



Transport of the Bariatric Patient

Promoting Safety for Patient and Provider

Dan Hankins, MD, FACEP

Consultant, Dept. of Emergency Medicine

Mayo Clinic

Co-Medical Director, Mayo Clinic
Medical Transport

President, Association of Air Medical
Services





Thank you to the ASA and the FNA for inviting me to do this presentation at this ASA+FNA 2011 conference





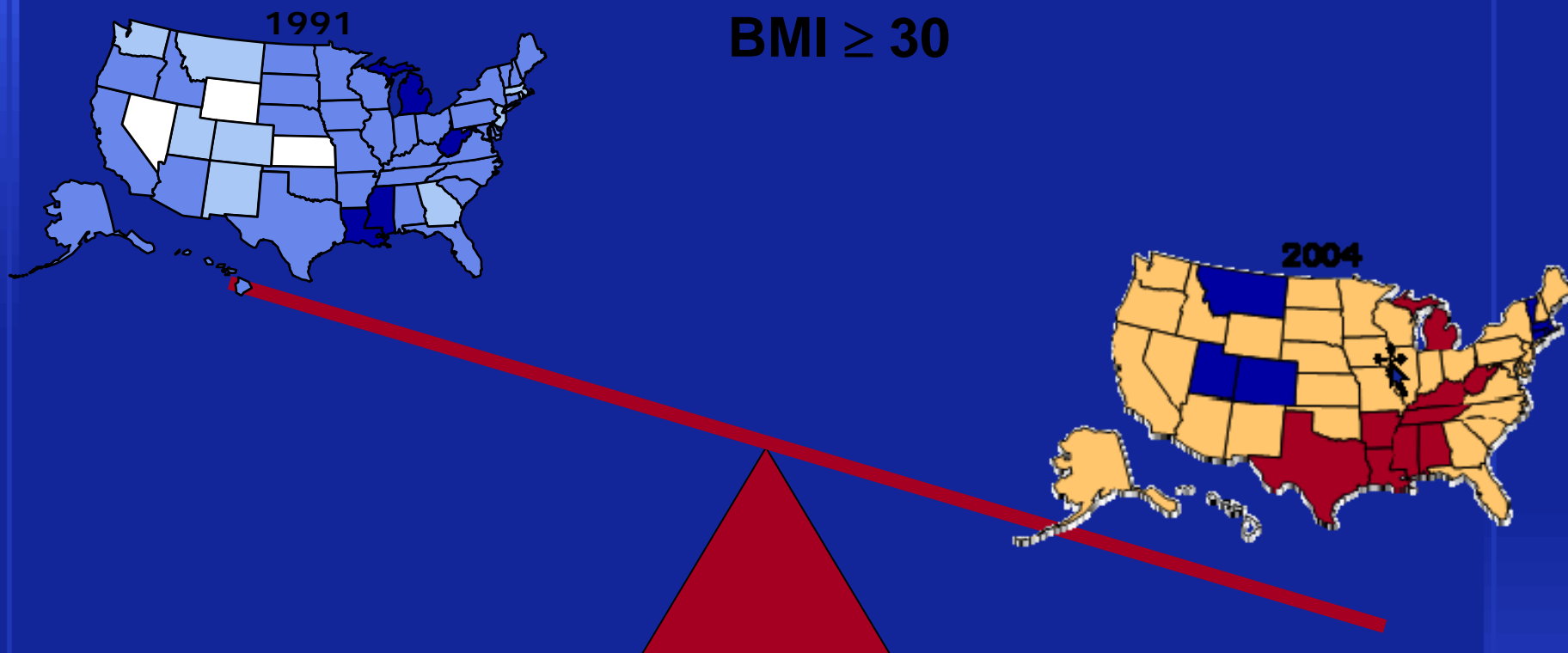
Goals

- **Overview of the problem: scope of problem and representative cases**
- **Describe how bariatric patients are more high risk**
- **Discuss safe practice guidelines**
- **Discuss special equipment that may help**





Obesity Trends Among U.S. Adults





The Scope of the Problem

Does anybody see transport, airway or other problems here?





The Scope of the Problem

- 1/3 of all adults (58 million) in U.S.A. considered obese
- Morbid obesity: more than 100 pounds overweight
- Real possibility for any EMS crewmember to transport patient over 500#





The Scope of the Problem

- Patients over 500 pounds are challenges because of their disease processes and the challenges of transport
- 6 times incidence of heart disease; 10 times incidence DM and renal failure
- Data from one ambulance service indicates that 50% of Workers' Compensation claims are related to transfer and handling of patients
- Unlike the hospital, only 2 or 3 crewpersons may be at scene
- One injury can end an EMS career





The Scope of the Problem

- Typical ambulance has 40 to 44 inch wide patient compartment
- A 700 pound patient may be 55 inches wide
- Transported on tarp or with straps-- liability of not being secured?
- Usual stretchers rated 350-500 pounds





Common Issues of the Bariatric Patient

- Accident prone
- Legs may not support body weight
- Impaired daily activities
- Daytime somnolence
- Decreased seat belt usage – MVC injuries
- Few head injuries from falls
 - ◆ Small head to torso ratio - torso may protect the head
- Greater deceleration force of the body causes greater potential for injury





Co-Morbidities of Morbid Obesity

Life threatening

- **Diabetes Mellitus Type 2**
- **Hypertension**
- **Sleep apnea**
- **Cardiovascular disease**
- **Cancer**
- **Gallbladder disease and gallstones**





Airway / Breathing Difficulties

- "Bull Neck", short, thick neck, poor neck extension
- Macroglossia – large tongue
- Weight of head increases exertion during laryngoscopy and head positioning
- Lungs do not increase in size as the patient becomes obese





Airway / Breathing Difficulties

- **Obesity Hypoventilation Syndrome (Pickwickian Syndrome)**

Hypercarbia

Hypoxemia

Hypersomnolence

Pulmonary Hypertension

Biventricular Failure





Airway / Breathing Difficulties

Intubation Considerations

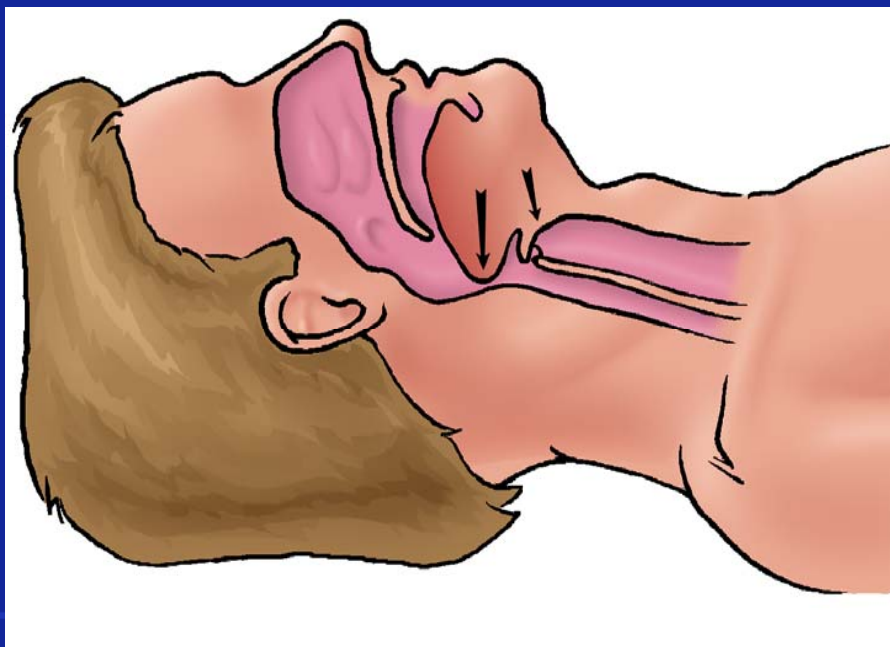
- The first intubation attempt should be by the most experienced intubator
- Have "rescue" alternative airway devices ready
- Obese patients will desaturate oxygen rapidly due to decreased functional reserve capacity





C-Spine Stabilization

- Avoid hyperextension of the head if lying the patient flat and supine
 - ◆ padding under head is probably needed





Medication Administration

IM injections

- Carefully choose location
- Compress the fatty subcutaneous layer with one hand
- Make sure to use 1.5 inch needle
- Make sure to be at a 90 degree angle

Medication may not truly be deposited in the muscle





Medication Administration

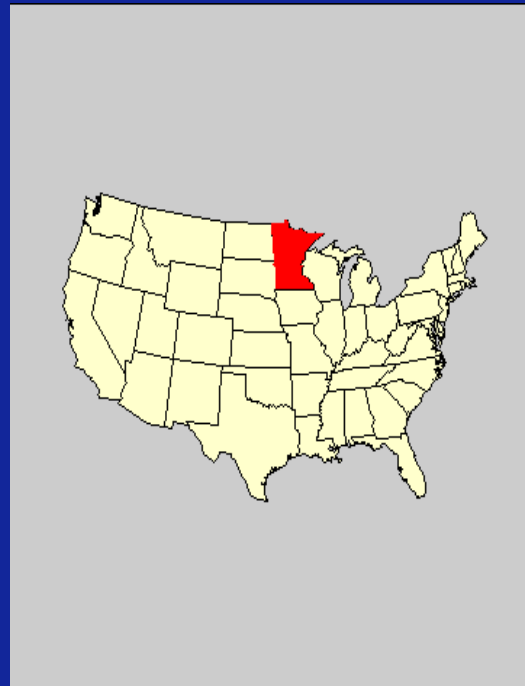
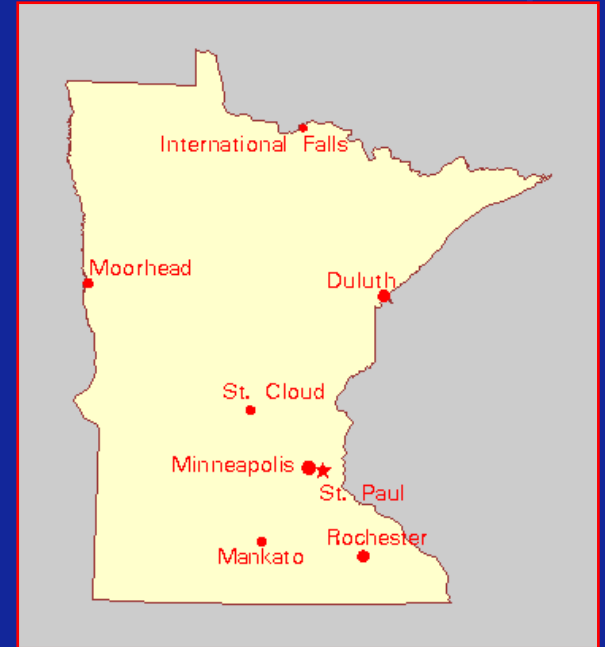
Sedation and Analgesia

- Doses should be carefully calculated, and titrated incrementally (from an amount closer to lean weight).
- May have prolonged recovery time
- Use short acting agents
- Carefully monitor respiratory status





Minnesota



50,000 air and ground calls per year,
including 911





2004 QA Study of 14,000 calls

- 600 lbs or more 2 (both 600 lbs)
- 500 to 599 lbs 19
- 400 to 499 lbs 84
- 350 to 399 lbs 111

Total over 350 lbs = 216 patients or 1.5%

92 calls with documented
problems/concerns for weights over 350 lbs





Bariatric Case #1

- A 600+ lb pt was a frequent ambulance transport
- Home-bound care resources not available
- Pt. being transported via EMS for routine clinic visit
- Crew used a doubled wooden backboard handed out through window opening





Case #1 - Outcomes:

- 3 of the 8 emergency service personnel sustained workman's comp. lifting injuries
- The injuries to 1 paramedic and 1 deputy resulted in permanent and career ending disability





Bariatric Case #2

- Ambulance crew to a NH - 400 lb, 86 y/o pt. in significant respiratory distress
- The RN at NH indicated the pt. could stand and walk to the stretcher
- Limited resources at NH to otherwise lift and move the pt.
- Pts. feet and ankles were swollen from CHF, wrapped in cloth bandages





Case #2 (cont.)

- Crew attempted to have pt. stand and self-transfer to the stretcher
- Both feet slipped outward on the linoleum floor & crew unable to support weight
- Pt. sank to floor in an awkward leg splits position
- Pt. now has a new complaint of right hip pain





Case #2 - Outcomes

- 2nd ambulance crew dispatched (delay)
- Pt. now supine on floor with additional SOB due to position
- Pt. sustained hip fracture during event





Bariatric Case #3 (2 events)

- **An adverse event reporting program discovered 2 calls in an 8-month period where stretchers tipped over with patients**
- **Pt. weights were 325 and 354 lbs**
- **The weights of the patients and stretchers combined were 450 and 475 lbs**





Case #3 - Outcomes

- Both events resulted in minor injuries to the patients requiring additional medical services
- A root cause analysis (RCA) investigation found similar factors contributing to both events.....





Case #3 – RCA Findings

- Newer stretcher top accessory for bariatric patients was in use (L.B.S.)
- The manufacturer's guideline for positioning of lifters or number of lifters was not followed
- Raising the stretcher to its top position created a too-high center of gravity
- Crew members in wrong position to prevent the stretchers from tipping





RCA Findings (cont.)

- Inadequate risk assessment and lack of situational awareness
- Ineffective communications among the crew members contributed to events
- Crew members had no appreciation for the combined weights of the stretcher, equipment and pts. they were lifting
- General non-compliance to some of the manufacturer's safe operation guidelines





Response to RCA Findings:

- Back to the classroom, within 2 months
- Basic stretcher skills reintroduced with emphasis on injury prevention
- Team based, safety focused, hands-on “bariatric operations” equipment training
- Crew resource management (CRM) training
- Education and awareness training about providing care to obese patients
- New protocol for “Safe Lifting and Moving of Patients”





“Safe Lifting and Moving of Patients” guideline includes

- Not walking pts. if chance of fall or aggravation of their condition**
- Perform risk assessment for every pt. lift or move required**
- Awareness of personal lifting capability and limitations**
- Situational awareness to determine best and safest options for moving pts.**





“Safe Lifting and Moving of Patients” guideline includes (cont.)

- **Patient’s weight criteria determines resources to deploy:**
 - ◆ **150 to 220 lbs- Consider additional help**
 - ◆ **220 to 350 lbs- Always employ additional qualified personnel**
 - ◆ **350 lbs or greater- Activate “bariatric operation” – additional resources, and often, time are required to safely move these patients.**





MCMT Safety Work Practices Guideline

- Use lifting aids whenever possible regardless the size of the patient
- Know your equipment limitations and how to use it



- A team member injured while transferring a patient may create the need for an additional response and may delay patient care





Laerdal BaXstrap Spineboard

Can hold up to 500 lbs



Ferno Scoop Stretcher

Maximum load capacity- 350 lbs



EZ Glide Evacuation Chair- 500 lbs

MAYO CLINIC





Model 35-P ProflexX™ Transporter



Load Limit 650-700 lbs
Stretcher Weight: 81-84 lbs
***Not including straps, mattress, linen,
etc.***

- **Ensure the patient is secured to the stretcher, and use shoulder straps**
- **Never roll a loaded stretcher in the 2 top loading positions**
- **Roll with stretcher frame inline, never sideways**
- **Use proper body mechanics for pulling and pushing the transporter**





Reinforced Lifting Sheets

Ferno- Manta 132

Graham- Mega Mover 1500

Stryker- Transfer Flat

“Essential bariatric equipment”

Large surface area

Flexible for tight areas, doors

Capacities of 800-1500 pounds

Hand holds for 8-12 to help lift

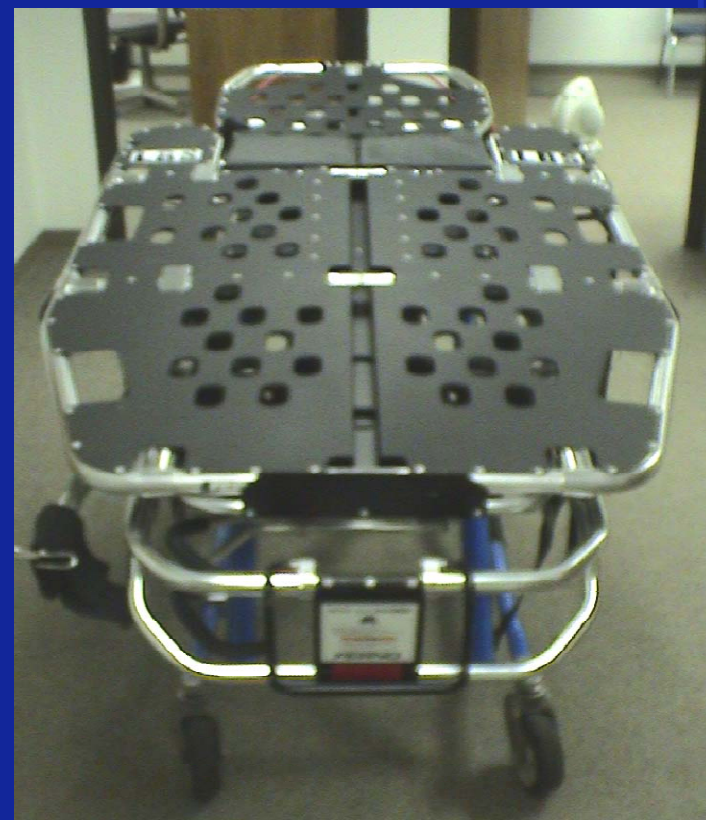
Easy to clean/disinfect





Stretcher Accessories

- Ferno LBS stretcher accessory provides a wider bed surface (33-3/4")
- Additional handholds help when lifting heavy loads
- Restraint extenders
- Offers maximum patient surface possible while allowing the cot to pass through a 36" door
- More comfortable for pts.





Obesity Trends and the Future for EMS

- Your system will see an increase in obese patients
- Transports may need to be delayed or abandoned for safety reasons
- Usual standard of care may be difficult to provide
- Additional resources will need to be utilized
- Risk of injury may increase
- Back injury will continue to be epidemic in EMS and healthcare (47%)





Take Home Lessons

- 1. Develop specific bariatric policy and patient care protocols**
- 2. Engage in risk assessment and safe lifting practice for every patient**
- 3. Develop a safety conscious culture**
- 4. Teach CRM and situational awareness**
- 5. Provide bariatrics specific education & training**
- 6. Strongly consider specialized bariatric operations equipment and tools**





“Safety for the Patient and Provider”

