The Vacuum Mattress is primarily a full spine / body immobilization transportation device for multi-trauma patients with suspected spinal injuries, but is also excellent as a transportation splinting device for patients with pelvic or hip injuries, extremity fractures, and for the intubated patient to prevent airway movement.

Indications:

1. Patients who are suspected, due either to mechanism of injury or clinical assessment, to have a spinal injury.
2. Patients, such as pelvic fractures, who will benefit from full-body immobilization

Precautions:

1. While a vacuum mattress gives excellent lateral body immobilization, a vacuum mattress does not provide the same longitudinal immobilization that is found with a Long Spine Board or a Scoop Stretcher. It is therefore required for any patient who is suspected to have a spinal injury and who is to be moved or carried any great distance in a vacuum mattress, that the vacuum mattress must be secured on a Long Spine Board or Scoop Stretcher.

Technique:

1. Place the Vacuum Mattress on the ambulance stretcher or on flat surface. If placing on the ground, be sure to protect the mattress from potential punctures by placing a blanket under it. Unclip the buckles on one side of the mattress and lay off to the side. Ensure the internal beads are spread out evenly throughout the mattress.
2. Place a blanket or sheet down the full length of the vacuum mattress. This will ease removing the patient off the vacuum mattress in the ED, and helps prevent sweating and heat loss when lying on the mattress.
3. Place the patient onto the mattress using a Long Spine Board or Scoop Stretcher. With adequate personnel (3), the patient can also be log rolled onto the mattress. Position the patient ensuring that the top of the patient's shoulders are level with the shoulder line marking. Once the shoulders are correctly positioned, remove the Long Spine Board or Scoop Stretcher. In a suspected spinal injury, one person should also continue holding the head to maintain proper head alignment (with a C-Collar in place) until the head is immobilized in the mattress (see below).

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4. In adults, place adequate padding under the head section of the mattress to maintain the head in the neutral in-line position. Firm padding using a *Folded Towel* or similar is generally required under the head section of the mattress in an adult to prevent hyperextension of the cervical spine.
5. Gently attach and snug up the straps. The straps should be tightened with a *'feed and pull'* method to prevent twisting of the patient. While tightening straps, have a rescuer gently push laterally inwards on the sides of the mattress. This will assist in tightening the straps.
6. Once the patient's body is secured properly to the mattress, only then is the patient's head secured to the mattress. Ensure the correct amount of firm padding remains is under the head section of the mattress to maintain the patient's spine in the neutral in-line position. If indicated, towel rolls or similar can be used to provide lateral stability to head. Gently wrap the head section of the mattress around the patient's temporal region. Place a strip of tape across the forehead and secure to mattress. Continue to hold this section firmly against the lateral support (towel rolls or similar) or the head until air is evacuated out of the mattress (Step 7).
7. Ensure all strapping is complete and snug. Attach the hand pump to either the foot end or head end port. Maintaining gentle lateral pressure to head, pelvic, and lower extremity sections of mattress, evacuate all the air out of the mattress until it feels solid. Re-adjust straps following evacuation of the air.
8. On arrival at the ED, ask the staff whether they wish the vacuum mattress removed from the patient. If they do (and time permits), assist them in transferring the patient onto a bed or another immobilization device.

Notes

1. A Vacuum Mattress is of most benefit where the patient will require immobilization for greater than 15 minutes, and/or where the patient cannot lay flat on a Long Spine Board or Scoop Stretcher.
2. Positioning the mattress can sometimes be made easier by partially evacuating the air out of the device to provide rigidity. Once the patient is on the mattress, the air can be let back in to allow the bead to redistribute themselves prior to full evacuation.