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Document name: Bariatric Trauma Patient – Reception to Discharge and Equipment Guideline	
Document purpose: This document is a guide to help trusts when treating a bariatric patient. It considers the pathway from reception to admission to discharge and mortuary requirements. It is a guideline and checklist for providers to use when reviewing or developing their own local policy and guidelines.	
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Introduction

Obesity is defined as BMI > 30 kg/m² and morbid obesity is a BMI > 40 kg/m². A waist measurement of greater than 100 cm in men and 88 cm in women is also a measure of obesity (NICE 2014).

An accurate weight may be difficult to obtain and is often underestimated by the patient or carers.

Management of the morbidly obese patient will present challenges from the effects of their weight and co-morbidities on physiology; access to imaging; appropriately sized equipment; safe working loads of transfer equipment and safe manual handling. We have provided an example list in Appendix 1.

Morbidly obese patients have an increased frequency of chest injury, pelvic fracture and extremity fracture compared with non-obese patients. They have a reduced likelihood of traumatic brain injury and abdominal injury.

Obese patients have a six-fold increased mortality following blunt trauma. Cardiovascular disease, hypertension, hyperlipidaemia, and diabetes are more common co-morbidities.

Obese patients with co-existing asthma or COPD are at even greater risk of respiratory complications following chest trauma or immobilisation for spinal trauma. They have an increased risk of thrombo-embolism and pressure sores during admission.

The safety, comfort and dignity of bariatric trauma patients should be the focus of care at all times.

INITIAL RECEPTION AND RESUSCITATION

When a patient is admitted who is classed as morbidly obese, ensure they are placed onto the correct trolley or bed using either a hoist or lateral transfer device such as Pat slide or slide sheet. If the patient is unable to move themselves it will be necessary to get as many staff as possible to assist.

Management of the trauma patient should follow the standard approach. It may be safer to initially assess a mild-moderately injured patient with a trauma team in resus rather than an ambulance receiving area for triage, or majors.

Airway

RSI – obese patients are more likely to be a difficult intubation and to rapidly desaturate after induction. Consider using nasal cannulae for apnoeic oxygenation.

A traumatic mechanism of injury would normally require a patient to be in a supine position with in-line immobilisation, but a risk-benefit analysis will need to be made as to whether the patient is tilted head up or positioned in a Ramped position to improve visualisation of the airway and successful intubation.

Difficult intubation trolleys should be routinely available. Additional equipment to consider different ETT sizes with stylets, video laryngoscopes (C Mac, King Vision, McGrath Video Blade, Glidoscope), and fiberoptic scopes.

Obese patients will frequently have obstructive sleep apnoea or obesity hypoventilation syndrome requiring use of a CPAP machine overnight. Staff should request a family member to bring in from home or to ensure that a machine is made available for the patient from the first day of their in-patient stay.

C-spine

Cervical collars will not fit a morbidly obese patient and should not be used. In-line immobilisation should be maintained in the uncleared C-spine with head blocks.

Due to body habitus, the patient may need to be sat up to allow adequate ventilation. A semi-recumbent position of up to 40 degrees does not place pressure on the spine (when spinal fractures cannot be ruled out).

Breathing

Thoracostomies will be very difficult due to the depth of subcutaneous fat. Long Spencer Wells forceps should be used, and staff should wear theatre gowns with double sterile gloves. A larger incision may be required to access the intercostal space. Prophylactic antibiotics may be considered for thoracostomies due to the increased risk of wound infection in obese patients.

Any patients with suspected rib fractures or spinal fractures should be referred to the Pain team (or Anaesthetic team out of hours) as there is a high risk of impaired ventilation.

Efficient O₂ therapy via High Flow Nasal Cannula or Face Mask may be necessary in obese trauma patients due to increased oxygen consumption and high risk of desaturation.

Circulation

A larger blood pressure cuff may be required: either a 'large adult' (size 12) or a 'thigh' (size 13) BP cuff. The patient's calf may need to be used.

Intravenous access may be difficult, and the ultrasound machine should be available to assist. In a MHP emergency, patients requiring EZ-IO humeral insertion may require a cut-down of skin and soft tissue to allow the LD needle to effectively penetrate the bone.

Commercial pelvic binders are unlikely to fit around the morbidly obese patient. Ensure minimal movements for patients with suspected pelvic fracture and consider a sheet to bind the pelvic at the level of the greater trochanters in hypovolaemic patients.

Disability

Certain vacuum mattress will not safely encompass a morbidly obese patient for immobilisation/transfer and should not be used. The patient may need to be carefully pat slid across to/from the CT scanner.

Staff should ensure sufficient people are available to assist with any safe log-roll or alignment roll.

Extremity

Obese patients have a higher risk of fracture after minimal trauma. Ensure a full secondary survey is completed and assess for open fractures. Have a low threshold for x-ray if there is any pain or tenderness of the limbs on examination.

Check skin integrity including all skin folds.

INVESTIGATIONS

CT

The morbidly obese patient may not fit in the CT scanner gantry due to circumference or weight. The patient circumference should be measured before transferring on to the CT bed. If the patient is able, an 'arms above the head' position may improve the likelihood of fitting through the gantry.

If the patient cannot be safely imaged in the hospital, but measurements of the patient's circumference suggest that they will safely fit through a regional CT scanner, then anaesthetic-supported inter-hospital transfer should be arranged.

The current CT and weight capabilities in our region are (as of Nov 2021):

Network	Hospital	Bore Diameter (cm)	Max Weight (kg)
Central England	Northampton	75	227
	Warwick	78	220
	George Eliot	76	227
	Kettering	80	315
	University Hospital Coventry & Warwickshire	70	308
Birmingham, Black Country, Hereford & Worcester	Royal Wolverhampton	70	204
	Worcester Royal	70	205
	Alexandra	70	205
	Sandwell	78	220
	City	78	220
	Walsall	70	227
	Queen Elizabeth Hospital Birmingham	78	227
	Good Hope	78	205
	Solihull	72	205
	Heartlands	78	305
	Dudley	78	227
	Hereford	72	205
North West Midlands & North Wales	Leighton	78	315
	Wrexham Maelor	70	300
	Royal Stoke University Hospital	78	220
	Royal Shrewsbury	78	227
	Princess Royal Telford	80	315
	Ysbyty Glan Clwyd	78	227
	Ysbyty Gwynedd	78	227

There are some occasions where, due to the patient's size, they are not able to have a safe CT scan and the patient is admitted without a definitive diagnosis. In this circumstance, the ED Consultant/senior Trauma Team Leader should review the patient to clinically identify the suspected injuries and refer to the relevant specialties.

Plain x-rays

Plain x-rays of the chest, pelvis and spine should be requested when the patient is too large for the CT scanner but there is a high suspicion of traumatic injury due to mechanism or clinical findings. The weight limit of the x-ray table is normally around 200 kg (check locally), but it may be safer to keep the patient on the trolley where possible.

Ultrasound

Portable ultrasound (by a radiologist) of the lungs, heart and abdomen should be considered as an adjunct to plain imaging. It may not be feasible to achieve high-quality images due to body habitus.

MRI

If the patient does not safely fit through the CT scanner, then the patient will also be too large for any MRI scan.

Bloods

Consider adding CK to standard bloods as patients may have a degree of rhabdomyolysis if they have had a prolonged extrication time.

Obese patients have increased chance of bleeding in surgery so have a low threshold to crossmatch.

Drug Treatment

Staff should be aware of the risks of prescribing medication according to lean body weight or total body weight. In most cases, lean body weight should be selected (e.g., Paracetamol, Morphine, Lidocaine, Bupivacaine, Fentanyl, Propofol, Rocuronium). Further information is available from Specialist in Obesity and Bariatric Anaesthesia (SOBA) UK <https://www.sobauk.co.uk/downloads/single-sheet-guideline>

Avoid over-sedation with opiates and ensure the Pain team are involved early for cases of moderate-severe pain.

THEATRE

If the patient may require emergency surgery, inform theatre staff (including recovery staff and theatre porters) early to allow the appropriate table, attachments, and straps to be set up. Consider anaesthetising on the theatre table rather than the trolley. Anticipate increased time and blood loss in surgery.

It may be necessary to liaise with ward staff and the manual handling team to ensure the correct bed is available for safe post-operative recovery.

PREPARATION FOR TRANSFER TO WARD OR OTHER AREA

A Consultant/senior Trauma Team Leader should determine the lead admitting specialty and ensure the relevant specialties have been informed/reviewed the patient. Ensure the ward is informed and they have initiated getting appropriate equipment in place prior to transfer.

There should be a low threshold to involve the Consultant for the specialty in these complex cases.

There should be a low threshold for review by the Intensive Care team to consider HDU admission.

The T&O team should perform a consultant-led tertiary survey following admission as per the Major Trauma Operational Policy for all admitted major trauma patients.

The patient should be referred to the Major Trauma Coordinator.

Ensure the correct number of staff are available to assist with the transfer to the ward if the patient is on a bed or trolley. Inform the porters that this will be required.

If the patient is well enough to be transported in a wheelchair an extra wide chair must be used (SWL 380kg) or equivalent. Two staff will be required to push the chair.

TRANSFER OR ADMISSION TO THE WARD

When a ward is notified of an impending admission / transfer it is important to have the necessary equipment available:

- Electric profiling bed and appropriate mattress (if not already on an appropriate bed)
- Bed side chair that is wider and appropriate for patient's weight
- Commode (if required) that is wider and appropriate for patient's weight
- Appropriate hoist and hoist sling (if required)

It will be helpful to have a list of equipment available, weight limits and location that you can access when required.

Consider other types of equipment for example larger gowns, bed sheets, shower chair, BP cuffs, CPAP machine adaptations, seating.

Due to the increased risk of thrombo-embolism, prophylaxis should be commenced as soon as possible as per trust guidelines.

Consider contacting your Tissue Viability Service early.

Obese patients are at risk of malnutrition and may require early dietician input.

DISCHARGE FROM THE WARD

Discharge planning may take some time requiring special equipment at the patient's home, so early planning is advised in conjunction with the Therapy team.

Ensure all equipment is returned to the appropriate area and is cleaned in line with the Trust Infection Control and Prevention policy

Review arrangements made for the patient's stay in hospital. Liaise with the Manual Handling team if any problems occur.

CARE OF THE DECEASED PATIENT & TRANSFER TO THE MORTUARY

In the event of a death inform the mortuary staff and porters that the patient is morbidly obese as this may have implications for the movement of the deceased patient to the mortuary.

The patient will need to be moved to the mortuary on the bed and to ensure there is a dignified transfer there must be an adequate number of staff to assist and if required corridors need to be cleared.

HANDLING AND MOVING

A moving and handling risk assessment should be made on admission. The patient's weight, height, waist circumference, and estimated BMI should be identified, and then contact made with the Handling and Moving team (in hours) or the hospital bleep holder (out of hours) to acquire the appropriate equipment.

Scoop stretchers & vacuum mattresses have a weight limit that may not be large enough to provide circumferential support to the body of a morbidly obese patient. Staff should be aware of what equipment is in stock and the relevant weight limits.

Dependent upon the individual patients' condition and where physically possible patients should be encouraged to transfer themselves.

APPENDIX 1**EXAMPLE EQUIPMENT LIST**

Below is a list of equipment to check your local stock for capacity/weight limits and the location of storage. Your manual handling team can support you in identifying the specialised equipment.

Equipment	Type	Capacity/Weigh Limit	Location
Scoop stretcher			
Vacuum mattress			
ED trolley			
Bed			
Hoist			
Operating theatre table			
Weighing scales			
Pat slide			
Slide sheet			
Larger gown			
Larger bed sheets			
Bedside chair			
Toilet			
Commode			
Shower Chair			
Additional equipment for emergency resuscitation			
Nasal cannulae for apnoeic oxygenation			
Difficult airway equipment			

Long Spencer Wells forceps			
Larger blood pressure cuff: either a 'large adult' (size 12) or a 'thigh' (size 13) BP cuff			
EZ-IO LD 45mm needle plus scalpel			
TPOD pelvic binder			
Portable ultrasound machine			

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