Clinical Standard Operating Procedure (SOP)

PACKAGING

SETTING	Service-wide
FOR STAFF	All staff
PATIENTS	All patients

Introduction

This document describes the standardised approach to patient packaging for all patients that Retrieve transfer. Transferring and receiving hospitals will become familiar with these processes and this will improve transfer efficiency. The main benefits of the packaging approach described in this document are patient-centred:

- Temperature control
- Protection of suspected or confirmed spinal injury
- Protection of skin and prevention of pressure injury
- Maintains privacy and dignity
- Protection of lines, tubes and drains
- Monitoring lines and ventilator circuit are safe and easily connected/disconnected

This approach should be taken for all patients except post-cardiac arrest patients in whom modifications are required. Any deviation must be documented in the Retrieve patient record.

Packaging

Patients should be packaged as follows:

- Blizzard Blanket velcroed closed containing:
- Sheet underneath patient
- Sheet on top of patient
- ReadyHeat blanket on top of sheet
- Blanket on top, if required

Once packaged, patients must be safely secured to the critical care transfer trolley using the 5 point harness as described in the ‘Securing patient, passengers and equipment in the ambulance’ SOP.

Spinal immobilisation

Patient with suspected or confirmed spinal injury must be transferred using the vacuum mattress adequately vacuumed and shaped to the patient’s position.

Whilst the orthopaedic scoop stretcher is available and widely used in the ambulance service, it is uncomfortable and associated with increased risk of pressure injury when patients lie on it for more than 45-60 minutes. The majority of Retrieve’s road journeys are over 45 minutes and, when adding the time a patient will lie on a scoop stretcher in the referring ED and receiving hospital, it is unlikely

that many transfers will be completed within this 60 minute period. Should a scoop stretcher be used, Retrieve carries immobilisation blocks and tape to provide spinal immobilisation.

The vacuum mat must be placed onto the critical care transfer trolley underneath the Blizzard Blanket as this will ensure that there is an easy method of moving the patient (if required) using the vacuum mattress handles. This is the only necessary modification to the standardised approach to packaging described above to ensure spinal immobilisation.

There are two methods of moving a patient with suspected or confirmed spinal injury onto or off the vacuum mat. The preferred method is to use an orthopaedic scoop stretcher and minimal (10º) rolls to insert/remove blades prior to lifting and moving the patient. If an orthopaedic scoop is unavailable, it is possible to use a patslide and sufficient assistants to maintain alignment (note: the Blizzard Blanket must remain on the critical care transfer trolley when sliding from the trolley to bed to avoid subsequent unnecessary movements).

Spinal control should be achieved by moulding the vacuum mattress around the patient's head and neck whilst removing air and then applying tape across the forehead and chin.

Trauma patients

Trauma patients may have additional devices that require care when packaging according to this SOP:

- Pelvic binders: should have been applied pre-hospitally or in the referring hospital ED. It is best practice to apply these to bare skin (ie. no underwear) as this reduces the risk of pressure injury. It is sometimes possible to remove underwear without disrupting the integrity of the binder by cutting it.
- Limb traction devices: often called Kendrick Traction Devices, KTDs (or similar), these ski pole-like devices are used to apply traction for long bone fractures. As they protrude beyond the end of the trolley care must be taken on transfer to ensure the patient is moved diagonally 'downwards' (ie. towards the foot end of the bed) to avoid snagging on the monitoring platform. Care must also be taken to ensure the KTD is adequately protected as it may protrude beyond the end of the critical care transfer trolley.

Air transfer

All patients transferred by air (air ambulance, Coastguard, military or fixed wing) should be packaged in a vacuum mattress as described in the spinal injury section. This makes moving the patient safer and easier.

Patients transferred by air should have hearing protection (ear plugs or ear defenders) that should be supplied by the transporting aircraft crew.

Modifications for post-cardiac arrest patients

Post-cardiac arrest patients who are ventilated and expected to undergo targeted temperature management in receiving hospital must not be packaged in a Blizzard Blanket and must not have a ReadyHeat blanket placed on top of them. All other packaging must be carried out.

Temperature

All patients must have their temperature monitored regularly. Ventilated patients must have an oesophageal temperature probe inserted and temperature monitored and recorded using the Zoll monitor and *Retrieve* patient record system. Non-ventilated patients must have their temperature checked at least hourly using the tympanic thermometer.

The *Retrieve* ambulances have temperature control within the cabin. The ambient temperature should be set to ensure patient and crew comfort. When transferring patients in whom maintaining temperature is anticipated to be particularly difficult (eg. burns, hypothermia), the cabin temperature should be set to high and pre-heated whilst the team are packaging the patient.

Cautions

The ReadyHeat blanket is widely used in pre-hospital and transfer medicine. It works via an exothermic reaction, warming to approximately 37.5ºC over a period of 5-10 minutes after being exposed to air. The blanket remains at this operating temperature for around 6 hours. Blankets must never be placed in direct contact with the patient's skin as there is a small risk of contact burns. Attention must be given to ensuring that the underlying sheet prevents this.

Preparation and packaging process

The following describes the step-by-step process of packaging a *Retrieve* patient.

1. Preparation

- Open ReadyHeat blanket to ensure it has time to warm up
- Ensure all medical devices are secured to the critical care transfer trolley
- Connect to wall power and oxygen

Patient

- Endotracheal tube:
  - If well-secured (eg. Zinc oxide tape trouser legs, AnchorFast, etc) then leave
  - If not well secured or any concerns, resecure using taped trouser legs and a loose circumferential tie (you must be able to insert 2 fingers between the tie and the patient's neck)
- Intravenous access:
  - Patients must have at least 2 sites of peripheral intravenous access if they do not have central venous access. In rare circumstances where this is particularly difficult, one IV and one IO is acceptable
  - If well-secured then leave
  - If not well-secured or any concerns then resecure
  - All peripheral infusion lines should be taped to the skin with a mesentery and doubled back to reduce the risk of traction removing the cannula

  - If the patient has peripheral access only, a cannula (ideally right sided) must have a bag of crystalloid, giving set, three-way tap and extension line connected to enable bolus drug administration en-route without a crew member unbuckling from their seat

- Transducers
  - Arterial line transducers must be attached to the patient's arm using the disposable tranducer holder. Neurosciences patients in whom cerebral perfusion pressure is particularly relevant (eg. traumatic brain injury), the arterial line transducer should be placed and zeroed at the patient's tragus.
- Tubes and drains must be adequately secured
- ECG dots – consider taping if not long-lasting ICU ones

Equipment

- Ventilator circuit and expiratory valve must be set up
- Monitoring cables must be tied together (don't forget temperature monitoring cable if ventilated)
- Lower critical care trolley sides
- Open left side of monitoring platform
- Place Blizzard Blanket open on critical care transfer trolley

2. Movement

- Brief the referring hospital team on the following sequence of events. The Retrieve team must lead this process.
- Place critical care transfer trolley alongside patient's right side
- Connect ventilator (this will enable sufficient time to stabilise prior to embarking upon the transfer)
- Connect Zoll monitoring (this ensures early monitoring data is recorded on the Retrieve patient record system)
- Move the patient onto the critical care transfer trolley using a patslide (or scoop in the case of suspected/confirmed spinal injury). This movement should result in the ventilator circuit and monitor cables hanging to the right of the patient in front of the individuals pulling the patient towards them. Take care to ensure no wrinkles of Blizzard Blanket or sheet occur underneath the patient.
- Move the critical care transfer trolley away from the bed to achieve 360º access

3. Packaging

- Place ventilator circuit into holder
- Ensure lines, tubes and drains are not exerting pressure on skin and that any hanging drains (eg. chest drains) are placed to the right side of the critical care transfer trolley
- Route monitor cabling so that the umbilicus will emerge from the Blizzard Blanket at the level of the patient's knees (ie. just below the Zoll monitor)

- Wrap Blizzard Blanket and secure Velcro ensuring ventilator circuit is outside the Blizzard so it is visible
- Cut hole(s) in the Blizzard blanket (5cm is sufficient) to access peripheral IV access and/or transducers. This approach minimises the need to open the Blizzard Blanket (maintaining heat) and ensures access is within reach when crew are seated in the ambulance
- Secure patient to the critical care transfer trolley as described in the 'Securing patient, passengers and equipment in the ambulance' SOP

4. Pre-transfer

- Complete pre-departure checklist
- Disconnect power from wall
- Disconnect oxygen from wall outlet and connect to cylinder
- Depart

Arrival, handover and unpackaging process

Upon arrival at the receiving hospital, the following process should be followed.

1. Arrival

- Arrive in destination hospital and make way to ED / ICU / theatres / etc
- Introduce team to receiving team
- State if there are any immediate requirements (see Handover SOP)

2. Handover

- Give structured handover to receiving team as detailed in the Handover SOP

3. Preparation

- Move trolley down right side of patient destination bed
- Connect to wall power
- Connect to wall oxygen
- Lower critical care trolley sides
- Open left side of monitoring platform
- Unbuckle patient harness
- Unwrap Blizzard Blanket (and de-vac vacuum mattress, if used)

4. Movement

- Brief the receiving hospital team on the following sequence of events. The Retrieve team must lead this process

- Move patient onto the destination bed using a patslide (or scoop in the case of suspected/confirmed spinal injury, remembering to minimise patient movement using 10º rolls).
- Detach monitoring when receiving hospital are ready to place patient on their monitoring
- Connect patient to receiving hospital ventilator

5. Post-transfer

- Clean equipment
- Ensure handover complete and questions answered as per Handover SOP
- Complete checklist to ensure no equipment is left behind
- Depart

Document Governance

REFERENCES	N/A
RELATED DOCUMENTS AND PAGES	Securing patient, passengers and equipment in the ambulance SOP Handover SOP
AUTHORISING BODY	Division of Surgery, University Hospitals Bristol & Weston NHS Foundation Trust
SAFETY	Care must be taken to avoid contact burns with the ReadyHeat blanket
QUERIES AND CONTACT	*Retrieve* Leadership Team