Key points of Symptoms – Assessment and Management

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

You know you’re gettin' OLD when you can’t walk past a bathroom without thinking, "I may as well pee while I’m here."
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

Let's meet Emily

- 56 year old with history of breast cancer
- Has had 3 children
- Currently on aromatase inhibitor for treatment of breast CA
- History of MS – currently being treated with Tysabri every month.

Urinary Incontinence

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

Mechanism: S – Storage  E – Emptying

Men and Women

**Post prostatectomy**

- Rhabdosphincter is damaged – and leads to either urge or combination of 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 esteem & 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
- Urodynamic & 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.

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

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

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 cisplat 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
  - Mitomycin
  - Vinblastine
  - Vincristine
  - MTX
  - Targeted Therapies: Busulfan
  - Vinblastine
  - Vincristine
  - MTX
  - Nivolumab

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
  - Steroids with immunotherapies
  - 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

Let's meet Montie
- 61 year old with diagnosis Small Cell lung CA
- Has increasing dyspnea – unable to walk up flight of stairs more than 4 times a day
- Currently a smoker – down from 1 pack/day to 5 cigs/day
- Experiences chest pain & muscle weakness with exertion
- Had DVT 6 months ago in Left upper extremity

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

Growing old is hard work...  
The mind says "yes" but, the body says "what the hell are you thinking"
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 1 – 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 of lymphatic vessels
- Ultrasound to evaluate 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 with 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
  - No BPs & blood draws in affected arm

- **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

**Interventions – cont’d**
- Avoid prolonged standing
- Elevate affected limb
- Avoid extreme heat
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

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

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 - Physical
- Slow development – few or no symptoms
- 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 & treat…**
- 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
- 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 interstitial 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, foot-drop
  - 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
- Speech/language ability
- Sight changes

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 11D 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
A patient receiving thalidomide is requesting an adjunct treatment option for neuropathy. Based on current evidence the nurse suggests:

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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 common 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

**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**

- **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 - 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

- 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 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 an 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.

Questions??