

## FACTS ABOUT QUADRIPLEGIA

Quadriplegia is caused by disease or injury to the cervical section of the spinal cord. It is paralysis of the lower and upper body due to injury, trauma, or some disease processes like cerebral palsy, multiple sclerosis, cancer (with tumors or lesions on the spinal cord), spina bifida, and occasionally osteoporosis. The main cause of quadriplegia is from traumatic injury with the leading cause being automobile accidents, which account for about 45% of cases. Quadriplegic patients are mostly male (82%) with most of these injuries occurring at age 19. Sport injuries account for about 8% of quadriplegia cases, 60% of which are from diving accidents.

The higher the level of the spinal cord injury, the more impaired an individual will be. Some patients require assistance with breathing from a respirator or diaphragmatic pacemaker if the injury occurs at the C1-C2 level. Spinal cord injuries that result in quadriplegia are labeled as partial or complete. If the injury is complete, there is no function below the point of injury, no sensation, and both sides of the body will usually be equally affected. Quadriplegic patients will not perspire below the level of their injury. Quadriplegics may have some return of function and sensation following their injuries, depending on the type and severity of the injury. Losses lasting six months or more are usually not reversible. Considerable research is being done in the area of improved functionality. Some patients may have surgical procedures done to improve their status. This involves the transplantation of muscle tendons. A patient also can have phrenic nerve pacers implanted to assist with breathing.

For partial injuries, the patient may be able to move one limb more than others or have some function in some areas. For example, a patient with a C5 injury may have some use of his shoulders and arms but no control of his wrists and hands; 45% of such injuries are complete, 55% incomplete.

Many of these patients spend considerable time in hospitals and rehabilitation facilities after their injuries. These patients are very often discharged from rehabilitation facilities with referrals for nursing, therapy, and home health aide services. Many patients need to go through extensive counseling to deal with their traumatic loss of function, depression, and dependence on others to meet all of their needs.

## COMPLICATIONS

Quadriplegic patients are at risk for multiple complications. Some of the complications are preventable with proper attention to care needs and adherence to routines. Home health aides assist these patients with most of their personal care activity and sometimes their bowel and bladder care. Home health aides need to know the complications that can occur and the necessary action to take when they observe something out of the ordinary for these patients.

**Pneumonia:** Quadriplegic patients, especially those on ventilators, may be more at risk for the development of pneumonia. Because these patients have limited sensation and muscle control below the level of their injury, they may not be able to cough and deep-breathe as well as normal.

**Contractures:** A contracture develops when the elastic connective tissues are replaced by inelastic fibrous tissue usually at a joint area. Contractures usually occur for two reasons: scarring of tissue and lack of use due

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to immobilization or inactivity. This makes the affected area resistant to movement and stretching and is often permanent. The quadriplegic patient will not be able to move independently and will need assistance with passive range of motion exercises. Home health aides may be assigned to perform range of motion exercise to help prevent the formation of contractures.

**Depression:** When an injury or illness results in quadriplegia, it can take a long time for a patient to adjust. Due to the extreme loss of function, mobility, and sensation, and then dependence on others, a deep depression often occurs. Many of these patients will need counseling as they adjust to their new lives.

**Skin Breakdown:** These patients are extremely prone to skin breakdown and pressure sores due to a loss of sensation and total inability to move without assistance. To prevent tissue breakdown in patients, caregivers must pay attention to skin care, repositioning, preventing friction, and using special mattresses and cushions.

**Autonomic Dysreflexia:** This can be a life-threatening complication. All home health aides working with quadriplegic patients need to know the signs and symptoms of this complication and the actions to take.

### **What Is Autonomic Dysreflexia?**

Autonomic dysreflexia is an over-activity of the autonomic nervous system. It may occur in patients with a spinal cord injury at the T5 level or above. The older the injury, the less likely this is to occur. When an irritating stimulus is introduced to the body below the level of the injury, the stimulus sends nerve impulses to the spinal cord where they travel upward until they are blocked at the level of the injury. Since these impulses cannot reach the brain, a reflex is activated that increases activity of the sympathetic portion of the autonomic nervous system. This causes spasms and a narrowing of the blood vessels, which results in a rise in blood pressure. The brain cannot send a message to a level below the injury so blood pressure cannot be regulated.

### **Causes**

- A blockage in the urinary drainage device, bladder infection, inadequate bladder emptying, bladder spasms, or possibly bladder stones
- A bowel that is full of gas or stool
- Skin irritations, wounds, pressures sores, burns
- Broken bones
- Pregnancy
- Ingrown toenails
- Appendicitis
- Other medical complications

**Symptoms**

- Pounding headache
- Goose bumps
- Sweating above the level of the injury
- Nasal congestion
- Slow pulse
- Skin blotching
- Restlessness

All quadriplegics will have been instructed in these signs and symptoms and actions that they need to take. Most patients will carry a card for emergency room staff regarding the need for the type of emergency treatment needed since not all emergency room physicians are familiar with this phenomenon.

**Treatment**

Symptoms of autonomic dysreflexia need immediate treatment. You may be the first person to recognize what is occurring and will need to take immediate action.

**Here are some things to do.**

If the patient has been sitting up, have him or her do a pressure release, that is, lift his or her buttocks off the wheelchair pad immediately and then transfer to bed, keeping the head elevated.

Check the patient's catheter to see whether it is kinked or plugged; if so, straighten the tubing and secure with a catheter strap. If the catheter is plugged, the patient will need an immediate catheter change. Contact the supervisor immediately.

Check the drainage bag to determine whether it is at a level higher than the patient's bladder or if the drainage bag is full; if so, empty the drainage bag and make sure the bag is hanging below the level of the bladder.

If it appears that the bladder has not triggered the episode, the patient will need to have his or her bowel routine done immediately to empty the bowel.

If you are doing digital stimulation as part of a patient's bowel regimen when the symptoms first occur, stop immediately and contact the supervisor as to how you should proceed.

If the bladder or bowel does not appear to be the stimulus triggering the autonomic dysreflexia, check to see whether the patient has a pressure sore, ingrown toenail, or reports any falls that may have caused a broken bone.

If the patient does not respond to interventions, call 911. Notify the supervisor about the signs and symptoms of autonomic dysreflexia, interventions, and other observations.

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**THE HOME HEALTH AIDE'S ROLE****Assist with Personal Care**

- Provide assistance based on the assignment sheet.
- Make certain the bath or shower water is not excessively warm or cold.
- If the patient has swallowing problems, follow the assignment sheet in assisting with food or liquid.
- Provide catheter care as outlined on the assignment sheet.
- Assist with bowel regimen as outlined on the assignment sheet.

**Assist with Exercises**

- Follow the assignment sheet or therapy instruction sheet carefully.
- Do not "force" range of motion in joints that are spastic. Move slowly and in a relaxed manner.

**Assist with Transfers**

- Be knowledgeable and competent in using any transfer assistive device the patient may require. Do not do a transfer or use equipment until you have been thoroughly trained.
- Notify the supervisor immediately if there is any change in procedure or equipment other than what is on the assignment sheet.

**Communicate**

- Most patients will be able to direct their care verbally.
- Patients develop their own routines. If you are new to the patient, he or she may know best what the order of the day is. Ask for direction and provide the care as long as it complies with what is on the assignment sheet.

**Observe and Report**

- It is important for the home health aide to report any new signs and symptoms and to notify the supervisor accordingly.
- If you are doing the patient's bowel regimen, observe and record the amount and consistency of stool. Report changes to the supervisor.
- Carefully observe the patient's skin condition at each visit and report any changes to the supervisor.
- Always observe for possible complications of quadriplegia. Record and report any to the supervisor.

**CASE STUDY**

Joe is a 24-year-old male who was injured in a motor vehicle accident six months ago. The motorcycle he was riding was broadsided by a car making an illegal turn. Joe had been on his way to the bike shop to pick up a new strut for his bike. He needs assistance with all of his personal care needs until his mother and fiancé can learn his care. As a result of the accident, Joe was thrown from his bike and sustained a fracture at the C5-C6 level of his neck. He still has marks on the sides of his forehead from the tongs that immobilized his neck for the first few months. Joe has minimal-to-no use of his arms with a little sensation around his elbows and forearms. He cannot move or feel his legs. Joe reports no problems breathing, but states he has had a couple of colds since being hospitalized.

This is Sam's first visit to Joe. He seems quiet and somewhat withdrawn but is able to give Sam directions regarding his care. Both his mom and fiancé want to observe Sam as he provides care. The home health nurse visits with Sam on the first visit because of the patient's extensive personal care needs.

The nurse spends the entire first visit demonstrating the patient's bowel regimen, transfers, and personal care. Sam assists with his shower, in the roll-in shower the family built, and then demonstrates transferring him back to bed to assist with his dressing. The nurse reviews all the items on the plan of care that are assigned to Sam including the patient's bowel routine. Joe's care plan includes the following activities: transfers, shower, shaving, bowel regimen Monday, Wednesday, and Friday, dressing, range of motion exercises, and suprapubic catheter care.

Joe doesn't talk much during the visit. He asks if Sam will provide care all the time. Sam tells Joe he will see him every Monday, Wednesday, and Friday. His mother and fiancé relate that it will be some time before they are able to learn all of his care. The nurse instructs the caregivers on the signs and symptoms of autonomic dysreflexia and the need to report any problems with Joe's catheter immediately. The nurse shows Joe's mother and fiancé how to irrigate the catheter in the event it plugs and instructs them to call immediately if it needs to be changed. The nurse also tells them to call 911 if Joe has symptoms of autonomic dysreflexia. She then checks to make sure Joe has his card with instructions for the emergency room staff regarding the treatment of autonomic dysreflexia.

**THINK ABOUT IT**

1. Does Joe meet the normal profile of patients who sustain spinal cord injuries with resulting quadriplegia?
2. Do all the items on the aide assignment sheet seem like activities that an aide would do in the course of a visit to a quadriplegic patient?
3. What would you do if a patient started developing signs and symptoms of autonomic dysreflexia while you were providing care? Would you discontinue a bowel regimen after you started if symptoms began to occur?
4. What things would you check every time you visited a quadriplegic?



DIRECTIONS: READ EACH QUESTION CAREFULLY. THEN, DETERMINE THE BEST ANSWER. CHECK THE CORRESPONDING BOX ON YOUR ANSWER SHEET. PLEASE DO NOT WRITE ON THIS POST-TEST.

1. An over-filled bladder can trigger autonomic dysreflexia. Which of these will cause an over-filled bladder?
  - a. Not drinking enough water
  - b. A plugged foley or suprapubic catheter
  - c. An elevated temperature
  - d. Immobility
  
2. Most patients who are quadriplegic will be young males who have sustained a spinal injury in an automobile accident or sports activity.
  - a. True
  - b. False
  
3. Patients who suffer quadriplegia as a result of an injury may experience feelings of loss, anger, and:
  - a. Happiness
  - b. Denial
  - c. Depression
  - d. Gratitude
  
4. Autonomic dysreflexia is a life-threatening complication of quadriplegia caused by numerous stimuli, including:
  - a. Nose bleed
  - b. A bowel over-filled with stool or gas
  - c. Not enough to eat
  - d. Anxiety
  
5. Passive range of motion exercises for quadriplegic patients can help:
  - a. Skin breakdown
  - b. Poor circulation
  - c. Contractures
  - d. Boredom
  
6. Besides having loss of function below the level of the spinal cord injury, quadriplegic patients may also have:
  - a. Inability to sense hot or cold
  - b. Inability to perspire below the level of the injury
  - c. Inability to feel if they have any skin breakdown occurring
  - d. All of the above

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POST-TEST, PAGE 2

7. Which of the following are methods an aide could employ to prevent skin breakdown in a patient with quadriplegia?
- Repositioning the patient
  - Installing an air purifier
  - Include more iron in the patient's diet
  - None of the above
8. The signs and symptoms of autonomic dysreflexia may include:
- Goose pimples
  - Sweating on face and neck
  - Severe headache
  - All of the above
9. Patients who are quadriplegic may be more susceptible to which of the following?
- Diabetes
  - Pneumonia
  - Arthritis
  - Heart failure
10. Patients who have a C1-C2 injury may need breathing assistance from:
- A nebulizer
  - A ventilator
  - Oxygen
  - None of the above

- END -



NAME \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTIONS: READ EACH QUESTION IN THE POST-TEST CAREFULLY. THEN, DETERMINE THE BEST ANSWER. CHECK THE CORRESPONDING BOX ON THIS ANSWER SHEET. DO NOT WRITE ON THE POST-TEST.

MULTIPLE CHOICE ANSWER SHEET

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| 1.  | <input type="checkbox"/> a | <input type="checkbox"/> b | <input type="checkbox"/> c | <input type="checkbox"/> d |
| 2.  | <input type="checkbox"/> a | <input type="checkbox"/> b |                            |                            |
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| 9.  | <input type="checkbox"/> a | <input type="checkbox"/> b | <input type="checkbox"/> c | <input type="checkbox"/> d |
| 10. | <input type="checkbox"/> a | <input type="checkbox"/> b | <input type="checkbox"/> c | <input type="checkbox"/> d |

INSTRUCTOR'S COMMENTS/SIGNATURE

Signature \_\_\_\_\_ RN \_\_\_\_\_ Date \_\_\_\_\_

