Managing the Morbidly Obese – ED Perspective

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Currently on secondment to Retrieval Services Queensland
Acknowledgements:

• Justine Powell NUM, RFDS Brisbane
• Tony Hucker, QAS Paramedic Educator
Managing the morbidly obese in ED

• Access to ED
• Logistics
• Medical issues
Local Perspective

Australian study 2007 (Kam and Taylor)
  • 23.7% of patients attending ED ‘obese’ (BMI 30-40)
  • 4.1% ‘morbidly obese’ (BMI>40)

For Logan ED seeing 80,000 patients/yr (approx 60,000 adults) that would equate to:
  = 40+ ‘obese’ patients/day
  = 7 ‘morbidly obese’ patients/day
Access: Getting to ED
Getting out of the house

A 300-kilogram man who was winched from a Brisbane tower by crane after suffering an asthma attack in his apartment remains in intensive care in hospital.

More than 40 emergency staff and builders knocked down a wall to remove a morbidly obese young woman from her home after she became ill and could not be taken for treatment any other way.
QAS: Standard Response Vehicles
Standard Stretcher

Stretcher specifications

Stretcher top specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>190.2 cm</td>
</tr>
<tr>
<td>Width</td>
<td>55.9 cm</td>
</tr>
<tr>
<td>Height</td>
<td>18.5 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>22.0 kg</td>
</tr>
<tr>
<td>Maximum Weight Capacity</td>
<td>228 kg</td>
</tr>
<tr>
<td>Wheel Diameter</td>
<td>10.2 cm</td>
</tr>
<tr>
<td>Backrest Articulation</td>
<td>0° to 75°</td>
</tr>
<tr>
<td>Shock Position</td>
<td>+17°</td>
</tr>
<tr>
<td>Leg raise Position</td>
<td>300</td>
</tr>
<tr>
<td>Handle Extension</td>
<td>19.7 cm</td>
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</table>
Routine Transport
Specialist Transport and Retrieval Unit
Bariatric Equipment

1.2 Specifications

<table>
<thead>
<tr>
<th>Length</th>
<th>Width</th>
<th>Loaded Length</th>
<th>Reduced Length</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000mm</td>
<td>750mm</td>
<td>2200mm</td>
<td>1690mm</td>
<td>500kg</td>
</tr>
</tbody>
</table>
STRU Unit
Bariatric Equipment
Bariatric Equipment
Current Bariatric Unit Locations - Qld

- Metro North (Chermside)
- Metro South (Nathan)
- Toowoomba
- Townsville
Access: Rural and Regional Queensland
Retrieval Services Queensland

• Transports 20,000+ patients/yr
  • Primary response
  • Inter-hospital transfers
• 11 helicopter bases
• 7 fixed wing bases (RFDS)
QEMS Coordination Centre (QCC)
Bariatric Sizing Chart

Facility: ____________________________

URN: ________________________________
Family name: ________________________
Given name(s): ______________________
Address: ____________________________
Date of birth: ________________________
Sex: M  F  I

Date: ___/___/______ Time: ___:

Upon request by QCC staff, please complete and fax to the QEMS Coordination Centre on Fax: (07) 3357 9104
For use in the assessment of patients requiring aeromedical transport
If you have any enquiries, please speak to a QCC Nurse Coordinator by calling PH: 1300 799 127

Height: ______ cm

Shoulder: ______ cm
Shoulder tip to shoulder tip

Width: ______ cm
Width at widest point (hips or abdomen)
NB: this should be a straight line measurement across the patient, i.e., not circumferential or "over" the abdomen.

Weight:
Actual: ______ kg
OR
Estimated: ______ kg
RFDS Kingair (Lifeport) loading system

- Stretcher length 186cm
- Stretcher width 48cm
- Clearance to sidewall 8cm
- Door width 60.5cm
- Load system 180kg limit

Note: attached equipment can weigh up to 22.5kg allows for patient wt 157.5kg
RFDS Kingair TAS loading

- Stretcher length 186cm
- Stretcher width 51cm
- Clearance to sidewall 8cm
- Cargo door width 130cm

- TAS loading:
  - Patient only 247kg
  - With equipment allows for patient weight of 222kg
Kingair TAS loading
What happens if the patient weighs over 247kg?
Road Options

• Can fly team out to patient who can provide critical care to patient
• Can drive bariatric ambulance out to patient
• Prolonged driving distances
  • Longreach-Rockhampton 7 ½ hours (one way)
  • Quilpie- Brisbane 12 hrs (one way)
• Physiologically demanding for patient and staff
• Fatigue considerations
ADF

• C130
  • Usually needs few days notice
  • Ambulance can be carried in aircraft
  • Very expensive
Example

- 200+ kg patient
- Regional hospital to tertiary centre
- Respiratory failure/pneumonia
- NIV with high $O_2$ requirements
- C130 with military ambulance used
  - Patient moved to ambulance (secured to mattress on floor)
  - Intubated in ambulance
  - Ambulance driven into aircraft
  - Patient managed in ambulance
  - Driven off and transferred at the other end

Took 3 days to organise and cost approx $400,000
Overview: What do we know about how we manage morbidly obese patients in ED?

1. Length of stay is longer
2. Increased CT usage (approx 10%)
3. Obese patients more likely to get IV and blood tests
4. Increased rates of intubation
5. Higher admission rates
6. Increased mortality rates
7. 50% more likely to suffer injury requiring medical attention
Logistical Issues in ED

• Ideally some forewarning of arrival with equipment immediately available and
• Direct unloading onto heavy duty bed or wheelchair
  • Standard bed takes up to 200kg but limited by width
  • Heavy duty bed can take up to 500kg
• Lifting device or hover mattress to assist with transfer
• Adequate staff available to assist
Where to manage the patient in ED?
Bariatric toilet
Medical Issues

1. Airway and ventilation
   • Positioning the patient ‘ramping’ and head of bed elevated
   • Use apnoeic oxygenation/delayed sequence intubation strategies to maximise preoxygenation
     Weingart 2012
   • Better ventilators
   • Availability of video laryngoscopes
   • Use of NIV
   • Nothing however replaces expertise and experience in the team
Medical Issues

2. Vascular Access
   • Use of ultrasound becoming much more widespread
   • Must be able to access longer cannulae
   • Use of EZ-IO when time-critical vascular access required
Medical Issues

3. Diagnostic uncertainty/limits of clinical examination/plain imaging
   • Increased use of CT (250kg limit)
   • Diagnostic uncertainty makes it difficult to refer patients to inpatient teams
Medical Issues

4. Pharmacology
   • Ideal body weight vs total body weight
     • Suxamethonium TBW
     • Vecuronium IBW
     • Rocuronium TBW
     • Ketamine TBW
Medical Issues

5. Paediatric patients
   • Seeing 80kg 10yo and 35kg 4yo
   • Medication dosing
     • Use of Broselow tape to determining ideal body weight
   • Worse outcome in
     • Burns
     • Asthma
     • Injury
     • Incidental findings: hypertension, NIDDM
## ED Assessment and Management: Issues identified by staff

**Kam & Taylor 2010**

### Medical Staff
- Physical examination
- Finding anatomical landmarks
- Performing procedures

### Nursing Staff
- Positioning patient
- Mobilisation
- Assistance with clothes
- IV cannulation

### Radiographer
- Positioning patient
- Ability to get good images
Recommendations:

• Lifting equipment
• Other equipment (tourniquets, beds)
• Extra staff to assist
Summary

1. Delayed access to care
2. Delayed ‘time to disposition’ once in ED
3. Increased CT usage
4. Need for specialised equipment/accommodation for patient (plus staff training) when the patient is in ED.
Thank you