SPINAL CORD INJURY (ACUTE REHABILITATIVE PHASE)

The leading causes of spinal cord injury (SCI) include motor vehicle crashes, falls, acts of violence, and sporting injuries. The mechanism of injury influences the type of SCI and the degree of neurological deficit. Spinal cord lesions are classified as a complete (total loss of sensation and voluntary motor function) or incomplete (mixed loss of sensation and voluntary motor function).

Physical findings vary, depending on the level of injury, degree of spinal shock, and phase and degree of recovery, but in general, are classified as follows:

C-1 to C-3: Tetraplegia with total loss of muscular/respiratory function.
C-4 to C-5: Tetraplegia with impairment, poor pulmonary capacity, complete dependency for ADLs.
C-6 to C-7: Tetraplegia with some arm/hand movement allowing some independence in ADLs.
C-7 to T-1: Tetraplegia with limited use of thumb/fingers, increasing independence.
T-2 to L-1: Paraplegia with intact arm function and varying function of intercostal and abdominal muscles.
L-1 to L-2 or below: Mixed motor-sensory loss; bowel and bladder dysfunction.

CARE SETTING

Inpatient medical/surgical and subacute/rehabilitation units.

RELATED CONCERNS

Disc surgery
Fractures
Pneumonia: microbial
Psychosocial aspects of care
Thrombophlebitis: deep vein thrombosis
Total nutritional support: parenteral/enteral feeding
Upper gastrointestinal/esophageal bleeding
Ventilatory assistance (mechanical)

Patient Assessment Database

ACTIVITY/REST

May exhibit: Paralysis of muscles (flaccid during spinal shock) at/below level of lesion
Muscle/generalized weakness (cord contusion and compression)

CIRCULATION

May report: Palpitations
Dizziness with position changes

May exhibit: Low BP, postural BP changes, bradycardia
Cool, pale extremities
Absence of perspiration in affected area

ELIMINATION

May exhibit: Incontinence of bladder and bowel
Urinary retention
Abdominal distension; loss of bowel sounds
Melena, coffee-ground emesis/hematemesis

EGO INTEGRITY

May report: Denial, disbelief, sadness, anger

May exhibit: Fear, anxiety, irritability, withdrawal

FOOD/FLUID

May exhibit: Abdominal distension; loss of bowel sounds (paralytic ileus)

HYGIENE

May exhibit: Variable level of dependence in ADLs

NEUROSENSORY

May report: Absence of sensation below area of injury, or opposite side sensation
Numbness, tingling, burning, twitching of arms/legs

May exhibit: Flaccid paralysis (spasticity may develop as spinal shock resolves, depending on area of cord involvement)
Loss of sensation (varying degrees may return after spinal shock resolves)
Loss of muscle/vasomotor tone
Loss of/asymmetrical reflexes, including deep tendon reflexes
Changes in pupil reaction, ptosis of upper eyelid
Loss of sweating in affected area

PAIN/DISCOMFORT

May report: Pain/tenderness in muscles
Hyperesthesia immediately above level of injury

May exhibit: Vertebral tenderness, deformity

RESPIRATION

May report: Shortness of breath, "air hunger," inability to breathe

May exhibit: Shallow/labored respirations; periods of apnea
Diminished breath sounds, rhonchi
Pallor, cyanosis

SAFETY

May exhibit: Temperature fluctuations (taking on temperature of environment)

SEXUALITY

May report: Expressions of concern about return to normal functioning

May exhibit: Uncontrolled erection (priapism)
Menstrual irregularities

TEACHING/LEARNING

Discharge plan considerations: **DRG projected mean length of inpatient stay: 17.1–90 days (inclusive of inpatient rehabilitation)**
Will require varying degrees of assistance with transportation, shopping, food preparation, self-care, finances, medications/treatment, and homemaker/maintenance tasks
May require changes in physical layout of home and/or placement in a rehabilitative center
Refer to section at end of plan for postdischarge considerations.

DIAGNOSTIC STUDIES

Spinal x-rays: Locates level and type of bony injury (fracture, dislocation); determines alignment and reduction after traction or surgery.

CT scan: Locates injury, evaluates structural alterations. Useful for rapid screening and providing additional information if
x-rays questionable for fracture/cord status.

MRI: Identifies spinal cord lesions, edema, and compression.

Myelogram: May be done to visualize spinal column if pathology is unclear or if occlusion of spinal subarachnoid space is suspected (not usually done after penetrating injuries).

Somatosensory evoked potentials (SEP): Elicited by presenting a peripheral stimulus and measuring degree of latency in cortical response to evaluate spinal cord functioning/potential for recovery.

Chest x-ray: Demonstrates pulmonary status (e.g., changes in level of diaphragm, atelectasis).

Pulmonary function studies (vital capacity, tidal volume): Measures maximum volume of inspiration and expiration; especially important in patients with low cervical lesions or thoracic lesions with possible phrenic nerve and intercostal muscle involvement.

ABGs: Indicates effectiveness of gas exchange and ventilatory effort.

NURSING PRIORITIES

1. Maximize respiratory function.
2. Prevent further injury to spinal cord.
3. Promote mobility/independence.
4. Prevent or minimize complications.
5. Support psychological adjustment of patient/SO.
6. Provide information about injury, prognosis and expectations, treatment needs, possible and preventable complications.

DISCHARGE GOALS

1. Ventilatory effort adequate for individual needs.
2. Spinal injury stabilized.
3. Complications prevented/controlled.
4. Self-care needs met by self/with assistance, depending on specific situation.
5. Beginning to cope with current situation and planning for future.
6. Condition/prognosis, therapeutic regimen, and possible complications understood.
7. Plan in place to meet needs after discharge.

NURSING DIAGNOSIS: Breathing Pattern, risk for ineffective

Risk factors may include

Impairment of innervation of diaphragm (lesions at or above C-5)
Complete or mixed loss of intercostal muscle function
Reflex abdominal spasms; gastric distension

Possibly evidenced by

[Not applicable; presence of signs and symptoms establishes an *actual* diagnosis.]

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Respiratory Status: Ventilation (NOC)

Maintain adequate ventilation as evidenced by absence of respiratory distress and ABGs within acceptable limits
Demonstrate appropriate behaviors to support respiratory effort.

ACTIONS/INTERVENTIONS	RATIONALE
Respiratory Monitoring (NIC)	
Independent	
Assess respiratory function by asking patient to take a deep breath. Note presence or absence of spontaneous effort and quality of respirations, e.g., labored, using accessory muscles.	C-1 to C-3 injuries result in complete loss of respiratory function. Injuries at C-4 or C-5 can result in variable loss of respiratory function, depending on phrenic nerve involvement and diaphragmatic function, but generally cause decreased vital capacity and inspiratory effort. For injuries below C-6 or C-7, respiratory muscle function is preserved; however, weakness/impairment of intercostal muscles may impair effectiveness of cough and the ability to sigh, deep breathe.

ACTIONS/INTERVENTIONS	RATIONALE
Respiratory Monitoring (NIC)	
Independent	
Auscultate breath sounds. Note areas of absent or decreased breath sounds or development of adventitious sounds (e.g., rhonchi).	Hypoventilation is common and leads to accumulation of secretions, atelectasis, and pneumonia (frequent complications). *Note:* Respiratory compromise is one of the leading causes of mortality, especially during the acute stage as well as later in life.
Note strength/effectiveness of cough.	Level of injury determines function of intercostal muscles and ability to cough spontaneously/move secretions.
Observe skin color for developing cyanosis, duskiness.	May reveal impending respiratory failure, need for immediate medical evaluation and intervention.
Assess for abdominal distension and muscle spasm.	Abdominal fullness may impede diaphragmatic excursion, reducing lung expansion and further compromising respiratory function.
Monitor/limit visitors as indicated.	General debilitation and respiratory compromise place patient at increased risk for acquiring URIs.
Monitor diaphragmatic movement when phrenic pacemaker is implanted.	Stimulation of phrenic nerve may enhance respiratory effort, decreasing dependency on mechanical ventilator.
Elicit concerns/questions regarding mechanical ventilation devices.	Acknowledges reality of situation. (Refer to CP: Ventilatory Assistance).
Provide honest answers.	Future respiratory function/support needs will not be totally known until spinal shock resolves and acute rehabilitative phase is completed. Even though respiratory support may be required, alternative devices/techniques may be used to enhance mobility and promote independence.
Maintain patient airway: keep head in neutral position, elevate head of bed slightly if tolerated, use airway adjuncts as indicated.	Patients with high cervical injury and impaired gag/cough reflexes require assistance in preventing aspiration/maintaining patient airway.
Assist patient in "taking control" of respirations as indicated. Instruct in and encourage deep breathing, focusing attention on steps of breathing.	Breathing may no longer be a totally voluntary activity but require conscious effort, depending on level of injury/involvement of respiratory muscles.
Assist with coughing as indicated for level of injury, e.g., have patient take deep breath and hold for 2 sec before coughing, or inhale deeply, then cough at the end of a slow exhalation. Alternatively, assist by placing hands below diaphragm and pushing upward as patient exhales(quad cough).	Adds volume to cough and facilitates expectoration of secretions or helps move them high enough to be suctioned out. *Note:* Quad cough procedure is generally reserved for patients with stable injuries once they are in the rehabilitation stage.

ACTIONS/INTERVENTIONS	RATIONALE
Respiratory Monitoring (NIC)	
Independent	
Suction as necessary. Document quality and quantity of secretions.	If cough is ineffective, suctioning may be needed to remove secretions, enhance gas exchange, and reduce risk of respiratory infections. *Note:* "Routine" suctioning increases risk of hypoxia, bradycardia (vagal response), tissue trauma. Therefore, suctioning needs are based on presence of/inability to move secretions.
Reposition/turn periodically. Avoid/limit prone position when indicated.	Enhances ventilation of all lung segments, mobilizes secretions, reducing risk of complications such as atelectasis and pneumonia. *Note:* Prone position significantly decreases vital capacity, increasing risk of respiratory compromise/failure.
Encourage fluids (at least 2000 mL/day).	Aids in liquefying secretions, promoting mobilization/expectoration.
Measure/graph:	
Vital capacity (VC), tidal volume (V_T), inspiratory force;	Determines level of respiratory muscle function. Serial measurements may be done to predict impending respiratory failure (acute injury) or determine level of function after spinal shock phase and/or while weaning from ventilatory support.
Collaborative	
Serial ABGs and/or pulse oximetry.	Documents status of ventilation and oxygenation, identifies respiratory problems, e.g., hypoventilation (low PaO_2/elevated $PaCO_2$) and pulmonary complications.
Airway Management (NIC)	
Collaborative	
Administer oxygen by appropriate method, e.g., nasal prongs, mask, intubation/ventilator.	Method is determined by level of injury, degree of respiratory insufficiency, and amount of recovery of respiratory muscle function after spinal shock phase.
Assist with use of respiratory adjuncts (e.g., incentive spirometer, blow bottles) and aggressive chest physiotherapy (e.g., chest percussion).	Preventing retained secretions is essential to maximize gas diffusion and to reduce risk of pneumonia.
Refer to/consult with respiratory and physical therapists.	Helpful in identifying exercises individually appropriate to stimulate and strengthen respiratory muscles/effort. For example, glossopharyngeal breathing uses muscles of mouth, pharynx, and larynx to swallow air into lungs, thereby enhancing VC and chest expansion.

NURSING DIAGNOSIS: Trauma, risk for [additional spinal injury]

Risk factors may include

Temporary weakness/instability of spinal column

Possibly evidenced by

[Not applicable; presence of signs and symptoms establishes an *actual* diagnosis.]

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Bone Healing (NOC)

Maintain proper alignment of spine without further spinal cord damage.

ACTIONS/INTERVENTIONS	RATIONALE
Traction/Immobilization Care (NIC)	
Independent	
Maintain bedrest and immobilization device(s), e.g., sandbags, traction, halo, hard/soft cervical collars, brace.	Body rest prevents vertebral column instability and aids healing. *Note:* Traction is used only for cervical spine stabilization.
Check external stabilization device, e.g., Gardner-Wells tongs or skeletal traction apparatus.	These devices are used for decompression of spinal fractures and stabilization of vertebral column during the early acute phase of injury to prevent further spinal cord injury.
Elevate head of traction frame or bed as indicated. Ensure that traction frames are secure, pulleys aligned, weights hanging free.	Creates safe, effective counterbalance to maintain both patient's position and traction pull.
Check weights for ordered traction pull (usually 10–20 lb).	Weight pull depends on patient's size and amount of reduction needed to maintain vertebral column alignment.
Reposition at intervals, using adjuncts for turning and support, e.g., turn sheets, foam wedges, blanket rolls, pillows. Use several staff members when turning/logrolling patient. Follow special instructions for traction equipment, kinetic bed, and frames once halo is in place.	Maintains proper spinal column alignment, reducing risk of further trauma. *Note:* Grasping the brace/halo vest to turn or reposition patient may cause additional injury.
Collaborative	
Assist with preparation/maintain skeletal traction via tongs, calipers, halo/vest, as indicated.	Reduces vertebral fracture/dislocation.
Prepare for internal stabilization surgery, e.g., spinal laminectomy or fusion, if indicated.	Surgery may be indicated for spinal stabilization/cord decompression or removal of bony fragments.

NURSING DIAGNOSIS: Mobility, impaired physical

May be related to

Neuromuscular impairment
Immobilization by traction

Possibly evidenced by

Inability to purposefully move; paralysis
Muscle atrophy; contractures

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Immobility Consequences: Physiological (NOC)

Maintain position of function as evidenced by absence of contractures, footdrop.

Muscle Function (NOC)

Increase strength of unaffected/compensatory body parts.
Demonstrate techniques/behaviors that enable resumption of activity.

ACTIONS/INTERVENTIONS	RATIONALE
Bed Rest Care (NIC)	
Independent	
Continually assess motor function (as spinal shock/edema resolves) by requesting patient to perform certain actions, e.g., shrug shoulders, spread fingers, squeeze/release examiner's hands.	Evaluates status of individual situation (motor-sensory impairment may be mixed and/or not clear) for a specific level of injury, affecting type and choice of interventions.
Provide means to summon help, e.g., special sensitive call light.	Enables patient to have a sense of control, and reduces fear of being left alone. *Note:* Quadriplegic on ventilator requires continuous observation in early management.
Perform/assist with full ROM exercises on all extremities and joints, using slow, smooth movements. Hyperextend hips periodically.	Enhances circulation, restores/maintains muscle tone and joint mobility, and prevents disuse contractures and muscle atrophy.
Position arms at 90-degree angle at regular intervals.	Prevents frozen shoulder contractures.
Maintain ankles at 90 degrees with footboard, high-top tennis shoes, and so on. Place trochanter rolls along thighs when in bed.	Prevents footdrop and external rotation of hips.
Elevate lower extremities at intervals when in chair, or raise foot of bed when permitted in individual situation. Assess for edema of feet/ankles.	Loss of vascular tone and "muscle action" results in pooling of blood and venous stasis in the lower abdomen and lower extremities, with increased risk of hypotension and thrombus formation.
Plan activities to provide uninterrupted rest periods. Encourage involvement within individual tolerance/ability.	Prevents fatigue, allowing opportunity for maximal efforts/participation by patient.

ACTIONS/INTERVENTIONS	RATIONALE
Bedrest Care (NIC)	
Independent	
Measure/monitor BP before and after activity in acute phases or until stable. Change position slowly. Use cardiac bed or tilt table/CircOlectric bed as activity level is advanced.	Orthostatic hypotension may occur as a result of venous pooling (secondary to loss of vascular tone). Side-to-side movement or elevation of head can aggravate hypotension and cause syncope.
Reposition periodically even when sitting in chair. Teach patient how to use weight-shifting techniques.	Reduces pressure areas, promotes peripheral circulation.
Prepare for weight-bearing activities, e.g, use of tilt table for upright position, strengthening/conditioning exercises for unaffected body parts.	Early weight bearing reduces osteoporotic changes in long bones and reduces incidence of urinary infections and kidney stones. *Note:* Fifty percent of patients develop heterotopic ossification that can lead to pain and decreased joint flexibility
Encourage use of relaxation techniques.	Reduces muscle tension/fatigue, may help limit pain of muscle spasms, spasticity.
Inspect skin daily. Observe for pressure areas, and provide meticulous skin care. Teach patient to inspect skin surfaces and to use a mirror to look at hard-to-see-areas.	Altered circulation, loss of sensation, and paralysis potentiate pressure sore formation. This is a lifelong consideration. (Refer to ND: Skin Integrity, risk for impaired.)
Assist with/encourage pulmonary hygiene, e.g., deep breathing, coughing, suctioning. (Refer to ND: Breathing Pattern, risk for ineffective).	Immobility and bedrest increase risk of pulmonary infection.
Assess for redness, swelling/muscle tension of calf tissues. Record calf and thigh measurements if indicated.	In a high percentage of patients with cervical cord injury, thrombi develop because of altered peripheral circulation, immobilization, and flaccid paralysis. Risk is greatest during the 2 wk immediately following injury and on through the next 3 mo.
Investigate sudden onset of dyspnea, cyanosis, and/or other signs of respiratory distress.	Development of pulmonary emboli may be “silent” because pain perception is altered and/or DVT is not readily recognized.
Collaborative	
Place patient in kinetic therapy bed when appropriate.	Effectively immobilizes unstable spinal column and improves systemic circulation, which is thought to decrease complications associated with immobility.
Apply antiembolic hose/leotard or sequential compression devices (SCDs) to legs as appropriate.	Limits pooling of blood in lower extremities or abdomen, thus improving vasomotor tone and reducing incidence of thrombus formation and pulmonary emboli.

ACTIONS/INTERVENTIONS	RATIONALE
Bedrest Care (NIC)	
Collaborative	
Consult with physical/occupational therapists/ rehabilitation team.	Helpful in planning and implementing individualized exercise program and identifying/developing assistive devices to maintain function, enhance mobility and independence.
Administer muscle relaxants/antispasticity agents as indicated, e.g.:	
Diazepam (Valium), baclofen (Lioresal), dantrolene (Dantrium);	May be useful in limiting or reducing pain associated with spasticity. *Note:* Baclofen may be delivered via implanted intrathecal pump on a long-term basis as appropriate.
Tizanidine (Zanaflex).	Centrally acting [alpha]$_2$-adrenergic agonist reduces spasticity. Short duration of action requires careful dosage monitoring to achieve maximum effect. May have additive effect with baclofen (Lioresal) but needs to be used with caution because both drugs have similar side effects.

NURSING DIAGNOSIS: Sensory perception, disturbed

May be related to

Destruction of sensory tracts with altered sensory reception, transmission, and integration
Reduced environmental stimuli
Psychological stress (narrowed perceptual fields caused by anxiety)

Possibly evidenced by

Measured change in sensory acuity, including position of body parts/proprioception
Change in usual response to stimuli
Motor incoordination
Anxiety, disorientation, bizarre thinking; exaggerated emotional responses

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Neurological Status: Spinal Sensory/Motor Function (NOC)

Recognize sensory impairments.

Knowledge: Personal Safety (NOC)

Identify behaviors to compensate for deficits.
Verbalize awareness of sensory needs and potential for deprivation/overload.

ACTIONS/INTERVENTIONS	RATIONALE
Peripheral Sensation Management (NIC)	
Independent	
Assess/document sensory function or deficit (by means of touch, pinprick, hot/cold, etc.), progressing from area of deficit to neurologically intact area.	Changes may not occur during acute phase, but as spinal shock resolves, changes should be documented by dermatome charts or anatomical landmarks, e.g., “2 in above nipple line.”
Protect from bodily harm, e.g., falls, burns, positioning of arm or objects.	Patient may not sense pain or be aware of body position.
Assist patient to recognize and compensate for alterations in sensation.	May help reduce anxiety of the unknown and prevent injury.
Explain procedures before and during care, identifying the body part involved.	Enhances patient perception of “whole” body.
Provide tactile stimulation, touching patient in intact sensory areas, e.g., shoulders, face, head.	Touching conveys caring and fulfills a normal physiological and psychological need.
Position patient to see surroundings and activities. Provide prism glasses when prone on turning frame. Talk to patient frequently.	Provides sensory input, which may be severely limited, especially when patient is in prone position.
Provide diversional activities, e.g., television, radio, music, liberal visitation. Use clocks, calendars, pictures, bulletin boards, and so on. Encourage SO/family to discuss general and personal news.	Aids in maintaining reality orientation and provides some sense of normality in daily passage of time.
Provide uninterrupted sleep and rest periods.	Reduces sensory overload, enhances orientation and coping abilities, and aids in reestablishing natural sleep patterns.
Note presence of exaggerated emotional responses, altered thought processes, e.g., disorientation, bizarre thinking.	Indicative of damage to sensory tracts and/or psychological stress, requiring further assessment and intervention.

NURSING DIAGNOSIS: Pain, acute

May be related to

Physical injury
Traction apparatus

Possibly evidenced by

Hyperesthesia immediately above level of injury
Burning pain below level of injury (paraplegia)
Muscle spasm/spasticity
Phantom pain; headaches

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Pain Level (NOC)

Report relief or control of pain/discomfort.

Pain Control Behavior (NOC)

Identify ways to manage pain.
Demonstrate use of relaxation skills and diversional activities as individually indicated.

ACTIONS/INTERVENTIONS	RATIONALE
Pain Management (NIC)	
Independent	
Assess for presence of pain. Help patient identify and quantify pain, e.g., location, type of pain, intensity on scale of 0–10.	Patient usually reports pain above the level of injury, e.g., chest/back or headache possibly from stabilizer apparatus. After spinal shock phase, patient may also report muscle spasms and radicular pain, described as a burning or stabbing pain (associated with injury to peripheral nerves and radiating in a dermatomal pattern). Onset of this pain is within days to weeks after SCI and may become chronic.
Evaluate increased irritability, muscle tension, restlessness, unexplained vital sign (VS) changes.	Nonverbal cues indicative of pain/discomfort requiring intervention.
Assist patient in identifying precipitating factors.	Burning pain and muscle spasms can be precipitated/aggravated by multiple factors, e.g., anxiety, tension, external temperature extremes, sitting for long periods, bladder distension.
Provide comfort measures, e.g., position changes, massage, ROM exercises, warm/cold packs, as indicated.	Alternative measures for pain control are desirable for emotional benefit, in addition to reducing pain medication needs/undesirable effects on respiratory function.
Encourage use of relaxation techniques, e.g., guided imagery, visualization, deep-breathing exercises. Provide diversional activities, e.g., television, radio, telephone, unlimited visitors, as appropriate.	Refocuses attention, promotes sense of control, and may enhance coping abilities.

ACTIONS/INTERVENTIONS	RATIONALE

Pain Management (NIC)	
Collaborative	
Administer medications as indicated: muscle relaxants, e.g., dantrolene (Dantrium), baclofen (Lioresal); analgesics; antianxiety agents, e.g., diazepam (Valium).	May be desired to relieve muscle spasm/pain associated with spasticity or to alleviate anxiety and promote rest.

NURSING DIAGNOSIS: Grieving, anticipatory

May be related to

Perceived/actual loss of physiopsychosocial well-being

Possibly evidenced by

Altered communication patterns
Expression of distress, choked feelings, e.g., denial, guilt, fear, sadness; altered affect
Alterations in sleep patterns

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Grief Resolution (NOC)

Express feelings
Begin to progress through recognized stages of grief, focusing on 1 day at a time.

ACTIONS/INTERVENTIONS	RATIONALE
Grief Work Facilitation (NIC)	
Independent	
Identify signs of grieving (e.g., shock, denial, anger, depression).	Patient experiences many emotional reactions to the injury and its actual/potential impact on life. These stages are not static, and the rate at which patient progresses through them is variable.
Shock	
Note lack of communication or emotional response, absence of questions.	Shock is the initial reaction associated with overwhelming injury. Primary concern is to maintain life, and patient may be too ill to express feelings.
Provide simple, accurate information to patient and SO regarding diagnosis and care. Be honest; do not give false reassurance while providing emotional support.	Patient's awareness of surroundings and activity may be blocked initially, and attention span may be limited. Little is actually known about the final outcome of patient's injuries during acute phase, and lack of knowledge may add to frustration and grief of family. Therefore, early focus of emotional support may be directed toward SO.

ACTIONS/INTERVENTIONS	RATIONALE
Grief Work Facilitation (NIC)	

Independent	
Encourage expressions of sadness, grief, guilt, and fear among patient/SO/friends.	Knowledge that these are appropriate feelings that should be expressed may be very supportive to patient/SO.
Incorporate SO into problem solving and planning for patient's care.	Assists in establishing therapeutic relationships. Provides some sense of control of situation of many losses/forced changes, and promotes well-being of patient.
Denial	
Assist patient/SO to verbalize feelings about situation, avoiding judgment about what is expressed.	Important beginning step to deal with what has happened. Helpful in identifying patient's coping mechanisms.
Note comments indicating that patient expects to walk shortly and/or is making a bargain with God. Do not confront these comments in early phases of rehabilitation.	Patient may not deny entire disability but may deny its permanency. Situation is compounded by actual uncertainty of outcome, and denial may be useful for coping at this time.
Focus on present needs (e.g., ROM exercises, skin care).	Attention on "here and now" reduces frustration and hopelessness of uncertain future and may make dealing with today's problems more manageable.
Anger	
Identify use of manipulative behavior and reactions to caregivers.	Patient may express anger verbally or physically (e.g., spitting, biting). Patient may say that nothing is done right by caregivers/SO or may pit one caregiver against another.
Encourage patient to take control when possible, e.g., establishing care routines, dietary choices, diversional activities.	Helps reduce anger associated with powerlessness, and provides patient with some sense of control and expectation of responsibility for own behavior.
Accept expressions of anger and hopelessness. Avoid arguing. Show concern for patient.	Patient is acknowledged as a worthwhile individual, and nonjudgmental care is provided.
Set limits on acting out and unacceptable behavior when necessary (e.g., abusive language, sexually aggressive or suggestive behavior).	Although it is important to express negative feelings, patient and staff need to be protected from violence and embarrassment. This phase is traumatic for all involved, and support of family is essential.
Depression	
Note loss of interest in living, sleep disturbance, suicidal thoughts, hopelessness. Listen to but do not confront these expressions. Let patient know nurse is available for support.	Phase may last weeks, months, or even years. Acceptance of these feelings and consistent support during this phase are important to a satisfactory resolution.
Arrange visit by individual similarly affected, as appropriate.	Talking with another person who has shared similar feelings/fears and survived may help patient reach acceptance of reality of condition and deal with perceived/actual losses.

ACTIONS/INTERVENTIONS	RATIONALE
Grief Work Facilitation (NIC)	
Collaborative	

Consult with/refer to psychiatric nurse, social worker, psychiatrist, pastor.	Patient/SO need assistance to work through feelings of alienation, guilt, and resentment concerning lifestyle and role changes. The family (required to make adaptive changes to a member who may be permanently "different") benefit from supportive, long-term assistance and/or counseling in coping with these changes and the future. Patient and SO may suffer great spiritual distress, including feelings of guilt, deprivation of peace, and anger at God, which may interfere with progression through/resolution of grief process.

NURSING DIAGNOSIS: Self-Esteem, situational low

May be related to

Traumatic injury; situational crisis; forced crisis

Possibly evidenced by

Verbalization of forced change in lifestyle
Fear of rejection/reaction by others
Focus on past strength, function, or appearance
Negative feelings about body
Feelings of helplessness, hopelessness, or powerlessness
Actual change in structure and/or function
Lack of eye contact
Change in physical capacity to resume role
Confusion about self, purpose, or direction of life

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Psychosocial Adjustment: Life Change (NOC)

Verbalize acceptance of self in situation.
Recognize and incorporate changes into self-concept in accurate manner without negating self-esteem.
Develop realistic plans for adapting to new role/role changes.

ACTIONS/INTERVENTIONS	RATIONALE
Self-Esteem Enhancement (NIC)	
Independent	
Acknowledge difficulty in determining degree of functional incapacity and/or chance of functional improvement.	During acute phase of injury, long-term effects are unknown, which delays the patient's ability to integrate situation into self-concept.
Listen to patient's comments and responses to situation.	Provides clues to view of self, role changes, and needs and is useful for providing information at patient's level of acceptance.

ACTIONS/INTERVENTIONS	RATIONALE
Self-Esteem Enhancement (NIC)	
Independent	
Assess dynamics of patient and SOs (e.g., patient's role in	Patient's previous role in family unit is disrupted or

family, cultural factors).	altered by injury, adding to difficulty in integrating self-concept. In addition, issues of independence/dependence need to be addressed.
Encourage SO to treat patient as normally as possible(e.g., discussing home situations, family news).	Involving patient in family unit reduces feelings of social isolation, helplessness, and uselessness and provides opportunity for SO to contribute to patient's welfare.
Provide accurate information. Discuss concerns about prognosis and treatment honestly at patient's level of acceptance.	Focus of information should be on present and immediate needs initially and incorporated into long-term rehabilitation goals. Information should be repeated until patient has assimilated or integrated information.
Discuss meaning of loss or change with patient/SO. Assess interactions between patient and SO.	Actual change in body image may be different from that perceived by patient. Distortions may be unconsciously reinforced by SO.
Accept patient, show concern for individual as a person. Encourage patient, identify and build on strengths, give positive reinforcement for progress noted.	Establishes therapeutic atmosphere for patient to begin self-acceptance.
Include patient/SO in care, allowing patient to make decisions and participate in self-care activities as possible.	Recognizes that patient is still responsible for own life and provides some sense of control over situation. Sets stage for future lifestyle, pattern, and interaction required in daily care. *Note:* Patient may reject all help or may be completely dependent during this phase.
Be alert to sexually oriented jokes/flirting or aggressive behavior. Elicit concerns, fears, feelings about current situation/future expectations.	Anxiety develops as a result of perceived loss/change in masculine/feminine self-image and role. Forced dependency is often devastating, especially in light of change in function/appearance.
Be aware of own feelings/reaction to patient's sexual anxiety.	Behavior may be disruptive, creating conflict between patient/staff, further reinforcing negative feelings and possibly eliminating patient's desire to work through situation/participate in rehabilitation.
Arrange visit by similarly affected person if patient desires and/or situation allows.	May be helpful to patient by providing hope for the future/role model. Can be a vital postdischarge resource during the difficult period of adjustment after injury.
Collaborative	
Refer to counseling/psychotherapy as indicated, e.g., psychiatric clinical nurse specialist, psychiatrist, social worker, sex therapist.	May need additional assistance to adjust to change in body image/life.

NURSING DIAGNOSIS: Bowel Incontinence/Constipation

May be related to

Disruption of innervation to bowel and rectum
Perceptual impairment
Altered dietary and fluid intake
Change in activity level

Possibly evidenced by

Loss of ability to evacuate bowel voluntarily
Constipation
Gastric dilation, ileus

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Bowel Continence (NOC)

Verbalize behaviors/techniques for individual bowel program.
Reestablish satisfactory bowel elimination pattern.

ACTIONS/INTERVENTIONS	RATIONALE
Bowel Management (NIC)	
Independent	
Auscultate bowel sounds, noting location and characteristics.	Bowel sounds may be absent during spinal shock phase. High tinkling sounds may indicate presence of ileus.
Observe for abdominal distension if bowel sounds are decreased or absent.	Loss of peristalsis (related to impaired innervation) paralyzes the bowel, creating ileus and bowel distension. *Note:* Overdistension of the bowel is a precipitator of autonomic dysreflexia once spinal shock subsides. (Refer to ND: Autonomic Dysreflexia, risk for.)
Note reports of nausea, onset of vomiting. Check vomitus or gastric secretions (if tube in place) and stools for occult blood.	GI bleeding may occur in response to injury (Curling's ulcer) or as a side effect of certain therapies (steroids or anticoagulants).
Record frequency, characteristics, and amount of stool.	Identifies degree of impairment/dysfunction and level of assistance required.
Recognize signs of/check for presence of impaction, e.g., no formed stool for several days, semiliquid stool, restlessness, increased feelings of fullness in/distension of abdomen.	Early intervention is necessary to effectively treat constipation/retained stool and reduce risk of complications.

ACTIONS/INTERVENTIONS	RATIONALE
Bowel Management (NIC)	
Independent	
Establish regular daily bowel program, e.g., digital stimulation, prune juice and/or warm beverage, and use of stool softeners/suppositories at set intervals. Determine usual time/routine of postinjury evacuations.	A lifelong program is necessary to routinely evacuate the bowel because the ability to control bowel evacuation is important to the patient's physical independence and social acceptance. *Note:* Bowel movements in patients with upper motor neuron damage are generally regulated with suppositories or digital stimulation. Lower motor neurogenic bowel is more difficult to regulate and usually requires manual disimpaction. Incorporating elements of patient's usual routine may enhance cooperation and success of program. *Note:* Many patients prefer morning program rather than evening schedule often practiced in acute/rehab setting.
Encourage well-balanced diet that includes bulk and roughage and increased fluid intake (at least 2000 mL/day), including fruit juices.	Improves consistency of stool for transit through the bowel. *Note:* Mixture of prune juice, applesauce, and bran often provides adequate fiber for effective bowel management.
Assist with/encourage exercise and activity within individual ability and up in chair as tolerated.	Improves appetite and muscle tone, enhancing GI motility.
Observe for incontinence and help patient relate incontinence to change in diet or routine.	Patient can eventually achieve fairly normal routine bowel habits, which enhance independence, self-esteem, and socialization.
Restrict intake of grapefruit juice and caffenated beverages (coffee, tea, cola, chocolate).	Diuretic effect can reduce fluid available in the bowel, increasing risk of dry/hard formed stool.
Provide meticulous skin care.	Loss of sphincter control and innervation in the area potentiates risk of skin irritation/breakdown.
Collaborative	
Insert/maintain nasogastric tube and attach to suction if appropriate.	May be used initially to reduce gastric distension and prevent vomiting (reduces risk of aspiration).
Consult with dietitian/nutritional support team.	Aids in creating dietary plan to meet individual nutritional needs with consideration of state of digestion/bowel function.
Insert rectal tube as needed.	Reduces bowel distension, which may precipitate autonomic responses.
Administer medications as indicated, e.g.:	
Stool softeners, laxatives, suppositories, enemas (eg, Therevac-SB)	Stimulates peristalsis and routine bowel evacuation when necessary. Suppositories should be warmed to room temperature and lubricated before insertion. Therevac-SB is a 4cc mini enema of docusate and glycerin that may cut time for bowel care by as much as 1 hr.

ACTIONS/INTERVENTIONS	RATIONALE
Bowel Management (NIC)	
Collaborative	
Antacids, cimetidine (Tagamet), ranitidine (Zantac)	Reduces or neutralizes gastric acid to lessen gastric irritation and risk of bleeding.

NURSING DIAGNOSIS: Urinary Elimination, impaired

May be related to

Disruption in bladder innervation
Bladder atony

Possibly evidenced by

Bladder distension; incontinence/overflow, retention
Urinary tract infections
Bladder, kidney stone formation
Renal dysfunction

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Urinary Continence (NOC)

Verbalize understanding of condition.
Maintain balanced I&O with clear, odor-free urine, free of bladder distension/urinary leakage.
Verbalize/demonstrate behaviors and techniques to prevent retention/urinary infection.

ACTIONS/INTERVENTIONS	RATIONALE
Urinary Elimination Management (NIC)	
Independent	
Assess voiding pattern, e.g., frequency and amount. Compare urine output with fluid intake. Note specific gravity.	Identifies characteristics of bladder function (e.g., effectiveness of bladder emptying, renal function, and fluid balance). *Note:* Urinary complications are a major cause of mortality.
Palpate for bladder distension and observe for overflow.	Bladder dysfunction is variable but may include loss of bladder contraction/inability to relax urinary sphincter, resulting in urine retention and reflux incontinence. *Note:* Bladder distension can precipitate autonomic dysreflexia. (Refer to ND: Autonomic Dysreflexia, risk for, following.)
Encourage intake (2–4 L/day), including acid ash juices (e.g., cranberry).	Helps maintain renal function, prevents infection and formation of urinary stones. *Note:* Fluid may be restricted for a period during initiation of intermittent catheterization.

ACTIONS/INTERVENTIONS	RATIONALE
Urinary Elimination Management (NIC)	
Independent	
Begin bladder retraining per protocol when appropriate, e.g., fluids between certain hours, digital stimulation of trigger area, contraction of abdominal muscles, Credé's maneuver.	Timing and type of bladder program depend on type of injury (upper or lower neuron involvement). *Note:* Credé's maneuver should be used with caution because it may precipitate autonomic dysreflexia.
Observe for cloudy or bloody urine, foul odor. Dipstick urine as indicated.	Signs of urinary tract or kidney infection that can potentiate sepsis. Multistrip dipsticks can provide a quick determination of pH, nitrite, and leukocyte esterase suggesting presence of infection.
Cleanse perineal area and keep dry. Provide catheter care as appropriate.	Decreases risk of skin irritation/breakdown and development of ascending infection.
Urinary Catheterization: [Indwelling/]Intermittent (NIC)	
Collaborative	
Monitor BUN, creatinine, white blood cell (WBC) count.	Reflects renal function, identifies complications.
Administer medications as indicated, e.g., vitamin C, and/or urinary antiseptics, e.g., methenamine mandelate (Mandelamine).	Maintains acidic environment and discourages bacterial growth.
Refer for further evaluation for bladder/bowel stimulation.	Clinical research is being conducted on the technology of electronic bladder control. The implantable device sends electrical signals to the spinal nerves that control the bladder and bowel. Early results look promising.
Keep bladder deflated by means of indwelling catheter initially. Begin intermittent catheterization program when appropriate.	Indwelling catheter is used during acute phase for prevention of urinary retention and for monitoring output. Intermittent catheterization may be implemented to reduce complications usually associated with long-term use of indwelling catheters. A suprapubic catheter may also be inserted for long-term management.
Measure residual urine via postvoid catheterization or ultrasound.	Helpful in detecting presence of urinary retention/effectiveness of bladder training program. *Note:* Use of ultrasound is noninvasive, reducing risk of colonization of bladder.

NURSING DIAGNOSIS: Autonomic Dysreflexia, risk for

Risk factors may include

Altered nerve function (spinal cord injury at T-8 and above)
Bladder/bowel/skin stimulation (tactile, pain, thermal)

Possibly evidenced by

[Not applicable; presence of signs and symptoms establishes an *actual* diagnosis.]

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

System Control Behavior (NOC)

Recognize signs/symptoms of syndrome.
Identify preventive/corrective measures.

Neurologic Status: Autonomic (NOC)

Experience no episodes of dysreflexia.

ACTIONS/INTERVENTIONS	RATIONALE
Dysreflexia Management (NIC)	
Independent	
Identify/monitor precipitating risk factors, e.g., bladder/bowel distension or manipulation; bladder spasms, stones, infection; skin/tissue pressure areas, prolonged sitting position; temperature extremes/drafts.	Visceral distention is the most common cause of autonomic dysreflexia, which is considered an emergency. Treatment of acute episode must be carried out immediately (removing stimulus, treating unresolved symptoms), then interventions must be geared toward prevention.
Observe for signs/symptoms of syndrome, e.g., changes in VS, paroxysmal hypertension, tachycardia/ bradycardia; autonomic responses: sweating, flushing above level of lesion; pallor below injury, chills, (gooseflesh) piloerection, nasal stuffiness, severe pounding headache, especially in occiput and frontal regions. Note associated symptoms, e.g., chest pains, blurred vision, nausea, metallic taste, Horner’s syndrome (contraction of pupil, partial stasis of eyelid, enophthalmos [recession of eyeball into the orbit], and sometimes loss of sweating over one side of the face).	Early detection and immediate intervention is essential to prevent serious consequences/complications. *Note:* Average systolic BP in tetraplegic patient is 120, therefore readings of 140+ may be considered high.
Stay with patient during episode.	This is a potentially fatal complication. Continuous monitoring/intervention may reduce patient’s level of anxiety.
Monitor BP frequently (every 3–5 min) during acute autonomic dysreflexia and take action to eliminate stimulus. Continue to monitor BP at intervals after symptoms subside.	Aggressive therapy/removal of stimulus may drop BP rapidly, resulting in a hypotensive crisis, especially in those patients who routinely have low BP. In addition, autonomic dysreflexia may recur, particularly if stimulus is not eliminated.
Elevate head of bed to 45-degree angle or place patient in sitting position.	Lowers BP to prevent intracranial hemorrhage, seizures, or even death. *Note:* Placing tetraplegic in sitting position automatically lowers BP.

ACTIONS/INTERVENTIONS	RATIONALE
Dysreflexia Management (NIC)	
Independent	
Correct/eliminate causative stimulus as able, e.g., bladder, bowel, skin pressure (including loosening tight leg bands/clothing, removing abdominal binder/elastic stockings); temperature extremes.	Removing noxious stimulus usually terminates episode and may prevent more serious autonomic dysreflexia, e.g., in the presence of sunburn, topical anesthetic should be applied. Removal of constrictive clothing/vascular support also promotes venous pooling to help lower BP. *Note:* Removal of bowel impaction must be delayed until cardiovascular condition is stabilized.
Inform patient/SO of warning signals and how to avoid onset of syndrome, e.g., gooseflesh, sweating, piloerection may indicate full bowel; sunburn may precipitate episode.	This lifelong problem can be largely controlled by avoiding pressure from overdistension of visceral organs or pressure on the skin.
Collaborative	
Administer medications as indicated (IV, parenteral, oral, or transdermal), and monitor response:	
Diazoxide (Hyperstate), hydralazine (Apresoline);	Reduces BP if severe/sustained hypertension occurs.
Nifedipine (Procardia), 2% nitroglycerin ointment (Nitrostat);	Sublingual administration usually effective, in absence of IV access for diazoxide (Hyperstat), but may require repeat dose in 30 to 60 min. May be used in conjunction with topical nitroglycerin.
Atropine sulfate;	Increases heart rate if bradycardia occurs.
Morphine sulfate;	Relaxes smooth muscle to aid in lowering blood pressure and muscle tension.
Adrenergic blockers, e.g., methysergide maleate (Sansert);	May be used prophylactically if problem persists/recurs frequently.
Antihypertensives, e.g., prazosin (Minipress), phenoxybenzamine (Dibenzyline).	Long-term use may relax bladder neck and enhance bladder emptying, alleviating the most common cause of chronic autonomic dysreflexia.
Obtain urinary culture as indicated.	Presence of infection may trigger autonomic dysreflexia episode.
Apply local anesthetic ointment to rectum; remove impaction if indicated after symptoms subside.	Ointment blocks further autonomic stimulation and eases later removal of impaction without aggravating symptoms.
Prepare patient for pelvic/pudendal nerve block or posterior rhizotomy if indicated.	Procedures may be considered if autonomic dysreflexia does not respond to other therapies.

NURSING DIAGNOSIS: Skin Integrity, risk for impaired

Risk factors may include

Altered/inadequate peripheral circulation; sensation
Presence of edema; tissue pressure
Altered metabolic state
Immobility, traction apparatus

Possibly evidenced by

[Not applicable; presence of signs and symptoms establishes an *actual* diagnosis.]

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Risk Control (NOC)

Identify individual risk factors.
Verbalize understanding of treatment needs.
Participate to level of ability to prevent skin breakdown.

ACTIONS/INTERVENTIONS	RATIONALE
Skin Surveillance (NIC)	
Independent	
Inspect all skin areas, noting capillary blanching/refill, redness, swelling. Pay particular attention to back of head, skin under halo frame or vest, and folds where skin continuously touches.	Skin is especially prone to breakdown because of changes in peripheral circulation, inability to sense pressure, immobility, altered temperature regulation.
Observe halo and tong insertion sites. Note swelling, redness, drainage.	These sites are prone to inflammation and infection and provide route for pathological microorganisms to enter cranial cavity. *Note:* New style of halo frame does not require screws or pins.
Encourage continuation of regular exercise program.	Stimulates circulation, enhancing cellular nutrition/oxygenation to improve tissue health.
Elevate lower extremities periodically, if tolerated.	Enhances venous return. Reduces edema formation.
Avoid/limit injection of medication below the level of injury.	Reduced circulation and sensation increase risk of delayed absorption, local reaction, and tissue necrosis.
Skin Care: Topical Treatments (NIC)	
Massage and lubricate skin with bland lotion/oil. Protect pressure points by use of heel/elbow pads, lamb's wool, foam padding, egg-crate mattress. Use skin hardening agents, e.g., tincture of benzoin, karaya, Sween cream.	Enhances circulation and protects skin surfaces, reducing risk of ulceration. Tetraplegic and paraplegic patients require lifelong protection from decubitus formation, which can cause extensive tissue necrosis and sepsis.
Reposition frequently, whether in bed or in sitting position. Place in prone position periodically.	Improves skin circulation and reduces pressure time on bony prominences.

ACTIONS/INTERVENTIONS	RATIONALE

Skin Care: Topical Treatments (NIC)	
Independent	
Wash and dry skin, especially in high moisture areas such as perineum. Take care to avoid wetting lining of brace/halo vest.	Clean, dry skin is less prone to excoriation/breakdown.
Keep bedclothes dry and free of wrinkles, crumbs.	Reduces/prevents skin irritation.
Cleanse halo/tong insertion sites routinely and apply antibiotic ointment per protocol.	Helpful in preventing local infection and reducing risk of cranial infection.
Collaborative	
Provide kinetic therapy or alternating-pressure mattress as indicated.	Improves systemic and peripheral circulation and decreases pressure on skin, reducing risk of breakdown.

NURSING DIAGNOSIS: Knowledge, deficient [Learning Need] regarding condition, prognosis, potential complications, treatment, self-care, and discharge needs.

May be related to

Lack of exposure/recall
Information misinterpretation
Unfamiliarity with information resources

Possibly evidenced by

Questions; statement of misconception; request for information
Inadequate follow-through of instruction
Inappropriate or exaggerated behaviors, e.g., hostile, agitated, apathetic
Development of preventable complication(s)

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Knowledge: Disease Process (NOC)

Verbalize understanding of condition, prognosis, and treatment.

Knowledge: Treatment Regimen (NOC)

Correctly perform necessary procedures and explain reasons for the actions.
Initiate necessary lifestyle changes and participate in treatment regimen.

ACTIONS/INTERVENTIONS	RATIONALE
Teaching: Disease Process (NIC)	
Independent	
Discuss injury process, current prognosis, and future expectations.	Provide common knowledge base necessary for making informed choices and commitment to the therapeutic regimen. *Note:* Improvement in managing effects of SCI has increased life expectancy of patients to only about 5 yr below norm for specific age group.

ACTIONS/INTERVENTIONS	RATIONALE
Teaching: Disease Process (NIC)	

Independent	
Provide information and demonstrate:	
Positioning	Promotes circulation; reduces tissue pressure and risk of complications.
Use of pillows/supports, splints	Keeps spine aligned and prevents/limits contractures, thus improving function and independence.
Encourage continued participation in daily exercise and conditioning program and avoidance of fatigue/chills.	Reduces spasticity, risk of thromboembolic (common complication). Increases mobility, muscle strength and tone for improving organ/body function, e.g., squeezing rubber ball, arm exercises enhance upper body strength to increase independence in transfers/wheelchair mobility; tightening/contracting rectum or vaginal muscles improves bladder control; pushing abdomen up, bearing down, contracting abdomen strengthens trunk and improves GI function (paraplegic).
Identify energy conservation techniques and stress importance of pacing activities/adequate rest. Review drug regimen note use of baclofen (Lioresal), diazepam(Valium), tizanidine (Zanaflex).	Fatigue is common and limits patient's ability to participate in/manage care, decreasing quality of life and increasing feelings of helplessness/hopelessness. Medications used to treat spasticity can exacerbate fatigue, necessitating a change in drug choice/dosage. *Note:* Amantadine (Symmetrel) and fluoxatine (Prozac) may decrease sense of fatigue by potentiating the action of dopamine or selectively inhibiting serotonin uptake in the CNS.
Have SO/caregivers participate in patient care and demonstrate proper procedures, e.g., applications of splints, braces, suctioning, positioning, skin care, transfers, bowel/bladder program, checking temperature of bath water and food.	Allows home caregivers to become adept and more comfortable with the care tasks they are called on to provide, and reduces risk of injury/complications.
Instruct caregiver in techniques to facilitate cough as appropriate.	"Quad coughing" is performed to facilitate expectoration of secretions or to move them high enough to be suctioned out.
Recommend applying abdominal binder before arising (tetraplegic) and remind to change position slowly. Use safety belt and adequate number of people during bed-to-wheelchair transfers.	Reduces pooling of blood in abdomen/pelvix, minimizing postural hypotension. Protects patient from falls and/or injury to caregivers.
Instruct in proper skin care, inspecting all skin areas daily, using adequate padding (foam, silicone gel, water pads) in bed and chair, and keeping skin dry. Stress importance of regularly monitoring condition and positioning of support surfaces (e.g., cushions, mattresses, and overlays).	Reduces skin irritation, decreasing incidence of decubitus (patient must manage this throughout life). Timely recognition of product fatigue, improper orientation, or other misuse can reduce risk of pressure ulcer formation.

ACTIONS/INTERVENTIONS	RATIONALE
Teaching: Disease Process (NIC)	

Independent	
Discuss necessity of preventing excessive diaphoresis by using tepid bath water, providing comfortable environment (e.g., fans), removing excess clothes.	Reduces skin irritation/possible breakdown.
Review dietary needs, including adequate bulk and roughage. Problem-solve solutions to alterations in muscular strength/tone and GI function.	Provides adequate nutrition to meet energy needs and promote healing, prevent complications (e.g., constipation, abdominal distension/gas formation).
Review pain management techniques. Discuss the potential for future pain management therapies if pain becomes chronic. Recommend avoidance of over-the-counter (OTC) drugs without approval of healthcare provider.	Enhances patient safety and may improve cooperation with specific regimen. *Note:* Pain often becomes chronic in patients with spinal cord injury and may be mechanical (e.g., overuse syndrome involving joints); radicular (from injury to peripheral nerves); or cervical (burning, aching just below level of injury). Dysesthetic pain (distal to site of injury) is extremely disabling (similar to phantom pain). Treatment for these painful conditions may include a team pain management approach, medications (e.g., Neurontin, Klonopin, Elavil), or electrical stimulation.
Discuss ways to identify and manage autonomic dysreflexia.	Patient may be able to recognize signs, but caregivers need to understand how to prevent precipitating factors and know what to do if autonomic dysreflexia occurs. (Refer to ND: Autonomic Dysreflexia, risk for).
Identify symptoms to report immediately to healthcare provider, e.g., infection of any kind, especially urinary, respiratory; skin breakdown; unresolved autonomic dysreflexia; suspected pregnancy.	Early identification allows for intervention to prevent/minimize complications.
Stress importance of continuing with rehabilitation team to achieve specific functional goals and continue long-term monitoring of therapy needs.	No matter what the level of injury, individual may ultimately be able to exercise some independence, e.g., manipulating electric wheelchair with mouth stick (C-3/C-4); being independent for dressing, transfers to bed, car, toilet (C-7); or achieving total wheelchair independence (C-8 to T-4). Over time, new discoveries continue to modify equipment/therapy needs and increase patient's potential.
Evaluate home layout and make recommendations for necessary changes. Identify equipment/medical supply needs and resources.	Physical changes may be required to accommodate patient and support equipment. Prior arrangements facilitate the transfer to the home setting.
Discuss sexual activity and reproductive concerns. Review alternative sexual activities/positions, and spasticity management as indicated (e.g., opposing pressure on area of spasm, using pillows for support, regular stretching/ROM exercises, appropriate medications).	Concerns about individual sexuality/resumption of activity is frequently an unspoken concern that needs to be addressed. Spinal cord injury affects all areas of sexual functioning. In addition, choice of contraception is impacted by level of spinal cord injury and side effects/adverse complications of specific method. Finally, some female patients may develop autonomic dysreflexia during intercourse or labor/delivery.

ACTIONS/INTERVENTIONS	RATIONALE
Teaching: Disease Process (NIC)	

Independent	
Identify community resources/supports, e.g., health agencies, visiting nurse, financial counselor; service organizations, Spinal Cord Injury Foundation.	Enhances independence, assisting with home management and providing respite for caregivers.
Coordinate cooperation among community/rehabilitation resources.	Various agencies/therapists/individuals in community may be involved in the long-term care and safety of patient, and coordination can ensure that needs are not overlooked and optimal level of rehabilitation is achieved. *Note:* Individuals with SCI are living longer, and more injuries are occurring at advanced ages, creating new challenges in care as SCI patients deal with the effects of aging.
Arrange for transmitter/emergency call system.	Provides for safety and access to emergency assistance and equipment.
Plan for alternate caregivers as needed.	May be needed to provide respite if regular caregivers are ill or other unplanned emergencies arise.

POTENTIAL CONSIDERATIONS following acute hospitalization (dependent on patient's age, physical condition/presence of complications, personal resources, and life responsibilities)

Disuse Syndrome, risk for—paralysis/mechanical immobilization.
Autonomic Dysreflexia—bladder/bowel distension, skin irritation, lack of caregiver knowledge.
Self-Care deficit—neuromuscular impairment, decreased strength/endurance, pain, depression.
Nutrition: imbalanced risk for (specify)—dysfunctional eating pattern, excessive/inadequate intake in relation to metabolic need.
Role Performance, ineffective/Sexual dysfunction—situational crisis and transition, altered body function.
Family Processes, interrupted—situational crisis and transition.
Caregiver Role Strain—discharge of family member with significant home care needs, situational stressors, such as significant loss, economic vulnerability; duration of caregiving required, lack of respite for caregiver, inexperience with caregiving, caregiver's competing role commitments.