

1. **Fractures** (indications, nursing management, complications)

**\*\*PPT Slides 15-23, "ATI Ch 71"**

**Closed (simple) fracture:** Does not break through skin.

**Open (compound) fracture:** Open wound, Tissue injury, Risk of Infection.

**Displaced fracture:** Bone fragments are NOT in alignment.

**Non-displaced fracture:** Bone fragments that ARE in alignment.

**Pathological (spontaneous) fracture:** Bone cancer or Osteoporosis weakens the bone.

**Compression fracture:** Loading force presses on callus bone. Common in ELDERLY who have osteoporosis. (mostly of the spine)

*Nursing management:*

**Monitor VS and neurologic status** because injury to vital organs can occur d/t bone fragments (fractures of pelvis or ribs)

**Stabilize the injured area**, including the joints above and below the fracture, by using a splint and **avoiding unnecessary movement**

**Maintain proper alignment** of the affected extremity

**Assess for bleeding** and apply pressure, if needed

**Cover open wounds** with a **sterile** dressing

**Remove clothing and jewelry** near the injury or on the affected extremity

Keep the client **warm**

**Assess pain frequently** and follow pain management protocols, both pharmacological and non-pharmacological

Initiate and continue **neurovascular checks at least every hour for the first 24 hours, then every 1-4 hours**; immediately **report any change in status to the provider**

Prepare the client for any immobilization procedure appropriate for the fracture

Neurovascular Assessment Includes:

**Pain:** assess pain level, location, and frequency; assess pain using 0 to 10 pain scale, and have the client describe the pain; immobilization, ice, and elevation of the extremity with the use of analgesics should relieve most of the pain

**Sensation:** assess for numbness or tingling of the extremity; loss of sensation can indicate nerve damage

**Skin temperature:** check the temperature of the affected extremity; extremity should be warm, not cool, to touch; cool skin can indicate decreased arterial perfusion

**Capillary refill:** press nail beds of affected extremity until blanching occurs; blood return should be within 3 seconds; prolonged refill indicates decreased arterial perfusion; nail beds that are cyanotic can indicate venous congestion

**Pulses:** should be palpable and strong; pulses should be equal to the unaffected extremity; edema can make it difficult to palpate pulses, so Doppler ultrasonography might be required

**Movement:** client should be able to move affected extremity in active motion

*Expected Findings:*

Hx of trauma, metabolic bone disorders, chronic conditions, and possible use of corticosteroid therapy

Pain and reduced movement manifest at the area of fracture or the area distal to the fracture

*Physical Assessment Findings:*

Creptus: a grating sound created by the rubbing of bone fragments

Deformity: internal rotation of extremity, shortened extremity, visible bone with open fracture

Muscle spasms: d/t pulling forces of the bone when not aligned

Edema: Swelling from trauma

Ecchymosis: Bleeding into underlying soft tissues from trauma

*Indications:*

- *Osteoporosis*
  - o *Excessive exercising and weight loss from dieting and malnutrition can lead to osteoporosis*
  - o *Women who do not use estrogen replacement therapy after menopause lose estrogen and are unable to form strong new bone*
  - o *Clients on long-term corticosteroid therapy lose calcium from their bones d/t direct inhibition of osteoblast function, inhibition of GI calcium absorption, and enhancement of bone resorption*
- *Falls*
- *Motor vehicle crashes*
- *Substance abuse disorder*
- *Disease (bone cancer, Paget's disease)*
- *Contact sports and hazardous recreational activities (football, skiing)*
- *Physical abuse*
- *Lactose intolerance*
- *Age, as bone becomes less dense w/ advancing age*

**Immobilization Devices** (Indications, Nursing management)

Cast (ppt slides 23-26)

*Indications:*

Fractures (see types above)

*Nursing management:*

Monitor neurovascular Q1 for 24 hours

Pain

Paresthesia (sensation, numbness, tingling)

Pallor (skin temperature, capillary refill)  
Pulselessness (pulses palpable distal to injury)  
Paralysis (movement of extremities)

Pain assessment

Ice for 24-48 hours

\*circling drainage on cast is an unreliable indicator of drainage amount, can increase client anxiety

Older adults- increased risk for impaired skin integrity (loss of elasticity in tissue)

*Client Education:*

Do not place foreign objects in the cast

Relieve itching under cast by blowing cool air with a blow dryer

Cover with plastic bag during bath/shower

Report "hot-spots"--> can indicate infection

Areas under cast the are painful, increased drainage, warm to the touch, odor

Report changes in mobility, SOB, skin breakdown, constipation

Splint/Immobilizers (ppt 28, ATI page 471)

*Indications:*

Support fractured/injured areas until casting can happen, swelling decreased

Provide support, prevent additional injury

Immobilizers- prefabricated, fasten with hook-and-loop fasteners

Splints- removable, allow for skin integrity monitoring

*Nursing Management:*

Education

Application protocol

Observe for skin breakdown at pressure points

Traction

*Indications:*

Type of pulling force to promote and maintain alignment of injured area

Goals

Prevent soft tissue injury

Realign bone fragments

Decrease muscle spasms and pain

Correct or prevent further deformities

*Nursing Management:*

Verify prescription- type of traction, amount of weight, is removal okay?

Assess neurovascular status Q1 for 24 hours, then Q4

Maintain alignment

**Avoid lifting or removing weights**

**Ensure weights freely hang, don't rest on floor**

Replace weights if displaced, notify provider if not corrected

Pulley ropes free of knots, fraying, loosening, improper positioning Q8-12

Notify of severe muscle pain from muscle spasms if unrelieved with meds or repositioning

Monitor skin integrity, document

Heat/massage for muscle spasms  
Therapeutic touch, relaxation techniques

Internal (ppt slides 40-41)

Opened Reduction (ORIF):

Open reduction- observing fracture through incision

Internal fixation- plates, screws, pins, rods, prosthetics inside

*Indications:*

Fractures, arthroplasty, meniscectomy, joint replacement

*Nursing Management:*

Prevent dislocation

Monitor skin integrity

Elevate heels, inspect bony prominences

**Neurovascular assessment**

Observe for cast drainage

Monitor for pulmonary/fat embolism

Anti-embolism- medications, SCD

Monitor pain

**Monitor for signs of infection**

PT/OT consult for mobility

Get out of bed on unaffected side

Nutrition

Increase calorie intake

Calcium supplements

Small, frequent meals with snacks

Monitor for constipation

External Fixation (ppt slides 35-36)

*Indications:*

Comminuted fracture, non-union fractures with soft tissue damage

Leg length discrepancies from congenital defects

Bone loss r/t tumors, osteomyelitis

*Nursing Management:*

Elevate extremity

Neurovascular status, skin integrity

Assess body image

Pin care

Every 8-12 hours

Monitor site for drainage, color, odor, redness

Observe for manifestations of fat/pulmonary embolism

Embolism prevention methods

Medication administration

SCDs

*Education:*

Teach client pin care

Discuss clothing, materials to cover device

Restricted activity- passive and active range of motion to prevent complications (pneumonia, thrombus formation)

Closed Reduction (ppt slide 38):

Traction applied manually to realign displaced bone fragments

Once reduced, immobilization used to allow healing

Fracture fragments are not externally exposed (book)

Indications-

Fractures, arthroplasty, meniscectomy, joint replacement

Circular (ppt slide 40):

Promote new bone growth for mal-union, nonunion fracture

Device turned four times per day to pull apart cortex of bone

Stimulate growth

### **Complications** (manifestation, nursing management)

Compartment syndrome (5 P's) ATI Ch 71

Pain -unrelieved w/ elevation or pain medication; intense pain when passively moved.

Paralysis- motor weakness, or inability to move the extremity indicates nerve damage  
(Late manifestations)

Paresthesia-numbness, burning, and tingling are early manifestations.

Pallor-pale skin, nail beds, and cyanotic.

Pulselessness -late manifestations muscles are hard and swollen from edema. **If untreated neuromuscular damage occurs within 4-6hrs**

Fat Embolism- adults >70 are @ High risk to develop FE: hip & pelvic fractures are common cause. Occurs after the injury, usually w/ 12-48hrs following long bone fractures or total joint arthroplasty

*Early Manifestation*

Dyspnea, increased RR, decreased O<sub>2</sub>sat

headache

Decreased mental acuity r/t low arterial O<sub>2</sub> level

Respiratory distress

Tachycardia

Confusion

Chest pain

*Late Manifestation*

Cutaneous petechiae (pinpoint- size sub-dermal hemorrhages that occur on neck, chest, upper arms, and abdomen from blockage of capillaries by fat globules)

*Nursing Actions*

Maintain pt on bed rest

Prevention includes immobilization of fractures or long bones and minimal manipulation during turning **if immobilization is not performed.**

*Treatment:*

Oxygen for respiratory compromise, corticosteroids, for cerebral edema, vasopressors, and fluid replacement for shock, pain, and anti-anxiety medication PRN.

Venous thromboembolism (DVT, PE)

Osteomyelitis

*Manifestations:*

Bone pain is constant, pulsating, localized, and worse w/ movement  
Erythema and edema at the site of infection  
Fever: Older adults may not have elevated temp.  
Leukocytosis and possible elevated sedimentation rate (ESR)  
Manifestation disappears if infection becomes chronic.

*Nursing actions:*

*Administer antibiotics as prescribed to maintain a constant blood level*  
*Administer analgesics as needed*  
*Conduct neurovascular assessments if debridement is done*  
*If the wound is left open to heal, standard precautions are adequate, and clean technique can be used during dressing changes*

Avascular necrosis

Results from the circulatory compromise that occurs after a fracture  
blood flow is disrupted to the fracture site and the resulting ischemia leads to tissue (bone) necrosis

Failure of fracture to heal

A fracture that has not healed within 6 months of injury is considered to be experiencing delayed union

Malunion: fracture heals incorrectly

Nonunion: fracture that never heals

Electrical bone stimulation and bone grafting can treat nonunion  
Low intensity pulse ultrasound can promote healing to treat nonunion  
Can occur more frequently in older adult clients d/t impaired healing process

1. **Amputation** (Risk factors/indications, nursing management complications)

Can be elective (PVD, arteriosclerosis, osteomyelitis, or malignant tumor) or traumatic (accident).

Level of amputation is determined by adequate blood flow for healing. The higher the amputation, the greater amount of effort to use a prosthesis

Risk factors:

Traumatic injury (MVC's, war-related injuries), PVD, thermal injuries (frostbite) malignancy, DM, infection (osteomyelitis)

Indications:

Unsalvageable, Trauma, Severe infections, Locally unresectable malignant tumors, Frostbite-related gangrene, Failed management of acute compartment syndrome, Debilitating extremity paralysis

Nursing care:

Prevent post-complications (hypovolemia, pain, infection)

Assess surgical site for bleeding

Monitor tissue perfusion of end of residual limb

Monitor for manifestations of infection and non-healing of incision; infection can lead to osteomyelitis

Complications:

Cardiopulmonary complications r/t co-morbid conditions

DVT

Stump hematoma

Infection

Need for re-amputation (revision)

Phantom limb pain

Administer antiepileptic medication such as gabapentin

Flexion contracture

More likely w/ hip or knee joint following amputation d/t improper positioning

Nursing Actions:

-ROM exercises and proper positioning immediately after surgery

-To prevent knee or hip flexion contractures may elevate extremity for 24-48hrs to reduce swelling/discomfort, then no more elevation

-Have client lay prone 20-30 min several times a day to help prevent hip flexion contractures

Above Knee (AKA)

Unable to save tissue/bone below the knee

Below Knee(BKA)

Salvage of knee joint greatly improves function over an AKA

*“NURSING INDICATIONS”*

Traumatic amputation caused by accidents, war, or injury is the primary care of upper extremity amputations

Unsalvageable extremity d/t critical limb ischemia in pts w/ vascular disease

Trauma resulting mangled extremity or failed attempt at limb salvage

Severe infections w/ extensive soft tissue or bony destruction, or osteomyelitis

Locally unresectable malignant tumors

Frostbite-related gangrene

Failed management of acute compartment syndrome

Debilitating extremity paralysis

- Performed to remove ischemic, infected, necrotic tissue or locally unresectable tumor, may also be life-saving
- PAD, alone or in combination w/ DM, contributes to more than 1/2 of all amputations
  - Trauma is 2<sup>nd</sup> leading cause
- Pts w/ DM have a 10-fold increased risk for lower extremity amputation compared w/ those who do not have DM

#### NURSING MANAGEMENT

Prevent post-complications (hypovolemia, pain, infection)

Assess surgical site for bleeding

Monitor tissue perfusion of end of residual limb

Monitor for manifestations of infection and non-healing of incision; infection can lead to osteomyelitis

#### Glasgow Coma Scale (GCS):

- Eye opening (E): best eye response
  - 4= eye opening occurs spontaneously
  - 3= eye opening occurs to sound
  - 2= eye opening occurs secondary to pain
  - 1= eye opening does not occur
- Verbal (V): best verbal response
  - 5= conversation is coherent and oriented
  - 4= conversation is incoherent and oriented
  - 3= words are spoken but inappropriately
  - 2= Sounds are made, but no words
  - 1= vocalization does not occur
- Motor (M): best motor response
  - 6= commands are followed
  - 5= local reaction to pain occurs
  - 4= general withdrawal to pain
  - 3= decorticate posture (adduction of arms, flexion of elbows & wrists)
  - 2= decerebrate posture (abduction of arms, extension of elbows & wrist)
  - 1= motor response does not occur

#### Interpretation:

- Best possible score → 15
- Score <8 → associated w/ severe head injury and coma
- Score 9-12 → indicates moderate head injury
- Score >13 → associated with minor head trauma

## Intracranial Pressure(ICP) (level, indications, nursing management)

ICP monitoring

Level:

Normal→ 10-15 mmHg 20 and more indicated an increase in ICP

Causing a decrease in perfusion. Prolonged compensation can cause more harm than good.

Persistent elevation extinguishes cerebral circulation

Results in brain death if not treated urgently

CPP less than 50 results in permanent neurologic damage

Indication:

Early identification and treatment of increased ICP

Early Manifestations:

Changes in LOC- restlessness, confusion, increasing drowsiness, purposeless movements

Increased respiratory efforts

Weakness in one extremity/side

Pupillary changes, impaired ocular movements

Headache- constant, increasing in intensity, aggravated by movement/straining (sneezing, bearing down)

Late Manifestations:

Respiratory/vasomotor changes

Cheyne Stokes breathing, respiratory arrest

Vitals- increase systolic blood pressure, widening pulse pressure, slowing heart rate; pulse fluctuation; temperature increase

**Cushing's Triad- bradycardia, hypertension, bradypnea**

Projectile vomiting

Further deterioration of LOC- stupor to coma

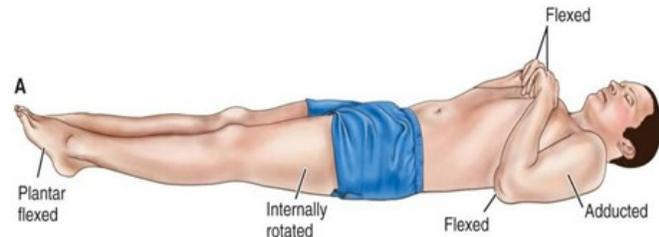
Hemiplegia (weakness on one side, floppy),

decortication, decerebration, flaccidity

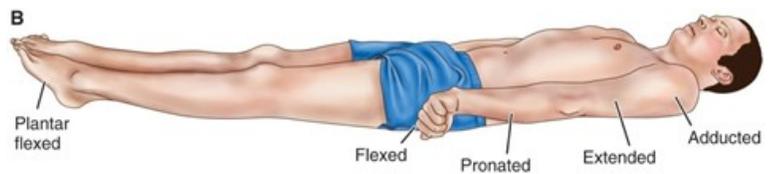
Loss of brainstem reflexes- pupil, gag, corneal, swallowing

Posturing:

Decorticate



Decerebrate



**Nursing Management:**

- Strict surgical aseptic technique
- Sterile dressing changes per facility protocol
- Keep drainage systems closed
- Limit monitoring to 3-5 days
- Irrigate system only PRN to maintain patency

**Complications:**

Insertion and maintenance can cause infection and bleeding

**Osmotic diuretic**

Mannitol

- Used to treat cerebral edema
- Drives fluid from brain into blood
- Administered IV
- Insert foley
- Monitor serum electrolytes and osmolality

**Level of Consciousness (LOC), (Indication, nursing management complications)**

**Causes:**

- **AEIOU TIPS:**
  - **A**lcohol or AAA
  - **E**pilepsy, hepatic encephalopathy
  - **I**nsulin (hypoglycemia)
  - **O**piates or overdose
  - **T**rauma, temperature (hypothermia, hyperthermia)
  - **I**nfections (sepsis, meningitis)
  - **P**sychogenic, pulmonary embolism, poisoning
  - **S**pace occupying lesions, stroke, shock, seizure

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  - **S**pace occupying lesions, stroke, shock, seizure

**Indication:**

- Not the disorder, result of a pathology
- Level of responsiveness/consciousness most important indicator of condition

**Nursing Management:**

- Labs
- Monitor based on underlying cause

### Diagnostic tests

Ordered based on underlying cause

### Management (ppt slide 20, 22)

ABCs, consider intubation, treat underlying cause

Maintain airway

Maintain skin integrity

Maintain fluid status

Maintain body temperature

Promote bowel and bladder function

Sensory stimulation and communication

### Complications:

Respiratory distress/failure

Pneumonia

Aspiration

Pressure ulcer

DVT

Contractures (posturing)

### CPP (cerebral perfusion pressure)

#### Level

CPP= MAP-ICP

70-100

<50 results in permanent neurologic damage

#### Monitoring

Signs of increasing ICP

Changes in LOC

### Head Injury (indication, manifestation, nursing management, complications).

#### Indication:

#### Types

Concussion/Mild Traumatic brain injury

Results in change of neuro function, no identified brain damage, resolves within 72 hours

Contusion

Bruise brain

Period of unconsciousness associated with stupor/confusion

Diffuse Axonal

Widespread injury to brain resulting in coma

Often seen with severe head trauma

Intracranial Hemorrhage

Epidural hematoma

Blood collection between skull and dura

Brief loss of consciousness w/ return to lucid state

Increased ICP with hematoma expansion, sudden decrease in LOC

#### EMERGENCY

Treatment- reduce ICP, remove clot, stop bleeding (burr holes, craniotomy)

Monitor- vital body function, respiratory support

Subdural hematoma  
 Blood collection between dura and brain  
 Acute- symptoms develop over 24-48 hours  
 Subacute- symptoms develop over 48 hours to 2 weeks  
 Chronic  
 Develops over weeks to months  
 Causative injury may be minor and forgotten  
 s/s may fluctuate  
 Treatment- clot evacuation

Intracerebral Hemorrhage  
 Occurs into substance of brain  
 Trauma or nontraumatic cause  
 Treatment  
 Supportive care, control ICP  
 Administer- fluids, electrolytes, antihypertensive meds  
 Craniotomy/ectomy to remove clot/control hemorrhage  
 May not be possible depending on location/lack of circumscribed area of hemorrhage

Manifestation:

Presence of alcohol/illicit drugs, amnesia, CSF leakage from nose/ears (indicate basilar skull fracture, "halo sign"--> yellow stain surrounded by blood on paper towel, fluid tests positive for glucose)

Labs

ABG, CBC, BMP  
 Serum/urine osmolality, toxicology screen  
 EEG, anti-seizure medication trough levels

Diagnostics

C-spine films (X-ray)  
 CT/MRI of head/neck  
 CPP calculation

Nursing Management:

Health promotion/disease prevention (ppt slide 42)  
 Helmets when skateboarding/bike riding/motorcycles/skiing/football/sports  
 Seat belts  
 Avoid speeding, driving under the influence  
 Avoid riding in back of pick-up truck  
 Promote programs for older adults to prevent falls  
 Major cause of neuro injury between ages 65-75

Support family

Brain death→ consider discussing organ donation

Assess/Monitor

Respiratory (priority assessment)  
 Cranial nerve function  
 PERRLA  
 Bilateral sensory/motor responses

### Increased ICP

- HOB 30 to promote venous drainage
- Avoid extreme flexion/extension/rotation of head, maintain body in midline neutral position
- Patent airway
- Administer O2 to keep PaO2 >60
- Consider hyperventilation to decrease ICP
- Maintain c-spine stabilization
- Maintain safety/seizure precautions

### Medications

#### Mannitol

- Used to treat cerebral edema
- Drives fluid from brain into blood
- Administered IV
- Insert foley
- Monitor serum electrolytes and osmolality

#### Barbiturates

- Phenobarbital, thiopental
- Included coma to decrease cellular demand until ICP can decrease

#### Phenytoin (seizure med)

- Prophylactic to prevent/treat seizures
- Dosing based on therapeutic blood levels

#### Morphine (harder glasgow coma scale)

- Analgesic to control pain/restlessness

### Complications:

- Brain herniation
- hematoma/intracranial hemorrhage (see above)
- Pulmonary edema
- Diabetes insipidus/SIADH
- Cerebral salt wasting

**Stroke** (indications, manifestation, nursing management complications).

#### *Hemorrhagic:*

Occur secondary to a ruptured artery or aneurysm

Prognosis is poor d/t amount of ischemia and increased ICP caused by the expanding collection of blood

If caught early and evacuation of clot can be done with cessation of the active bleed, the prognosis of a hemorrhagic stroke improves significantly

#### *Ischemic: (thrombotic or embolic)*

Ischemic strokes (thrombotic or embolic) can be reversed with fibrinolytic therapy using alteplase, also known as tissue plasminogen activator (tPA) if given within 3-4.5 hrs of initial onset of symptoms (unless contraindicated)

*Thrombotic:*

Occurs secondary to the development of a blood clot on an atherosclerotic plaque in a cerebral artery that gradually shuts off the artery and causes ischemia distal to the occlusion

Manifestations evolve over a period of several hours to days

*Embolic:*

Caused by an embolus traveling from another part of the body to a cerebral artery  
Blood to the brain distal to the occlusion is immediately shut off causing neurologic deficits

*Manifestations:*

Symptoms depend on the location and size of the affected area

Some clients have transient manifestations, such as visual disturbances, dizziness, slurred speech, and a weak extremity à transient ischemic attack (TIA)

**PHYSICAL ASSESSMENT FINDINGS:**

**Left cerebral hemisphere** → responsible for language mathematics, and analytic thinking

Expressive and receptive aphasia, agnosia, alexia, agraphia, right extremity hemiplegia or hemiparesis, slow cautious behavior, depression, anger, visual changes such as hemianopia

**Right cerebral hemisphere** → responsible for visual and spatial awareness and proprioception

Altered perception of deficits, unilateral neglect, loss of depth perception, poor impulse control, visual changes

*Complications:*

Dysphagia and aspiration

Unilateral neglect

*Nursing Management:*

Monitor VS every 1-2 hrs; notify provider immediately if SBP >180 or DBP >110

Monitor temperature à fever increases ICP

Provider O2 to maintain SpO2 >92%

Monitor cardiac rhythm to detect arrhythmia

Elevate HOB to 30 degrees to reduce ICP and promote venous drainage

Institute seizure precautions

Assist w/ communication skills if speech is impaired

Assist with safe feeding

Prevent complications of immobility

Maintain skin integrity

Encourage passive range of motion every 2 hrs to affected extremity

Maintain safe environment to reduce risk of falls

Provide assistance with ADLs

**Spinal Cord Injury** (indications, manifestation, nursing management, complications)

**PPP, starts on 68:**

- Loss of motor function, sensory function, reflexes, control of elimination
- Injuries to c-spine may result in quadriplegia (paralysis/paresis of a 4 extremities and trunk)
- The level of cord involved dictates the consequences of spinal cord injury
- Not all fractures of vertebrae cause SCI, direct injury must occur

*Causes:*

- Trauma (MVCs), diving accidents, GSWs

*Risk Factors:*

- Male clients age 16-30,
- high risk activities (extreme sports or high speed driving),
- participation in impact sports,
- acts of violence (GSW or knife wounds),
- alcohol or drug use,
- disease (metastatic cancer or arthritis of spine),
- falls (especially older adults)

*Expected findings:*

-lack of sensation of dermatomes below level of injury

-reports neck or back pain

-Phys Assessment findings:

Inability to feel light touch when touched by a cotton ball, inability to discriminate between sharp and dull when touched with a safety pin or other sharp objects

Absent deep tendon reflexes

Flaccidity of muscles

Hypotension that is more severe when the client is in sitting upright position

Shallow respirations

Spinal shock, a complication of spinal cord injury, causes a total but temporary loss of all reflexive and autonomic function below the level of the injury, lasting for a period of days to weeks

*Nursing management (73):*

•Respiratory status:

-First priority!

-Provide O2, assist w/ intubation & mechanical ventilation if necessary, assist client to cough by applying abdominal pressure when attempting to cough, teach client about IS and encourage DB frequently

•Tissue perfusion:

-NEUROGENIC SHOCK!

-Sudden loss communication within the SNS that maintains the normal muscle tone in blood vessel walls à results in peripheral vasodilation that leads to venous pooling in the extremities à decreased CO and HR and life-threatening decrease in BP

-Monitor for hypotension, dependent edema, and loss of temperature regulation

-When in upright position, client who was in neurogenic shock will experience postural hypotension; transferring to WC should occur in stages

- Intake & output
  - May be NPO for several days; regulation of fluid balance and nutrition is necessary
- Neurologic status
  - Determine baseline, then monitor for increasing loss of neurologic function
- Muscle strength and tone
  - Determine baseline, then monitor for an increasing loss of muscular strength in affected extremities
- Mobility
  - If complete injury then will not regain mobility
  - If incomplete injury then may regain some mobility
- Bowel & bladder function
  - Spastic neurogenic bladder → for males consider condom catheter or stimulated micturition reflex by tugging on pubic hair; for females use indwelling urinary catheter
  - Flaccid neurogenic bladder → intermittent catheterization
  - For bowels → stool softeners or bulk-forming laxatives
- Skin Integrity
  - Change position every 2 hrs (every 1 hr while in WC)
- Sexual function
  - Reflexogenic erections are possible
  - Ejaculation coordinated with emission might not occur
  - If incomplete injury then may be capable of both reflexogenic and psychogenic erections

*Complications (77):*

- Orthostatic hypotension
- Spinal shock
- Neurogenic shock
- Autonomic dysreflexia
- Occurs secondary to SNS stimulation and inadequate compensatory response by the PNS
- Clients who have lesions below T6 do not experience dysreflexia
- Stimulation of SNS → causes extreme HTN, sudden severe HA, pallor below the level of the spinal cord's lesion dermatome, blurred vision, diaphoresis, restlessness, nausea, and piloerection
- Stimulation of PNS → bradycardia, flushing above the corresponding dermatome, and nasal stuffiness

**Dementia**

*Indications (slide 79):*

The most common causes of dementia are neurodegenerative conditions, which include:

- #1 is Alzheimer's disease
- #2 is Vascular Dementia (multi-infarct)

*Manifestation (slide 79):*

Neurocognitive disorder characterized by dysfunction or loss of memory, orientation, attention, language, judgement, and reasoning.  
Personality changes and behavioral problems such as agitation, delusions, and hallucinations may occur.

*Nursing management:*

- Promote cognitive function
- Promote physical safety
- Promote independence and daily care activities
- Reduce anxiety and agitation
- Improve communication
- Socialization and intimacy needs
- Promote adequate nutrition
- Promote balanced activity schedule and rest
- Don't prescribe cholinesterase inhibitors without periodic assessment for cognitive benefits vs GI effects
- Oral assisted feeding over feeding tubes

**Delirium**

*Indications (slide 80) :*

- 50% of people over 65 who are hospitalized
- 80% of patients in ICU
- Dementia is leading risk factor

*Manifestation (slide 80):*

State of temporary but acute mental confusion.  
In many cases delirium is preventable and/or reversible and often the result of the interaction of the patient's underlying condition with a precipitating event.  
Hypoactive delirium → lethargy  
Hyperactive delirium → agitation and hallucinations

*Nursing management:*

Supportive medical care → at risk for complications from immobility and confusion leading to high prevalence of irreversible functional decline

Managing agitation → prevent harm to patients, ask yourself "what is the outcome of that behavior and is that outcome acceptable?"

Non-pharmacologic interventions → high ambient noise, poor lighting, lack of windows, frequent room changes, and restraint use often worsen confusion so address these concerns!

Neuroleptic medications → low dose haloperidol can reduce severity and frequency of delirium; risperidone, ziprasidone, ziprasidone and olanzapine may have similar efficacy to haloperidol

Benzodiazepines → limited role in treatment of delirium; primarily indicated as sedative drug; **overprescribed for patients with delirium**

Manage pain

*Prevention (slide 89):*

Orientation protocols → clocks, calendars, windows w/ outside views, and verbally re-orienting patients

Cognitive stimulation → regular visits from family and friends; avoid sensory overstimulation especially at night

Facilitation of physiologic sleep → nursing and medical procedures should be avoided at night; reduce nighttime noise

Early mobilization and minimized use of physical restraints for patients with limited mobility

Visual and hearing aids for patients with these impairments

Avoiding and/or monitoring the uses of problematic medications → opioids, diphenhydramine, benzodiazepines, antiemetics, corticosteroids

Avoiding and treating medical complications → hypoxemia and infections

Managing pain

Medications to prevent delirium → available evidence does not support the use of medications to prevent delirium in the acute care or ICU; melatonin may show promise

*Comparison Chart for Dementia, Delirium, and Depression:*

Feature	Dementia	Delirium	Depression
Onset	Usually insidious	Abrupt, although initially can be subtle	Often coincides with life changes; often abrupt
Progression	Slow	Abrupt; can fluctuate from day to day	Variable; rapid to slow but may be uneven
Duration	Years (avg of 8 yrs but can be much longer)	Hours to days to weeks; can be prolonged in some	Can be several months to years, especially if not treated
Thinking	Difficulty with abstract thinking, impaired judgment, words difficult to find	Disorganized, distorted; slow or accelerated	Intact but with apathy, fatigue; may be indecisive; feels sense

		incoherent speech	of hopelessness
Perception	Misperceptions often present; delusions and hallucinations	Distorted; delusions and hallucinations	May deny or be unaware of depression; may have feelings of guilt
Psychomotor behavior	May pace or be hyperactive; as disease progresses, may not be able to perform tasks or movement when asked	Variable; can be hypoactive or hyperactive or mixed	Often withdrawn and hypoactive
Sleep-wake cycle	Sleeps during day; frequent awakenings at night; fragmented sleep	Disturbed sleep; reversed sleep-wake cycle	Disturbed, often with early morning awakening

*Do's, Don'ts, and Cautions for Delirium Prevention, Screening, and Management:*

- DO**
- Make sure patients are walking every day; mobility is one of the best deterrents to delirium.

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  - Ensure that patients are getting enough sleep. Emphasize non-pharmacological approaches, and minimize sleep interruptions for vital signs, medication administration, or venipunctures.

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  - Ensure that patients are treated for pain (use non-narcotics preferentially).

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  - Correct any metabolic disturbances, and treat any new infections.

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  - Correct or provide adaptations for hearing and vision problems to keep patients oriented.

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  - Assist patients with feeding as needed, and prevent dehydration.

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  - Assess for drug or alcohol withdrawal.

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  - Consider using volunteer or paid attendants who can help ensure the safety of delirious patients, and avoid the need for physical restraints.

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  - Avoid bed rest orders to ensure that patients remain mobile.

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  - Avoid or minimize inappropriate psychoactive drugs in older adults (the "American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults" includes multiple anticholinergics, antipsychotics, and other drugs that should be avoided in most cases).

## **DON'T**

- Overlook hypoactive delirium, which may be harder to spot than hyperactive delirium but is more common and linked to worse outcomes.
- Rely on rapid bedside screens. They aren't enough on their own to identify delirious patients; rather, they can identify patients who should receive additional evaluation.
- Rely on melatonin. Its utility as a preventive or treatment is still uncertain.
- Rely on bed alarms to keep patients safe. Data about their efficacy in preventing falls and other injuries are lacking.
- Use tele-sitters or robot sitters. They are untested in prevention and could cause fear and confusion in patients who are already delirious.
- Overuse CT scans and other brain-imaging tests. They have shown limited usefulness in evaluating hospital-onset delirium. Experts caution against their overuse and recommend restricting them to patients with focal deficits or recent falls.
- Forget that patients with delirium may not be able to understand discharge instructions. Involve family members and caregivers in instructions and education to help ensure a safe transition.
- Immobilize patients with tethers or bed and chair alarms unless absolutely necessary.