Patient Packaging – Litter

A subject who will be transported via litter must be properly secured in the litter. This process is called “patient packaging”. All injuries must be considered, and the patient must be immobilized as necessary. This may mean securing and immobilizing an injured limb, a broken pelvis, or the patient’s spine.

The patient is secured into the litter by means of the patient restraint system. The patient restraint system is a series of colored velcro straps that are threaded through the side bars of the litter, and placed across the patient and then tightened.

In addition to the patient restraint system, the patient is also secured from sliding down inside the litter by one of three methods which are the harness, double foot restraint and the single foot restraint.

Principles

- Think of the litter as simply handles for the patient. You should be able to put the litter in any orientation with no significant movement of the patient.
- While the patient must be secure, be careful to not interfere with the patient’s breathing by having the chest straps too tight across the chest. Doing so restricts the chest cavity which cannot expand sufficiently for breathing.
- It is important to monitor the patient’s airway while packaging. It is also important to monitor the patient’s potential state of nausea. If the patient states that they are going to vomit, or appears to

vomit, it is critical that the patient/litter be rolled on its side to allow the vomit to fall out of the mouth. A patient that vomits in the supine position is likely to aspirate the vomit which can lead to pneumonia and an extended hospital stay, or worse, a fully obstructed airway.

- All patients should have a helmet placed on their head and secured with the chin strap. The exception to this is when the patient is placed in the full body splint for cervical spine injuries.
- Placing something under the patient's knees will improve patient comfort, especially on long carry-out operations. This includes a patient with a knee injury. Our litter system includes a small inflatable pillow for this purpose, or the full body vacuum splint can be shaped to raise the knees slightly before being evacuated of air.
- Be certain that all tie-ins are sufficiently strong to hold the patient in the litter. The Velcro straps that attach the patient restraint system shoulder straps to the litter must have sufficient length of engagement or they may be pulled off of the litter with only moderate force. This is generally not an issue unless the patient is very large. Should you have a patient who is too large, you may have to provide additional securing with webbing, in a similar fashion to how the velcro straps are oriented.

Basic steps:

- Assemble litter
- Pull the restraint system, helmet, and knee pad out of the carry bag
- Lay the restraint system out above the head of the litter

- Adjust shoulder straps so restraint system can be pulled over patient’s head
- Be sure shoulder straps are secure – engage enough length of Velcro
- Load patient (head and hip placement in the litter are important for obtaining the best use of the patient restraint system)
- Put padding under patient’s knees
- Attach the harness to the patient (if the harness is the method of choice) and secure the harness to the litter with webbing. The patient harness is located inside the litter carry bag that also includes the helmet and eye pro. There are two sizes which are M to L and L to XL. Generally, a patient over 200 lbs requires the XL harness. The harness must be attached and secured to the litter before placing the patient restraint system over the patient. The harness is placed around the patient’s waist and secured by the buckle. Webbing is then attached to the litter at shoulder level on one side of the litter, placed through the belay loop on the harness and attached to the other side of the litter. Both webbing attachments utilize the single round turn and two half hitches to secure it to the litter. It is important that the webbing is pulled tight as this prevents the patient from sliding down in the litter (tight but not so tight that the patient is in pain from the harness pull in their groin). Once the webbing is secured to the litter, it is critical that the shoulder straps be re-checked and tightened to ensure a tight fit between shoulder straps and harness. This system can be utilized inside the VSB and SKED as well. The harness can be utilized on a patient with a pelvic injury as long as the pelvic binder is placed on the patient first.

- Move the restraint system over patient’s head and lay out the straps across the body in their appropriate locations ensuring that the abdominal strap is located at the hips and the leg straps do not go over the knees.
- Attach the straps to the lower small rail of the litter. Do not attach the straps to top rail of litter.
- The chest strap should go across the patient’s chest at the location of the Xyphoid process or lower end of the sternum. The chest strap does NOT go over patient’s arms. Having the chest strap too high on the chest can cause airway difficulties for the patient. It is important to have the patient take a deep breath and hold it while the chest strap is tightened. Once tight ensure you tell the patient they can resume breathing.
- Once all straps are tight you will tighten the shoulder straps.
- Put helmet and eye protection on patient

- If the harness is not utilized then you must utilize either the single or double foot restraint (can be done simultaneously with restraint system)
- For a patient with no leg injury you utilize the double foot restraint. . .Tie one end of webbing to litter about at patient’s knees
- Run webbing under both feet and loop webbing around litter opposite initial tie-off
- Pass webbing around webbing that runs between patient’s feet
- Tie webbing off near initial tie-off with a round turn

and two half hitches

- For a patient with a leg (incl knee injury) you will only secure the uninjured leg as follows. . .
- Secure the webbing onto the litter on the uninjured side of the patient.
- Then run the webbing under the uninjured foot, across the top of the foot, behind the ankle, back across the top of the foot (you will create a cross with the webbing), under the foot and up the foot to the ankle. You will then secure the webbing to the same side of the litter as the uninjured leg. Do not attempt to secure the webbing under or over the injured leg to the opposite side of the litter.

Attaching the webbing to the litter for the harness, single foot restraint and double foot restraint.

- Webbing is attached to the litter by means of the round turn and two half hitches. This hitch consists of two parts, a round turn and two half hitches. The round turn takes the initial strain and controls the load giving you freedom to tie the working end. It also provides friction against the support. The half hitches create a clove hitch around the standing end, securing the load. The round turn is simply one full wrap around the vertical bar on the litter. Pull the amount of tension you want in the webbing, make the round turn, and then secure with two half hitches.

The Wiggies:

The Wiggies is a heavy duty, medical grade sleeping bag. The medical grade is based on the fabric (easy to disinfect) and the number and locations of patient access points—arms, chest, and pelvic areas. The Wiggies is utilized on patients to maintain their body temperature. In almost all cases the patient has been standing still for several hours before SAR members arrive. This can easily result in a hypothermic patient upon our arrival even in warm temperatures (above 75/80 degrees). In many cases the patient can easily become hypothermic during litter transport as cool air under the back can cool the patient very quickly. The patient's body build, temperature (not just current temp but the temp anticipated during the entire carryout), patient's medical condition, length of evac, etc. are all critical items that must be considered. You must think ahead as to whether the patient should be completely placed in the Wiggies before being packaged in the litter or just place the bottom of the Wiggies under the patient (this gives the option to place the Wiggies top on the patient later without taking them out of the litter). Below is some basic guidance for Wiggies use with temps at or below 75 degrees:

- A Wiggies must be considered any time the temperatures are 75 degrees or below. If your patient is warm and comfortable upon your patient contact then just placing the bottom portion of the Wiggies under the patient is most likely sufficient.
- A patient that is cool upon SAR arrival would indicate that the patient be placed inside the Wiggies.
- A patient that is cold upon SAR arrival would indicate the placement of a heat blanket inside the Wiggies and then the patient placed inside the Wiggies on top of the heat blanket. Heat packs can also be added to improve patient comfort.
- Regardless of temperature if you have a cool to cold,

shivering patient when you arrive you must place the patient into the Wiggies. A patient in shock can be hypothermic with ambient temperatures above 90 degrees.

- The following steps are utilized when the harness is used on a patient that will be placed into the Wiggies:
    - Place the harness on the patient
    - Enclose the patient inside the wiggies and zipper the Wiggies as needed
    - Attach the webbing to the top half of the litter on one side utilizing the round turn with 2 half hitches
    - Run the webbing through the Velcro arm slot, through the harness belay loop and back out the Velcro arm slot on the opposite side.

- Secure the webbing to the litter utilizing the round turn with 2 half hitches.
- Secure the Velcro on the arm slots around the webbing to prevent air, snow or rain infiltration into the wiggies.
- Retighten the shoulder straps to ensure a snug fit.

Other:

- It is important to talk to your patient and explain what you are doing and why it is being done. Many patient are nervous about being secured into the litter.
- If a patient has a head, spinal, or pelvic injury, they must be first packaged in the full body splint before being placed/secured into the litter.
- Have conscious and alert patient hold onto the hand loop. An unresponsive patient should have their hands secured with the Velcro hand loop.
- Some patients may be combative. This can happen with head injuries, patients on drugs, diabetic patients, etc. It is recommended to secure them in the full body splint first as this splint provides the best means of securing the patients arms, hands, and legs. In the absence of the full body splint, you can use roller gauze to secure the hands and arms or place the patient in an emergency blanket first wrapping their arms and hands inside the blanket before securing them with the restraint system.
- The final step of patient packaging is for the Safety Officer to verify that the packaging has been done correctly and the patient is secure.