SOCIETY FOR AMBULATORY ANESTHESIA
Outpatient • Office Based • Non-Operating Room

ASC Medical Directors & Leaders Virtual Summit
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Obesity in Outpatient Surgery

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Obesity in Outpatient Surgery- Objectives

- Formally define and identify those patients considered to be obese
- Understand the additional anesthetic challenges that the obese patient presents when rendering care
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Definitions of Obesity

- Body Mass Index (BMI)- typically utilized
- Measurements of Central Obesity (Includes waist circumference and waist-to-hip ratio)
  - Corresponds to visceral adiposity- insulin resistance, dyslipidemia, increased CV risk
  - Waist circumference: Men > 102 cm (40 in); women >88 cm (35 in)
  - Waist-to-hip ratio: Men > 0.90; women >0.85
- Body Composition Measurements
  - Limited in obesity diagnosis: Men body fat >25% and in Women > 35%
- Not Just by weight alone as many used to do

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Expanded classification of body mass index

Underweight – BMI <18.5 kg/m²
Normal weight – BMI ≥18.5 to 24.9 kg/m²
Overweight – BMI ≥25 to 29.9 kg/m²
Obesity – BMI ≥30 kg/m²
▪ Class 1 – BMI 30 to 34.9 kg/m²
▪ Class 2 – BMI 35 to 39.9 kg/m²
▪ Class 3 – BMI ≥40 kg/m²
▪ Class 4 – BMI ≥50 kg/m²
▪ Class 5 – BMI ≥60 kg/m²

The CDC[1] and WHO[2] have adopted BMI classification that includes obesity classes 1 through 3 as defined by BMI in this table. This table shows the expanded classification used by some organizations and investigators, including Classes 4 and 5[3]. Terms that are sometimes used include:

- Class 3 obesity – severe or extreme obesity
- Class 4 obesity – super obesity
- Class 5 obesity – super super obesity

BMI: body mass index; CDC: Centers for Disease Control and Prevention; WHO: World Health Organization.

References:

1. *US Centers for Disease Control and Prevention. Defining adult overweight and obesity. Available at: https://www.cdc.gov/obesity/adult/defining.html (Accessed on November 17, 2021).*
2. *World Health Organization Europe. Body mass index – BMI. Available at: https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi (Accessed on November 17, 2021).*
3. *Poirier P, Alpert MA, Fleisher LA, et al. Cardiovascular evaluation and management of severely obese patients undergoing surgery: a science advisory from the American Heart Association. Circulation 2009; 120:86.*

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Prevalence of Obesity- US and many countries

- Study group age 20 and older 2007 to 2016
- Obesity increased 33.7% to 39.6% of population
  - Men 32.2 % to 37.9%
  - Women 35.4% to 41.1
- Severe Obesity 5.7 to 7.7% an increase of over 35%
- Peak obesity occurs in those aged 40-60
  - 40.8% of men
  - 44.7% of women

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Size Matters…. Bigger Challenges Await

- Why the obese patient presents additional and unique challenges
  - Insulin Resistance and an array of metabolic and hemodynamic disorders
  - Type 2 DM more than 80% related to obesity
  - Lipid abnormalities
  - Systolic and Diastolic hypertension
  - LVH- high EDV and increased filling pressures
  - Obstructive Sleep apnea
  - Increased Systemic inflammation
  - Sympathetic Nervous System Activation
  - Endothelial dysfunction

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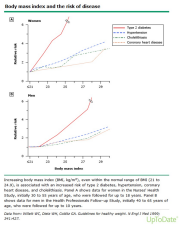
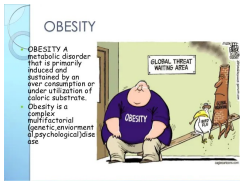
BMI and the Risk of Disease





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Big Issues… Big Concerns

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Understanding the Anesthetic Challenges

- What's the Big Deal?
  - Preoperative process-
  - In person Pre-anesthetic evaluation
  - Setting the expectations for the patient
  - Airway – understanding the differences with obese patient
  - Physiologic changes and respiratory challenges
  - Pharmacokinetic and dosing of medications
  - Technical components of monitoring, access, predictability, and execution of the anesthetic plan
  - Regional? Neuraxial
  - Patient positioning
- Co-morbidities abound…

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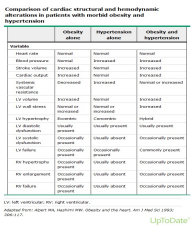
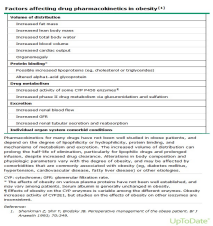
Physiological and Pharmacokinetic Changes





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Before… During… After?

Predictors of difficult mask ventilation

- Older age (adult)
- Male gender
- Obesity
- Edentulous
- Facial hair (especially beard)
- Mallampati oropharyngeal grade 3 or 4
- Mandibular protrusion (inability to protrude)
- Thyromental distance (short)
- Snoring (indication of OSA)
- Abnormal neck anatomy

Risk of difficult mask ventilation increases with greater number of predictors.

BMI: body mass index; OSA: obstructive sleep apnea.

Information from:

1. Langeron O, Masso E, Huraux C, et al. Prediction of difficult mask ventilation. Anesthesiology 2000; 92:1229.
2. Kheterpal S, Healy D, Aziz MF, et al. Incidence, predictors, and outcome of difficult mask ventilation combined with difficult laryngoscopy: a report from the multicenter perioperative outcomes group. Anesthesiology 2013; 119:1360.

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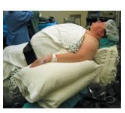

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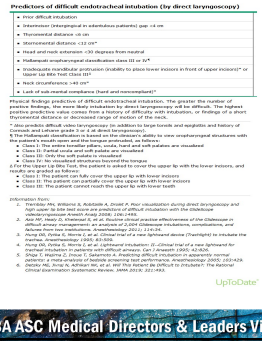

Considerations of LMA vs. ETT

- Degree and Distribution of Obesity
- Type and Length of surgery
- Patient Positioning
- Controlled Ventilation
  - BMI >40
  - Primary with Abdominal Obesity
  - Major Abd or Thoracic (not outpatient)
  - Surgery greater than 2 hours
  - Trendelenburg/head down/ Prone?

Consider 2nd generation SGAs

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To do or Not to do….. That is **THE** question

- Decision to perform surgery on the obese patient in the Outpatient Setting: What would I do differently in another setting?
  - Information Needed: Data and Outcomes help guide decisions- BMI up to 40 has been shown to be equivocal risk; some up to 50…
  - **P-values** (Assign a value to each and create a checklist)
    - Process- Establish priorities and protocols- boundaries matter
    - Patient- evaluate thoroughly- Establish risk… Sedentary… active… motivated
    - Procedure –Single vs Multi-specialty, invasive, duration, postoperative pain management,
    - Place – Infrastructure, resources, proximity to tertiary care center, equipment
    - Personnel- staffing model, skillsets, care-team
    - Practitioners- MDA, CRNAs, RNs, LPNs, surgeons, procedures
    - Preparedness- Education of staff, Understanding the challenges, Planning in advance
    - Performance: Keep track of your outcomes

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Standardization with Individualization®

- If yes is the answer….
- Perioperative and Postoperative challenges
  - ABC- trust the numbers
  - Positioning
  - Fluid management
  - Pain management
- Don't do this alone
- The more the merrier
  - Make sure you have what you need at the site
  - Make sure you have what you need at home
- The rules of engagement

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Clinical case study….

- 57-year-old male with Type 2DM, HTN, mild OSA (AHI less than 10), compliant with CPAP, OA, and BMI of 46.8 presents for Left TKA, Limited Activity but No shortness of breath or chest pain
- Yes or No : P-values
- If yes, then what:
- If no, why not ?
- Action Plan:
  - Preop- set the parameters
  - Intraop - choices
  - Postop and beyond- resources at home and patient needs

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Is there a right or wrong answer?

- Medical Directors are typically seasoned and experienced
- Provide oversight and pragmatism – "Trust your GUT"
- Facilitators but not Enablers
- Responsible and Trustworthy
- Checks and Balances- Authority and Governance
- Collaborate and Communicate
- Alignment is also key
- Understand your Audience

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References and Resources

- Obesity as a risk factor unanticipated admissions after ambulatory surgery; Hofe RE, Kai T, Decker PA, Warner DO, Mayo Clin Proceedings; 2008;83(8):908
- Systematic Review of Same Day Lap Adjustable gastric band surgery; Thomas H, Agrawal S, Obese Surg, 2011 June;21(6):805-10
- Are morbidly obese patients suitable for ambulatory surgery?; Moon TS, Joshi GP, Curr Opin Anesthesiol. 2016, Feb;29(1): 141-5.
- Predictors of 30 Day Pulmonary Complications after Outpatient surgery: Relative Importance of BMI Weight classifications in Risk assessment; De Oliviera GS Jr., McCarthy, RJ etc; J Am Coll Surge 2017;225(2):312 Epub217 Apr23
- Additional upon request

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References and Resources

- Effect of BMI on Perioperative Outcomes after Major Surgery: Results from the ACS-NSQIP 2005-2011; Sood A et al; World J Surg. 2015 Oct;39(10) 2376-85
- Body position and the effectiveness of mask ventilation in anaesthetised paralysed obese patients: A randomised cross-over study,Chang JE, Seol T, Hwang JY ,Eur J Anaesthesiol. 2021;38(8):825.
- Society for Ambulatory Anesthesia consensus statement on preoperative selection of adult patients with obstructive sleep apnea scheduled for ambulatory surgery;Joshi GP, Ankichetty SP, Gan TJ, Chung F ;Anesth Analg. 2012 Nov;115(5):1060-8. Epub 2012 Aug 10
- Anaesthesia and morbid obesity;Lotia S, Bellamy MC ;Continuing Education in Anaesthesia Critical Care&Pain. 2008;8(5):151.

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Questions……

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