Care and Transport of the Bariatric Patient

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Objectives

- Define bariatrics and review important facts
- Review body systems and assessments of the bariatric patient
- Discuss trauma trends of the bariatric patient
- Discuss weight loss options and complications
- Review transfer and transport options

Bariatrics

Definition: The branch of medicine that deals with the causes, prevention, and treatment of obesity.

"Baro" comes from the Greek word for "weight" or "pressure"

Interesting Facts

*Obesity has been recognized as a chronic disease since 1985.

*Obesity is the 2nd leading cause of preventable death, exceeded only by cigarette smoking.

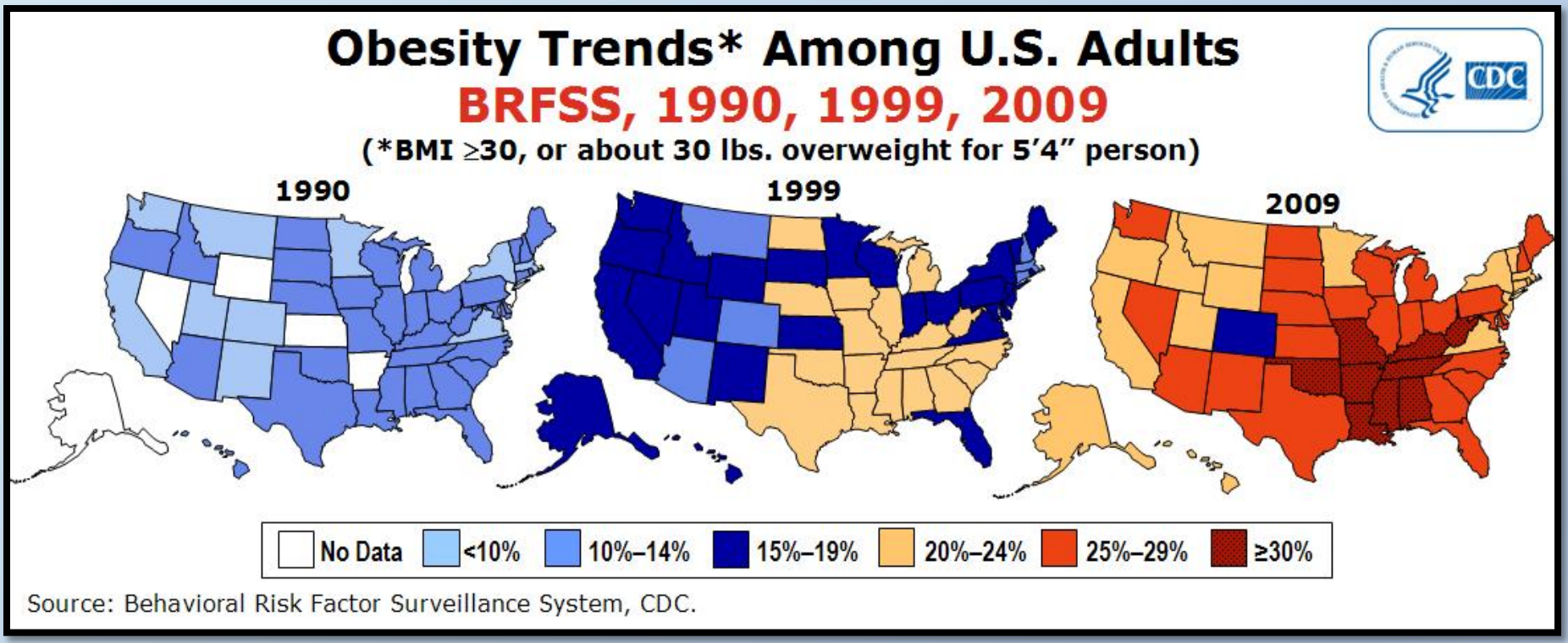
*Mortality rate is 3.9% higher than those with ideal body weight.

Interesting Facts

- 36% of Caucasian women
- 47% of Mexican-American women
- 48% of African-American women

*1 in 80 men
> 300 pounds
*1 in 200 women
>300 pounds

CDC map of trends



Economic Impact

Obesity is estimated to account for 12% of the health care budget.

Increased incidence of inpatient and outpatient care, pharmacy costs, and laboratory demands.

The obese population have also been shown to be more frequent accessors of sickness and unemployment benefits.

How do we define what ideal body weight is?

BMI =

$$\frac{\text{Weight in Kg}}{\text{Height in M2}}$$

- >25 kg/m^2 overweight
- >30 kg/m^2 obese
- >40 kg/m^2 morbidly obese

BMI doesn't account for individual variations.

*Imperfect measurement
*Most readily applied

Obesity Causes

Over consumption

Genetics

Diseases

Mental Health

Medications

Morbid obesity is a serious disease process in which the accumulation of excessive fatty tissue interferes with, or injures the bodily organs, causing life threatening health problems.

The Airway:
Anticipate Problems!

Studies show:

- Link between difficult intubation and increasing BMI
- Incidence of difficult intubation on obese patients is 13%

BUT, studies also show:

"Emergency intubation of obese trauma patients can be safely and successfully performed in a high volume level 1 trauma center." (Journal of Trauma 2008)

Airway: why is it more difficult?

Fat face and cheeks

Large breasts

Large tongue

Increased anterior and posterior fatty tissue of neck

Short neck

Excessive palate and pharyngeal soft tissue

Fat pad on upper back

Airway

- Prepare airway adjuncts
- Use 2 experienced intubators

Lengthy pre-oxygenation

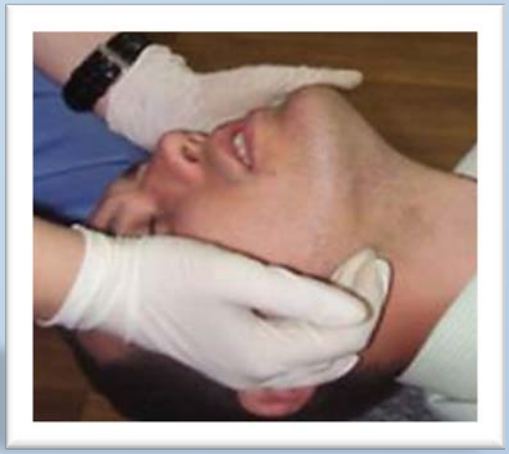
*Use oral airways or bilateral nasal airways

*High flow O2: nasal cannula while using BVM

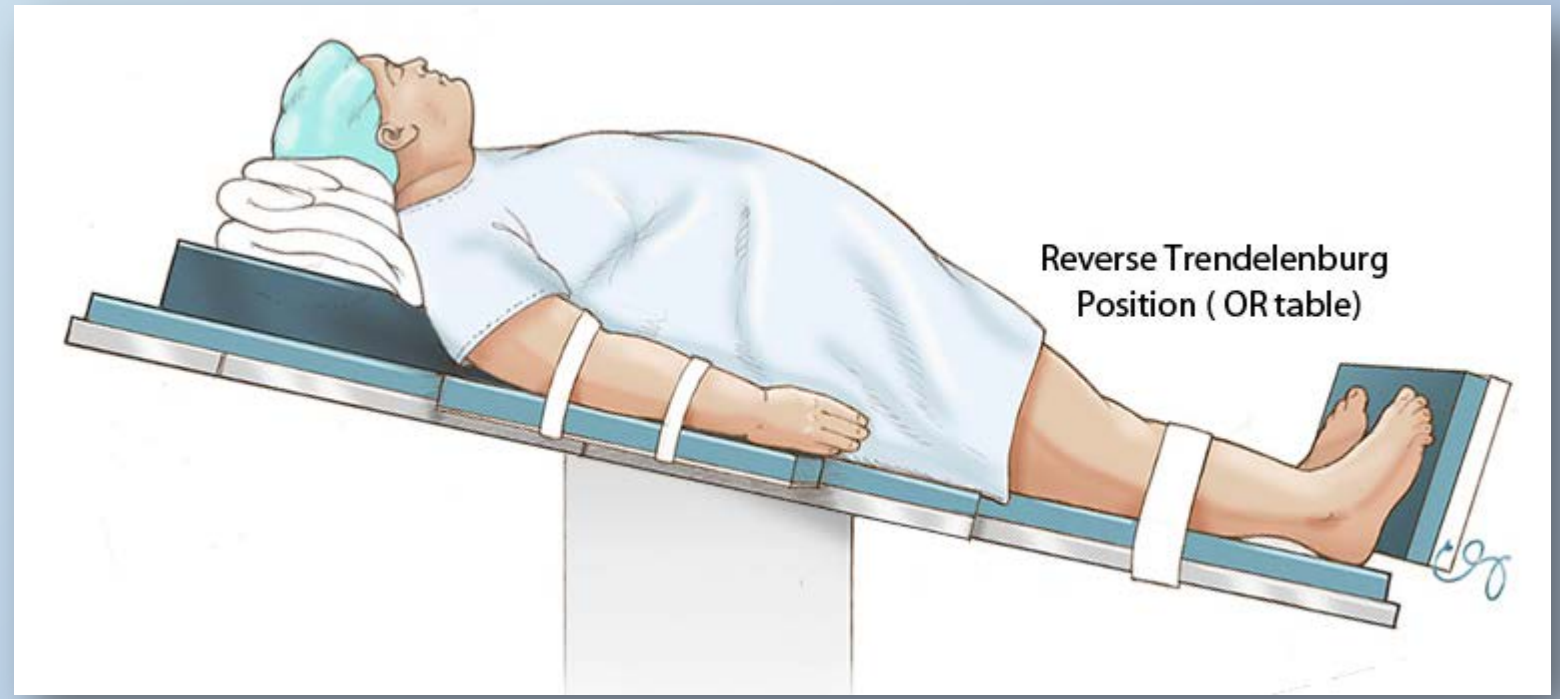
Airway

Elevate the head and shoulders

Airway



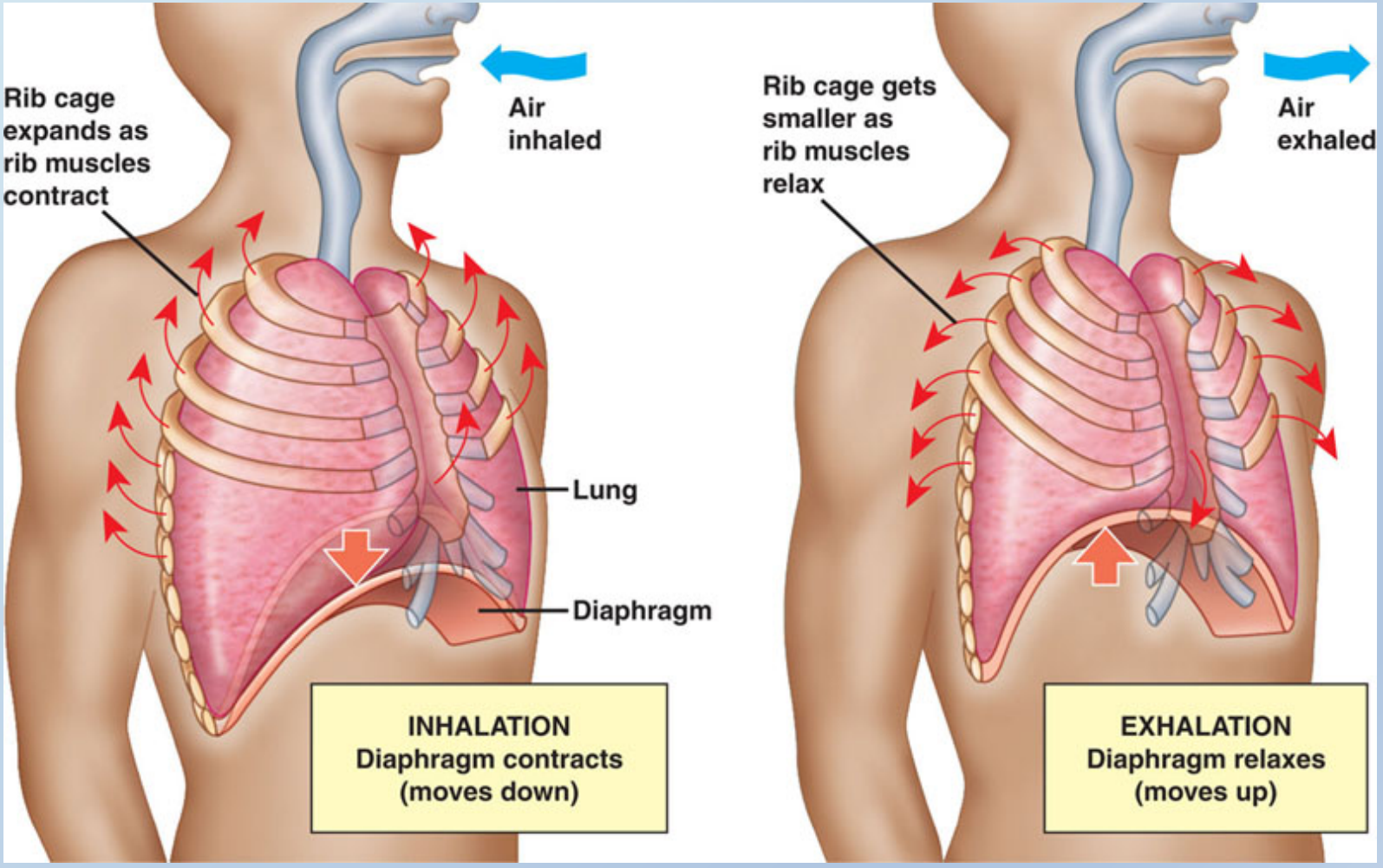
- Reverse Trendelenburg
- Modified jaw thrust
- Cricoid pressure (if it helps you visualize)



Respiratory System

- The obese patient is at a higher risk of:
  - Chronic respiratory distress
  - Pulmonary embolism
  - Asthma
  - Sleep apnea

Respiratory System



Respiratory System

Breathing is more difficult

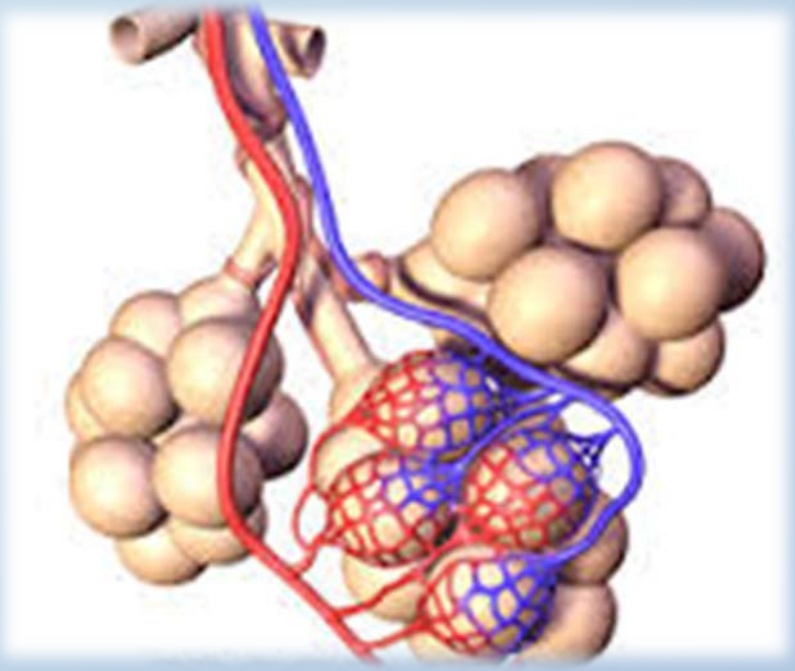
Increased Intra-abdominal size and pressure

Diaphragm is unable to fully descend

Increased weight on the chest wall (chest can’t expand fully)

Respiratory System

Abdominal tissue can crush alveoli



Obese patients present with:

*Reduced FRC

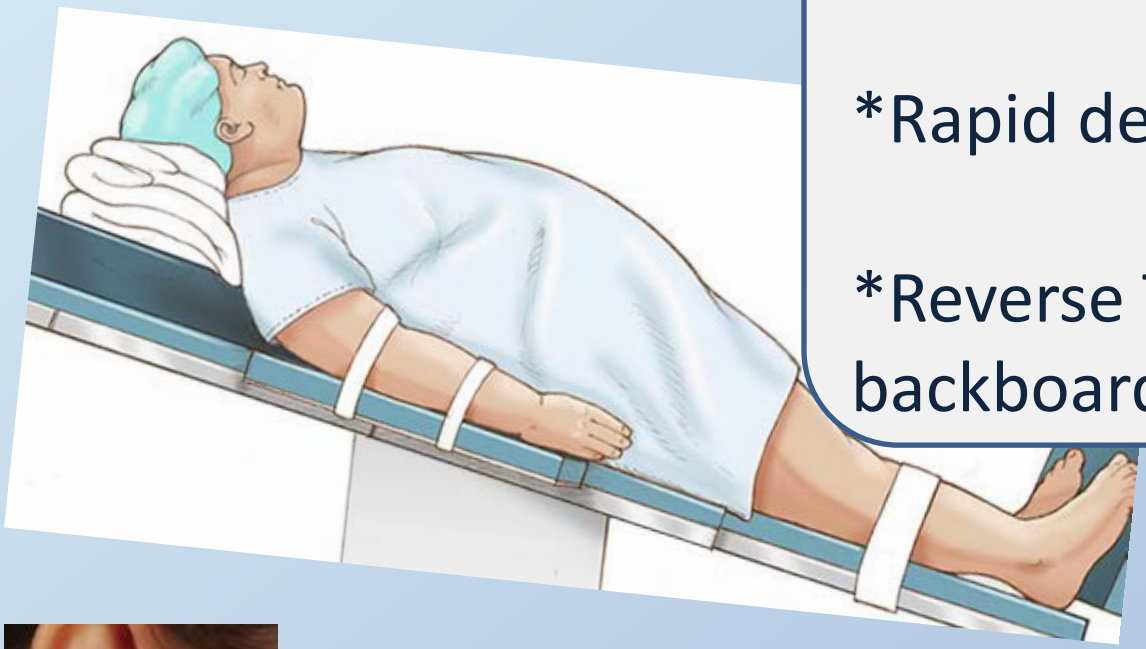
*Reduced total lung capacity (as much as 25% - 30%)

Increased pulmonary blood flow

Respiratory Assessment

- Increased respiratory rate (up to 40% higher)
- Increased work of breathing (up to 250% more)
- Underlying hypoxia and hypercapnia that could lead to pulmonary hypertension
- Difficulty to wean off ventilator in the ICU setting – end of with trach

Respiratory Tips



*Don't lay them flat!!!

*Rapid desaturation

*Reverse Trendelenburg for backboarded patients

Use small finger or toe, nose, lip, or temporal area for pulse ox

Listen for breath sounds on the back

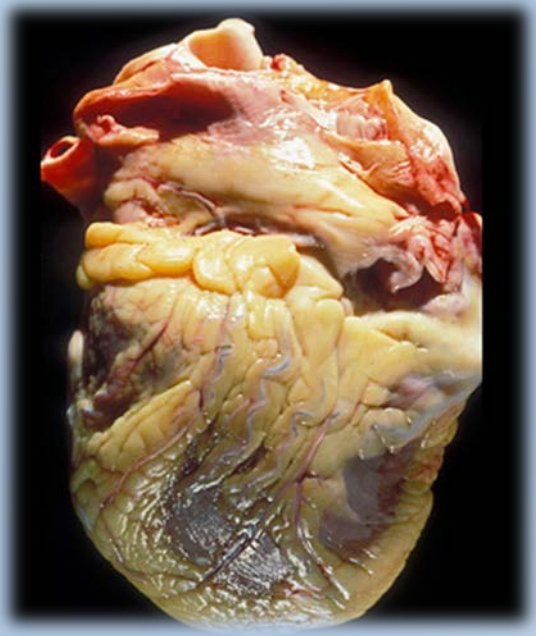
Respiratory Tips

Ventilated patients:

- Standard transport ventilator may not be adequate
- Call critical care transport team
- Maintain a high FiO2, higher PEEPs of 7-10 cm H20, and reverse Trendelenburg.
- Avoid high volumes

Cardiovascular System

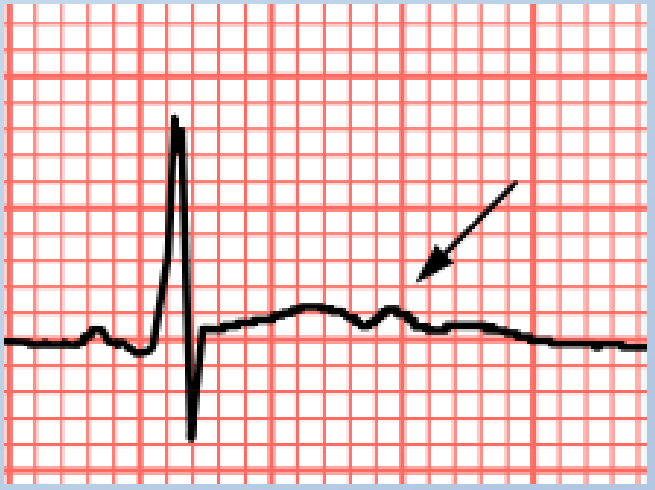
- The obese patient is at higher risk for:
  - Heart disease
  - Heart attack
  - High blood pressure
  - Congestive heart failure
  - Atherosclerosis
  - Ventricular hypertrophy
  - DVT
  - PE
- The increase in cardiac workload is directly proportional to the degree of obesity.



Cardiovascular Assessment

EKG tracings may be effected:

- -Low voltage
- -T wave flattening or inversion
- -Leftward shift of P, QRS, and T wave axes



Place EKG leads on lateral sides of lower abdomen

Muffled heart sounds

Pulses difficult to palpate
-Use Doppler

Cardiovascular Assessment/Recommendations

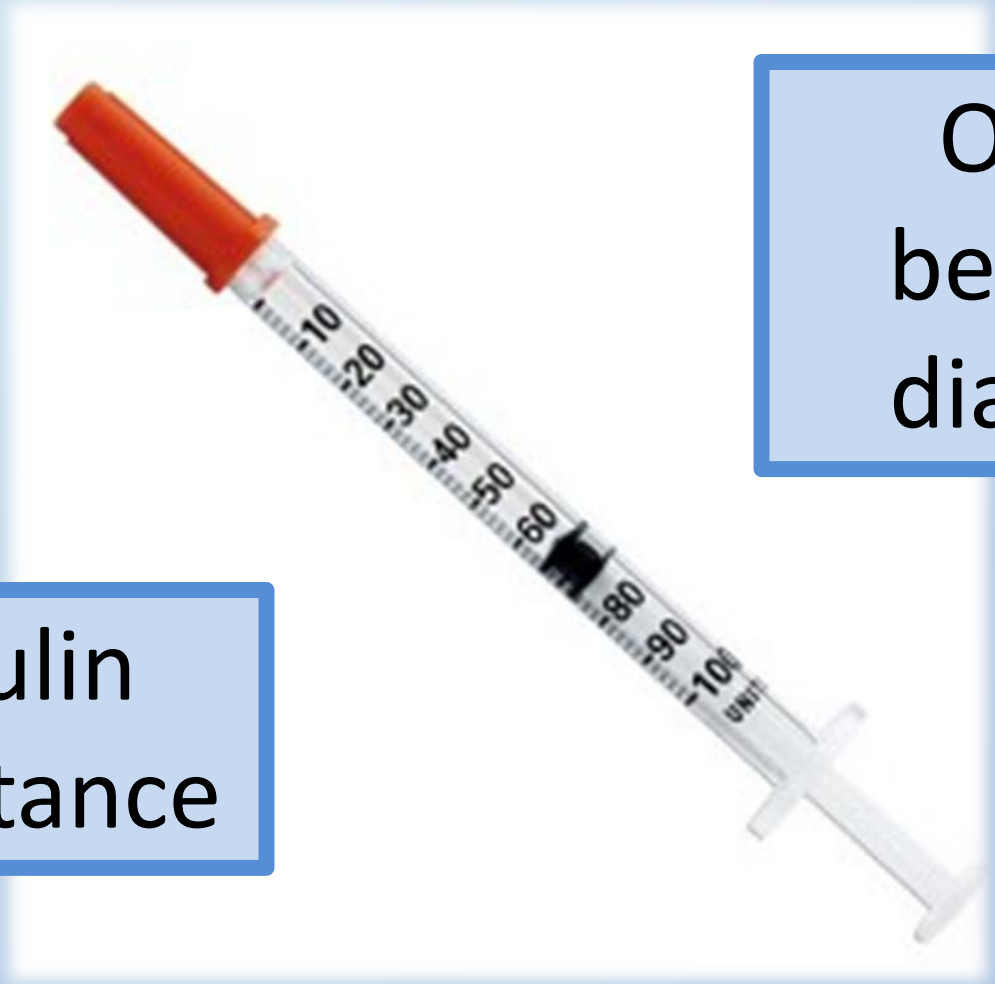
- IV access is difficult
  - Lack of visual landmarks
  - Unable to palpate vessels
- Central line access may be a necessity
  - Prone to infections because of skin folds
- Use longer introducer needles (spinal needles work well)
- Use Doppler ultrasound guidance
- An IO may be necessary
  - Use the longer needle

GI/GU

Greater Risk for:

-GERD
-Hiatal hernia
-Gallstones
-Bladder control problems
-Kidney failure
-Gastric volumes increased (up to 75%)
-High intra-abdominal pressures

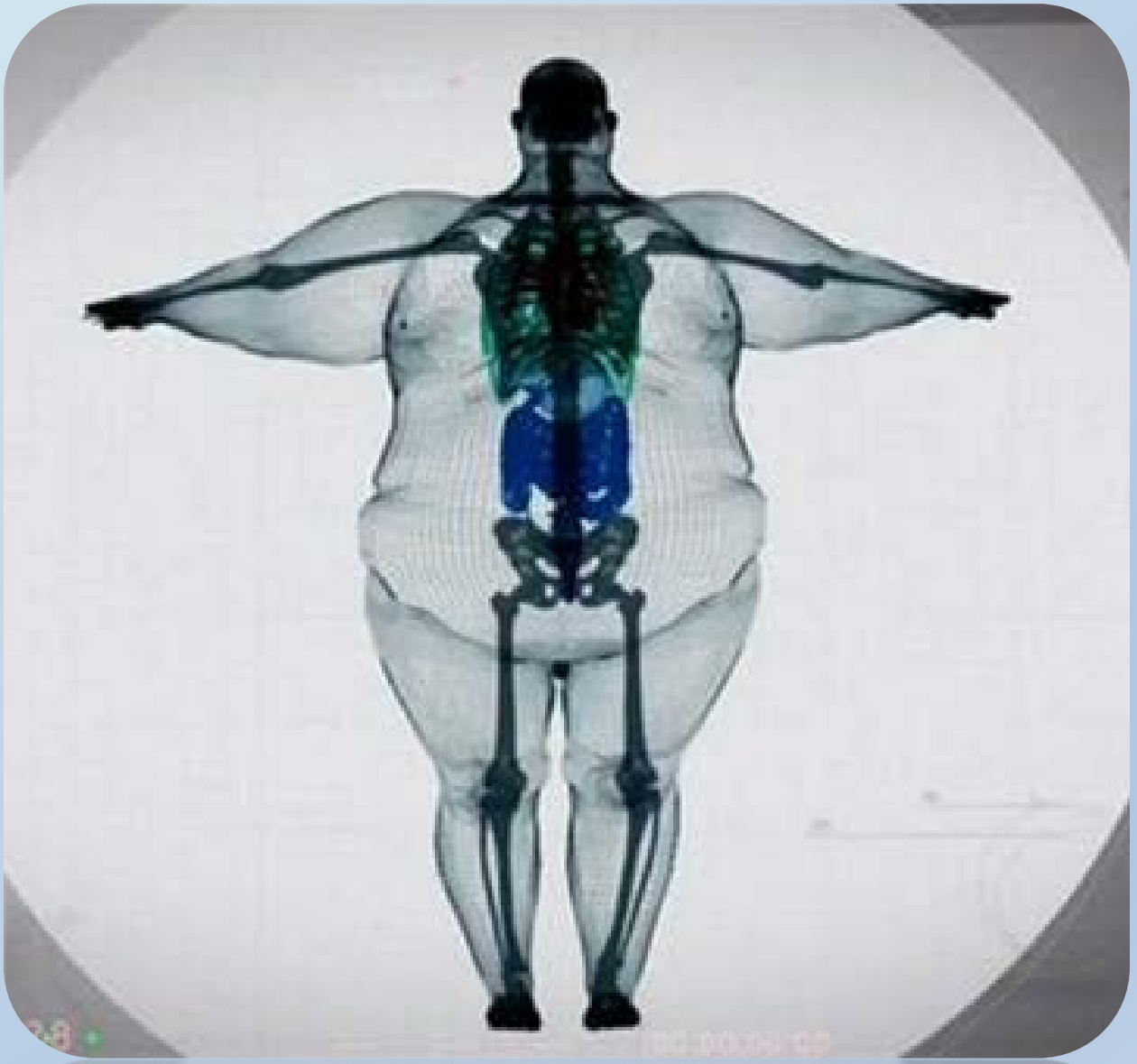
Endocrine



Often become diabetic

Insulin Resistance

Musculoskeletal



Musculoskeletal

- Joint stress
- Chronic back pain
- Fall related injuries
- Rely on mobility aids
- Larger extremities

BP measurement is challenging

- Larger BP cuff
- May have to use thigh cuff on arm
- Newer devices

Musculoskeletal

Inaccurate BP Monitoring

-Cuff size

Skin

Increased potential for pressure sores and cellulitis

Infection in skin folds

Difficulty controlling body temperature

-Increased perspiration

Emotional

Depression

Anxiety

Sleep Disorders

Isolation

Stress

Discrimination

Diagnostic Difficulties

Lumbar Puncture

Ultrasound

X-rays

CT Scan

Pharmacokinetics

Hydrophilic meds are distributed more to lean tissue like muscle and less to fat. These meds should be dosed on the ideal body weight (IBW) not actual weight.

Lipophilic medications are better absorbed by adipose tissue and are more frequently dosed on actual body weight. They will have a longer half-life for elimination and prolonged effects.

Weight Loss

Surgical

- Restrictive
- Malabsorptive
- Combination

Medical

- Exercise
- Diet
- Controlling medical condition
- Medication

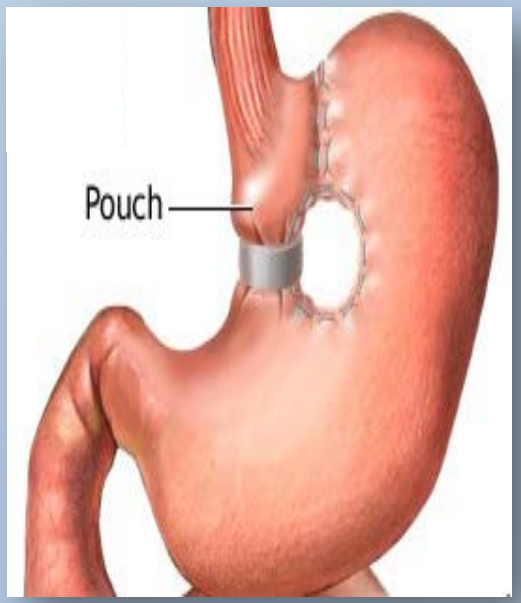
Bariatric Surgery

Restrictive Surgeries

Gastric Banding

Sleeve Gastrectomy

Vertical Banding Gastroplasty

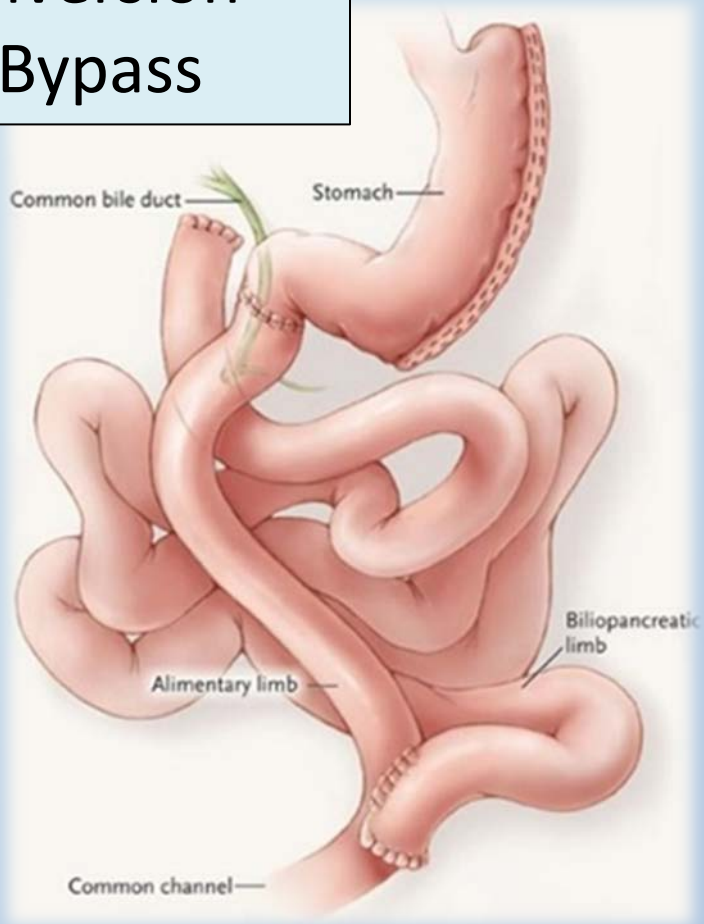


Physically restricts the amount of food a patient can consume by reducing the size of the stomach or the amount it can expand.

Bariatric Surgery

Malabsorptive Surgeries

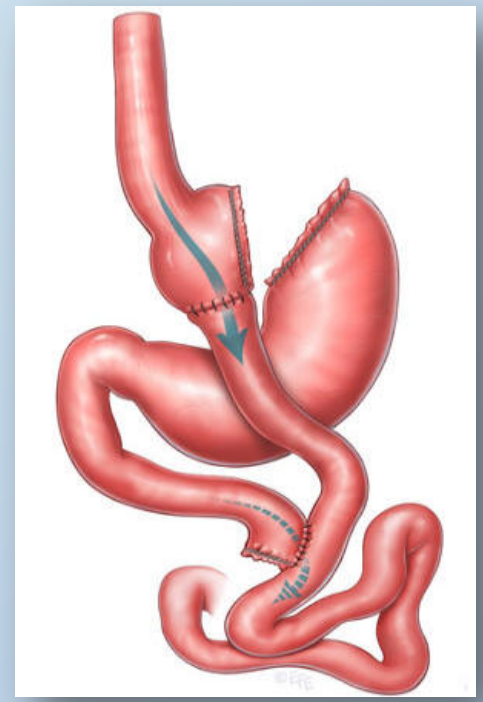
Biliopancreatic Diversion Bypass



Does not affect food intake but instead limit the absorption of calories and nutrients from food by creating a bypass around a significant length of intestine.

Bariatric Surgery

Combined Procedures



Roux-en-Y
Gastric Bypass

Surgically reduce the size of the stomach but also reroute the digestive tract so that food bypasses most of the intestine.

Bariatric Surgery Outcomes

Benefits

- Weight loss
- Diabetic Improvements
- Cholesterol level reduction
- Decrease in high blood pressure
- Sleep apnea improvements
- Stress urinary incontinence improves
- Depression improves

Complications

- Bleeding
- Hernia
- Infection
- Intestinal site leakage
- Diarrhea
- Thrombus and emboli
- Bowel obstruction
- Band slips
- Long Term: Poorly absorbed nutrients*** electrolyte imbalances

Trauma

Injury patterns differ

Fewer head and visceral injuries and more:

-Pelvic fractures

-Lower extremity fractures

-Rib fractures

Trauma

Mortality rate is higher

More likely to require hospitalization

Longer hospitalization

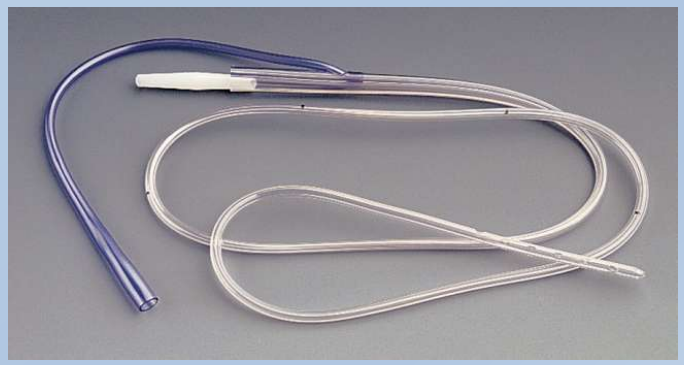
More complications

Trauma Pearls

Flail chest is difficult to diagnose.

Perform needle decompression with larger needle

Use higher levels of PEEP if the patient is vented

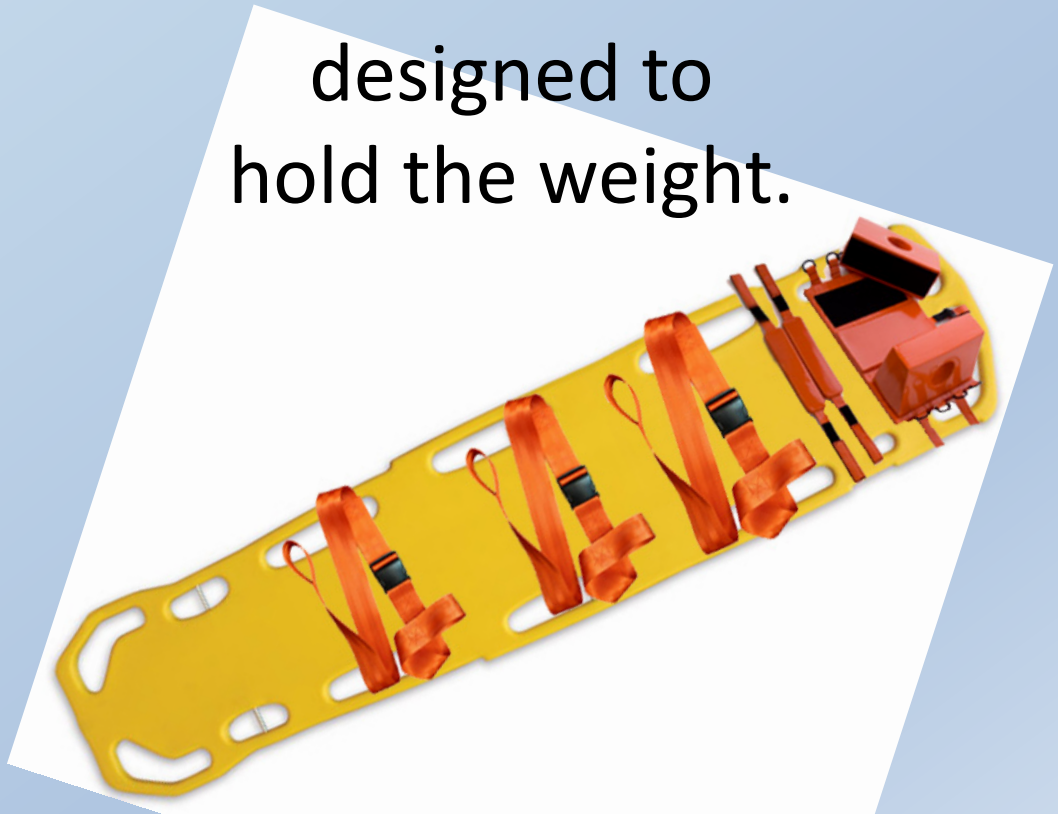


Gastric decompression is essential

Trauma Pearls

Use available resources: think outside the box

Standard equipment may not fit or be designed to hold the weight.



Be Prepared

About half of health care providers Worker's Compensation Cases are from patient transport and handling injuries.

American Ambulance Association advocates for policies and procedures and training for the bariatric transport.

Be Prepared

Flag patients in dispatch system

Create Minimum Personnel Policy: Identify strategies and set limits on how few people may attempt to move a specified weight without additional manpower.

Lifting Basics

Maintain good posture

Smooth motions

Use Lift Equipment Available

Lift with legs

Use a s… grip

…each or pull patient up

Adequate number of personnel to assist

Do not twist or lean

…et shoulder width apart

…near

Transfer Sheets

Pneumatic Systems

Control the girth

Typical stretcher:

- Load rating up to 750 lbs.
- Typically 23” wide
- Limited by girth unless they have winged handles

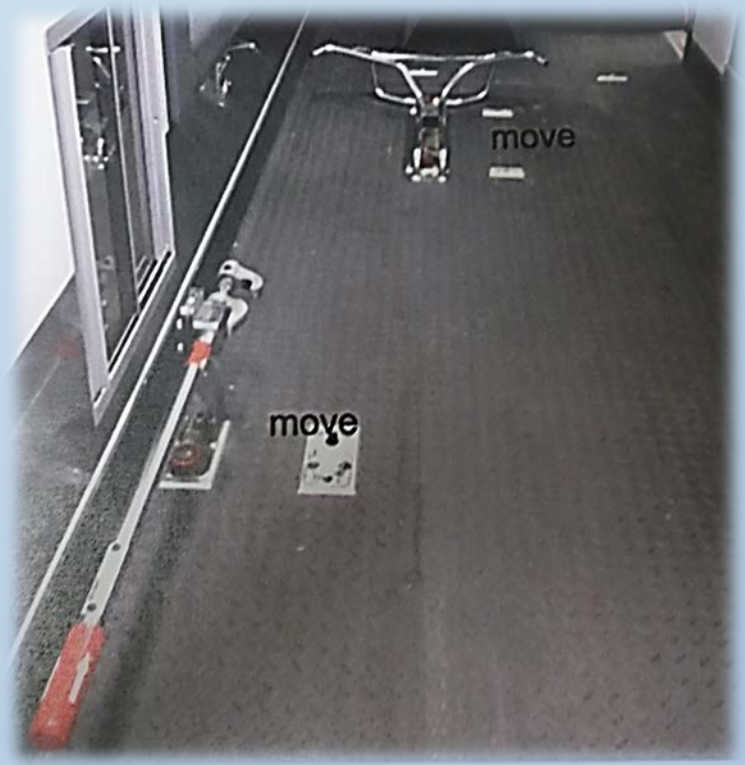
Bariatric stretchers:

- Load rating up to 1600 lbs. – leave down
- 850 lbs. if elevated
- Not powered
- Width up to 40 inches

Ambulances

- Must support the girth of the patient
- Ensure adequate oxygen supply.
- Winch systems or lifts?

Ramp and Winch System




EMERGE
MEDICAL
SERVICE

Air Transport ?

- Weight limitations (aircraft, aircraft floor, stretcher)
- Girth issues
- Patient position
- Call to find out…

Training Days

Scenario-based
simulation training

Training Days

Training Days

Training Days

Liability

Consult legal counsel to obtain “hold harmless” releases for all parties.

In Summary

- Obesity is an epidemic
- It effects every body system
- Number of morbidly obese patients will increase
- Know how to assess and treat these patients
- Be Prepared!!!
- Establish procedures and protocols
- Use specialty equipment designed for bariatric patients
- Train using simulation.

Special Thanks to:

- Richmond Ambulance Authority
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Any
Questions?