Symptom Management
Part II
Renee Yanke, ARNP, MN, AOCN
Whidbey General Hospital

Key points of Symptoms – Assessment and Management

- Understand the usual pattern of disease progression
- Consider Co-morbidities
- Consider Symptom Clusters
- OLDCART

Alterations in Genitourinary Function

- Urinary Incontinence
  - Involuntary loss to the point it is a problem
- Ostomies & Urinary Diversions
  - Urine is diverted away from lower urinary tract
- Renal Dysfunction
  - Damage to vasculature/structural change of the kidneys leading to systemic problems

Urinary Incontinence

- Stress – laugh, cough, etc. increasing abdominal pressure  \textbf{S}
- Urge – abrupt, strong urge to void – followed by involuntary loss of urine.  \textbf{S}
- Reflex – incontinence w/o urge to void or sensing of bladder fullness.  \textbf{S} \& \textbf{E}
- Functional – can’t get to toilet in time.  \textbf{S}
- Total – continuous loss without distention or sensing bladder fullness.  \textbf{S}
- Retention – inability to void or empty bladder.  \textbf{S} \& \textbf{E}

\textbf{Mechanism:}\  \textbf{S} – Storage \hspace{1cm} \textbf{E} - Emptying
Men and Women

**Post prostatectomy**
- Rhabdosphinctor is damaged and leads to either urge or commination stress & urge incontinence.
  - Scarred/atrophied tissue
  - Nerve damage
  - Shortened urethra
- Age – atrophy and neural degeneration

**Female changes**
- Menopause – less estrogen leads to thinning of urethral epithelium
- Pelvic Organ Prolapse

**Risk Factors**
- Disease – Brain lesions – CVA, MS
- Spinal cord damage
- Surgery/RT/trauma to sphincter
- Prolonged bladder distention, infection/inflammation
- Bladder obstruction
- Immobility
- Endocrine – Diabetes
- Functional ability
- Treatment – Surgery damages neural pathways
- RT leading to fibrosis/stenosis
- Chemotherapy
- Fistula formation
- Cryosurgery
- Medications
- Long term Foley catheter use

**Assessment**
- Personal History:
  - Cognitive ability
  - Neurologic disease
  - Motivation
  - Living arrangement
  - Medications
  - Impact of incontinence on self esteems & relationships
- Patterns of elimination
  - Caffeine & ETOH use
  - Physical activity
  - Nocturia? Dysuria? Poor stream
  - Duration
  - Frequency & amount of urine
  - Prior treatment
  - Have person keep bladder diary for 3 days

**Physical Assessment**
- Abdominal masses
- Bladder fullness
- Fecal impaction
- Neuro changes – balance, gait, deep tendon reflexes
- Odor, skin breakdown
- Diagnostics: U/A, culture/sensitivity
- Cough stress test
- Post void residual
- Urodynamics & imaging to check voiding, filling and storage function
- Cystoscopy
Intervention

- Skin Care
- Bladder training
- Kegels 10 reps TID
- Decrease evening fluid intake
- Decrease caffeine, ETOH to decrease bladder irritation
- Monitor use of voiding programs
- Include family/caregivers in plan
- Electrostimulation – 30 sec. muscle contraction
- Meds: anticholinergics to stop the message for bladder contraction.
- Tricyclic antidepressants – anticholinergic action
- Potassium Channel blockers

Ostomies & Urinary Diversions

- Used to drain urine when bladder, prostate, uterus, fallopian tubes, ovaries, pelvic lymph nodes, anterior vaginal wall and sometimes the urethra (in women) are removed.
- Ileal conduit – ostomy formed with small bowel and ureteral attachment – external appliance used and continuous urine production.
- Reservoir from ileum or large intestine – holds up to 800 ml. Catheterize via ostomy – no external collection appliance
- Orthoptic neobladder – bladder built from intestine attached to urethra. Voiding learned, may need intermittent cathing for retention

Renal Dysfunction- Risk Factors

- Hydronephrosis from compression of ureters due to metastatic tumor
- Venous/arterial occlusion from compression of blood vessels due to tumor
- Hypercalcemia – leads to loss of ability to concentrate urine – leads to electrolyte imbalance
- Radiation therapy – fibrosis and atrophy
- Tumor Lysis – may lead to obstruction or kidney stone formation
- Chemotherapy – Cisplat, carbo, ifosfamide, etc. may cause renal damage.
- Multiple Myeloma – Bence Jones proteins & light chains

Intervention

- Appropriate stoma siting – Wound, Ostomy Continence nurse referral
- Patient education regarding care and management of urinary diversion.
  - Change appliance q 5 days & prn
  - Barrier clears ostomy by 1/8 inch and apply skin barrier paste prn
  - Empty pouch when 1/3 to ½ full and before chemotherapy treatment
  - Monitor volume, color and consistency
  - New diversion starts functioning 3-5 days post op
- Assist patient & family to promote body image and self esteem with urinary diversion
Assessment

- Age
- Diuretic use
- Comorbidities
- Renal stones
- Pre-existing renal impairment
- Labs - Creatinine, Creatinine clearance, BUN, electrolytes
- Cardiovascular – arrhythmias, orthostatic hypotension, rapid pulse,
- Neurologic – lethargy, confusion
- Skin turgor – poor
- GI – nausea/vomiting, polydipsia, splenomegaly
- GU – nocturia, polyuria, oliguria, flank pain, dysuria

Interventions

- Verify baseline values
- Monitor I & O >30 ml/hour
  - Good fluid intake – more intake than output if person is on diuretics
  - IV hydration pre & post cisplatin
- Monitor for obstructive diuresis - >2000 ml in 8 hours after removal of obstruction
- Monitor labs – renal function & electrolytes
- Daily weight
- Pharmacologic –
  - Saline hydration with diuresis
  - Oral sodium bicarb for alkaline urine
  - Amifostine and sodium thiosulfate for cisplatin nephrotoxicity
  - Electrolyte replacement

Which chemotherapy may cause neurotoxic SE that may lead to difficulty or inability to get to the toilet (functional incontinence)

- A. Vincristine & Vinblastine
- B. 5Fu & Bleomycin
- C. Methotrexate & doxorubicin
- D. Gemcitabine & mitoxantrone

Which Cancer produced Bence Jones proteins and light chains that cause renal dysfunction and a risk for dialysis?

- A. Testicular Cancer
- B. Cervical Cancer
- C. Small Cell Lung Cancer
- D. Multiple Myeloma
## Alterations in Respiratory Function

- **Anatomic or Surgical**
  - Space occupying lesions
  - Airway obstruction
  - Fluid accumulation – lung or pleural space
  - Surgical removal of lung or portion of lung or tracheostomy
- **Pulmonary Toxicity due to cancer therapy**
  - Radiation pneumonitis
  - Chemo-, bio-, or target therapy induced toxicity
- **Dyspnea**
  - Subjective sensation of difficulty breathing – inability to get enough air and reaction to the sensation.
- **Pleural Effusion**
  - Presence of excess fluid in pleural space – benign or malignant

## Pulmonary Toxicity

- **Pneumonitis** – inflammation of lung – may occur up to 1 year post TX
  - Radiation induced – occurs in 1%-20% of thoracic radiation patients
  - Fractionation – hyperfractionation may cause less RT pneumonitis
- **Concomitant chemo & RT:**
  - Bleomycin
  - Busulfan
  - Chlorambucil
  - Doxorubicin
  - Ifosfamide
  - MTX
  - Mitomycin
  - Vinblastine
  - Vincristine
  - Targeted Therapies
    - Alemtuzumab
    - Bevacizumab
    - Cetuximab
    - Rituximab
    - Trastuzumab

## Risk Factors

- **RT:** occurs in 5-15% of those receiving RT
  - Pre-existing pulmonary disease, interstitial lung disease
  - Smoking history
  - Poor performance status
  - More severe in older adults or female
- **Chemotherapy**
  - Age >60 years old
  - Cumulative dose of administered drug
  - Pre-existing pulmonary disease, interstitial lung disease, renal dysfunction
  - Smoking history
  - Oxygen at high concentration >35%
- **Targeted Therapy**
  - Pre-existing lung disease or cardiovascular disease

## Assessment – Signs & Symptoms

- **Non productive cough**
- **Mild dyspnea**
- **Low grade fever**
- **Tachycardia**
- **Pleuritic chest pain**
- **Fatigue**
- **Moist rales, pleural friction rub**
- **Tachypnea**
- **hypoxia**
Assessment - Diagnostics

- Radiology
  - Chest x-ray – early stage – diffuse haziness/ground glass opacification. Later stage – infiltrates or dense consolidation.
  - RT induced – infiltrates correspond with radiated areas
  - Chemo induced – infiltrates usually bilateral
  - Targeted – infiltrates usually bilateral
- Pulmonary Function Testing
  - Decreased lung volume, diminished diffusion capacity of lungs for carbon monoxide
- CT
  - Radiation fibrosis
- ABGs
  - Hypoxia
  - Hypocapnia, respiratory alkalosis

• Pulmonary Fibrosis –
  - later effect – 6-12 months post treatment
  - Symptoms:
    - May be asymptomatic
    - Similar to pneumonitis
    - May lead to chronic cor pulmonale

Nursing Assessment

- Presence & quality of cough
- Assess skin & mucosa for cyanosis
- Pulse oximetry for hypoxia
- Assess chest/back pain
- Monitor level of consciousness
- Assess for edema, ascites
- Assess for QOL, activity, depression, self care & psychosocial support

Interventions

- Radiation induced
  - Mild – cough suppressants, antipyretics, rest
  - Severe – glucocorticoids and taper slowly when symptoms improve.
- Chemotherapy induced
  - Monitor PFTs and limit cumulative dose
  - Corticosteroid use
  - Discontinue use of agent
- Targeted therapy induced
  - Dose reduce or stop use of agent
  - To decrease or prevent adverse effects
  - Pulmonary rehabilitation
  - Energy conservation
  - Monitor for relief of symptoms
Dyspnea – Risk Factors
- Tumors decreasing air flow
- Increased metabolic demands – fever, infection
- Cerebral mets affecting respiratory center
- Pleural, cardiac effusions or ascites
- Co-existing pulmonary, cardiac, neuromuscular diseases
- Incisional pain
- RT or chemotherapy induced pulmonary toxicity
- Anaphylactic reactions to treatment agents
- Lifestyle – anxiety, tobacco use, environmental exposures, obesity

Assessment
- Presence of smoking, chemical or other environmental risk factors
- Assess subjective reports of SOB
- Pattern – onset, frequency, severity, associated symptoms
- Aggravating and alleviating factors
- Impact on ADLs, lifestyle, roles, relationships, sexuality, body image
- Tachypnea, hypercapnia
- Accessory muscle use – retraction, nostril flaring
- Clubbing, cyanosis, pallor, venous congestion
- Confusion, restlessness, ability to concentrate
- CBC – hemoglobin, ABGs
- PFTs, Pulse oximetry
- CXR, CT
- Bronchoscope
- Sputum or Bronchial cultures

Intervention
- Treat underlying problem – thoracentesis, RT, antimicrobial meds
- Glucocorticoids
- Opioids and anxiolytics
- Bronchodilators
- Diuretics to decrease fluid overload
- Oxygen therapy for hypoxia
- Benzodiazepine
- Fan blowing air & Cooler room temp.
- Relaxation and stress reduction techniques
- Education and support to patient/family/caregivers

Interventions – effectiveness not established
- Oxygen therapy in non-hypoxia
- Extended release morphine, midazolam plus morphine
- Nebulized opioids, furosemide, lidocaine
- Acupuncture
Interventions – low risk

- Prevent fluid overload
- Positioning – sit upright, lean over with elbows on knees, table, pillows
- Pursed lip breathing
- Use of assistive devices – walker, wheelchair, portable O2
- Pulmonary rehab now covered for lung cancer
- Instruct patient/family – use of assistive devices, frequent rest periods, use of ready made meals, keep often used items close by.

Pleural Effusions – Risk Factors

- History of CHF, poor cardiac function
- Infection/trauma
- Nephrotic syndrome, cirrhosis, hypoalbuminemia
- Lung, Breast, hematopoietic tumors
- Previous pleural effusion
- RT to chest, thorax or abdomen
- Surgical modification of venous or lymphatic vessels

Assessment

- Assess risk factors
- Symptoms
  - Dyspnea – progressive, exertional
  - Dry, non-productive cough
  - Chest pain
- Physical exam
  - Tachypnea
  - Restricted chest wall expansion
  - Dull percussion
  - Diminished/absent breath sounds
  - Fever
  - Mediastinal shift
- Diagnostic tests
  - Chest x-ray
  - Chest CT
  - Ultrasound
  - Thoracentesis – fluid for cytology, chemical, culture, diagnostic & TX
  - Evaluate fluid for LDH, glucose, protein
    - Transudative – systemic factor causing effusion – CHF, cirrhosis, hypoalbuminemia
    - Exudative – local factors – metastatic, or primary tumor, infectious, PE, GI abscess, pancreatic disease, post abd. surgery

Intervention

- Therapeutic thoracentesis – with talc
- Chemotherapy and mediastinal radiation
- PleurX type catheter placement
- Breathing and relaxation techniques
- Pain meds prior to procedure
- Energy conservation
- Assistive device use
- Monitor respiratory status, response to procedure and fluid reaccumulation.
- Instruct patient/family to report symptoms – pain, fever, change in respirations
Joe has a history of cardiac disease and is being evaluated for CLL. He reports tachycardia and dyspnea. A CBC is obtained – what do you think is the likely cause?

- A. Hgb 7.9
- B. Platelet count 1,000,000 mm³
- C. WBC 2960 mm³
- D. ANC 1700 mm³

What would the treatment most likely be?

A client comes in for 3 month f/u post chemo. On exam, you notice tachypnea, dullness to percussion in RLL. Absent breath sounds on auscultation on RLL, Egophony on the R and a slight fever. What do you suspect?

- A. AAA
- B. Severe anemia
- C. Pulmonary Fibrosis
- D. Pleural Effusion

Alteration in Cardiovascular Function

- Lymphedema – obstruction of lymphatic system that causes accumulation of lymph fluid in interstitial spaces
- Edema – fluid accumulation in interstitial spaces
- Malignant Pericardial Effusion
- Cardiovascular Toxicity

Lymphedema – Risk Factors

- Surgical – lymph node dissection
- Infection – of affected extremity
- Seroma
- Obesity
- Air travel – sub optimal cabin pressure, long distance, prolonged immobilization
- Traumatic injury
- Prolonged standing
- Poor nutrition
- Thrombophlebitis
- Taxane therapy
- Skin inflammation
- Radiation – scar tissue formation or fibrosis
Assessment

• Physical
  – Clothing tightness
  – Visible puffiness
  – Pain, stiffness, weakness,
  – Redness, warmth
  – Distal location
  – Thickening, pitting – peau d’orange
  – Stasis dermatitis
  – Heaviness of extremity

• Measure extremities – symmetrically
• Water displacement
• Radiofrequency devices
• Assess for infection
• Pulses & ROM
• Strength of affected limb
• Presence of suspicious masses or tumor recurrence

Staging & Grading Scale

• Stage I – mild, reversible
  • Heaviness, smooth skin, pitting
• Stage 2 - moderate, irreversible
  • Poss. Tissue fibrosis, skin stretched, shiny non-pitting
• Stage 3 – severe, irreversible, elephantiasis.
  • Skin discolored, stretched, firm
  • Rare in breast cancer

• Grade 1 – swelling, pitting edema. 5-10% size difference @ greatest point
• Grade 2 – obvious obstruction, taut skin 10-30% size difference
• Grade 3 – limb starts to look disfigured, interferes with ADLs, >30% size difference
• Grade 4 – often progresses to malignancy, may need amputation. 5-10% in size or mass of limb

Labs/Diagnostics:

• Lymphoscintigraphy – radioactive mapping lymphatic vessels
• Ultrasound to evaluation tissue and fluid
• CT, MRI or PET – not approved for lymphedema, but may be used to evaluate soft tissue or possible mass.

Interventions

• Decongestive therapy
  • Compression bandaging/garment
  • Manual drainage
  • Exercise w/strength training
  • Skin care with bathing, drying, lubrication
  • Avoid prolonged standing
  • Elevate affected limb
  • Avoid extreme heat

• Medical TX –
  • Antibiotics for suspected infection
  • Pain management for acute or chronic pain
• Prevention –
  • Low sodium, high fiber, wt. control
  • Avoid vigorous, repetitive resistance exercise
  • Skin care/protection
    • Cuticles, cuts/abrasions, smoking, ETOH
  • No BPs & blood draws in affected arm
Interventions – cont’d

- Effectiveness not established
  - Compression garments
  - Hyperbaric treatment
  - Low-level laser TX
  - Nanocrystalline silver dressing on ulcers
  - Pneumatic compression pump
  - Simple lymph drainage
  - Surgical intervention

- Not recommended
  - Diuretics
  - benzopyrenes

Edema

- Increased capillary pressure
- Increased capillary permeability
- Obstruction
- Decreased plasma oncotic pressure
- Increased hydrostatic pressure

- Lymphatic obstruction
  - Cancer – kidney, liver, ovarian
  - Co-morbidities – heart failure, liver failure, nephrotic syndrome
- Meds – NSAIDS, hormones, steroids, beta blockers, etc.
- Chemo – cisplatin, docetaxel, gemcitabine, targeted therapies
- Malnutrition – hypoproteinemia hypoalbuminemia
- Fluid overload, blood therapy

Assessment

- Pre-existing causes – cardiac, liver, renal diseases
- Cancer and treatment
- Long distance travel
- Meds
- Physical symptoms – clothing tightness, pain/stiffness, weight gain, SOB, decreased urination, elevated BP, decreased peripheral pulses

- Labs
  - Serum albumin & protein – decreased
  - Creatinine, BUN – increased?
  - Liver function – increased?
  - Thyroid
  - BNP – brain natriuretic peptide – CHF
  - CXR – fluid overload
  - Echocardiogram – Ejection Fraction
  - U/S – DVT or thrombophlebitis

Intervention

- Elevate extremity above heart
- Compression
- Skin care
- Treat underlying cause
- Bedrest for diuresis
- Protect limb from injury
- Low sodium, well balanced diet
- Daily weight

- Meds include
  - Diuretics
  - Angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin receptor blockers
  - Beta blockers
  - Pain meds
Pericardial Effusion

- Primary tumors – mesothelioma is most common
- Tumor invasion – lung tumor, thymoma, esophageal or lymphoma
- Obstruction of mediastinal lymph nodes
- Infection
- Fibrosis due to RT
- Autoimmune disease

Assessment - Risk Factors

- Coexisting cardiac disease, lupus, bacterial endocarditis
- RT – 3000 cGy to more than 33% of heart - > 300 cGy/day
- High dose chemo/bio therapy that increase capillary permeability
  - Cytosine arabinose, cyclophosphamide, busulfan, IL2, IL-11, G-CSF
  - Imatinib
  - Arsenic trioxide
  - All-trans retinoic acid
- Direct injury or infection causing hemorrhagic tamponade

Assessment - Physical

- Slow development – few or no symptoms
- Rapid development – symptomatic at 50-80 ml – **normal 15-50 ml
- Fatigue, malaise, weakness
- SOB – at rest & with exertion
- Dull nonpositional chest pain – distant muffled sounds –late finding
- Nonproductive cough
- Cool, clammy extremities
- Tachycardia, hypotension, distended jugular vein, decreased peripheral pulses
- Anxious/restless
- Pericardial friction rub – with radiation induced or nonmalignant
- 2-3+ pedal edema with slow development – none w/rapid
- Narrowing pulse pressure
- Hepatomegaly/splenomegaly

Assessment – Laboratory & DI

- CXR – enlarged heart
- EKG – low voltage QRS, nonspecific ST changes
- Echocardiogram
- CT of chest
- Pericardial fluid – LDH, protein, tumor markers
- Cardiac cath – if difficult to tell
- Troponin – may be elevated
- Elevated WBC with infection
- Elevated BNP with fluid overload
- Cross reactive protein elevated with inflammation
**Intervention**

- Drainage with percutaneous pericardiocentesis & possible sclerosis
- Radiation (rare)
- Elevate HOB
- Minimize activity to conserve energy, Relaxation techniques
- Palliative care consult
- No TX if asymptomatic
- Chemo – if tumor responsive – lymphoma, leukemia, breast
- Oxygen
- Pain management

**Cardiovascular Toxicity**

- Alkylating agents – acute myopericarditis, effusions, heart failure
- Anthracyclines – fibrosis, myocardial cell loss
- Taxanes – left ventricular dysfunction, early heart failure
- Monoclonal antibodies – inhibit pathways critical for function
- Tyrosine Kinase Inhibitors – small incidence – inhibition of pathways
- Proteasome inhibitors – stress to cell endoplasmic reticulum
- Antimetabolites – coronary spasm – angina, arrhythmia, MI
- Radiation – fibrosis of cardiac structures
- Hypertension
- QT prolongation – due to targeted TX
- Venous thromboembolism

**Assessment – Risk Factors**

- Pre-existing heart disease, HPT, hyperlipidemia
- Smoking
- Age – younger than 15 or older than 65 years old
- Cardiotoxic drugs – Adria > 550 mg/m2, liposomal doxorubicin > 900 mg/m2, epirubicin > 720 mg/m2, mitoxantrone > 120 mg/m2, idarubicin > 90 mg/m2
- Exceeding recommended total doses or high dose in short period
- Radiation
- Cardiac event during treatment
- Chest radiation with anthracycline
- Female, obesity, comorbid disease

**Assessment - Lab & DI**

- EKG changes – premature atrial contraction, premature ventricular contraction, ST changes
- Echo or MUGA – EF < 45% or decrease of more than 5% from baseline
  - Pericardial effusion
  - Left ventricular hypertrophy
- MRI – gold standard for eval of left ventricular volumes
- BMI/waist circumference
- Lab changes – K+, MG++, Ca+, renal function, cardiac markers, thyroid, lipids, lytes need to be monitored
Intervention

- PREVENTION!
- Cardiovascular risk assessment
- Screening periodically
- Valvular surgery – after radiation TX
- Manage underlying disease
- Lipid lowering meds
- Beta blockers & ACE inhibitors
- Avoid drug-drug interactions
- Zinecard – with Adria
- Education – s/s to report, well balanced diet
- Cardiac Rehab

Thrombotic Events – Risk Factors

- Thrombocytosis – plt count > 400 K
- Metastatic cancer
- VAD
- DIC
- Cancer treatment – chemo, hormonal and antiangiogenic therapies
- Sepsis
- Cardiac disease, pulmonary disease, renal
- Clotting abnormalities – factor V Leiden, protein C &S deficiency
- TTP w/microangiopathic hemolytic anemia
- Smoking, obesity – BMI > 35kg/m2
- Heparin induced thrombocytopenia
- ESA therapy
- Hospitalization
- Advanced Age
- lymphadenopathy

Assessment - Physical

- Venous occlusion
  - Dull ache, tightness or pain in calf
  - Tenderness over vein/venous cord
  - Unilateral edema of extremity
- Arterial embolus
  - Severe pain in extremity
  - Coolness/pallor
  - Absent/decreased pulse
- Pulmonary embolus
  - Chest pain, dyspnea, tachypnea
  - Sudden anxiety
  - Cardiopulmonary arrest
- Laboratory & DI
  - CBC & platelet count
  - Venous duplex scan or venography
  - Liver functions, BUN, creatinine
  - Arteriography
  - Spiral CT or V-Q scan
  - PT/PTT, INR
  - MRI venography for pelvic, iliac veins & vena cava – Expensive!

Interventions to prevent...

- Frequent ambulation – leg exercises
- Elevation of foot w/flexed knee
- Elastic stockings, pneumatic compression device
- PT / OT referral
- Prophylaxis not recommended in standard chemo
- Consider in pancreatic or lung CA –
  - ASA 81 mg
  - Low molecular weight heparin
- Treatment:
  - Placement of filter – inferior vena cava
  - Arterial embolectomy
  - Thrombolysis
  - Monitor PT/PTT & INR
  - LMWH
  - Heparin drip
  - Warfarin – (INR 2-3)
  - O2 for PE
  - Pain management
  - Dietary restriction – vitamin k
  - Smoking cessation
  - Activity restriction
Abnormal leakage of fluid from lymph and blood vessels leading to excessive fluid in intersitial spaces is:

- A. Lymphedema
- B. Edema
- C. Hematoma
- D. Hepatoma

The most common chemotherapy toxicity is:

- A. Cardiomyopathy
- B. Asymptomatic bradycardia
- C. Hemorrhagic myocardial necrosis
- D. Coronary artery spasm

Malignant pericardial effusion has the following features EXCEPT:

- A. May be associated with primary tumors of the pericardium, mesothelioma – most common
- B. Symptoms may include chest pain, dyspnea, and fatigue
- C. Is usually not apparent on chest x-ray or echocardiogram
- D. Symptoms are determined by the speed of development of the effusion

Alteration in Neurologic Function – Risk Factors

- Disease Related
  - Cancer related
  - Postherpetic neuralgia
  - Infiltrative emergencies – spinal cord compression
  - Pre-existing neuropathy – due to diabetes, HIV, Vit. B deficiency
- Situation related
  - Psychological issues
  - Social issues
- Treatment related
  - SE high dose chemo
  - Peripheral neuropathies – tingling fingers/toes, footdrop
  - SE radiation therapy
  - Older than 65
  - Pre-existing neuropathy related to radiation therapy
**Assessment**

- Baseline sensory, mobility & motor function
- Baseline autonomic function
- Baseline cranial function
- Baseline cerebellar function
- Speech/language ability
- Sight changes

- Anxiety management
- Coping strategies

- Lab studies
- Nerve conduction, EMG
- Muscle or nerve biopsy

**Interventions**

- Instruct patient about early s/s neuropathies
- Teach about SE chemotherapy
- Instruct about hand & foot care
- Referral to PT & OT
- Instruct on Safe home environment
- Bowel program
- Increase fluid intake – 3000 ml/d
- High fiber diet

- Instruct on protecting hands & feet from cold
- Avoid excess stimulation of skin & tight clothing
- Gloves for outdoor work & gardening
- Slow infusion of paclitaxel to reduce incidence of neuropathy
- Tylenol & NSAIDs
- Antidepressants – Elavil, Cymbalta
- Anticonvulsants – gabapentin
- Opioids
- Lidocaine 5% patch
- Glutamine
- Capsaicin cream TID or QID

**Alteration in Mental Status – Risk Factors**

- CNS neoplasm – primary or metastatic disease
- Metabolic emergencies
- Uncontrolled pain
- Head injury
- Pre-existing depression
- HIV dementia
- Opportunistic infections
- Liver Disease

- SE – Chemotherapy – sleep disturbance, headache
- SE biologic response modifier
- Steroid therapy
- SE analgesics
- Dehydration
- Electrolyte imbalance
- Emotional trauma
- Significant loss
- Depression
- Hopelessness/powerlessness

**Mental Status - Assessment**

- Presence of Risk Factors
- Neurologic exam
- Cognitive mental status exam
- Memory, problem solving
- Changes in emotional/behavioral affect
- Mood swings
- Anxiety
- Hallucinations/illusions

- Impaired judgement
- Decreased level of consciousness
- Agitation, restlessness
- Tremors, confusion, seizures
- Obtain baseline information from family
- Labs – CBC
- Electrolytes
- Thyroid & liver function
Mental Status - Intervention

- Goal to maintain or regain patient’s cognitive functions
- Assess degree of change
- Reorient patient to time, place & reason
- Provide clear, concise information
- Provide structured environment
- Structured routine activities
- Allow time for response to questions & decisions
- Discuss medication with PCP
- Counseling & psychotherapy
- Behavioral therapy
- Educate family – disease process and interventions

A patient receiving thalidomide is requesting an adjunct treatment option for neuropathy. Based on current evidence the nurse suggests:

- A. Fish oil
- B. Acupuncture
- C. Lamotrigine
- D. Glutathione

Alteration in Musculoskeletal Function

- Skeletal system tumor
- Brain/spinal cord tumor
- Obstruction lymphatic or systemic circulation
- Bone pain, stiffness, fatigue
- Spinal cord compression
- Non-malignant – herniated disks, vertebral fractures due to osteoporosis
- Cardiopulmonary disorders
- Dehydration
- SE – steroid therapy
- SE – RT
- SE – Chemotherapy
- Nerve & muscle damage from surgery
- Change in physical activity
- High or low stress level
- Independent versus dependent personalities
- Absence of social support
- Depression

Assessment

- Presence of risk factors
- Evaluation fall risk
- History of alcohol or drug use
- Physical exam:
  - Muscle tone, strength, mass
  - Unintentional weight loss
  - Strength & motor function
  - Mobility and sensory function
  - Change in sexual function
  - Change in bowel/bladder function
- Alignment, gait, balance
- Writing name
- Depression
- Anxiety
- Lack of motivation
- Laboratory data
  - Hypercalcemia
  - Electrolyte abnormality
  - Lumbar puncture results
Interventions

- Active range of motion on unaffected limbs TID-QID
- Maintain body alignment in bed
- Observe patient before, during and after activity
- Assistive devices
- Rehab therapy consultation
- Establish routine for ADLs
- Provide assistance & supervision prn

- Protect areas of decreased sensation from hot & cold
- Home safety measures
- Positive reinforcement to patient & family
- Patient & family education

Alteration in Comfort - Pain

- Sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage
- Pain is whatever the person says it is, existing whenever he or she says it does

Characteristics of PAIN

- Acute: lasts less than 6 months – cause often known, pain behaviors
- Chronic: lasts longer than 3 months; cause often unknown in non-malignant pain; fatigue and depression common
- Cancer pain: may be acute and chronic associated with direct tumor involvement, diagnostic or therapeutic procedures
  - May mean disease is progressing or recurrent
  - Worsens anxiety, hopelessness and depression

Types of Pain

- Nociceptive – activation of pain fibers in deep & cutaneous tissues
  - Somatic – from bone, joint, or connective tissue – sharp, throbbing or pressure, well localized
  - Visceral – from distention, compression, or infiltration of thoracic or abdominal tissue (pancreas, liver, GI) – aching, cramping, poorly localized
- Neuropathic – due to compression, infiltration, ischemia or injury to peripheral, sympathetic, or CNS.
### Pain – Risk Factors

- **Disease Related**
  - Type of Cancer – head & neck most common, GYN & GI
  - Bone mets – most commons source of pain
  - Visceral – tumor obstruction of bowel, liver mets, blood flow
  - Nerve compression or injury
- **Treatment Related**
  - Chemo – mucositis, neuropathies, herpetic neuralgia
  - Radiation – mucositis, skin changes
  - Surgery – post mastectomy – tightness; post thoracotomy – aching, numbness
- **Personal & Psychosocial**
  - Fears of addiction
  - Fears of what pain means – disease progression, recurrence
  - Age/culture and meaning of pain

### Assessment

- **O – Onset**
- **L – Location**
- **D – Duration**
- **C – Characteristics – type of pain**
- **A – Aggravating factors**
- **R – Relieving Factors**
- **T – Treatments that have been used**
- **Psychological, Social & Spiritual dimensions of pain**

### Pain - Intervention

- Treat underlying cause of pain
- Tailor pain management according to individual pain needs
- Long acting pain around the clock when pain is constant
- Breakthrough pain meds – when pain flares
  - Oral opioids – 10-20% of 24 hour dose
  - Parenteral opioids – 25-50% of hourly infusion rate
- Incident pain – transient pain precipitated by activity
  - Give analgesics to allow them to work prior to activity
  - BTP meds short acting

### Pain Interventions

- Use equianalgesic conversion tables to guide medication selection
- Start with least invasive route – oral, transdermal.
- Implement strategies to minimize SE – bowel program, antiemetic's, and CNS stimulants to counteract sedation

### Pain Interventions

- Medication reconciliation
  - Drug interactions
  - Elderly more sensitive to meds
  - Assess ability to manage meds – long versus short acting
  - Assess confusion and vision
  - Availability of home supervision
  - Cost of meds for elderly
  - Appropriate pain scale for elderly & pediatrics
### Pain Intervention

- **Step 1** – Non-opioid – mild pain
  - Tylenol, ASA and NSAIDs
- **Step 2** – Opioid analgesic – mild to moderate pain, or increases from step 1.
  - Hydrocodone or Oxycodone with acetaminophen or ASA
  - Ceiling dose – not to exceed 4000 mg acetaminophen / 24 hours or 3000 mg/24 hours without provider instruction
  - Use of mixed agonist/antagonist meds like Stadol or Talwin – conversion to these from opioid agonist can be complicated
- **Step 3** – Opioid analgesic – for severe pain, or increase from step 2.
  - Most commonly used in cancer pain – morphine, hydromorphone, oxycodone, fentanyl
  - Caution in renal impairment due to M3G and M6G metabolite
  - Avoid meperidine due to metabolite normeperidine can cause CNS toxicity or arrhythmia

### Pain - Intervention

- **Adjuvants** – antidepressants, or other meds used to enhance analgesia, relieve concurrent symptom
- **Miscellaneous**
  - Radionuclides – strontium 89 and samarium 153 for disseminated bone cancer
  - Bisphosphonates – pamidronate and zoledronic acid - osteolytic bone mets
  - Intraspinal analgesia
    - Epidural - ~10% of IV dose; used in post op pain for GYN or pain below waist
    - Tunneled epidural – used for end of life when implanted port is not feasible
  - Intrathecal analgesia - ~ 10 % epidural dose – intractable cancer pain, often at end of life
  - Patient selection – proximity to resources for pump management
  - Economic factors – insurance coverage, life expectancy of at least 3-6 months

### Pain Interventions

- Radiation Therapy – painful bone metastases or reduce large bulky masses
- Nerve blocks – for well localized pain syndromes
- Neurostimulation – for neurologias and complex pain syndromes
- Minimally invasive surgery – debulking of tumor, vertebral kyphoplasty or vertebroplasty
- OT & PT referral for cancer rehabilitation
- Acupuncture, acupressure
- Complementary therapies
- Patient/family education

Mrs. Q.T.Pie has a history of RA and been using Talwin (pentazocine for several years. Recently was diagnosed with metastatic breast CA with low back pain, “8/10” due to bone mets. She started on Fentanyl patch – what needs to be considered?

A. Pentazocine & Duragesic will work synergistically
B. She will have and exacerbation of SE due to 2 opioids together
C. Pentazocine – agonist/antagonist should be dc’d due to ineffective action of Duragesic in combination with agonist/antagonist
D. Alternative to pentazocine nalbuphine (Nubain) should be substituted.