic hysterectomy
- **Head & Neck**: Thyroidectomy
- **Urology**: Robotic prostatectomy; nephrectomy

7

PST and Preop Instructions	Preoperative Education •Clear fluids up to 2 hours before *scheduled* arrival time •Education about preoperative paravertebral nerve blocks •Gabapentin 300 mg preop prior to OR transfer •Emend (Aprepitant) for patients with PONV Risk Score of 4 •Preoperative warming
Perioperative Fluid Management	•Non-Restrictive Fluid Therapy (1-2 liters/case)
Intraoperative Anesthetic Technique	•MAC: propofol infusion with surgical local anesthesia infiltration (lumpectomy) •GA with LMA or ETT (mastectomy with or without reconstruction)
Regional Anesthesia	ERAS: Mastectomy Regional Anesthesia: Preoperative paravertebral blocks (PVB)
Analgesics-Opioid & Non-Opioid	•IV Ketorolac 30mg(15mg for age ≥ 65 or < 50 kg) during closure on all breast and combined procedures as standard. (exceptions to be noted by surgical staff). •Goal to minimize narcotic use through multimodal therapy.
Antiemetics	As per MSKCC PONV Guidelines
Local Infiltration	For outpatients: Continue local anesthesia infiltration with bupivacaine. For AXR Mastectomies: Not generally needed if PVB provided. Role of bupavicaine, or liposomal bupivacaine (Exparel ®) to be determined.
Outcomes and Metrics	Assess and emphasize meaningful outcomes •Return ADLS, Return to work, Patient satisfaction (Quality of Recovery surveys) •PACU length of stay •Compliance with protocol •Pain and PONV

8

2016 JRSC Regional Anesthesia Team

4 young Jedis

Dr. Rebecca "Obi-Wan Kenobi" Twersky

9

Issues/challenges

This will cause major delays

I've done these cases without blocks for years, why now?

What if there's a complication?

You're going to stick a needle where?!

These are advanced blocks, too difficult to learn

Just do a GA

How will we "win over:"

- Surgeons: breast & plastics surgeons
- Patients
- Nurses
- Other anesthesiologists in my department

10

11

Training

- Observed a successful program
- Started slow, learned together
- Took us about 1-2 months to become "facile"

12

Standardize supplies and equipment

13

Equipment

14

Personnel

Block Nurse role

- Dedicated Block RN
- Procedural Checklist
- Time out for safety
- Monitoring standards
- Assist with positioning

15

Education

- Surgeon faculty meetings
- Nursing inservice and Q/A sessions
  - Perianesthesia nursing
  - OR nursing
  - Pre-surgical testing nurse practitioners
  - PACU nursing and APP staff
  - Office-based nurses (surgeon's offices)
- Anesthesia staff and faculty meetings
- Patient education materials

16

PATIENT & CAREGIVER EDUCATION

Regional Anesthesia to Your Breast, Armpit, or Chest Wall

Types of Anesthesia

About regional blocks

What to Expect During Your Regional Block Procedure

17

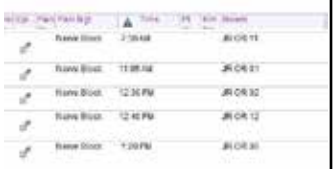
Workflow issues to consider

- Who gets a block?
- How to alert periop team that patient is getting a block?
- How do we standardize orders for block patients?
- How do we position/monitor patient for a block?
- How do we get first cases in the OR without delay?
- How do we manage potential complications?
- How do we track quality of recovery outcomes?

18

Workflow

- Patient selection: Procedure type determines "block eligibility"
- Team reminders: Automated daily email
- "Block Icon": Initiates workflow for periop team
- Standardized order sets
- Same care regardless of day/time
- Dedicated block attending



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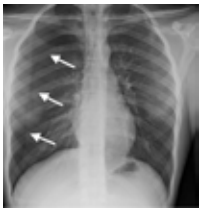
Possible Risks/Side Effects of paravertebral blocks

- Hypotension
- Inadvertent epidural spread
- Bradycardia
- Vasovagal
- Horner's Syndrome
- LAST
- Pleural puncture
- Pneumothorax



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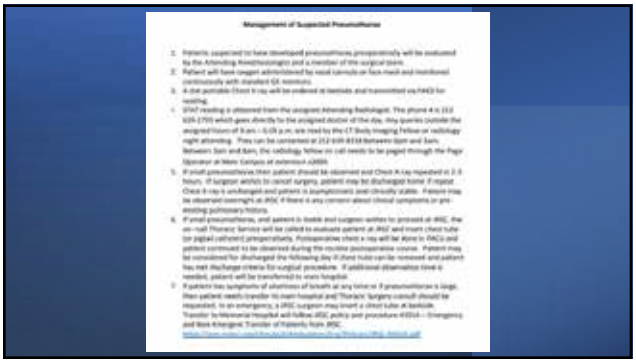

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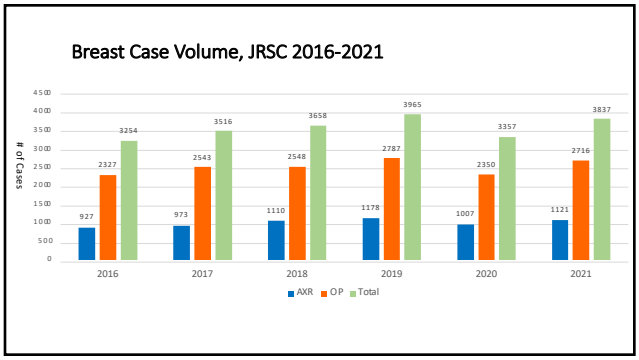

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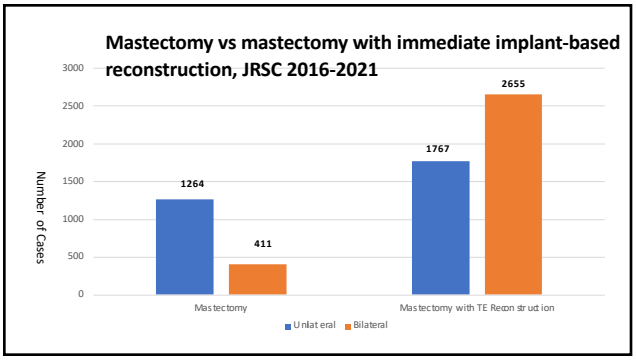

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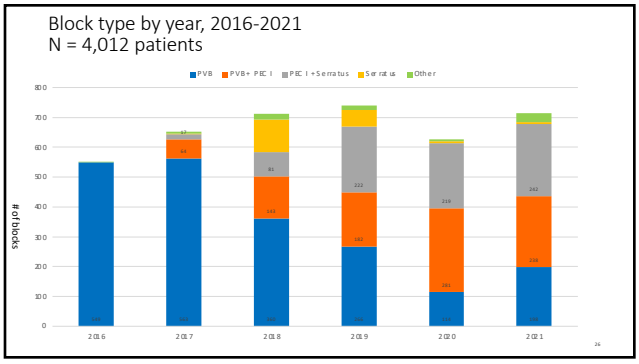

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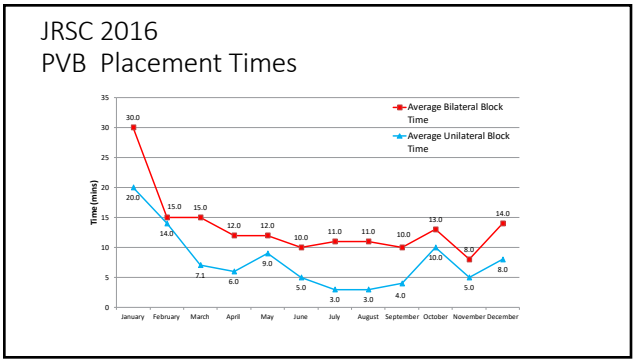

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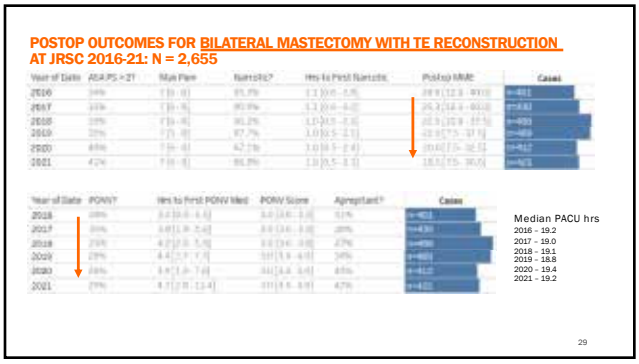

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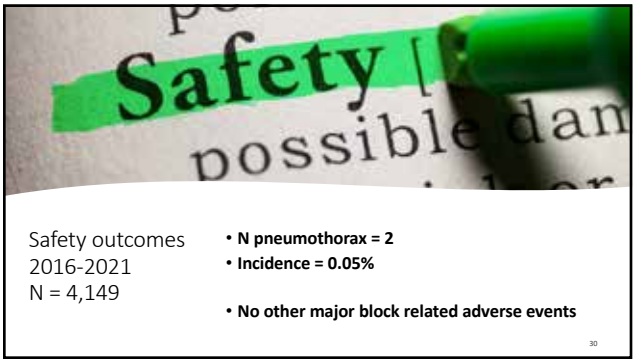

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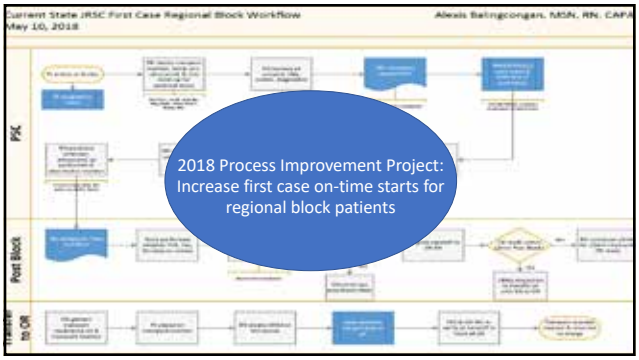

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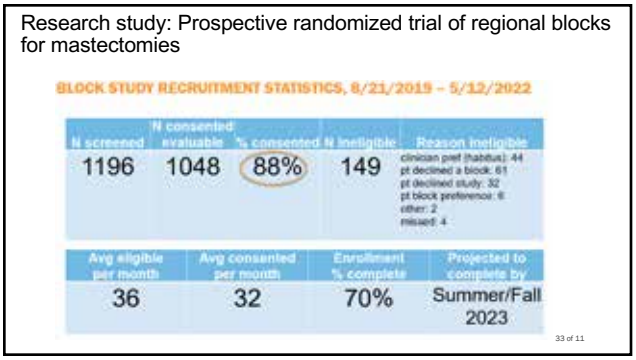

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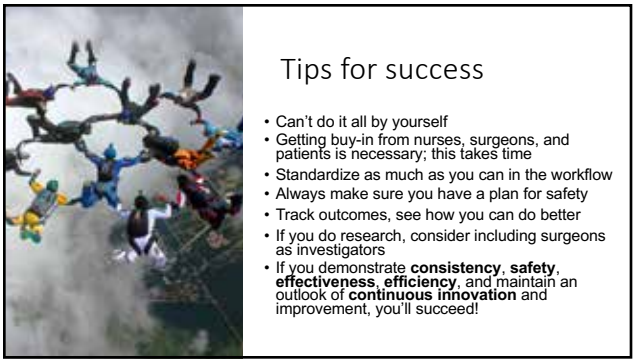

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Hanae K. Tokita, MD, FASA
tokitah@mskcc.org
@drhanae_tokita
2022 SAMBA ANNUAL MEETING · MAY 11 – 14, 2022

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

PBLDs/Ask the Experts: Dilemmas in Pre-Op Evaluation of Ambulatory/NORA Patients

Kenneth Cummings, MD, MS, FASA

05/13/2022
2:45pm – 4:45pm

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

PBLD 1:
A Complex GI Patient

Ken Cummings, MD, MS, FASA
Associate Professor of Anesthesiology
Director, Pre-Anesthesia Consultation Clinics
Cleveland Clinic

1

The Case

You are managing care in your hospital's attached endoscopy unit. There is a request to add a patient to the end of the day's schedule for EGD and a colonoscopy.

The patient was admitted 5 days ago with a NSTEMI. The cardiologist placed a drug-eluting stent in the LAD and plans to take the patient back to the cath lab for an RCA stent in the near future.

He was started on aspirin and clopidogrel. His hematocrit has declined over the admission and yesterday morning he began to have melena.

2

The Case, Cont.

He is 72 years old and lives with his wife in a single-story house. He is sedentary. His PMH is significant for hypertension, type 2 diabetes on oral medications, CKD, obesity (BMI 43), and OSA for which he uses CPAP. He also has a diagnosis of early Alzheimer's disease for which he takes a cholinesterase inhibitor.

The gastroenterologist strongly prefers to do the procedure there because the equipment is better than on their travel cart and this case will not occur until late evening if done in the OR. She asks you to "just give him a little propofol and I'll be fast."

3

Questions, 1

- What are the main complication risks that concern you about this case?
- Is he a candidate for the endoscopy unit? Why or why not? What if he had not had the recent NSTEMI?
- What further testing, if any, would you request prior to the procedure?

4

Questions, 2

- Is there a BMI cutoff you would impose? Why or why not?
- Is it safer to do this in the OR?
- Should all GI bleeding cases be done in the OR?

5

PBLD 2:
Surgery after COVID

Ken Cummings, MD, MS, FASA
Associate Professor of Anesthesiology
Director, Pre-Anesthesia Consultation Clinics
Cleveland Clinic

6

The Case

A 45 year-old woman with a diagnosis of invasive ductal carcinoma of the breast is scheduled for a simple mastectomy and sentinel note biopsy at your ASC.

She was diagnosed with COVID-19 22 days ago with mild URI symptoms and loss of smell. Her symptoms (other than anosmia) had resolved 6 days after her positive test. Her PMH is otherwise significant for type 2 diabetes on oral medications and hypertension for which she takes lisinopril.

7

Questions

- Should she be re-tested to ensure a negative result?
- She feels fine. Is she at increased perioperative risk? If so, what complications are most likely?
- She is vaccinated. Does that change her perioperative risk?

8

Questions

- What guidelines are available on the topic?
- Should she proceed to surgery? What if this was not a cancer surgery but a symptomatic (but not incarcerated) inguinal hernia?

9

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

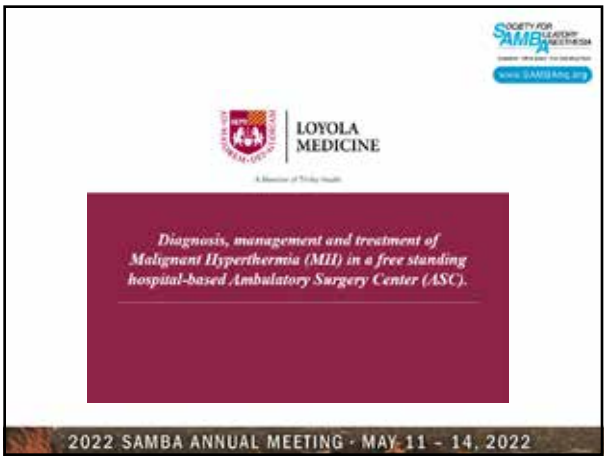
PBLDs/Ask the Experts: Diagnosis Management and Treatment of MH in Free Standing Hospital Based ASC: What Should be Present in an ASC to Prepare for a Case or a Comparison Between the Different Types of Dantrolene and Which Makes Most Sense to Stock

Julius Pawlowski, MD

05/13/2022
2:45pm – 4:45pm


2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022
Diagnosis, management and treatment of Malignant Hyperthermia (MH) in a free standing hospital-based Ambulatory Surgery Center (ASC).
Different types of Dantrolene – which ones makes the most sense to stock
Julius Pawlowski, MD
Associate Professor of Anesthesia
Medical Director – Ambulatory Surgery
Loyola University Medical Center
LOYOLA MEDICINE

1


LOYOLA MEDICINE
Diagnosis, management and treatment of Malignant Hyperthermia (MH) in a free standing hospital-based Ambulatory Surgery Center (ASC).
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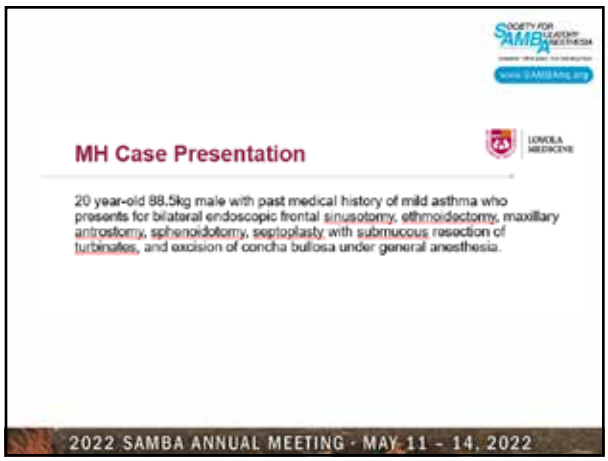
MH Case Presentation
20 year-old 88.5kg male with past medical history of mild asthma who presents for bilateral endoscopic frontal sinusotomy, ethmoidectomy, maxillary antrostomy, sphenoidotomy, septoplasty with submucous resection of turbinates, and excision of concha bullosa under general anesthesia.
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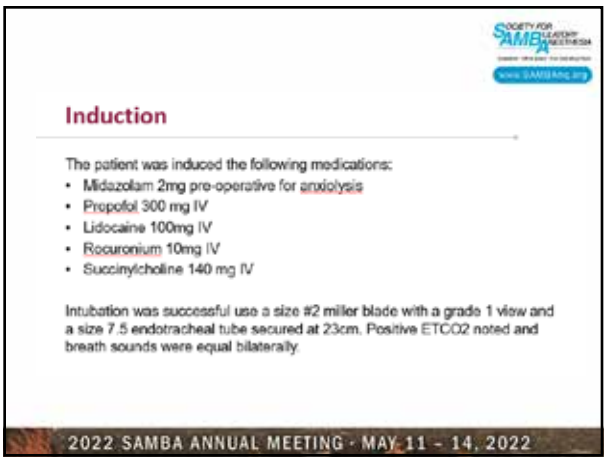
Induction
The patient was induced the following medications:
• Midazolam 2mg pre-operative for anxiolysis
• Propofol 300 mg IV
• Lidocaine 100mg IV
• Rocuronium 10mg IV
• Succinylcholine 140 mg IV
Intubation was successful use a size #2 miller blade with a grade 1 view and a size 7.5 endotracheal tube secured at 23cm. Positive ETCO2 noted and breath sounds were equal bilaterally
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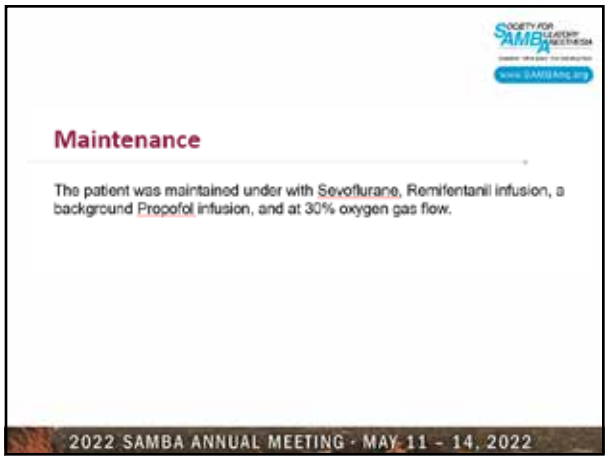
Maintenance
The patient was maintained under with Sevoflurane, Remifentanil infusion, a background Propofol infusion, and at 30% oxygen gas flow.
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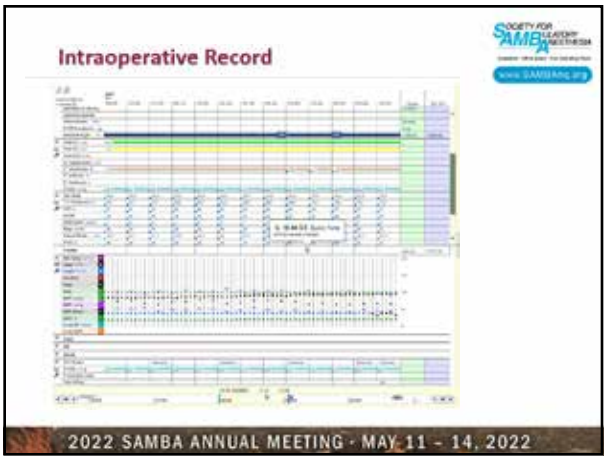
Intraoperative Record
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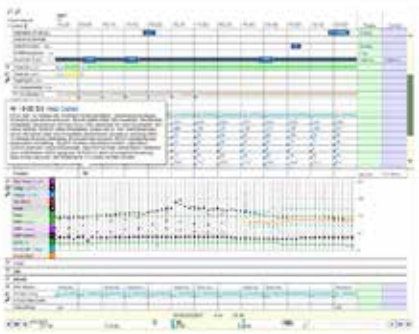
6

Intraoperative Record



7

Timeline

- 1414 – Induction
- 1430 - Starting ETCO2 38 mmHg
- 1630 – Increase in minute ventilation
  - *ETCO2 35 mmHg*
- 1700 – Increase in minute ventilation
  - *ETCO2 37 mmHg*
  - *HR 85 BPM*
  - *Temp 36.9C*
- 1820 – Increase in minute ventilation
  - *ETCO2 41 mmHg*
  - *HR 88 BPM*
  - *Temp 37.9C*

8

Timeline

- 1844 – Sodalime absorber canister changed by anesthesia provider
  - *ETCO2 52 mmHg*
  - *HR 93 BPM*
  - *Temp 38.4C*
- 1855 – Anesthesia provider change of staff
  - *ETCO 52 mmHg*
  - *HR 95 BPM*
  - *Temp 38.7C*
- 1906 – Call for help
  - *HR 96 BPM*
  - *Temp 38.6C*
  - *No Change in ETCO2 with increased minute ventilation*
  - *Muscle rigidity noted*
  - *Sevoflurane discontinued*
  - *Total intravenous anesthesia (TIVA) with Propofol started*

9

Malignant Hyperthermia (MH)

- Malignant Hyperthermia is a pharmacogenic disorder of skeletal muscle
- Individuals have abnormal skeletal-muscle ryanodine receptors
- An inherited autosomal-dominant trait
- MH episodes have been estimated to occur in the general population in 1:100,000 administered anesthetics
- Triggering Agents
  - *Volatile anesthetics agents*
  - *Succinylcholine*
- Timing of Presentation
  - *Can occur soon after induction of general anesthesia*
  - *Can occur any time during the maintenance phase of general anesthesia*

10

Clinical Signs of MH

11

Clinical Signs of MH

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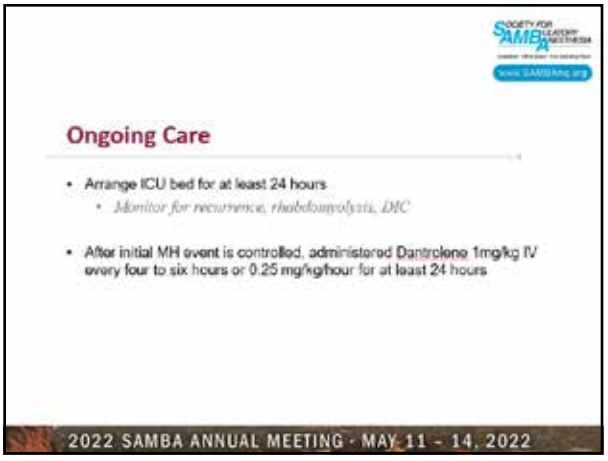

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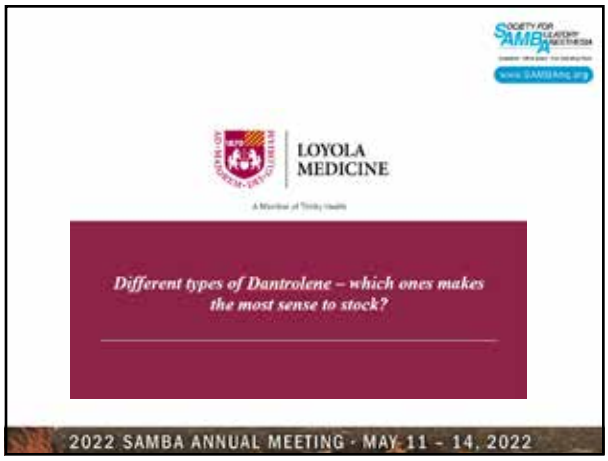

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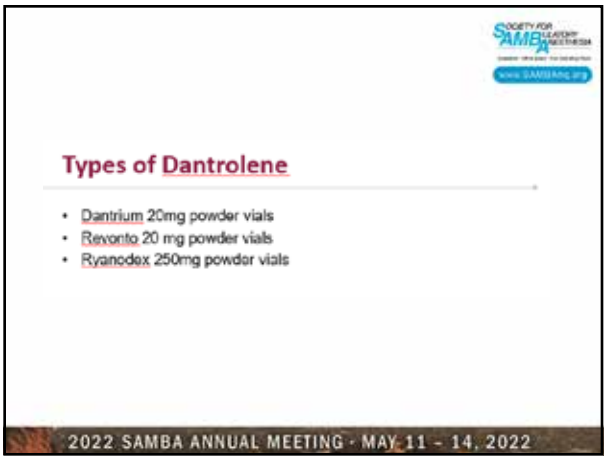

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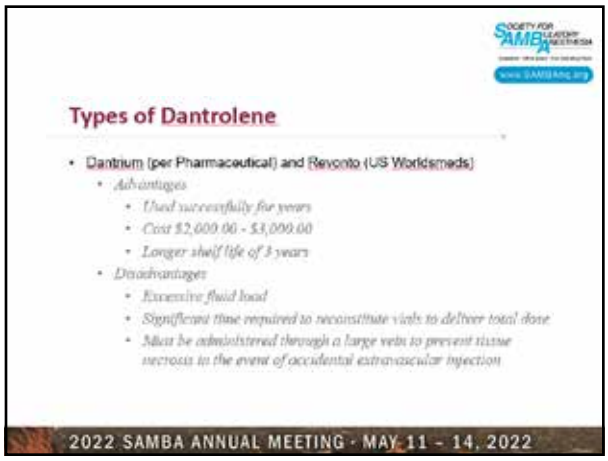

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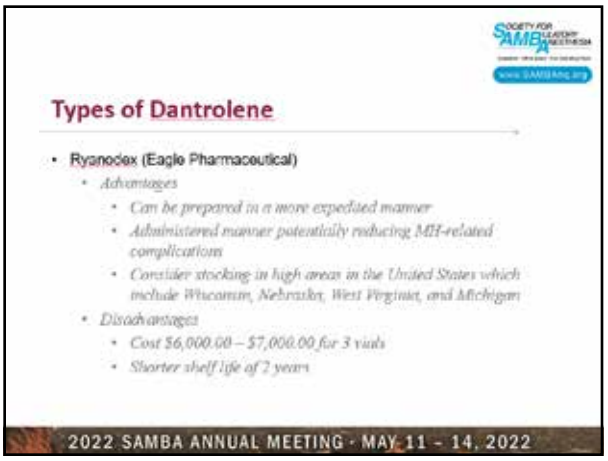

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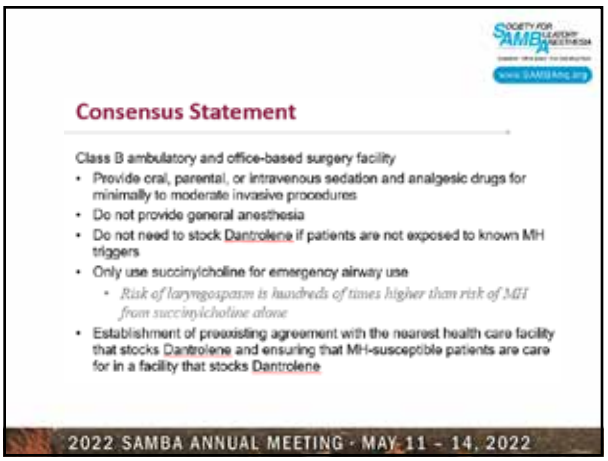

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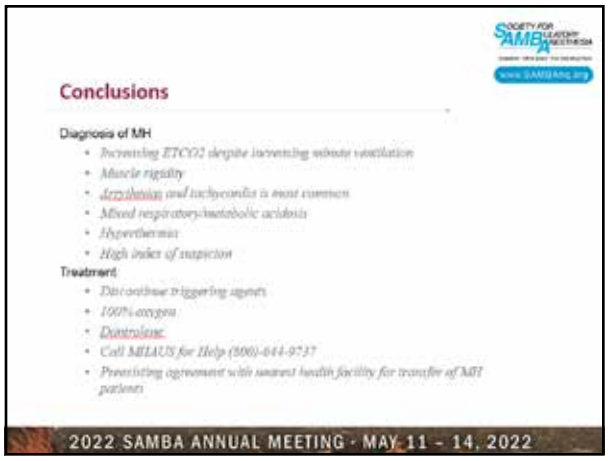

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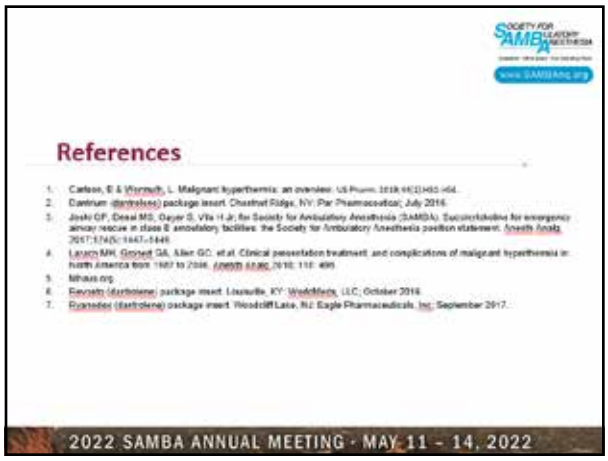
References
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LOYOLA
MEDICINE
Questions
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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

PBLDs/Ask the Experts: Pediatric Obesity and OSA for Ambulatory Surgery

Kumar Belani, MBBS, MS, FACA, FAAP, SAMBA-F
Chhaya Patel, MD, SAMBA-F

05/13/2022
2:45pm – 4:45pm

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MAY 11 - 14, 2022

My Son needs his Tonsils out Today!

Ask the Expert/Problem Based Learning Discussion (PBLD)

SAMBA Annual Meeting May 2021

Chhaya Patel, MD, SAMBA-F and Kumar Belani, MBBS, ACA, FAAP, SAMBA-F

Disclosures: no financial relationships with commercial interests

1

Stem Case

- A 6 years old 60 kg boy is scheduled for adenotonsillectomy at your ambulatory surgery center. The patient has history of mild asthma for which he requires albuterol two times a month. He presents to your surgery center with cough and runny nose for few days. Mom says he has difficult time focusing in the classroom and is sleepy during the day. Mom reports a sleep study was difficult to schedule and she just wants to get the tonsils out so her boy can sleep better and focus in the school. On physical exam, he has high arching palate and mild wheezing. His vitals signs are age appropriate, but he does appear anxious.

2

Preoperative Discussion Questions

- What preoperative questions do you have for the parents? Mom is worried about his cold.
- What comorbidities are you concerned about?
- Are there any further studies?
- Is this patient as candidate for surgery today?
- What preoperative medications do you order for the patient?

3

Intraoperative Discussion Questions

- How do you induce this patient?
- What induction medications do you use?
- What are the options for the airway?

4

Intraoperative Course

- After securing the airway, patient becomes difficult to oxygenate? PIP are high and breath sounds are absent!
- What is the differential diagnosis?
- How do you treat this?
- What is the pain management option for this patient?
- Do you emerge the patient deep or awake extubation?

5

Postoperative Discussion Questions

- Patient is severely agitated, confused, and making non purposeful movements.
- What is your differential diagnosis and treatment?
- An hour after the surgery, the patient still requires oxygen. What can you do?
- What home medication should the surgeon prescribe for this patient?

6

HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

2022 ASA/SAMBA Management of he Difficult Airway Guidelines

Basem B. Abdelmalak, MD, FASA, SAMBA-F
Jeffrey Apfelbaum, MD, SAMBA-F

05/14/2022
8:00am – 9:00am MST

2022 SAMBA ANNUAL MEETING
MAY 11 – 14, 2022

ASA Difficult Airway Algorithm

What is new and Why?: An Interview with Basem Abdelmalak, MD, FASA, SAMBA-F

1

The Group Responsible

2022 American Society of Anesthesiologists Practice Guidelines for Management of the Difficult Airway*

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2

The Collaborating Societies

- The American Society of Anesthesiologists (ASA)
- All India Difficult Airway Association (AIDAA)
- European Airway Management Society (EAMS)
- European Society of Anaesthesiology and Intensive Care (ESAIC)
- Italian Society of Anesthesiology, Analgesia, Resuscitation and Intensive Care
- Learning, Teaching and Investigation Difficult Airway Group
- Society for Airway Management (SAM)
- Society for Ambulatory Anesthesia (SAMBA)
- Society for Head and Neck Anesthesia (SHANA)
- Society for Pediatric Anesthesia (SPA)
- Society of Critical Care Anesthesiologists (SOCCA)
- The Trauma Anesthesiology Society

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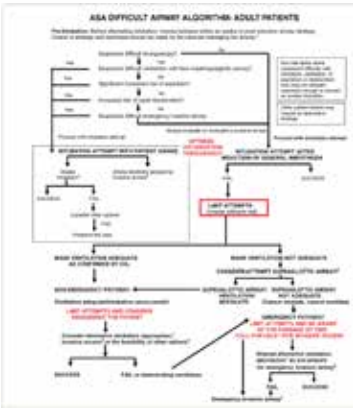

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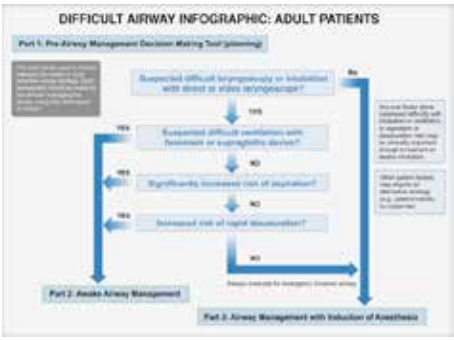

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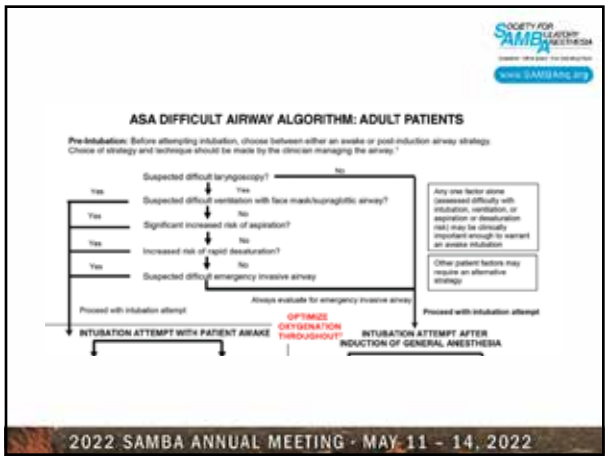
ASA DIFFICULT AIRWAY ALGORITHM: ADULT PATIENTS
Suspected difficult laryngoscopy?
Suspected difficult ventilation with face mask/supraglottic airway?
Significant increased risk of aspiration?
Increased risk of rapid desaturation?
Suspected difficult emergency invasive airway
Any one factor alone (assessed difficulty with intubation, ventilation, or aspiration or desaturation risk) may be clinically important enough to warrant an awake intubation
Other patient factors may require an alternative strategy
Always evaluate for emergency invasive airway
Proceed with intubation attempt
OPTIMIZE OXYGENATION THROUGHOUT
INTUBATION ATTEMPT WITH PATIENT AWAKE
INTUBATION ATTEMPT AFTER INDUCTION OF GENERAL ANESTHESIA
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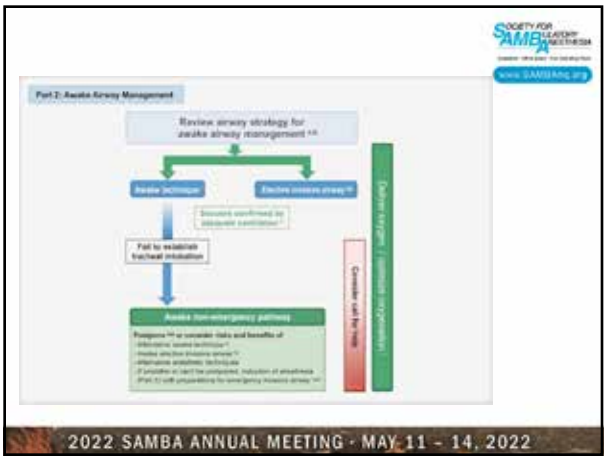
Part 2: Awake Airway Management
Review airway strategy for awake airway management
Awake intubation
Fail to establish tracheal intubation
Awake non-emergency pathway
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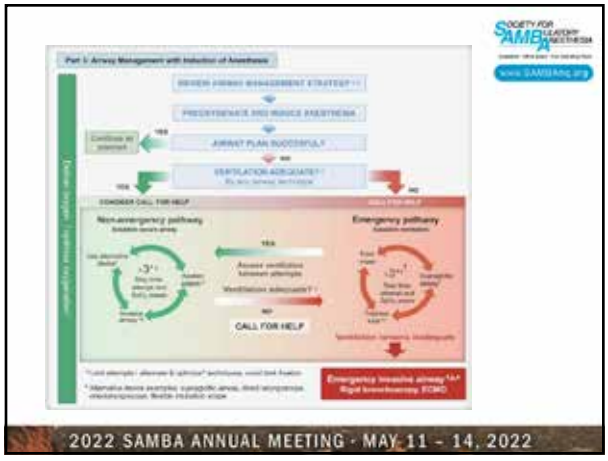
Non-emergency pathway
Emergency pathway
CALL FOR HELP
Emergency invasive airway
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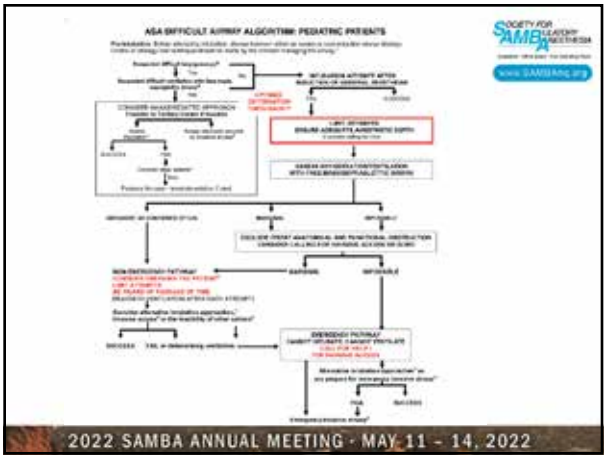
ASA DIFFICULT AIRWAY ALGORITHM: PEDIATRIC PATIENTS
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10


THANK YOU!!!!
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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Ambulatory Anesthesia Literature Year in Review

Girish P. Joshi, MBBS, MD, FCAI, SAMBA-F

05/14/2022
9:00am – 10:00am MST

THE UNIVERSITY OF TEXAS
SOUTHWESTERN MEDICAL CENTER
AT DALLAS

Recent Publications Impacting Ambulatory Anesthesia Practice

Girish P. Joshi, MB, BS, MD, FFARCSI
Professor of Anesthesiology and Pain Management

DISCLOSURE: Consultant Baxter International Inc.

1

Expansion in ambulatory surgery provides opportunity for anesthesiologists to expand our role as perioperative physicians

2

Ambulatory Surgery Centers and Their Intended Effects on Outpatient Surgery

Hooenbeck BK, et al: Health Services Research DOI: 10.1111/1475-6773-12278

Objectives. To assess the impact of ambulatory surgery centers (ASCs) on rates of hospital-based outpatient procedures and adverse events.
Data Sources. Twenty percent national sample of Medicare beneficiaries.
Study Design. A retrospective study of beneficiaries undergoing outpatient surgery

- Opening an ASC in the hospital service area resulted in a decline in hospital-based outpatient surgery without increasing mortality or readmission
- ASC growth was greater than the decline in outpatient surgery use at their respective hospitals
- Opening ASCs increase surgical growth

3

Association of Race, Health Insurance Status, and Household Income With Location and Outcomes of Ambulatory Surgery Among Adult Patients in 2 US States

Janeway MG, et al: JAMA Surg 2020; 155: 1123-31

- 2011-2013 State Ambulatory Surgery and Services Databases of New York (n=5.6 million) and Florida (n=7.5 million)
- Surgery in free-standing ASC was lower in Blacks and Hispanics
- Patients with public insurance (Medicare & Medicaid) were less likely to receive surgery in ASC in both NY & FL
- 30-day unplanned hospital admission higher for public insurance
- No difference in unplanned hospital visits by race and ethnicity
- Unplanned visits after surgery in ASC were less than HOPD

4

Percutaneous Coronary Interventions in ASCs

5

Percutaneous Coronary Interventions in ASCs: A Bridge Too Far!

- In January 2020, CMS began reimbursement for PCIs in ASCs
  - Change based on evidence supporting safety of same-day discharge after PCI performed in hospitals
  - Patient selection is critical for safety
- When PCI was introduced, ORs were held open with cardiac surgeons standing by should complications occur
- PCI without on-site cardiac surgery is now accepted, but patients were hospitalized overnight for observation

Dehmer GJ: J Am Coll Cardiol Intv 2021; 14: 301-3

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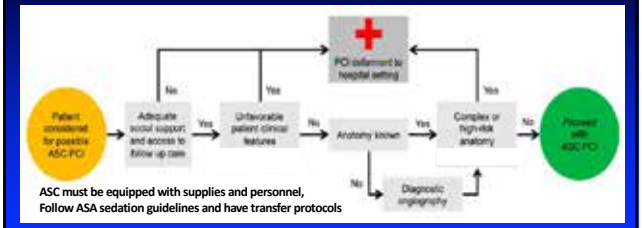
Patient Pathway for ASC PCI: ACC/SCAI Position Statement



Box LC, et al: Catheter Cardiovasc Interv 2020; 96: 862-70
Society for Cardiovascular Angiography and Interventions (SCAI)

7

Patient Selection

8

High Risk Patients For Ambulatory General Surgery

- Analysis of NSQIP database 2005-2017 to evaluate outcomes after ambulatory general surgery in high-risk patients (ASA 3=95%, ASA 4= 5%, n=137,175)
- Mortality: 0.04% at 3 days and 0.1% at 30 days
- 30-day major morbidity: 1.25% (low-risk patients <1%)
- 30-day hospital readmission: 2.5%
- Predictors of major morbidity and hospital admission
  - Non-independent functional status, ascites, renal failure, and bleeding disorder, disseminated cancer, CHF
  - COPD, DM, hypertension, steroid use, dyspnea, male sex, BMI >40

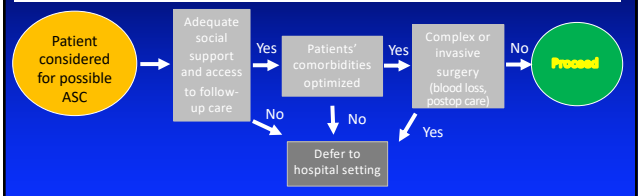
Pang G, et al: J Surg Res 2021; 263: 71-7

9

Patient Selection for Adult Ambulatory Surgery: A Narrative Review

Niraja Rajan, MD,* Eric B. Rosero, MD, MSc,† and Girish P Joshi, MBBS, MD, FFARCSI‡

Anesth Analg 2021; 133: 1415-30



ASC must be appropriately equipped, and have personnel, transfer protocols

10

Patient Selection For Ambulatory Surgery

- ASA Physical Status:
  - ASA-PS ≤3 are suitable
  - ASA-PS 4 with stable comorbid conditions may undergo low-risk procedures such cataract surgery under local/regional anesthesia
- Age:
  - Age alone should not be an exclusion factor
  - Consider comorbid conditions, frailty, cognitive function
  - Consider type of surgery and anesthesia
  - Consider social factors such as lack of home care support

11

Patient Selection For Ambulatory Surgery

- Obesity:
  - BMI<40 kg/m^2 – suitable for ambulatory surgery
  - BMI40-50 kg/m^2 – manage OSA
  - BMI>50 kg/m^2 – for low-risk procedures in absence of severe cardiopulmonary comorbidities
- Sleep Apnea:
  - Screen for OSA and optimize comorbid conditions
  - Preoperative sleep study not required
  - Use opioid-sparing multimodal non-opioid analgesia
  - Encourage use of CPAP, if prescribed

12

Cardiac Patient Ambulatory Surgery

- Asymptomatic cardiac patients do not require preop testing
- Do not postpone surgery based solely upon BP
- Not suitable for ambulatory surgery
  - Within 30 days of acute MI
  - Decompensated, new onset, or untreated HF
  - Symptomatic patients (i.e., fatigue, dizziness, dyspnea, syncope, palpitations, chest pain, shortness of breath)
  - Patients with low (<35%) LVEF, new onset AF, or severe valvular disease
- Patients with CIED suitable if low potential for EMI
- Patients with coronary stents suitable is not on DAPT

13

Patient Selection For Ambulatory Surgery

- **COPD:** Exclude patients with severe disease
  - Optimize bronchodilator therapy, respiratory infection, smoking cessation
- **DM:** Exclude only if unstable metabolic conditions (e.g., DK)
  - Continue anti-diabetic drugs, as appropriate
  - Resume oral intake and hypoglycemic regimen as soon as possible
- **ESRD:** Exclude if not on dialysis
  - Accept anemia and asymptomatic hyperkalemia
- **TIA/Stroke:** Delay elective surgery for at least 3-6 months
  - Need to manage antiplatelet therapy
- **MH:** Proceed with non-triggering GA, No prophylactic dantrolene

14

Pro-Con Debate: Are Patients With a Cardiovascular Implantable Electronic Device Suitable to Receive Care in a Free-Standing Ambulatory Surgery Center?

Eric B. Rosero, MD, MSc,* Niraja Rajan, MD,† and Girish P. Joshi, MBBS, MD, FFARCSI*

15

CIED Patients Not Suitable for ASC

- Patients with unoptimized comorbidities
- CIED implanted within 3 months prior to the procedure
- Lack of CIED information
- Recurrent ICD shocks
- CRT devices in patients with LVEF ≤35%
- No access to CIED team to reprogram, when necessary
- Complex CIED patients undergoing procedures generating EMI

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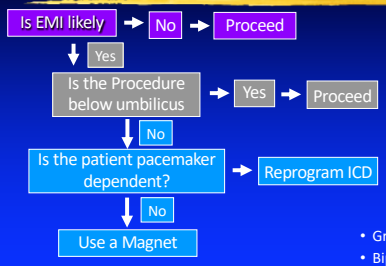
ICD Perioperative Management



Minimize EMI

- Grounding patch near surgical site
- Bipolar or ultrasound scalpel

Based on Crossley GH et al: Heart Rhythm 2011; 8: 1114-54

17

Interrogation Prior to Discharge

- Patients with ICD programmed preoperatively
- Patients undergoing major cardiovascular/thoracic procedures
- Emergent/urgent above umbilicus surgery
- Patients with intraoperative hemodynamic instability
- Logistical problems preventing reliable device evaluation within one month of the procedure

Crossley GH et al: Heart Rhythm 2011; 8: 1114-54

18

Remote Control of CIEDs

- Program CIEDs remotely
  - Currently being used at UTSW Medical Center, Dallas Childrens Hospital, Parkland MRI Center
- FDA approved App perform remote control
- Saves personnel time
  - Waiting for MRI to start and finish and commuting to locations
- Program uses Bluetooth to communicate with CIED

Remote Control of Cardiac Implantable Electronic Devices: Exploring the New Frontier—First Clinical Application of Real-time Remote-control Management of Cardiac Devices Before and After Magnetic Resonance Imaging

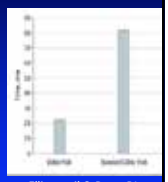
Kloosterman EM, et al: J Innov Cardiac Rhythm Manage 2019; 10: 3477-84

19

Telemedicine for preanesthesia evaluation: review of current literature and recommendations for future implementation

Omaira Asrad and Girish P. Joshi *Curr Opin Anesthesiol 2021; 34: 672–7*

- Telemedicine definition: audiovisual 2-way clinical encounter between physician and patients
- Since COVID-19 pandemic, burdensome regulations have been removed and payments have improved
- Telemedicine can reduce anxiety, improve patient satisfaction, reduce hospitalization, reduce costs



Ellimoottil C, Boxer RJ: JAMA Surg 2018;153:177-8

20

Fast-Track Anesthetic Technique

21

Consider Local/Regional Anesthesia

- Avoids airway manipulation
- Avoids residual effects of drugs used for GA
- Provides postop analgesia and reduces opioid use
- Allows shorter time to home readiness
- Suitable when
  - Airway easily accessible
  - Patient can tolerate surgical position
  - Surgery can be quickly terminated
- Use minimal or no sedation

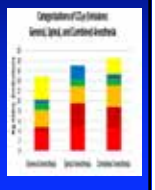
22

Spinal anesthesia for ambulatory surgery: current controversies and concerns

Jesse Stewart, Irina Gasanova, and Girish P. Joshi

Curr Opin Anesthesiol 2020; 33: 746-52

- Benefits over fast-track GA technique questionable
- Delay in start time: placement/onset time, failure
- Delay in ambulation and discharge home
  - Delayed recovery of motor function
  - Postural hypotension (orthostatic intolerance)
  - Urinary retention in older male patients
- SA and GA have similar carbon footprint
  - McGain F, et al: Anesthesiology 2021; 135: 976-91



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Spinal versus general anesthesia for patients undergoing outpatient total knee arthroplasty: a national propensity matched analysis of early postoperative outcomes

Kendall MC, et al: BMC Anesthesiol 2021; 21: 226

- ACS-NSQIP database (2005-2018) queried for outpatient TKA
  - Of these, GA (n=2034) and SA (3540), propensity matching (n=1962)
- No differences between GA and SA for serious adverse events at 72 h after surgery
  - Composite of return to OR, SSI, VTE, ARF, MI, cardiac arrest, stroke or CVA, on ventilator >48 h, unplanned intubation, sepsis/septic shock, death
- Minor adverse events greater with GA
  - Blood transfusion, pneumonia, wound dehiscence, UTI, renal insufficiency
- Use of TXA, VTE prophylaxis, avoidance of urinary catheter, fast-track GA technique (opioid sparing) should address minor events
- Overall, no differences between GA and SA

24

General anesthetic techniques for enhanced recovery after surgery: Current controversies

Girish P. Joshi, MBBS, MD, FFARSCI, Professor of Anesthesiology and Pain Management *

University of Texas Southwestern Medical Center, 5323 Harry Hines Blvd, Dallas, TX 75390-9068, USA

Best Practice & Research Clinical Anaesthesiology 35 (2021) 531–541

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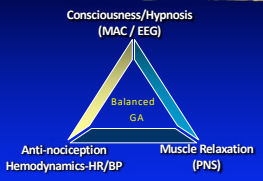
Fast Track General Anesthesia



- Use minimal number of drug combinations
- Use shortest-acting drugs at the lowest possible doses

- Pre-operative
  - Avoid routine use of midazolam
- Prevention of Recall
  - Inhalation anesthesia + N_2O (or TIVA)
  - Depth: MAC 0.8–1 and/or EEG monitoring
- Neuromuscular blockade
  - Minimize NMB, reverse appropriately
- Anti-nociception
  - Opioid-sparing NOT opioid-free approach

Joshi GP: Best Parct Res Anesthesiol 2021; 35: 531-41

26

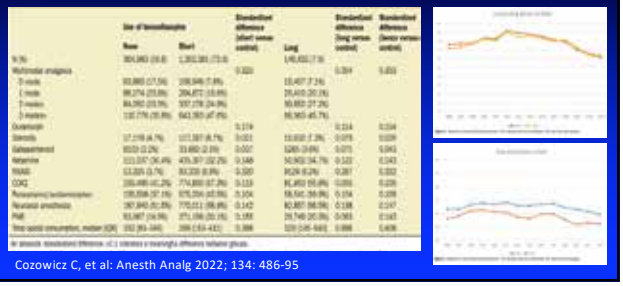
Association of perioperative midazolam use and complications: a population-based analysis

Athanassoglou V, et al. Reg Anesth Pain Med 2022;47:228–33

- Patients undergoing TKA/THA (n=2,848,847) identified from a National administrative database (2006-2019)
- 75% patients received midazolam perioperatively
- Use of midazolam was associated with increased in-hospital falls (OR 1.1), decrease in adjusted odds for cardiac (OR 0.94) and pulmonary complications (OR 0.92)
- Concurrent use of midazolam and gabapentin significantly increased pulmonary complications (OR 1.22), naloxone use (OR 1.56), and postoperative delirium (OR 1.45)

27

Preoperative Benzodiazepines Increase Postoperative Opioid Use



Cozowicz C, et al: Anesth Analg 2022; 134: 486-95

28

Comparison of Percentage Prolonged Times to Tracheal Extubation Between a Japanese Teaching Hospital and One in the United States, Without and With a Phase I Postanesthesia Care Unit

Sugiyama D, et al: Anesth Analg 2021; 133: 1206-14

Factors Influencing Tracheal Extubation and PACU Stay

- Patients undergoing gynecological surgery at a US hospital (n=785) or Japanese hospital (n=699), surgical duration of >4h
- Incidence of prolonged extubation times (>15 min from end of surgery) were 39% in US hospital vs 6% in Japanese hospital
- 97% of the patients in US hospital transferred to PACU with average stay of 2.4±0.9 h (3% sent to ICU), while 0% in Japanese hospital transferred to PACU (transferred directly to wards)
- Mean time from end of surgery to discharge to ward at the US hospital was 2.2 h longer than at the Japanese hospital

29

Factors Influencing Tracheal Extubation and PACU Stay

- Patient and case characteristics do not account for the differences in prolonged extubation
- Prolonged extubation due to differences in GA techniques
- At the Japanese hospital: GA maintenance with desflurane ~4.8% and Remifentanil (0.1–0.3 µg/kg/min)
- At the US hospital: GA maintenance with sevoflurane or isoflurane and fentanyl intermitted boluses

Sugiyama D, et al: Anesth Analg 2021; 133: 1206-14

30

Effect of therapeutic suggestions during general anaesthesia on postoperative pain and opioid use: multicentre randomised controlled trial

Nowak H, et al: BMJ 2020; 371: m4284

- Blinded randomized controlled trial
  - Hypnotherapeutic principles; Intraoperative audio – music and positive suggestion played repeatedly for 20 min followed by 10 min silence
  - Control Group: blank tape
- Lower opioid 24-h use in intervention group median 4 mg (0-8 mg) vs. 5.3 mg (2-12 mg) morphine units
- Number patient requiring opioid 63% vs. 80%
- Number needed to treat to avoid opioid requirements = 6
- Pain scores 25% lower in the intervention group
- Care about the background noise in the OR

31

Effects of Intraoperative Auditory Stimulation on Pain and Agitation on Awakening After Pediatric Adenotonsillectomy

A Randomized Clinical Trial

JAMA Otolaryngol Head Neck Surg 2021 147 638-45

- Randomization: auditory stimulation with music, with noise, ambient noise insulation with masking earplugs, and control group receiving no intervention
- Intraoperative music resulted in clinically meaningful reduction in severe pain on awakening and emergence delirium in the immediate postoperative period

32

Pressure Support Ventilation During Emergence

ANESTHESIOLOGY

Pressure Support versus Spontaneous Ventilation during Anesthetic Emergence—Effect on Postoperative Atelectasis: A Randomized Controlled Trial

- RCT patients undergoing laparoscopic surgery in Trendelenburg position
  - Intermittent manual vs. PSV during emergence (end of surgery to extubation)
- Outcomes:
  - Primary outcome: incidence of atelectasis diagnosed by ultrasound in PACU
  - Secondary outcome: PaO2 in PACU and SaO2 <92% during 48 h postop
- Conclusions
  - No difference in emergence times
  - Atelectasis in PACU lower in PSV group (33% vs. 57%)
  - PaO2 were higher with PSV, no difference in SaO2

33

Blood Management and TXA

34

Blood Management: Ambulatory Surgery

- Leading complication after outpatient TJA in the Medicare population was blood loss requiring blood transfusion
  - Greenky MR, et al: J Arthroplasty 2019; 34: 1250-4
- Blood Management
  - Presurgical hemoglobin >12 gm/dL
  - Administration of TXA
  - Use of bipolar sealers
  - Intraoperative blood pressure control
  - Reduced surgical duration
  - Acceptance of lower postoperative hemoglobin
    - McClatchy SG, et al: Orthop Clin N Am 2021; 52: 201–8

35

Tranexamic Acid (TXA)

- 1 gm IV after induction and 1 gm IV at the end of surgery
- Potential adverse effects: DVT, PE, MI, seizures
- Potential contraindications
  - Anticoagulant therapy, coronary stents, stroke, subarachnoid hemorrhage, h/o PE or DVT, hypercoagulable diseases, acquired defective color vision
- If IV c/i: topical or add to LIA solution

Comparison of topical versus intravenous tranexamic acid in primary total knee arthroplasty: A meta-analysis of randomized controlled and prospective cohort trials

Wong H, et al: The Knee 2014; 21: 987-93

In primary TKA-topical TXA has similar efficacy to IV TXA in reducing blood loss and transfusion rate without sacrificing safety

Association of Intravenous Tranexamic Acid With Thromboembolic Events and Mortality

A Systematic Review, Meta-analysis, and Meta-regression

Taeuber I, et al: JAMA 2021 (Epub)

IV TXA, irrespective of dosing, is not associated with increased risk of any thromboembolic events

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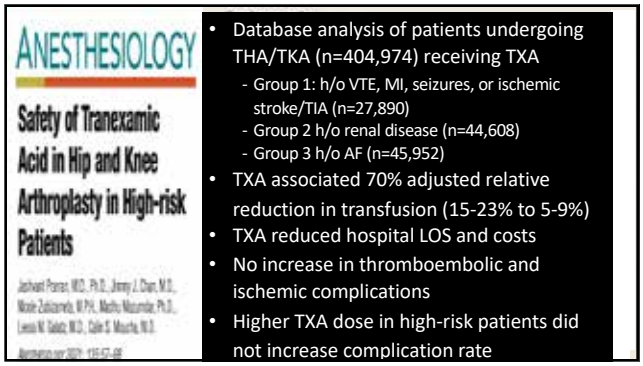

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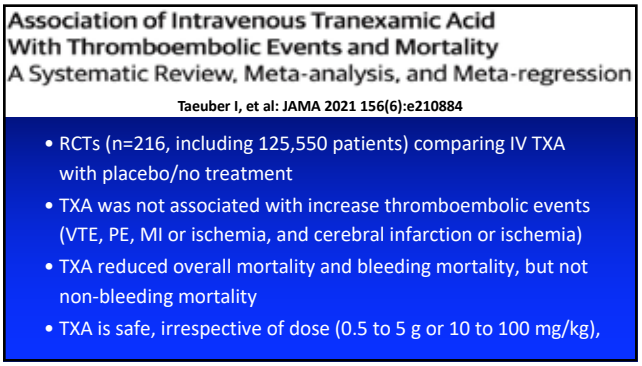

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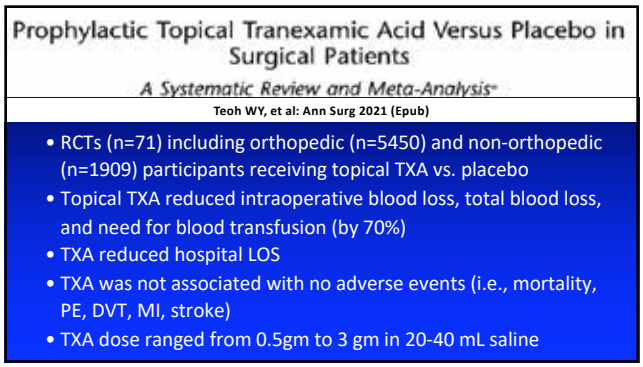

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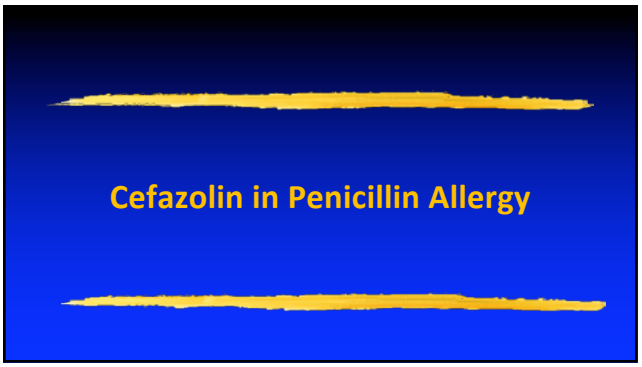

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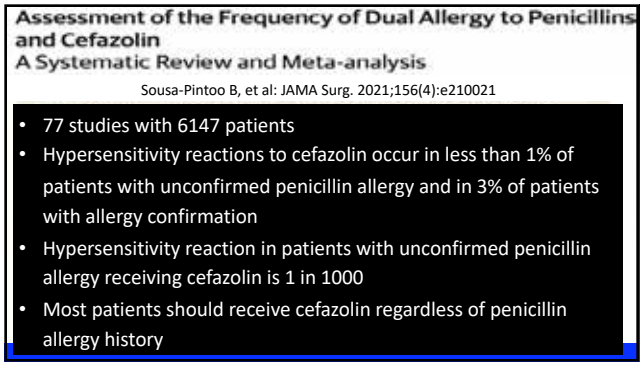

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42

Ambulatory Surgery: Opioid Stewardship

Opioids Are Infrequently Required following Ambulatory Otologic Surgery

Mavrommatis MA, et al: Otol Neurotol 2021; 42: 1360–15

Assessment of Unused Opioids Following Ambulatory Surgery

Dixit AA, et al: Am Surgeon 2002; 86: 652-8

Opioid prescribing and unused opioid prescription are prevalent in ambulatory surgical population

43

Patient and Surgeon Education

Nudging patients and surgeons to change ambulatory surgery pain management: Results from an opioid buyback program

Liu JY, et al: Surgery 2021; 170: 485-92

Patient-Centered Decision-making for Postoperative Narcotic-Free Endocrine Surgery
A Randomized Clinical Trial Zhu DY, et al. JAMA Surg 2021;156(11):e214287.

- Preoperative counseling combined with a patient-choice strategy for prescribing opioid analgesics reduced the number of opioids prescribed without worsening postoperative pain or health-related quality of life
- Allow patients to choose whether to include opioids

44

Opioid Prescribing Recommendations For Opioid-naïve Patients

Patient- and procedure-specific opioid prescription (dose and duration), partial fills when available

Procedure		Procedure	

opioidprescribing.info

45

Postoperative Opioid Use: Educate Surgeons

- Communication between anesthesiologists and surgeons critical
- Primary aim to promote return of function
- Avoid sedating medications
  - Benzodiazepines, muscle relaxants, gabapentinoids
- Wean opioids first (reverse ladder)
- Refer pain specialist for complex pain or opioid-tolerant patients
- Plan pain and opioid therapy transition to primary service
- Patient education for discharge planning, pain management, and opioid use, storage, disposal/return

Kharasch ED, et al: Anesthesiology 2022; 136: 10-30

46

Post-Discharge Monitoring

- Create and enable triggers to aid identification of chronic and high-risk opioid users
- Recognize and monitor high risk opioid users
  - >90 days use in opioid naïve patients
- Implement strategies to ensure safe prescribing and dispensing of opioids
  - Check the prescription monitoring program (PMP)
  - E-prescribing for all controlled substances
- Mitigate overdose risks
- Implement transitional pain service

47

Telemedicine and Remote Monitoring: Ambulatory Surgery

48

Technology and Post-discharge Monitoring

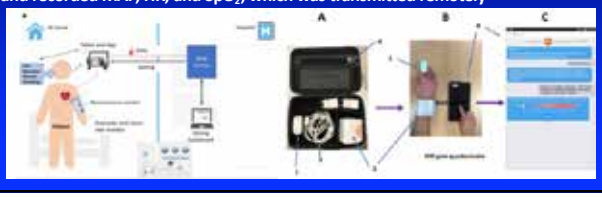
- Post-discharge telephone calls (traditional approach) are insufficient in identifying potential impending complications
- Modern digital technology (text messaging, videoconferencing, smart phone applications, web-based platforms, e-connected devices) increases connectivity with patients and their caregiver
- Technology can be adapted for surveillance of patients at home and optimize surgical care, quality, and value
- Electronic patient symptom reporting daily survey with clinical alerts reduced potentially avoidable urgent care visits
  - Simon BA, et al: JAMA Surg 2021; 156: 740-6

49

Feasibility of remote digital monitoring using wireless Bluetooth monitors, the Smart Angel™ app and an original web platform for patients following outpatient surgery: a prospective observational pilot study

Chevallier T, et al: BMC Anesthesiol 2020; 20: 259

Patients completed a self-report questionnaire (pain, comfort, nausea, vomiting) and recorded MAP, HR, and SpO_2, which was transmitted remotely



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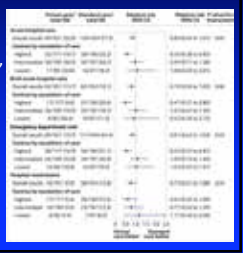
Post-discharge after surgery Virtual Care with Remote Automated Monitoring-1 (PVC-RAM-1) technology versus standard care: randomised controlled trial

McGillion MH, et al. BMJ 2021; 374: ;374:n2209

- Study group (n=451) received a tablet computer and remote automated monitoring (RAM) technology for daily biophysical measurements (HR, BP, RR, SaO_2, temp, weight) and wound photos
- Primary outcome: days alive at home during 31 days of follow-up
- Secondary outcomes: acute care, detection and correction of drug errors, pain at 7, 15, and 30 days
- Use of technology reduced acute care visit (by 5.3%), drug errors (by 24.4%), pain (by 13.9%), but did not affect days alive at home



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A Randomized Controlled Trial Evaluating Electronic Outpatient Symptom Monitoring After Ambulatory Cancer Surgery

Andrea L. Pusic, MD, MHS,✉ Larissa K. Temple, MD, MSc,† Jeanne Carter, PhD,‡§¶ Cara M. Stabile, MPH,‖ Melissa J. Assel, MS,‖ Andrew J. Vickers, PhD,‖ Kate Niehaus,** Jessica S. Ancker, PhD, MPH,†† Taylor McCready,‡‡ Peter D. Stetson, MD, MA,§§ and Brett A. Simon, MD, PhD‡‡‖‖¶¶*

Ann Surg 2021;274:441–448

Association Between Electronic Patient Symptom Reporting With Alerts and Potentially Avoidable Urgent Care Visits After Ambulatory Cancer Surgery

Brett A. Simon, MD, PhD; Melissa J. Assel, MS; Amy L. Tin, MA; Priyanka Desai, MPH; Cara Stabile, MPH; Roberta H. Baron, MSN, Jennifer R. Cracchiolo, MD; Rebecca S. Twersky, MD, MPH; Andrew J. Vickers, DPhil; Vincent P. Laudone, MD

JAMA Surg 2021; 156: 740-6

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Summary

- Growth in ASC provides us with an opportunity to play a pivotal role in perioperative care, including post-discharge care
- Develop evidence-based procedure- and patient-specific pathways with multidisciplinary input
- Elements that influence outcomes after ambulatory surgery
  - Preoperative: patient selection, preoperative evaluation, and optimization
  - Fast-track anesthetic technique, aggressive pain and PONV prophylaxis
  - Post-discharge care: Patient education and monitoring for early identification of complications using modern technology

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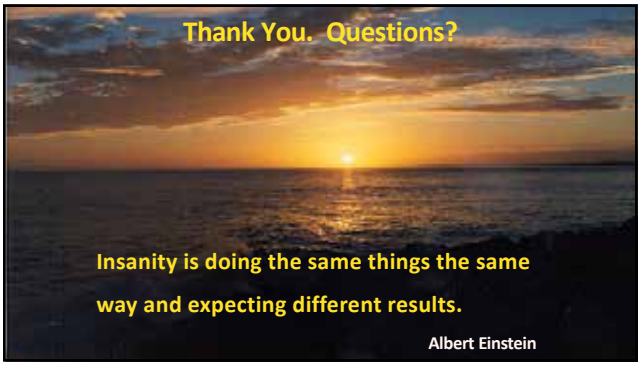

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Cases from the Real World

Catherine Tobin, MD
Tina Tran, MD
Meghan C. Valach, MD

05/14/2022
10:45am - 12:00pm MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Cases From the Real World

Moderator: Michael T Walsh, MD Assistant Professor Mayo Clinic Rochester, MN

Panelists:

Meghan Valach, MD Chief Medical Officer Mobile Anesthesiologists

Tina Tran, MD Chief of Anesthesiology, Wilmer Eye Institute, Johns Hopkins Hospital

Catherine Tobin, MD Associate Professor, Medical Director MUSC Simulation Center, Lewis Blackman Endowed Chair of Patient Safety and Simulation Medical University of South Carolina

1

Disclosures:

- Michael T Walsh, MD - none
- Tina Tran, MD - Melt Pharmaceuticals Advisory Board
- Meghan Valach, MD - none
- Catherin Tobin, MD

  SMART, Medication Error Reduction in the Operating Room, Funded by AHRQ
  Simulation Education for Ebola/COVID19 Healthcare Team Competency, Funded by Centers for Disease Control (CDC) and Prevention

SAMBA 2021 · A Virtual Experience
May 13-16, 2021

2

1st Case

- Otherwise healthy 33 yo nurse practitioner added on to list day before for colonoscopy
- 12 days of persistent diarrhea and 2 days inability to eat

3

Past Medical History

- ROS negative except for respiratory
  - Hx asthma during allergic reactions
  - Intubated 7 times in the past
    - Attributed to her mastocytosis
    - Last intubation 8 months ago
  - No recent respiratory issues
    - "rarely" uses inhaler and "not in awhile"

What else do you want to know?

4

- Meds:
  - Lexapro
  - Xopenex hFa inhaler
  - Symbicort inhaler
- Allergies:
  - Ketorolac
  - Vanco, sulfa, PCN
  - Cephalosporins
  - IVP Dye Latex
  - Foods:
    - Avocado, Kiwi, Banana

Anaphylaxis!

Anyone want to do this case?

In an office?

5

Things to consider

- This is a nurse practitioner who felt she had a good regimen for her mastocytosis and it was under control
- No respiratory problems in last 8 months
- Just a colonoscopy

BUT…….

- Further questioning – admits to having hives the night before but responded to Benadryl and not really unusual for her

6

- Everyone ready to precede?
- Any special considerations?

7

Decide to proceed

- Pretreated with 50 mg IV diphenhydramine, 20 mg famotidine, and 2 mg Decadron
- MAC anesthesia
  - 50 mg lidocaine and propofol infusion
    - Propofol boluses prn
  - 4 mg ondansetron and 400 cc of LR
- 12 min procedure time

Everything went fine

8

PACU course

- Pt requested additional Benadryl for itching – 12.5 mg given
- Requested an additional dose – 12.5 mg given
- Shortly after 2nd dose, she started coughing and complaining that it was a little difficult to catch her breath

What now?

9

PACU course

- Albuterol doses given, without help
- Upon exam, breath sounds were severely diminished and patient now having difficulty talking

Now what?

- Intubated at the bedside and paramedics were called

10

11

Next Case

- 27 yo female at 20 weeks gestational age in pregnancy presents for outpatient EUS (Endoscopic Ultrasound) at your very busy Digestive Disease Unit. You have 3 busy rooms this day with over 20 cases.
- Nursing notes: not sure why we're even doing this case. Overheard a nurse navigator say the patient really wanted procedure done and did not want to wait till after baby was born.

In your system, would you know anything about this case before it showed up at your door morning of surgery?

12

Past Medical History

- Pancreatitis- She has had 3 episodes, and patient notes that this is why she is here today. There was also talk of sphincter of Odi dysfunction

Would you do this case?

13

Other PMH

- Hyperemesis with PICC line in place on TPN
- HTN
- Obesity
- Somatization Disorder
- Migraines
- Chronic Pain Syndrome
- Cystic Fibrosis- per patient it is "not in her lungs" but more GI system.
- Factor V Leiden Deficiency-with history of a DVT (3 in last 2 years)
- POTS syndrome (Postural orthostatic tachycardia), s/p ablation for atrial tachycardia and now with a pacemaker

What else do you want to know?

14

- **Medications:**
  - Ondansetron
  - Promethazine
  - Prenatal vitamins
  - Vit D
  - Enoxaparin 900mg Q 12
  - Labetalol
  - Nifedipine

  → Flecainide
- **Physical exam:**
  - 95 kg, EKG-paced at 85, BP 128/87, Oxygen saturation 99%
  - Lungs CTA, PICC line noted in R arm, pacemaker right chest

15

Further Workup

- What do you want to know about her heart?
- Complex atrial tachycardia
- Pacemaker checked 1 month ago – pacer dependent; battery is fine
- 2000 ECHO: Normal function
- Was told she needed repeat ECHO but missed appointment
- Do you need OB to weigh in?
- Says it's okay to procede
- Check fetal heart tones

16

Would you do this case?

Where?

How would you proceed?

17

- RSI: Propofol, lidocaine, and succinylcholine
- MAC 3, grade 1 view 6.0 ETT
- TIVA done with fentanyl and Zofran (no inhalational)
- Case was over 1 hour long
- End of case, patient extubated
- Spontaneously breathing but seemed weak

What now? Dibucaine Number?

18

19

Case # 3

- Healthy and active 35 year old woman scheduled for ptosis surgery (oculoplastics) under GA in an ASC.
- Diagnosed with mitochondrial disorder several years ago. No medications taken. NKDA
- Family history of mitochondrial disorder in several family members with varying clinical presentations such as strokes, respiratory failure, and CHF
- H&P by PCP did not mention mitochondrial disease in the PMH. Concluded that patient was stable for anesthesia and surgery

What else do you want to know?

20

- Last seen by a geneticist a year ago. The geneticist recommended comprehensive labs and TTE every 6 months.
- Patient was not aware it needed to be done prior to surgery

In your system, would you know anything about this case before it showed up at your door morning of surgery?

Would you do this case?

21

- Patient was upset and stated that she has had surgery under anesthesia previously without any issues. Her exercise tolerance is good. She is a stay at home mom who cares for two young children

Would you do this case

Call her geneticist?

22

- Geneticist tells you that the patient should obtain labs and TTE prior to surgery
- The patient says that she will accept the higher risk of complications as her ptosis is significantly affecting her life

Now what????

23

Beside POCUS TTE ?

- Normal EF, no valvular lesions

OK to proceed now?

24

Phone a Friend

- Geneticist agreed to proceed without formal TTE if she was asymptomatic
- Pediatric anesthesiologist originally assigned to the case wanted to wait until she had an official TTE, cardiologist consult, and to proceed in the main hospital
- Cardiac anesthesiologist did not feel strongly about the TTE if she was asymptomatic

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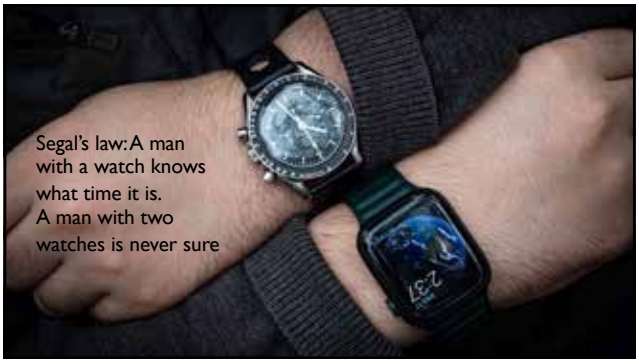

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How will you proceed?

- Any special considerations for the anesthetic?

27

28

Case # 4

- 52yo with known left adnexal mass, ascites and pelvic organ prolapse
- Diagnostic paracentesis and peritoneal biopsy, both of which were negative for malignancy
- Elevated tumor markers of Ca-125 of 402, Ca 19-9 of 68 and CEA 4.3 and low albumin 2.4
- Plan: laparoscopy - biopsy and frozen pathology

29

PMH

- One month prior: seen in the ED for abdominal pain
  - CT abdomen/pelvis showed a left ovarian mass concerning for malignancy with peritoneal carcinomatosis and possible bone metastasis, as well as hyperechoic lesions in the spleen.
- The following week: US-guided FNA and paracentesis
  - showed inflammatory cell but negative for neoplasm
- After another week, patient presented to the ED again for evaluation of abdominal pain and distention

30

In ER

- Alert and oriented without distress
- Afebrile with BP=99/74. HR=102 RR=16 and SAO2= 100%
- "She is slightly tachycardic and pressures are slightly soft, but she appears stable. She is in no acute distress."
- Plan: repeat paracentesis

31

ER course

- After draining the 3L of ascitic fluid, patient was persistently tachycardic to the 150s.
- On monitor: SVT vs afib
- ECG: possible SVT vs. atrial flutter (2:1 block)
- No complaints of chest pain, but feels heart skipping

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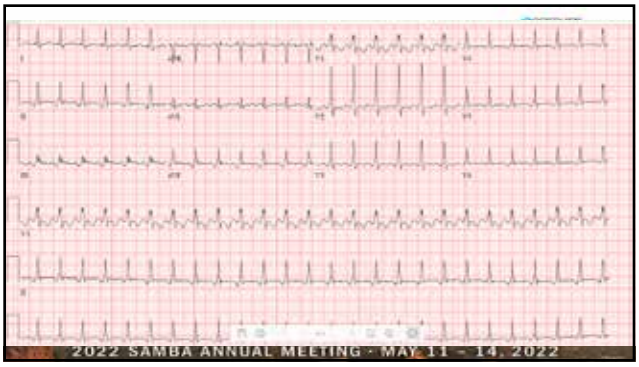

33

ER course

- Vagal maneuvers were attempted without successful conversion.
- 10mg of diltiazem given
- Repeat EKG appears to show that she is back in sinus rhythm, although tachycardic compared to baseline.

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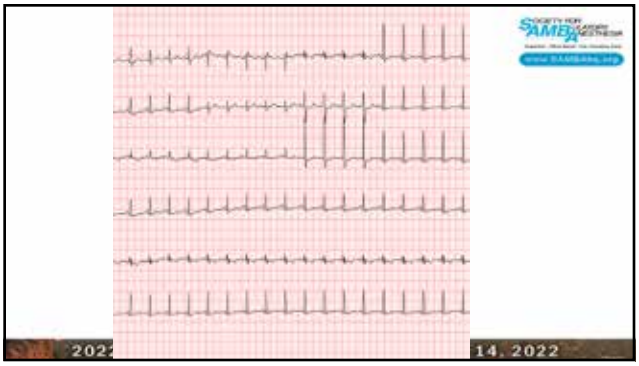

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10 days later……

What else do you want to know?

- Hgb 9.2 BP= 100/53
- Albumin 2.4 HR = 88

OK to proceed now?

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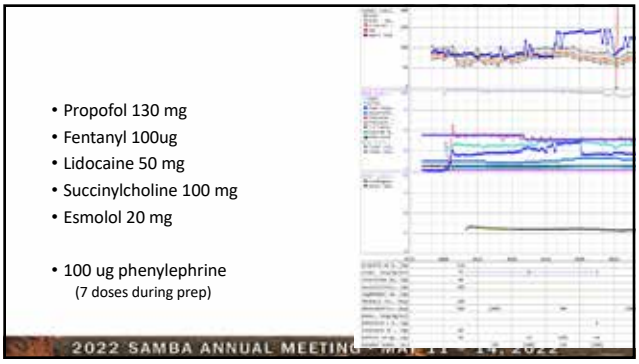

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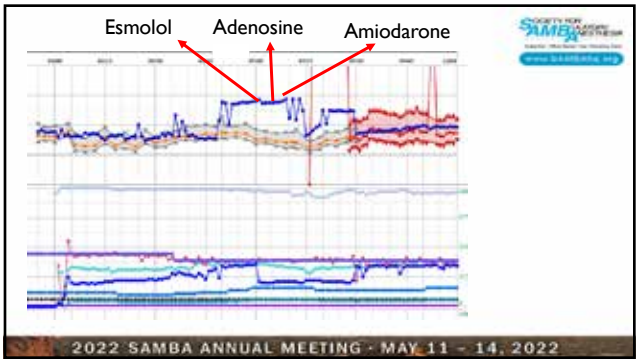

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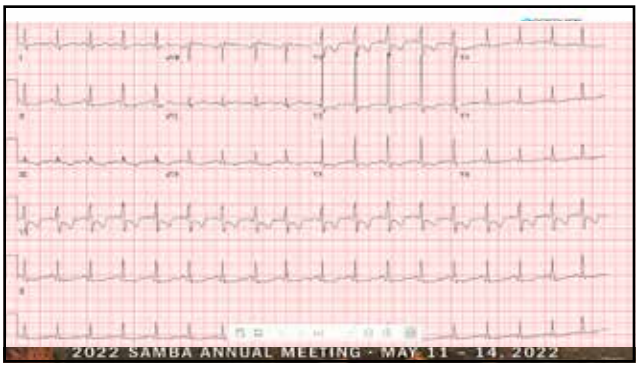

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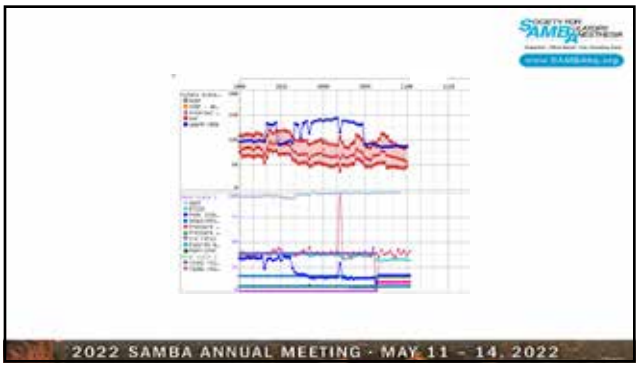

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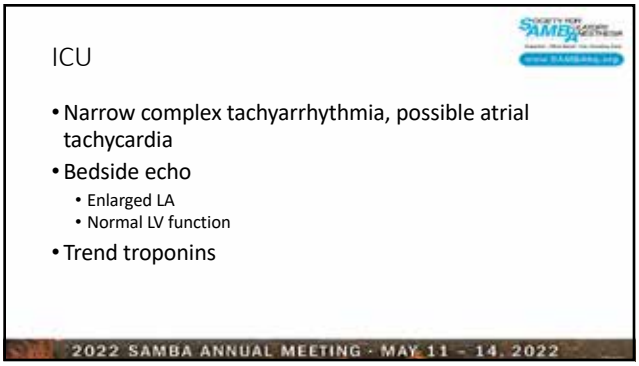

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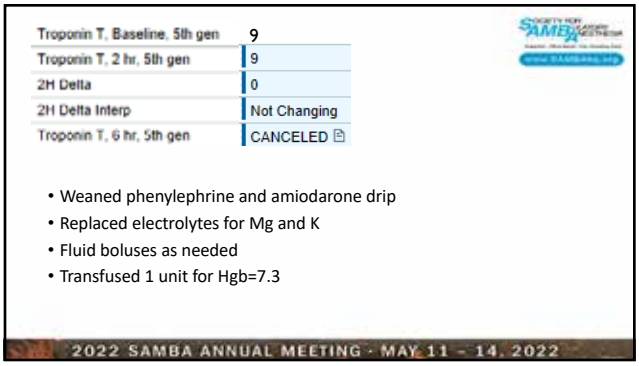

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Formal ECHO next morning

- 1. Mildly enlarged right ventricular chamber size, normal systolic function , and estimated right ventricular systolic pressure is 42 mmHg
- 2. Normal left ventricular chamber size, no regional wall motion abnormalities, calculated 2-D linear ejection fraction 67%
- 3. Normal left ventricular filling pressure
- 4. Severely enlarged left atrial size with redundant interatrial septum (bowing towards the right)
- 5. No hemodynamically significant valvular heart disease
- 6. No pericardial effusion

43

Discharged POD #4

- Metoprolol 25 mg BID
- 1 month heart rhythm monitor
- Followup in 6 week
- "...counseled the patient that this is not a life-threatening arrhythmia. Recommended that she wait for some time (e.g. 30 minutes) unless significant symptoms. If concerning symptoms, patient can go to ED"

44

ANESTHESIOLOGY

From: Perioperative Atrial Tachyarrhythmias
Anesthesiology. 2002;97(6):1618-1623. doi:10.1097/00000542-200212000-00039

45

Focal Atrial Tachycardia

- 10% of all SVT (younger women higher risk)
- HR 130-250 range of symptoms
- Most patients have relatively normal hearts
  - Long term effects can lead to cardiomyopathy
- Hard to diagnose on regular EKG
  - Quicker onset/offset than sinus tach
  - Change in p wave morphology and variable pr intervals

46

46

Management

- Vagal maneuvers and adenosine not usually effective
- AV nodal blocking agents work best
  - Helps control rate and in some case even terminate
    - Calcium channel blockers and beta blockers
- Sotalol and amiodarone effective
- Best treatment long term – radiofrequency ablation

47

47

Pseudocholinesterase Deficiency

Dr. Catherine Tobin, MD, FASA

1

Incidence:

Homozygotes: 1 per 2000-5000 (paralysis for hours)
Heterozygotes: 1 per 500 (succinylcholine lasts 10-30 mins to 1 hour)

- harder to diagnosis
- we likely extubate weak people more than we think
- Underdiagnosed
- some cases of awareness under anesthesia

The inherited cause of pseudocholinesterase deficiency is attributed to mutations in the BChE gene located on chromosome 3q26. It is inherited as an autosomal recessive trait and affects approximately 1 in 3,200 to 1 in 5,000 people, and it is more common in the Persian Jewish and native Alaskan ethnicities.

2

Dibucaine (amide local anesthetic) Number

In patients with normal pseudocholinesterase, this drug inhibits enzyme activity by 80% (dibucaine number of 80)

- Heterozygotes have a dibucaine number between 40 and 60
- Homozygotes have a number around 20.

- Test: (DO Not in recovery room) wait 2 days after the surgery, 48 hours from drug

3

Acquired Causes of Pseudocholinesterase Deficiencies

Medical conditions	Medications
Chronic infections	Cyclophosphamide
Liver disease	Oral contraceptives
Renal disease	MAO inhibitors
Malignancy	Metoclopramide
Major burns	Diethylstilbestrol
Malnutrition	Pancuronium
Pregnancy	Bambuterol (metabolized to terbutaline)
Hypothyroidism	Glucocorticoids

4

My patient (they ran pseudocholinesterase total) not dibucaine number but alas it was normal

- Collected: 01/18/22
- Result status: Final
- Resulting lab: MAYO MEDICAL LABORATORY
- Value: SEE NOTE
- Comment:

Test	Result	Flag	Unit	Ref Value
Pseudocholinesterase, Total, S	6153		U/L	4260 - 11250

- Females age 18-41 years who are pregnant or taking hormonal contraceptives, the reference interval is 3650 - 9120 U/L.

Test Performed by:
Mayo Clinic Laboratories - Rochester Main Campus
200 First Street SW, Rochester, MN 55905
Lab Director: William G. Morice M.D. Ph.D.; CLIA# 24D0404292

5

References

Robles A, Michael M, McCallum R. Pseudocholinesterase Deficiency: What the Proceduralist Needs to Know. Am J Med Sci. 2019 Mar;357(3):263267

-Thomsen JL, Nielsen CV, Eskildsen KZ, Demant MN, Gätke MR. Awareness during emergence from anaesthesia: significance of neuromuscular monitoring in patients with butyrylcholinesterase deficiency. Br J Anaesth. 2015 Jul;115 Suppl 1:i78-i88.

Zencirci B. Pseudocholinesterase enzyme deficiency: a case series and review of the literature. Cases J. 2009 Dec 04;2:9148.

6

2022 SAMBA ANNUAL MEETING
MAY 11 – 14, 2022

Anesthetic Considerations for Patients With Mitochondrial Disease

Tina Tran, MD

Johns Hopkins SOM, Department of Anesthesiology and Critical Care Medicine

SAMBA real world cases, May 2022

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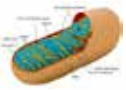
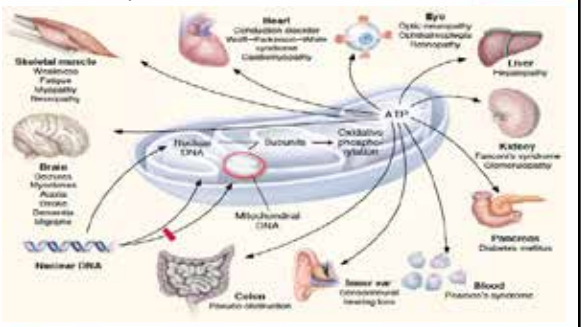


Mitochondrial defects

- Mitochondrial function is dependent on hundreds of different proteins.
- Mitochondrial myopathies represent a wide variety of molecular defects and thus a wide range of different diseases with similar phenotypes. The specific defect in the underlying the mitochondrial disease might not be known.
- Increases in lactate or pyruvate, increases in systemic acylcarnitines, or altered amounts of amino acids can occur.
- Metabolic abnormality in a patient with a myopathy or encephalopathy, should raise the possibility of a mitochondrial defect.
- Abnormal metabolites may be partially causative for the disease symptoms such as acidosis

2

Systemic Clinical Effects



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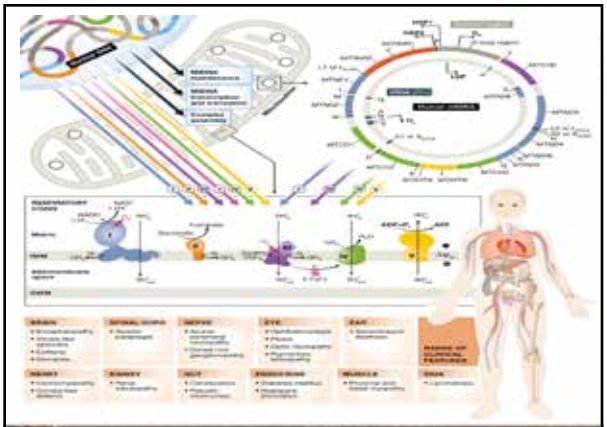

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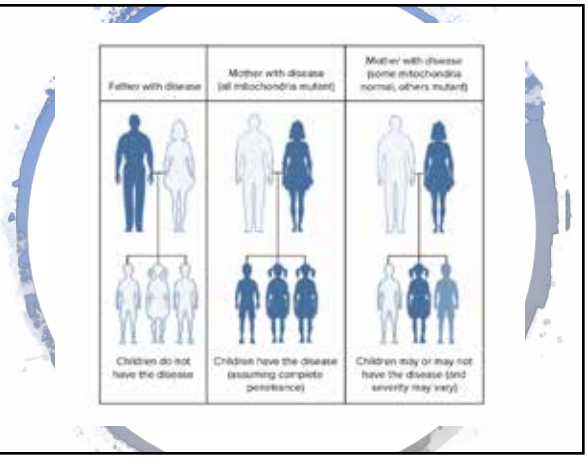

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Anesthesia for patients with mitochondrial disease - the good news

- Most exposures to anesthetics for mitochondrial patients are without apparent complications
- Patients can tolerate a wide variety of anesthetics including the volatile anesthetics, propofol and local anesthetics.

6

Anesthetic Decisions

- These patients are at increased risk from the stress of surgery and anesthesia.
- Primary complications of mitochondrial myopathies include respiratory failure, cardiac depression, conduction defects and dysphagia.
- Mitochondrial patients often require **smaller doses** of general anesthetics, local anesthetics, sedatives, analgesics, and paralytics
- **Avoid increasing the metabolic burden** of patients by not requiring prolonged fasting, and preventing hypoglycemia, PONV, hypothermia (with resulting shivering), prolonged orthopedic tourniquet application, acidosis, and hypovolemia.

7

IV fluids

- Avoid glucose in those patients on ketogenic diet
- Supply glucose at maintenance rates with perioperative serum glucose monitoring in patients not on ketogenic diet
- Avoid lactate to their fluids
- **Use D5 NS or 1/2 NS**

8

IV Solution Cheat Sheet

9

Adverse Outcomes

- Respiratory depression can occur from the combination of anesthetics and existing muscle weakness.
- Reports of late, profound respiratory depression and/or CNS white matter degeneration in patients seemingly only mildly affected preoperatively, and who have had relatively uneventful anesthetic courses during surgery

10

Considerations

- All general anesthetic agents studied has been shown to depress mitochondrial function, most notable are the volatile anesthetics and propofol
- Consider direct inhibition of the respiratory chain separately from the indirect effects of anesthetics on physiologic functions also affected by mitochondrial function such as respiratory drive, cardiac contractility, muscle strength.
- Anesthetics may depress certain systems by mitochondrial-independent mechanisms, such as GABA enhancement, but still lead to **additive inhibition** of organ systems affected by mitochondrial defects.

11

Volatile Agents

- Does not require metabolism for excretion, thus advantageous over IV anesthetics, which are dependent on energy requiring metabolism.
- Each of the volatile anesthetics depresses respiration, through different mechanisms.
- Isoflurane and desflurane depress the ventilatory response to CO2 response more than does sevoflurane.
- Sevoflurane and desflurane cause more direct muscle relaxation.
- **Sevoflurane** would seem to be mildly advantageous in patients with mitochondrial defects.

12

Propofol

- Propofol has been shown to affect mitochondrial function by at least four different mechanisms.
- Decreases ventilatory drive, cardiac output, and contractility.
- Excretion of propofol is metabolism dependent.
- **Both propofol and thiopental have been used as induction agents successfully when used in a limited regimen such as for an induction bolus.**
- Some patients with mitochondrial defects may be susceptible to adverse reactions from propofol.

13

Opioids and Muscle Relaxants

- Generally, has not been shown to alter mitochondrial function, with possible exception of morphine.
- Must be considered carefully in patients who may already have respiratory compromise.

14

Local analgesics

- Patients with defects in fatty acid metabolism may have an increased sensitivity to toxicity from bupivacaine.

15

Medication	Mitochondrial Effects
Barbiturates	Complex I inhibition
Etomidate	Complex I inhibition, mild inhibition complex III
Propofol	Acylcarnitine transferase, complexes I/II/IV inhibition
Benzodiazepines	Complex I/II/III inhibition
Ketamine	Increase energy consumption +/– reports of complex I
Dexmedetomidine	None reported
Fentanyl/remifentanil	Minimal
Morphine	Mild complex I inhibition
Volatile Anesthetics	Complex I inhibition
Bupivacaine (Etidocaine)	Acylcarnitine translocase Mild complex I

16

Recommendations

- Minimizing preoperative fasting to avoid hypovolemia, hypoglycemia and increased metabolism of fatty acids
- Use muscle relaxants cautiously in patients with a preexisting myopathy or decreased respiratory drive
- Avoid lactate as some patients have difficulty metabolizing lactate and may become acidotic
- Tourniquets and pressure points to minimize regions of poor perfusion and oxygen delivery
- Avoid swings in body temperature as mitochondrial patients are unable to adapt well to either hypothermia or hyperthermia
- Slow titration of volatile and parenteral anesthetics to minimize hemodynamic changes, consider EEG monitoring
- Minimize PONV and use multimodal analgesic techniques

17

Safe for Ambulatory Surgery?

- Equipment, medical, and clinical resources
- Pathway for inpatient admission
- Consultation with geneticist, cardiologists, endocrinologist and other subspecialties
- Educate patient and family (or vice versa)
- Collaborative perioperative preparation, communications, and discussions
- Consider hospital setting and/or admission
  - Previous significant adverse reactions to anesthesia and/or surgery
  - Patient has moderate to severe clinical manifestations of the mitochondria and/or other medical co-morbidities
  - Limited resources at home during recovery

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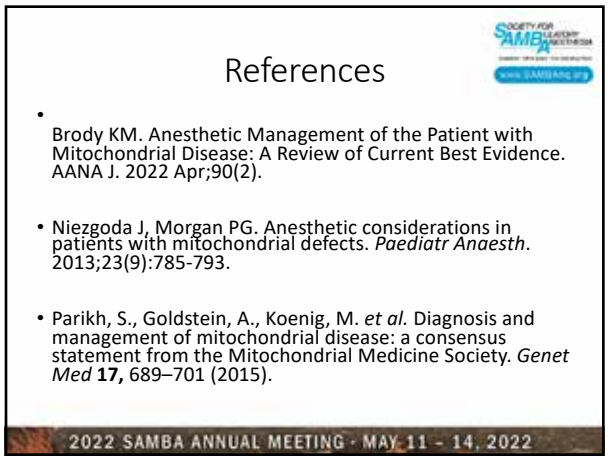
References
Brody KM. Anesthetic Management of the Patient with Mitochondrial Disease: A Review of Current Best Evidence. AANA J. 2022 Apr;90(2).
Niezgoda J, Morgan PG. Anesthetic considerations in patients with mitochondrial defects. Paediatr Anaesth. 2013;23(9):785-793.
Parikh, S., Goldstein, A., Koenig, M. et al. Diagnosis and management of mitochondrial disease: a consensus statement from the Mitochondrial Medicine Society. Genet Med 17, 689–701 (2015).
2022 SAMBA ANNUAL MEETING · MAY 11 – 14, 2022

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Updates on NORA: Robotic Bronchoscopy and Ventilation Strategies for Navigation Biopsies

Basem B. Abdelmalak, MD, FASA, SAMBA-F

05/14/2022
2:30pm – 3:45pm MST

Robotic Bronchoscopy and Ventilation Strategies for Navigation Biopsies

Basem Abdelmalak, MD, FASA, SAMBA-F
Professor of Anesthesiology
Director, Anesthesia for Bronchoscopic Surgery
Director, Center for Procedural Sedation
Anesthesiology Institute, Cleveland Clinic

Past President, Society For Ambulatory Anesthesia
Past president, Society For Head and Neck Anesthesia

@basemcc

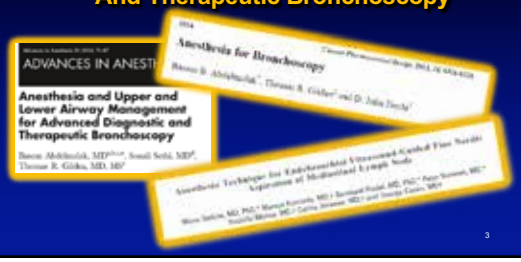
1

Disclosures

- Speaker: Medtronic Inc. and Acacia Pharma
- Royalties; text books:
  - Anesthesia for Otolaryngology
  - Clinical Airway Management: an Illustrated Case Based Approach

2

Anesthetic Considerations And Techniques For Advanced Diagnostic And Therapeutic Bronchoscopy



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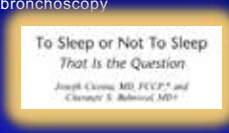
Anesthesia: Intraoperative

- Topical anesthesia and sedation could be used for simple bronchoscopy



- GA is required for most of the advanced bronchoscopy

Abdelmalak B, Gildea T, Doyle J. Anesthesia For Bronchoscopy. Current Pharmaceutical Design, 2012, 18, 6314-6324.

4

Total Intravenous Anesthesia (TIVA)

- Avoid polluting the room with inhaled anesthetic agents
- Ensures continuous delivery of anesthesia despite possible ventilation leaks
- Allows for utilization of intermittent apnea or jet ventilation techniques

Doyle, J , **Abdelmalak, B**, Machuzak , M. Gildea,T. Anesthesia and Airway Management for Removing Pulmonary Self-expanding Metallic Stents J Clin Anesth. 2009 Nov;21(7):529-32.

5

Choice Of The Airway

- **Sub-glottic and upper tracheal lesions: SGA**

Abdelmalak B, Gildea T, Doyle J. Anesthesia For Bronchoscopy. Current Pharmaceutical Design, 2012, 18, 6314-6324

6

Airway Choices

Abdelmalak BB, Gildea TR, Doyle DJ. Anesthesia for Bronchoscopy. *Current Pharmaceutical Design*. 2012 18. 6314-6324

7

Ventilating Rigid Bronchoscope

Abdelmalak B, Sarkiss M. Anesthesia for Therapeutic Bronchoscopic Procedures. In: *Anesthesia for Otolaryngologic Surgery* edn. Edited by Abdelmalak B , Doyle DJ eds. London, UK: Cambridge University Press;. 2013: In Press.

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Jet Ventilation

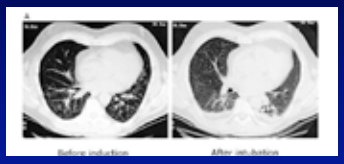
Jet Ventilation Equipment

9

9

Prevention of Atelectasis Formation During Induction of General Anesthesia

Marco Rusca, MD*, Stefania Proietti, MD†, Pierre Schnyder, MD‡, Philippe Frascarolo, PhD*, Göran Hedenstierna, MD, PhD§, Donat R. Spahn, MD*, and Lennart Magnusson, MD, PhD*



Anesth Analg 2000;97:1835–9

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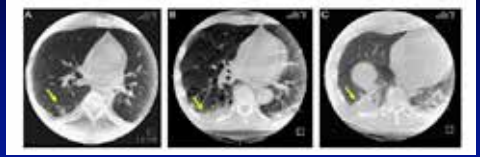
Lung Navigation Ventilation Protocol to Optimize Biopsy of Peripheral Lung Lesions

Krish Bhadra, MD Randolph M. Steur, PhD† William Condra, RT(R),* and Michael A. Pritchett, DO, MPH‡*



J Bronchol Interv Pulmonol • Volume 00, Number 00, ■ ■ 2021

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Do you utilize a special induction and ventilation techniques for navigation bronchoscopy

A. Yes
B. No

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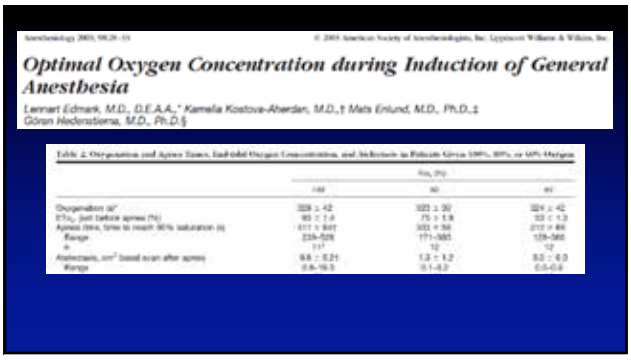

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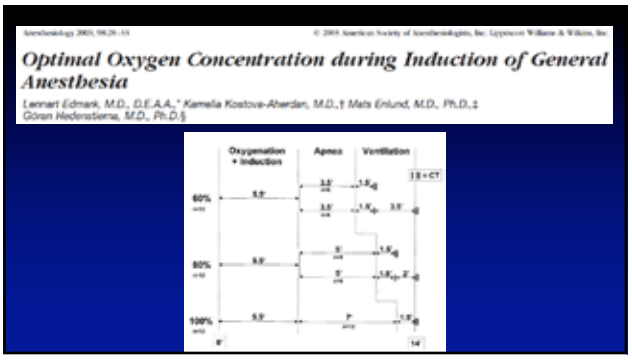

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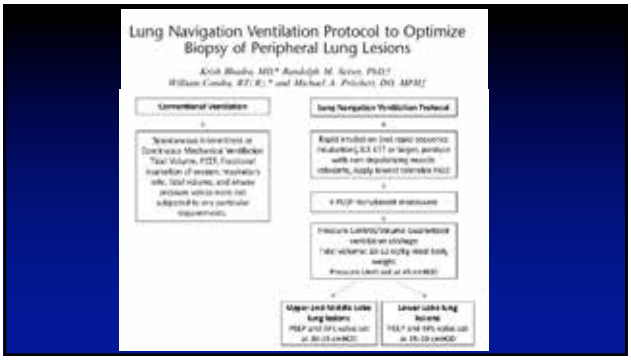

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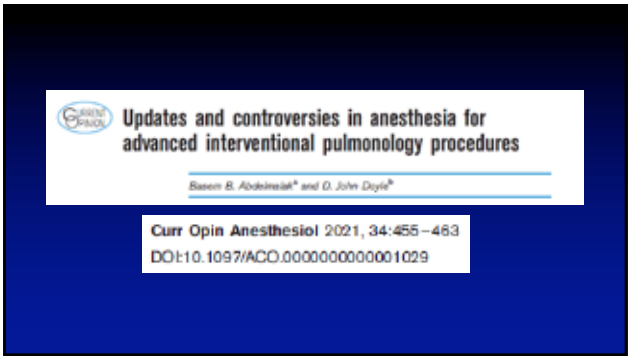

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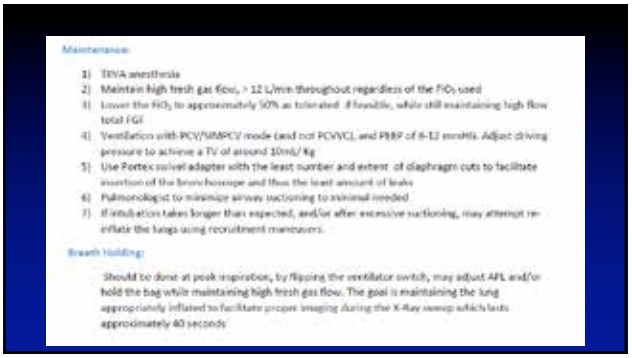

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A Word About Robotic Bronchoscopy!

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Planning Ahead

20

Anticipate Emergencies

21

Safe Execution

22

A Blue Print for Success: Bronchoscopy Suite

23

Cleveland Clinic

Every life deserves world class care.

Thank you !

Basem Abdelmalak, MD, FASA, SAMBA-F
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@basemcc

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Updates on NORA: ICU NORA

Kunal Karamchandani, MD, FCCP, FCCM

05/14/2022
2:30pm – 3:45pm MST

NORA ICU: Challenges galore

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- Disclosures:
  - Scientific advisory board, Eagle pharmaceuticals
  - Research advisor, Philips Healthcare
- COI: None

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Learning objectives

Need

Challenges

Special considerations

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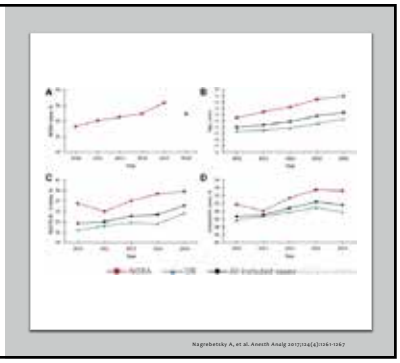
NORA growth

- 40% of all anesthetics
- 50% of all anesthetics delivered in the next decade



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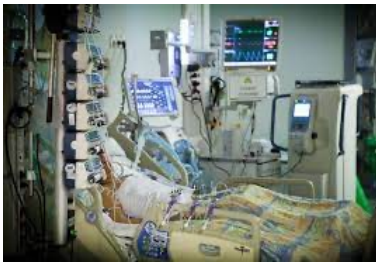
NORA ICU



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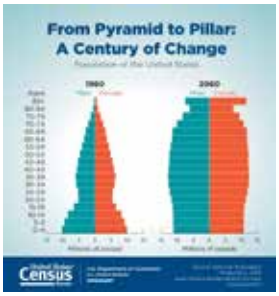
Older and sicker



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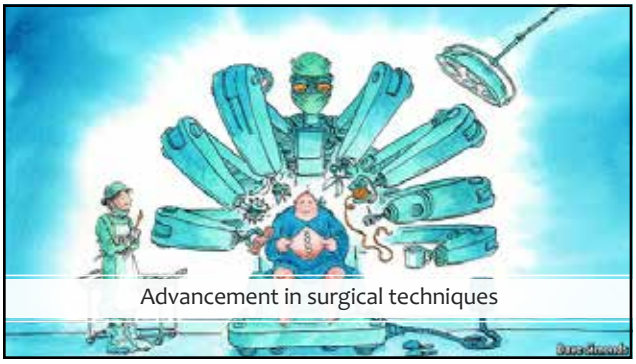

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Improvement in ICU ergonomics

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Increase in bedside ICU procedures

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- Cost savings
- Timely access
- Patient transport

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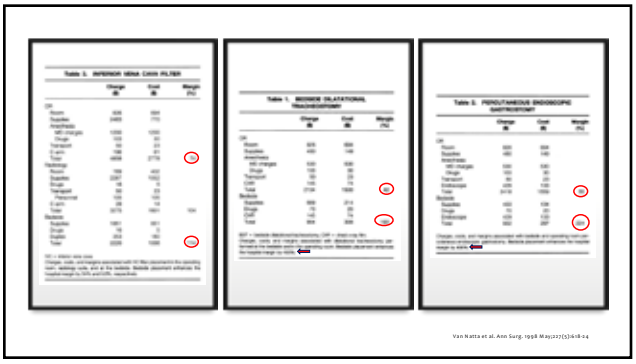

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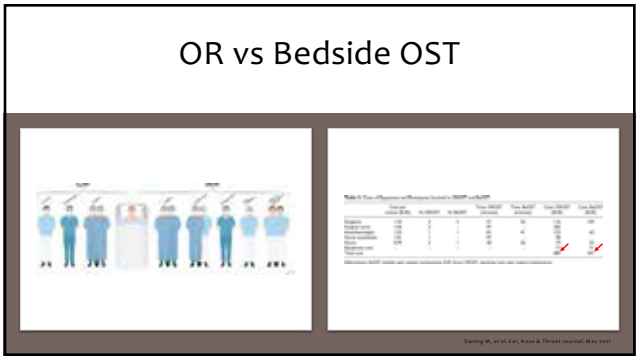

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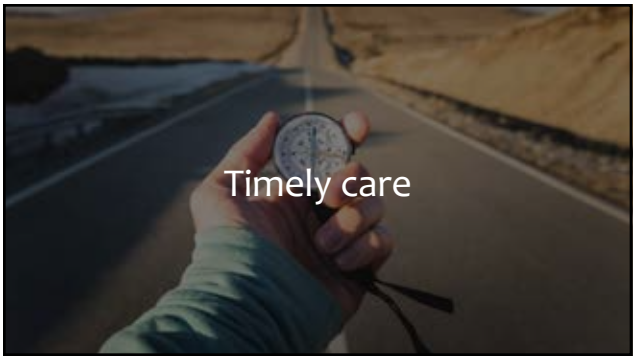

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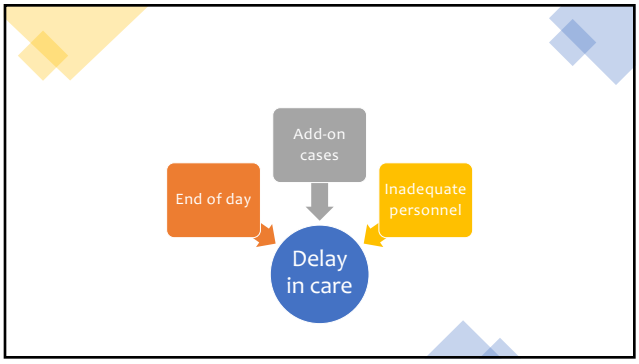

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Johns Hopkins Percutaneous Tracheostomy Program(JHPTP)

- Multi-disciplinary percutaneous tracheostomy program
- Before and after review
  - 2004 vs 2008
- 46.8% vs. 77.2% percutaneous tracheostomy at the bedside in the ICU

	Percutaneous (ICU)	Open (OR)	P-value
Number of patients	183	33	
Days to tracheostomy	1.3±1.9	5.2±5.3	<0.001
Operating time	37.2±20.2	71.1±37.4	<0.001
Anesthesiologist time	50.0±22.3	114.4±48.9	<0.001

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Our data…

- COVID patients
- OR vs Bedside open tracheostomy

	OR Tracheotomy (n=83)	Bedside Tracheotomy (n=36)	p-value
Length of intubation (days)	31 (CI 29-34)	23 (CI 18-28)	**<0.01**

Tanner Mitton BS, et al. Predictors of Mortality in Patients with COVID-19 Undergoing Tracheotomy. Under review

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- Accidental disconnections/extubations
- Technical failure of life support devices
- Increased morbidity and mortality
- Spreading contagions

Beckmann U, et al. Intensive Care Med 2004;30(8):1579-85.

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Incidents relating to the intra-hospital transfer of critically ill patients

An analysis of the reports submitted to the Australian Incident Monitoring Study in Intensive Care

- Cross-sectional case review
- Incident reports submitted to the Australian Incident Monitoring Study in Intensive Care (AIMS-ICU).
- Between 1993 and 1999
- 176 reports were submitted describing 191 incidents

Beckmann U, et al. Intensive Care Med 2004;30(8):1579-85

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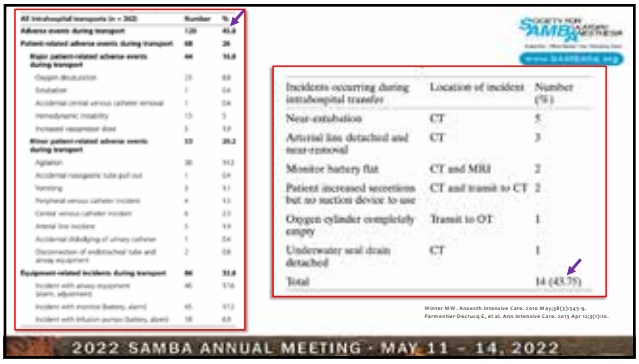

Incidents occurring during intrahospital transfer	Location of incident	Number (%)
Near-extubation	CT	5
Arterial line detached and near-removal	CT	3
Monitor battery flat	CT and MRI	2
Patient increased secretions but no suction device to use	CT and transit to CT	2
Oxygen cylinder completely empty	Transit to OT	1
Underwater seal drain detached	CT	1
Total		14 (43.75)

Winter M W. Anaesth Intensive Care. 2010 May;38(3):545-9.
Parmentier-Decrucq E, et al. Ann Intensive Care. 2013 Apr 11;3(1):10.

23

Which patients?

What procedures?

24

25

OR costs and transport risks are not justified

- Tracheostomy
- PEG tube insertion
- IVC filter placement

Emergent procedures in unstable patients

- Laparotomy
- Hemorrhage control
- Debridement and irrigation of wounds
- Temporary fracture stabilization

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- TRACHEOSTOMY
- Percutaneous placement of enteral feeding tubes
- Application or realignment of external fixation of fractures
- Surgical dressing changes
- Endoscopic interventions
  - Occult bleeding
  - Hemorrhage control
  - Pancreato-biliary pathologies
- Exploratory laparotomy
- Closure of open cavities
- Invasive diagnostic procedures
- Insertion or removal of invasive life support equipment (ECMO, IABP, VAD etc.)
- Fasciotomy for compartment syndrome
- Wound debridement
- Pericardiocentesis

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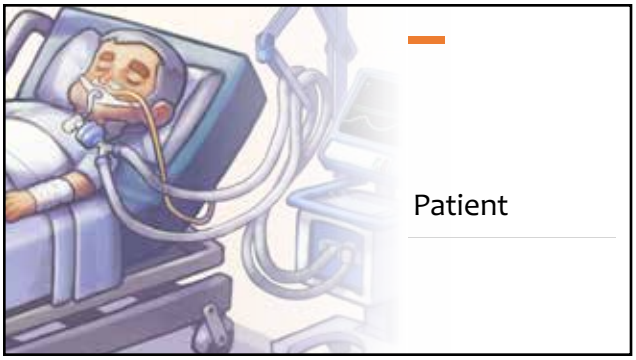

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Higher acuity patients

"Too sick for the OR"

Intra-hospital transfer

Preventable adverse events

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Challenges

- Patient related
- Spatial and ergonomic challenges
- Personnel and staffing challenges
- Resource allocation and reimbursement

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Patient related

- Consent/code status (Patient/HCPOA)
- Airway
  - Secured
    - Confirm tube position
    - Ensure tube patency
  - Unsecured
    - Physiologically difficult airway
      - Pre-oxygenation
      - Optimize patient position
      - Rescue plans
      - Beware of hemodynamic collapse

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- Mechanical ventilation
  - Continue the same mode and settings
  - Work with the RT
- Hemodynamics
  - Preoperative POCUS
  - Increase dose of pressors
- Renal
  - Electrolytes
  - Drug clearance/metabolism
  - RRT
    - If CRRT, continue and avoid fluid removal
    - If IHD (last session, fluid removal)

33

- Heme
  - Coagulation status
  - Blood and blood products
- Endocrine
  - Stress hyperglycemia
  - Relative adrenal insufficiency

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	Challenges	Management considerations
Airway	• Anatomic, physiologic, and logistical difficulties	• Preparation for a difficult airway • Pre-oxygenation and apneic oxygenation
Cardiovascular	• Underlying cardiovascular pathology • Dysrhythmias • Shock due to multiple etiologies • Inotropic and pressor requirements	• POCUS to assess volume status, cardiac function, and valvular pathology • Continue vasopressors and inotropes • Invasive hemodynamic monitoring (if not already present)
Pulmonary	• Hypoxia/hypercarbia • Atelectasis, V/Q mismatch, shunt • Mechanical ventilation	• Consider HFNO and NIV in non-intubated patients • Continue same settings of MV
Neurological	• Presence of impaired neurologic function due to ICU delirium or metabolic derangements • Critical care neuropathy/myopathy • Increased ICP	• Avoid neuromuscular blockade if possible • Avoid benzodiazepines (worsen delirium) • Identify hemodynamic goals
Renal	• Altered drug metabolism • Electrolyte and acid-base disturbances • Volume shifts in patients requiring RRT	• Optimize electrolytes and acid-base imbalance (if time permits) • Avoid/decrease dose of renally cleared drugs
Endocrine	• Relative adrenal insufficiency • Stress hyperglycemia	• Stress dose steroids • Frequent blood sugar checks
Hematologic	• Anemia due to critical illness and/or blood loss • Coagulopathy	• Correct coagulopathy prior to procedure • Ensure availability of blood and blood products
Gastrointestinal	• Risk of aspiration • Minimizing disruption in nutrition	• Consider rapid sequence intubation • **Continue TPN** • **Continue post-pyloric feeding** • **Hold gastric feeds 6 hrs. prior to the procedure**

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Spatial and ergonomic

- Patient rooms are not designed as operating rooms
- Absence of 'standard' anesthesia equipment
  - Anesthesia machine
  - Drug/supply carts
- Physical limitations
  - Access to airway
  - Access to IV
- Hemodynamic data integration with AIMS

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Personnel and staffing

- Medical complexity
- Discrete location
- Special isolation precautions

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Staffing models

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Solo anesthesiologists or anesthesiologist-intensivists

Medical direction (residents, CRNA or AA)

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Delivery of Anesthesia

TIVA vs. *Volatile*

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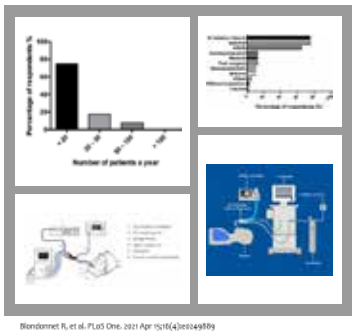

Volatile anesthetics in the ICU

- Growing interest
  - Refractory bronchospasm
  - Long term sedation
  - ?Procedures in the ICU
- Limiting factors
  - Scavenging (AnaConDA, Mirus)
  - Spatial constraints
  - Personnel familiarity

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Silver lining…

- Identical monitoring capabilities
- Advanced ventilators
- Trained personnel
  - Critical care nurses
  - Respiratory therapists

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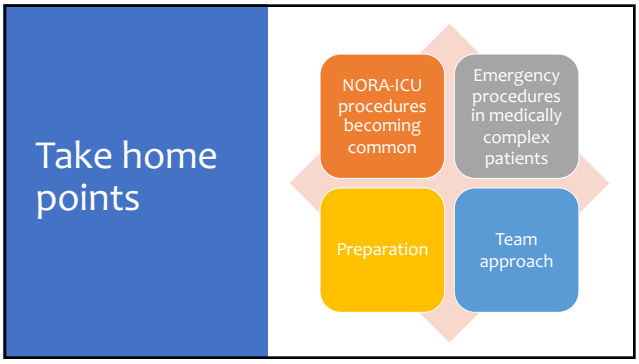
Take home points
NORA-ICU procedures becoming common
Emergency procedures in medically complex patients
Preparation
Team approach

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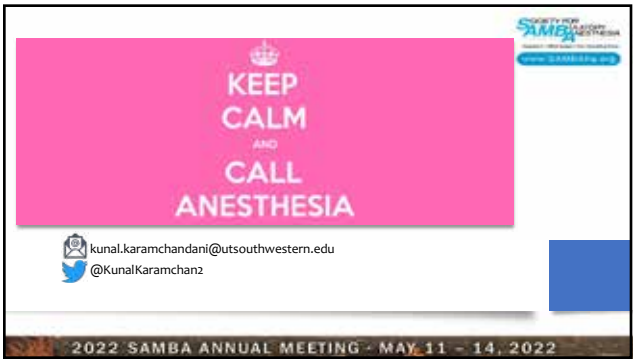
KEEP
CALM
AND
CALL
ANESTHESIA
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2022 SAMBA ANNUAL MEETING · MAY 11 – 14, 2022

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HANDOUTS

SOCIETY FOR AMBULATORY ANESTHESIA

Updates on NORA: Cutting-Edge Technologies for Gastrointestinal Therapeutic Endoscopy

Michael V. Presta, DO

05/14/2022
2:30pm – 3:45pm MST

2022 SAMBA ANNUAL MEETING
MAY 11 - 14, 2022

Cutting-Edge Technologies For Gastrointestinal Therapeutic Endoscopy

Michael Presta, DO
Associate Professor
GI Lab Director Anesthesia Services
Director NORA Rotation
Department of Anesthesiology and Perioperative Medicine

1

Disclosure

- I have no actual or potential conflict of interest in relation to this program/presentation.

2

Learning Objectives

- Understand the growing use of endoscopy in therapeutic procedures in the GI lab.
- Understand why clinicians are moving endoscopy away from purely diagnostic use.
- Understand how our anesthetic can better help facilitate procedures such as POEMs, ESDs, and Necrosectomies.
- Understand the potential complications to monitor during these procedures.

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Growth of Nonoperating Room Anesthesia Care in the United States: A Contemporary Trends Analysis

Alexander Nagrebetsky, MD, MSc,* Rodney A. Gabriel, MD,† Richard P. Dutton, MD, MBA,§ and Richard D. Urman, MD, MBA‖

Table 2. Annual Numbers and Proportions of the Analyzed Anesthesia Cases by Subcategories

Location	2010 #	2010 %	2011 #	2011 %	2012 #	2012 %	2013 #	2013 %	2014 #	2014 %
OR	1,604,841	70.9	1,625,134	68.9	[illegible]	67.7	[illegible]	[illegible]	[illegible]	[illegible]
NORA unspecified	[illegible]	14.2	[illegible]	15.5	[illegible]	14.3	[illegible]	[illegible]	[illegible]	[illegible]
NORA cardiology	[illegible]	1.5	[illegible]	1.4	[illegible]	1.5	[illegible]	1.4	[illegible]	[illegible]
NORA gastroenterology	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NORA radiology	[illegible]	1.4	[illegible]	1.5	[illegible]	1.4	[illegible]	1.4	[illegible]	[illegible]
Total	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	

NACOR- National Anesthesia Clinical Outcomes Registry as a retrospective analysis of NORA volume via the Anesthesia Quality Institute (AQI)

Interventional Gastroenterology is a rapidly expanding field at the cutting edge of innovation and novelty.

Growth of Nonoperating Room Anesthesia Care in the United States: A Contemporary Trends Analysis. Nagrebetsky, Alexander MD, MSc; Gabriel, Rodney A. MD; Dutton, Richard P. MD, MBA; Urman, Richard D. MD, MBA. Anesth Analg. 2017 Apr;124(4):1261-1267.

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Current Trends

- The global endoscopy devices market size is expected to reach $81 billion by 2030, according to a new report by Grand View Research, Inc.
- The market is expected to expand at a compounded annual growth rate (CAGR) of 7.4% from 2022 to 2030.
- Minimally invasive endoscopic procedures for the esophagus, colon, and stomach are some of the factors boosting the market growth.
- The fastest growing regional market is North America
  - Burden of cancer
  - Increasing favorable reimbursement
  - Growing obese population
  - Hospital buy in from leadership
- With the aging of the population, more attention will be directed toward therapeutic endoscopy for elderly patients, because it is less invasive.

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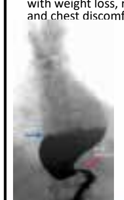
Achalasia

-a rare esophageal motility disorder of unknown cause, characterized by an absence of peristalsis in the esophageal body and a failure of relaxation of the lower esophageal sphincter (LES) with swallows. Affected individuals develop progressive dysphagia, often with weight loss, regurgitation, and chest discomfort.



Vaezi MF, Pandolfino JE, Vela MF. ACG clinical guideline: diagnosis and management of achalasia. Am J Gastroenterol 2013;108:1238-49.
Goldblum JR, Whyte RI, Orringer MB, et al. Achalasia. A morphologic study of 42 resected specimens. Am J Surg Pathol 1994;18:327-37.

6

Peroral Endoscopic Myotomy (POEM)

- Traditionally, laparoscopic Heller myotomy (LHM) and pneumatic dilation (PD) were the two main modalities for the treatment of symptomatic achalasia patients.
- With the advent of third space endoscopy, per-oral endoscopic myotomy (POEM) was introduced (2008) a decade ago as an alternate minimally invasive approach for these patients. (90-100% effective)

Pasricha PJ, Hawari R, Ahmed I, et al. Submucosal endoscopic esophageal myotomy: a novel experimental approach for the treatment of achalasia. Endoscopy 2007;39:761-4.
Inoue H, Minami H, Kobayashi Y, et al. Peroral endoscopic myotomy (POEM) for esophageal achalasia. Endoscopy 2010;42:265-71.

7

Treatment Of Achalasia

- POEM has been endorsed by the American Gastroenterological Association as a primary treatment option for achalasia types I and II and as the preferred therapy for patients with achalasia type III.
- Treatment of achalasia is aimed at lowering the resting pressure of the LES
- GOAL→improve food passage to the stomach and to prevent severe complications such as a megaesophagus.

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Anesthesia Preassessment

- No specific guidance or recommendations for anesthesia providers.
- Performed under GETA exclusively.
- Barium swallow, esophageal manometry and EGD to confirm/rule out other conditions (e.g., cancer).
- Workup can include an EKG (chest pain), and chest imaging (decreased respiratory function/chronic aspiration).

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Prevention Of Aspiration

- A liquid diet for at least 24h prior to POEM is required. A clear liquid diet of longer duration (i.e. 3–5 days) preferred. NPO for at least 12 hours.
- Perioperative PPI medications.
- RSI recommended to minimize regurgitation from the esophagus into the oropharynx.

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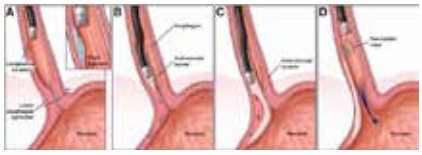
Intra-procedure



The four steps of PerOral Endoscopic Myotomy (POEM): mucosal incision and tunnel entry (A), submucosal tunneling (B), myotomy (C), and closure of mucosal entry (D).

https://www.gastrojournal.org/article/S0016-5085(19)41309-7/fulltext

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Anesthesia Considerations

- ASA standard monitors with +/- arterial line.
- Positioned in a supine or semi-left lateral decubitus position leaving the upper abdomen exposed (tension capnoperitoneum).
- Propofol, sustained neuromuscular blockade and inhalation/TIVA have been widely utilized.
- Scopolamine was used to inhibit abnormal spastic contraction of the esophagus.
- Emergency equipment, advanced care teams and ICU teams should be available.

Tanaka E, Murata H, Minami H, Sumikawa K. Anesthetic management of peroral endoscopic myotomy for esophageal achalasia: a retrospective case series. J Anesth. 2014;28:456–459.

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Complications During POEM

Rare tracheomalacia can occur, resulting from chronic pressure due to massive esophageal dilation.

Large quantities of CO2 are absorbed during POEM, which can in turn induce hypercapnia and acidosis.

The upper abdomen should be closely monitored for clinical signs such as abdominal distension, tympanic percussion sound, as well as subcutaneous emphysema.

Löser, Benjamin MD*; Recio Ariza, Olga†; Saugel, Bernd MD†; Reuter, Daniel A. MD*; Zöllner, Christian MD*; Weiner, Yuki B. MD‡; Rösch, Thomas MD‡; Petzoldt, Martin MD‡ Anesthesia for Patients Undergoing Peroral Endoscopic Myotomy Procedures: A Review of the Literature, Anesthesia & Analgesia: May 2020 - Volume 130 - Issue 5 - p 1331-1340 doi: 10.1213/ANE.0000000000004420

Yurtlu and Aslan Surg Laparosc Endosc Percutan Tech. Volume 31, Number 6, December 2021 (Turkey)

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Endoscopic submucosal dissection (ESD)

- Endoscopic mucosal resection (EMR) consists of three steps: marking, lifting, and cutting. (reoccurrence)
- Endoscopic submucosal dissection (ESD) is a well-established treatment for early-stage malignant lesions of the stomach, esophagus, and colorectum with no risk of lymphatic metastasis.
- Developed for en bloc removal of large (usually more than 2 cm), flat GI tract/colorectal lesions.
- Alternative to surgery for lesions with superficially invasive cancer.

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ESD Technique

Colorectal endoscopic submucosal dissection (ESD) Lorenzo Fuccio and Thierry Ponchon Best Practice & Research: Clinical Gastroenterology, 2017-08-01, Volume 31, Issue 4, Pages 473-480 2017.

https://consultqd.clevelandclinic.org/a-minimally-invasive-treatment-for-early-gi-cancer/

15

Challenges For The Technique

- ESD is a very challenging and risky procedure, and the most serious complications are perforation (5-10%) and bleeding (2-5%).
- Risk factors for ESD-related perforations have been identified, such as location in the colon, tumor size, the presence of submucosal fibrosis and also the endoscopists' expertise.

Colorectal endoscopic submucosal dissection (ESD) Lorenzo Fuccio and Thierry Ponchon Best Practice & Research: Clinical Gastroenterology, 2017-08-01, Volume 31, Issue 4, Pages 473-480 2017.

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Choice Of Anesthesia

- Reducing the procedure time, aspiration risk and cost are the current major challenges in certain types of ESD procedures.
- Thickness of the dilated esophageal wall during insufflation is only 3 to 4 mm. (Upper vs Lower)
- The advantages of MAC vs CS are clearly established: fewer movements of the patient during ESD and faster recovery after the procedure because of the short half-life of propofol
- However, there is no consensus in the literature regarding the technique of anesthesia/sedation method for ESD procedures.

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CS vs General Anesthesia

Comparison of general anesthesia and conscious sedation in procedure-related complications during esophageal endoscopic submucosal dissection

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MAC vs General Anesthesia

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MAC vs General Anesthesia

- The research demonstrated that the size of dissection per unit time was higher in group G compared with group S.
- Reported fewer anesthesia-related complications in patients receiving general anesthesia during ESD.
- Yurtlu et al., cough was observed more frequently during ESD in patients receiving propofol compared with general anesthesia (50% vs 5.4%).
- Likewise, desaturation occurred more often in the propofol sedation group (18.5% vs 2.7%).
- General anesthesia group reported no hypotension, desaturation or aspiration.

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MAC vs General Anesthesia

- Center experience, anesthesia provider comfort and endoscopist skill level predicate the eventual decision.
- Communication and upfront discussions are paramount to facilitating safe patient centered delivery of anesthesia.
- GA may prevent an increase in procedure time due to frequent breaks caused by gag reflex, cough, mobilization, and oropharyngeal suctioning needs of the patient, and thus reduce and minimize patient movement leading to the reduction of dissection time and intraprocedural complications.

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Acute Pancreatitis

- -is responsible for over 270,000 admissions annually. Approximately 20% of cases are complicated by pancreatic necrosis, and 30% of these become infected.
- Infected necrosis and associated systemic illness have a mortality rate approaching 100% without procedural intervention.
- Endoscopic necrosectomy is effective in the treatment of walled-off necrosis (WON), and is preferred to surgical approaches, however complication and mortality rates remain high with few centers regularly employing the technique.

Bakker OJ, et al. Dutch Pancreatitis Study Group. Endoscopic transgastric vs surgical necrosectomy for infected necrotising pancreatitis: a randomized trial. JAMA. 2012 Mar 14;307(10):1053-61.

Peery AF, Dellon ES, Lund J, et al. Burden of gastrointestinal disease in the United States: 2012 update. Gastroenterology. 2012 Nov;143(5):1179–87. Beger HG, Rau B, Mayer J, et al. Natural course of acute pancreatitis. World J Surg. 1997;21:130–5. Banks PA, Freeman ML. Practice guidelines in acute pancreatitis. Am J Gastroenterol. 2006;101:2379–400.

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Endoscopic Necrosectomy

- Diseases of the pancreas, such as pancreatic lesions and pancreatitis, have traditionally been considered surgical diseases.
- Endoscopic drainage of pancreatic fluid collections with necrosectomy has become widely accepted as the superior first-line therapy.
- Potentially reduces the proinflammatory response and risk of procedure-related complications such as multiple organ failure in these already ill patients.

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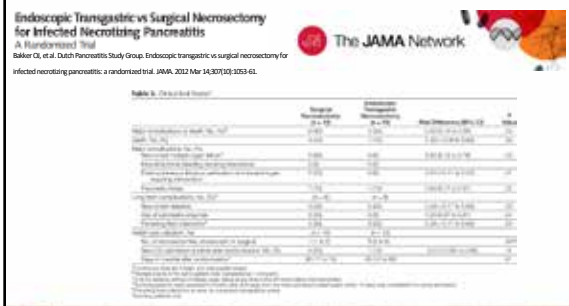
Endoscopic Transgastric VS Surgical Necrosectomy



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Patient Selection

- Appropriate patient selection is crucial:
  1. Duration of fluid collection greater than four weeks
  2. Well-formed wall surrounding the collection
  3. WOPN accessible endoscopically
  4. Located within 1cm of the gastric wall
- Contraindications include:
  1. Presence of coagulopathy that cannot be corrected
  2. Endoscopically inaccessible sites
  3. Sterile necrosis
  4. Predominantly solid necrosis with minimal liquefaction.

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MAC vs General Anesthesia

- Extremely limited to no guidance resulting from literature searches.
- Ultrasound-guided drainage of small pancreatic cysts, including pseudocysts, may be performed under MAC.
- Large burden and necrosis which contain a large volume of fluid that will be released into the GI lumen would benefit from GETA thereby decreasing the risk of pulmonary aspiration.

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Summary

- The gastrointestinal endoscopy paradigm is rapidly changing, and technological advancements are largely responsible.
- We as anesthesia providers are expected to support the ever expanding needs and demands.
- The cases and challenges provided are becoming challenging. Complications are inevitable due to the complexity of the procedures seen.
- It is crucial for the anesthesia provider to have a good understanding of the techniques employed by the endoscopist in order to anticipate and appropriately manage many of the complications.
- Advanced GI endoscopic procedures continue to evolve and will continue to pose many unique challenges to the anesthesia provider.
- Communication is an essential tool in anticipating the difficult outcomes.
- Many mucosal and submucosal lesions that used to mandate surgical resection can now be resected using endoscopic techniques.

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