N441 Concept Review Exam 3

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 (nursing diagnoses)

   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.

   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

   •**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:**

   –Crepitus: 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:

Excessive exercising, weight loss from diet/malnutrition leading to osteoporosis

Women lacking estrogen replacement post-menopause

Long-term corticosteroid therapy

- Osteoporosis
  - Excessive exercising and weight loss from dieting and malnutrition can lead to osteoporosis
  - Women who do not use estrogen replacement therapy after menopause lose estrogen and are unable to form strong new bone
  - 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

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

Cast (ppt slides 23-26)

Indications:

Fractures (see types above)

Prevent further injury

Promote healing/circulation

Reduce pain

Correct deformity

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, cast above level of heart for 24-48 hours

Reduce swelling

Circling drainage on cast is an unreliable indicator of drainage amount, can increase client anxiety

Circle drainage, make note in chart, report to provider

- Handle cast with palms of hands not fingers, don't put on hard/sharp surfaces to avoid denting
- Older adults- increased risk for impaired skin integrity (loss of elasticity in tissue)
- 1 finger between skin and cast
- Check hourly, report increased swelling to provider

Client Education:

- Do not place foreign objects in the cast
  - Promotes infection if they break the skin
  - Relieve itching under cast by blowing cool air with a blow dryer
- Cover with plastic bag during bath/shower, avoid soiling from urine/feces
- 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
- Avoid joint contracture following paralysis injury
- Immobilizers- prefabricated, fasten with hook-and-loop fasteners
- Splints- removable, allow for skin integrity monitoring

Nursing Management:

- Education
  - Application protocol- full-time or part-time use
  - 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
- Types of fractures
  - Displaced
  - Complete

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
Pin Site Care:
Prevent and monitor for signs of infection
Assess- drainage, color, amount, odor; loosening of pins; tenting of skin at pin site (too much traction)
Clean each pin site with CHG, different swab for each pin
Assess for manifestations of compartment syndrome (RN)

Internal (ppt slides 40-41)
Opened Reduction (ORIF):
Open reduction- observing fracture through incision, manually aligned, kept in place with plates/screws
Find out where plates/screws/pins are for future MRI possibilities
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
Can have a window cut in cast to visually monitor site
Monitor for pulmonary/fat embolism
Anti-embolism- medications, SCD
Monitor pain
Assess pain first before any interventions
Repositioning, dressing changes
Cover pain before performing
PT/OT consult for mobility
Get out of bed on unaffected side
Nutrition
Increase calorie intake
Calcium supplements
Small, frequent meals with snacks

- Risk for constipation, nausea, vomiting
- Monitor for constipation
- May have an order for a stool softener

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
    - SCD on opposite leg of fixation device
- Education:
  - Teach client pin care
    - Aseptic technique, different swab for each pin site
    - Chlorhexidine swabs or bottle from pharmacy, cotton swabs
    - ONLY use what provider instructs
  - Discuss clothing, materials to cover device
  - Restricted activity- passive and active range of motion, cough and deep breathe, repositioning 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

Manifestation

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.

i. Lack of circulation can cause ischemia (tissue death)

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

Treatment

Negative pressure wound therapy

Fasciotomy

Nursing Actions

Prevention

Assess neurovascular

Notify provider if expected univalve/bivalve

Loosen constrictive dressings

Education

Report pain not relieved by analgesics, pain continuing to increase in intensity

Report numbness, tingling, change in color of extremity

Fat Embolism-

Indication:

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 O2sat
- –HA
- –Decreased mental acuity r/t low arterial O2 level
- –Respiratory distress
- –Tachycardia
- –Confusion
- –Chest pain

Late Manifestation

- Cutaneous petechiae (pinpoint- size subdermal 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)

Manifestations:

Anxiety, feeling of impending doom
Sudden chest pressure, inspiration pain, dyspnea, air hunger
Cough, hemoptysis
Physical assessment findings
Pleurisy, pleural friction rub
Tachycardia, hypotension, S3/4 heart murmur, diaphoresis
Tachypnea, adventitious breath sounds, decreased O2 sat, cyanosis
Low-grade fever, petechiae, distended neck veins, syncope

Indications:

Long-term immobility
Tobacco use, oral contraceptives
Elevated platelets
Obesity, heart failure, chronic atrial fibrillation, sickle cell anemia
Long bone fractures, trauma, surgery
Cancer, septicemia, advanced age

Nursing Interventions:

O2 therapy, IV access
Respiratory assessment- lung sounds, rate/rhythm/effort, skin color, capillary refill, tracheal positioning
Cardiac assessment- compare bp in both arms, palpate pulse quality, check for dysrhythmias on monitor, examine for distended neck veins, petechiae
Emotional support, monitor for changes in LOC
Medication administration
Anticoagulants (enoxaparin, warfarin, heparin), Direct factor Xa inhibitor (apixaban), direct thrombin inhibitor (dabigatran), thrombolytic therapy (alteplase)

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.
- Leukocytososis and possible elevated sedimentation rate (ESR)
- *Manifestation disappears if infection becomes chronic.*

Nursing Actions:

Administer antibiotics, analgesics

Neurovascular assessment (post-debridement)

Standard precautions if left open to heal, clean technique for dressing changes

Avascular necrosis

Disrupted blood flow to fracture site, ischemia leads to tissue/bone necrosis

Indications:

Hip fractures, displacement fractures

Long-term corticosteroid therapy

Treatment

Bone graft, prosthetics

Failure of fracture to heal

Delayed union- not healed within 6 months of injury

Malunion- healed incorrectly

Nonunion- never heals

Electrical bone stimulation, low intensity pulse US

Indication

Older adult clients d/t impaired healing process

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

Above Knee (AKA)

Unable to save tissue/bone at/below the knee

Below Knee (BKA)

Salvage of the knee greatly improves function vs. an AKA

Symes

Removal of foot while saving ankle

Mid-foot, toe

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

Peripheral artery disease alone or with diabetes

Low blood flow to capillaries/nerve ending

Second leading cause of amputation

- 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 ½ of all amputations
  - Trauma is 2nd 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)

Hemodynamic monitoring

- Assess surgical site for bleeding, redness, warmth, drainage, odor, approximation of suture lines
- Monitor tissue perfusion of end of residual limb
- Monitor for manifestations of infection and non-healing of incision; infection can lead to osteomyelitis

Review ppt slides 77-88

Glasgow Coma Scale (GCS):

Indication:

Change in neurologic status that can be measured with a scale

Intubation:

GCS may be reported as 2 scores for modification

Scale:

–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

Persistent elevation extinguishes cerebral circulation

Results in brain death if not treated urgently

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

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

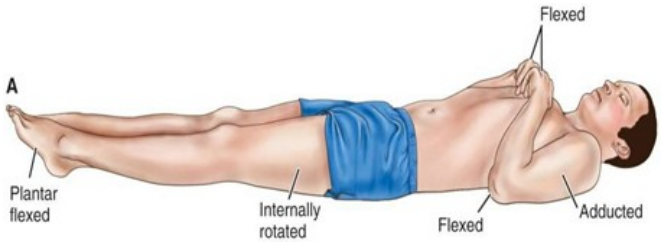
Further deterioration of LOC- stupor to coma

Hemiplegia, decortication, decerebration, flaccidity

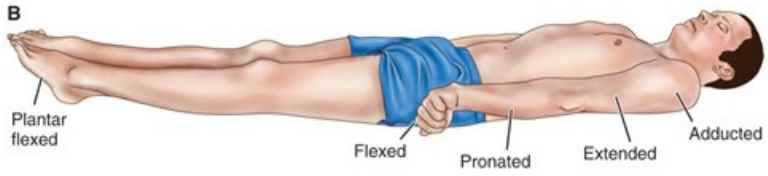
Loss of brainstem reflexes- pupil, gag, corneal, swallowing

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

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 further 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

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

Morphine

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).

<u>Hemorrhagic:</u>

- 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

<u>Ischemic:</u> (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 à for males consider condom catheter or stimulated micturition reflex by tugging on pubic hair; for females use indwelling urinary catheter
- –Flaccid neurogenic bladder à intermittent catheterization
- –For bowels à 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 à 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 à 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: Page 213-215 textbook

- Supporting Cognitive function-a quiet, pleasant manner of speaking, clear and simple explanations, and the use of memory
- Promoting physical safety-prevent falls, adequate lighting,
- Promoting independence and self care activities
- Reducing anxiety and agitation-provide quiet environment
- Improving communication-remain unhurried and reduce noise clear easy to understand sentences
- Socialization and intimacy needs
- Promoting Adequate Nutrition
- Promoting balanced activity and rest
- Home, community, and transitional care
  Don't prescribe cholinesterase inhibitors without periodic assessment for cognitive benefits vs GI effects
  Oral assisted feeding over feeding tubes

Delirium

Indications:

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, risperidone, 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):

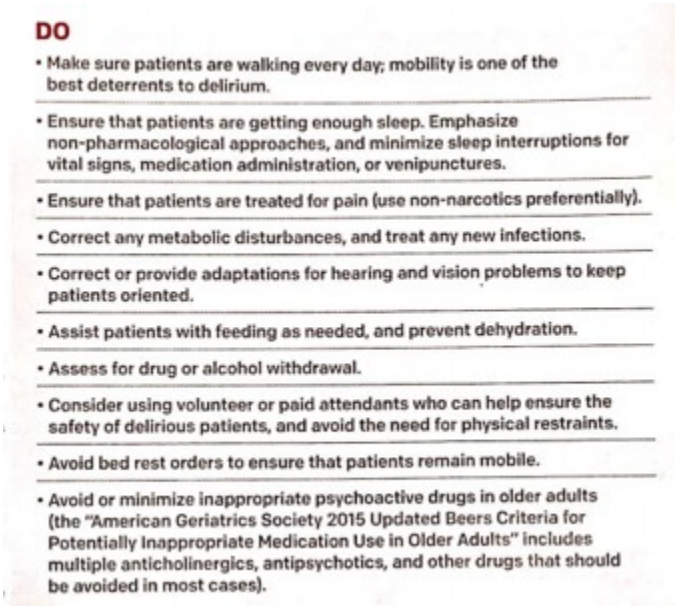
- Orientation protocols → clocks, calendars, windows w/ outside views, and verbally re-orienting patients
- Cognitive stimulation → regular visits from family and friends; avoid sensory overstimulation especially at night
- Facilitation of physiologic sleep → nursing and medical procedures should be 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	Disorganized,	Intact but with apathy,

	thinking, impaired judgment, words difficult to find	distorted; slow or accelerated incoherent speech	fatigue; may be indecisive; feels sense 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 Cations for Delirium Prevention, Screening, and Management:



DO

- Make sure patients are walking every day; mobility is one of the best deterrents to delirium.
- Ensure that patients are getting enough sleep. Emphasize non-pharmacological approaches, and minimize sleep interruptions for vital signs, medication administration, or venipunctures.
- Ensure that patients are treated for pain (use non-narcotics preferentially).
- Correct any metabolic disturbances, and treat any new infections.
- Correct or provide adaptations for hearing and vision problems to keep patients oriented.
- Assist patients with feeding as needed, and prevent dehydration.
- Assess for drug or alcohol withdrawal.
- Consider using volunteer or paid attendants who can help ensure the safety of delirious patients, and avoid the need for physical restraints.
- Avoid bed rest orders to ensure that patients remain mobile.
- 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.