2022 SAMBA ANNUAL MEETING
MAY 11 – 14, 2022

Controversies in Pediatric Anesthesia

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Children's National Hospital

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Disclosures

- no relevant financial relationships with commercial interests

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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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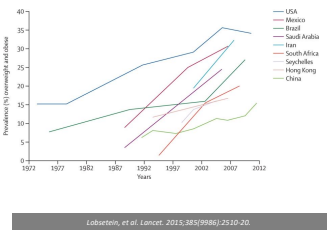

Lobstein, et al. Lancet. 2015;385(9986):2510-20.

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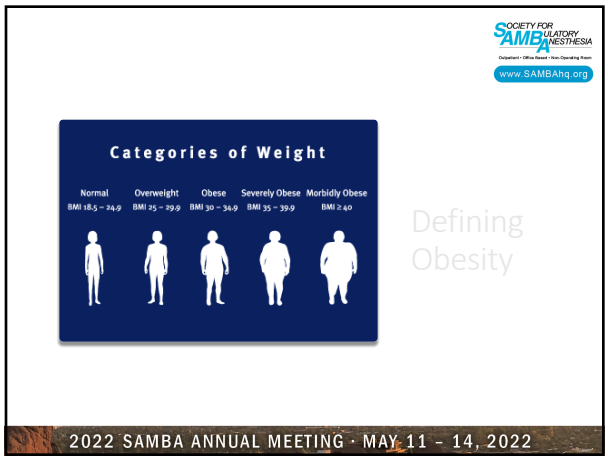
SOCIETY FOR AMBULATORY ANESTHESIA
www.SAMBAhq.org
Categories of Weight
Normal BMI 18.5 – 24.9
Overweight BMI 25 – 29.9
Obese BMI 30 – 34.9
Severely Obese BMI 35 – 39.9
Morbidly Obese BMI ≥ 40
Defining Obesity
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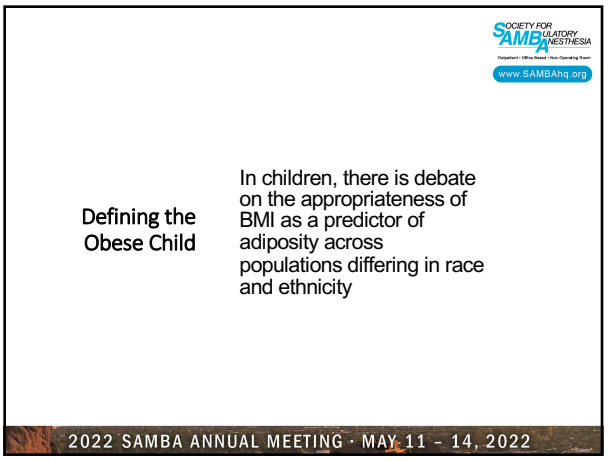
SOCIETY FOR AMBULATORY ANESTHESIA
www.SAMBAhq.org
Defining the Obese Child
In children, there is debate on the appropriateness of BMI as a predictor of adiposity across populations differing in race and ethnicity
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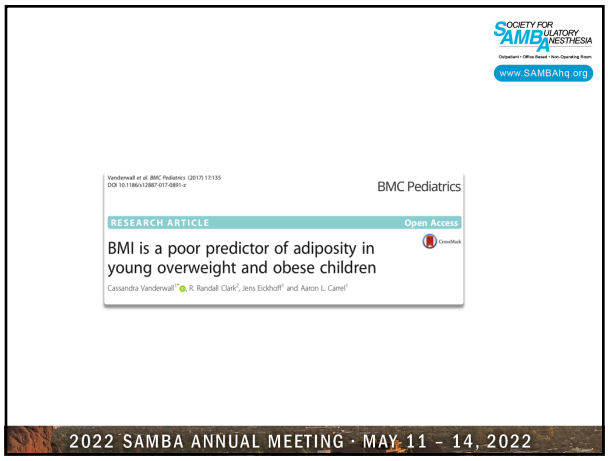
SOCIETY FOR AMBULATORY ANESTHESIA
www.SAMBAhq.org
BMC Pediatrics
RESEARCH ARTICLE
Open Access
BMI is a poor predictor of adiposity in young overweight and obese children
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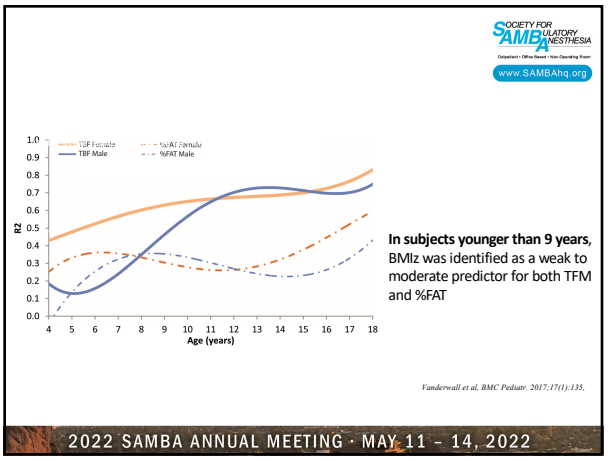
SOCIETY FOR AMBULATORY ANESTHESIA
www.SAMBAhq.org
TBF Female
%FAT Female
TBF Male
%FAT Male
R2
Age (years)
In subjects younger than 9 years, BMIz was identified as a weak to moderate predictor for both TFM and %FAT
Vanderwall et al, BMC Pediatr. 2017;17(1):135.
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SOCIETY FOR AMBULATORY ANESTHESIA
CDC
BMI Calculator for Child and Teen
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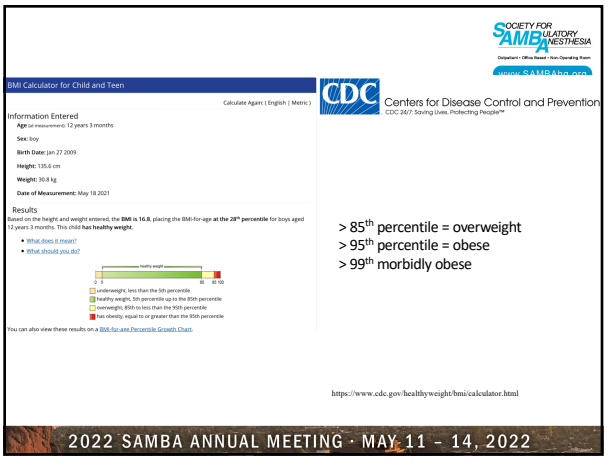
SOCIETY FOR AMBULATORY ANESTHESIA
BMI Calculator for Child and Teen
CDC
Centers for Disease Control and Prevention
Information Entered
Results
> 85th percentile = overweight
> 95th percentile = obese
> 99th morbidly obese
https://www.cdc.gov/healthyweight/bmi/calculator.html
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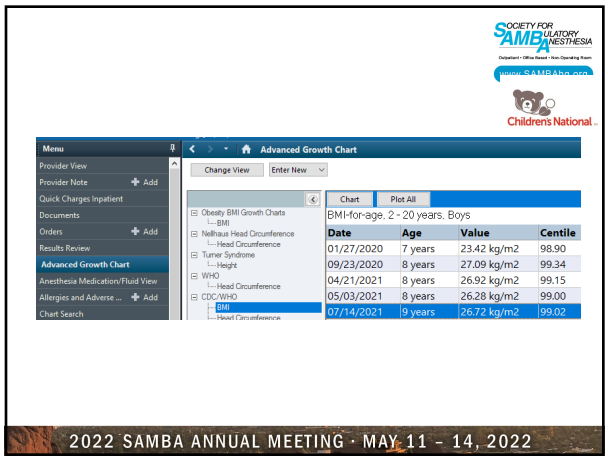

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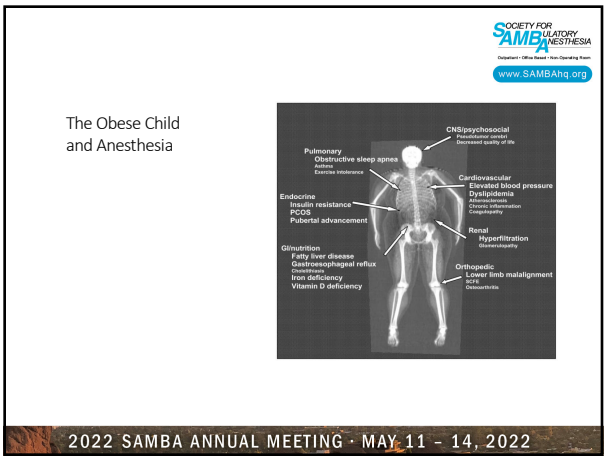

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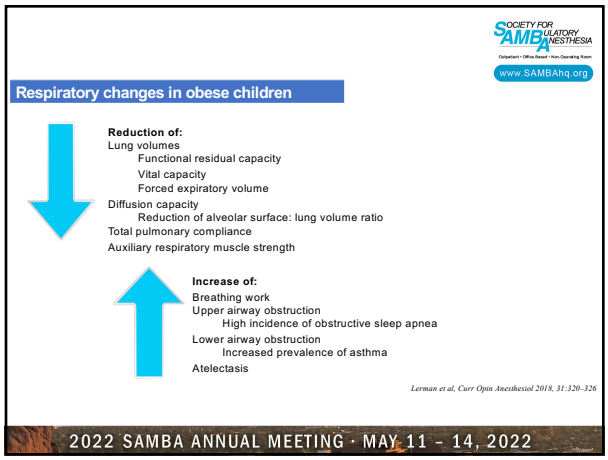

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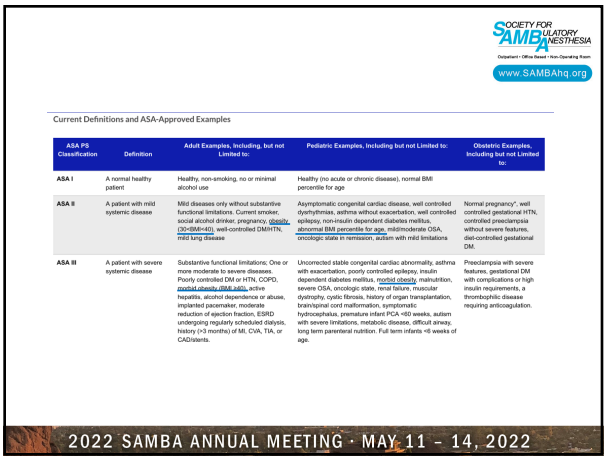

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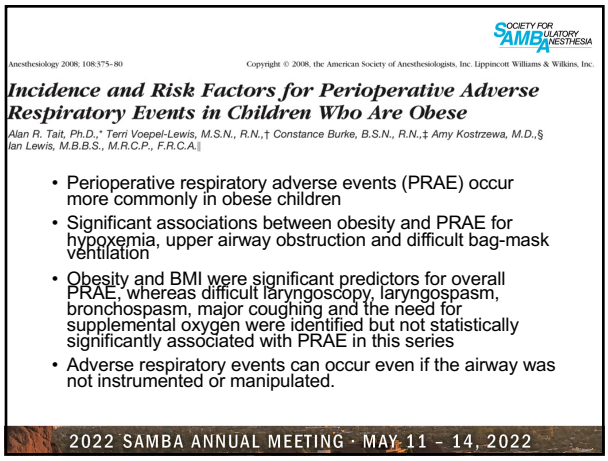

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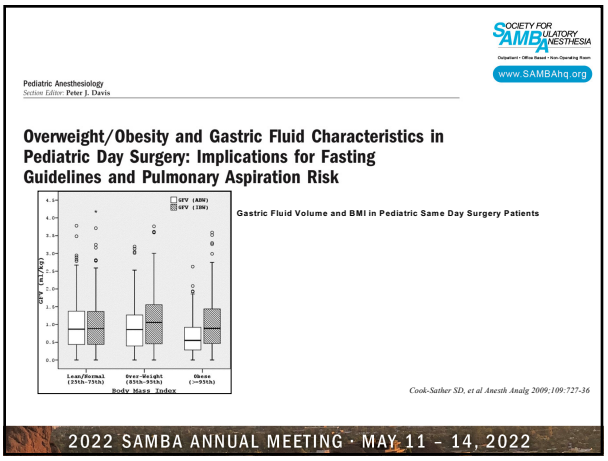

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Technical Challenges

- Airway Management

Mask Airway:
-Challenging

Intubation:
-Usually OK

Supraglottic Airway:
-Usually OK

Moon TS, et al. J Anesth (2019) 33: 96
Tian 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.

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Children's National ASC Guidelines for Obese Children

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

Children's National

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OFA: The Latest Trend

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OFA: Opioid Free Anesthesia

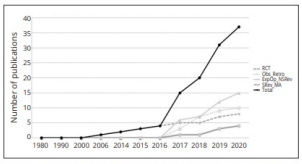

Figure 1.—Number of PubMed Indexed publications on OFA per year, according to the type of paper.
RCT: randomized clinical trial; Obs_Retro: observational and retrospective studies; ExpOp_NSRev: expert's opinions and non-systematic reviews; SRev_MA: systematic reviews and meta-analyses.

2021 Bugada et al, Edizioni Minerva Medica

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OFA

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

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Rationale for OFA

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

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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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Table 1. Standardized Intraoperative Anesthesia Protocols for Bellevue Clinic and Surgery Center's Most Common Surgeries as of December 2017 and June 2019

Procedure		Opioid-Inclusive Protocols (2017)	Opioid-Free Protocols (2019)
Otolaryngology	Myringotomy with tympanostomy tubes	Fentanyl 1 μg/kg intranasal (intraoperatively)	Ibuprofen 10 mg/kg oral (preoperatively)
	Tonsillectomy and adenoidectomy/tonsillectomy	Morphine 0.1 mg/kg Acetaminophen 15 mg/kg Dexamethasone 0.15 mg/kg (max 4 mg)	Dexmedetomidine 1 μg/kg Ketorolac 0.5 mg/kg (max 30 mg) Dexamethasone 0.5 mg/kg (max 8 mg)
	Adenoidectomy	Morphine 0.05 mg/kg Acetaminophen 15 mg/kg Dexamethasone 0.15 mg/kg (max 4 mg)	Dexmedetomidine 0.5 μg/kg Ketorolac 0.5 mg/kg (max 30 mg) Dexamethasone 0.5 mg/kg (max 8 mg)

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Dexmedetomidine

Effect of Dexmedetomidine on Sevoflurane Requirements 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

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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#,
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

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

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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

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Joan C. Bevan MD DRCOG FFARCS, Celeste Johnston RN DEd, Margaret J. Haig MD FRCPC, Guy Tousignant MD FRCPC, Simon Lucy MD FRCPC, Vanessa Kirnon BA, Irene K. Assimes MD, Ruben Carranza MD

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

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

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Anesthesiology 2003; 98:58–64

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

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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

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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

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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.

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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

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Thank you!

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