Objectives

• Discuss common end of life symptoms
• Describe etiology for common symptoms
• Discuss non-pharmacological management
• Recommend appropriate pharmacological management of common end of life symptoms

Symptom Prevalence in Cancer*

Systematic review of the most common symptoms in end stage cancer (N=46 studies)*

• Fatigue- 74% (in general)/88% (last 7-14 days of life)
• Pain- 74/88%
• Weakness- 60/70%
• Weight loss- 46/86%
• Appetite loss- 53/56%
• Nervousness/anxiety- 48/30%
• Constipation- 37/29%
• Dyspnea- 35/39%
• Dry mouth-40/34%
• Depressed mood-39/19%

Principles of Symptom Control at the End of Life

- Use standard assessment and history taking
- Use oral medications when possible
- Take age into account
- Anticipate and treat drug side effects
- Treat all symptoms (do not just focus on pain symptomology)

Goals for Medication Use

- Improve QOL
- Avoid polypharmacy
- Minimal drug interactions and ADRs
- Multiple routes of administration
- Manageable dosing schedule
- Cost-effective

Case 1

- Mr. Smith is a 68 year old gentleman with end stage COPD. He was discharged from the hospital and admitted 2 days ago to hospice with increasing SOB, not relieved by oxygen, nebulizer treatments and bronchodilators. He is homebound and requiring more assistance from his wife with ADLs.

- What common symptom is Mr. Smith experiencing?
**Dyspnea: Prevalence**

- Reported to occur in 21-70% of all terminally ill patients
- Reported more commonly during the patient’s last weeks of life
- National Hospice Study
  - 25% patients experiencing breathlessness did not have underlying pulmonary disease

**Dyspnea: Definition**

- Definition: Uncomfortable awareness of breathing (subjective symptom)
- Dyspnea evokes affective responses including panic, frustration, worry, anxiety, anger, depression

**Dyspnea: Mechanisms and Etiology**

- **Increased ventilatory demand** (activity, anxiety, weakness, position) + **impaired mechanical responses** (obstruction, weakness, narrowing, pressure on diaphragm, infection, inflammation, fluid build up) = **DYSPNEA**
  - Results in a mismatch between the perceived need to breathe and the perceived ability to breathe
Primary Causes of Dyspnea

- Pneumonia
- Muscle weakness/deconditioning
- Primary/metastatic tumor
- Congestive heart failure
- Pleural/pericardial effusion
- Carcinomatous lymphangitis
- Pre-existing pulmonary disease
- COPD, asthma
- Chemotherapy induced illness
- Pneumonia
- Pulmonary embolism
- Uremia
- Superior vena cava syndrome
- Depression/anxiety
- Muscle dysfunction/deconditioning
- Anaemia
- Carcinomatous lymphangitis

Dyspnea - Management

- Palliation of Dyspnea
- Non-Pharmacological
- Oxygen
- Non-Opioids (Bronchodilators, Corticosteroids, Benzodiazepines, Other Antibiotics)
- Opioids

Dyspnea: Nonpharmacologic Management

- Fans/open windows to increase air movement: stimulate trigeminal nerve to reduce the sensation of air hunger
- Position sitting up and leaning forward
- Address anxiety/provide reassurance
- Behavioral treatments - relaxation exercises, education, distraction
- Reduce the need for exertion/provide supports
Oxygen Therapy

<table>
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<tr>
<th></th>
<th>COPD</th>
<th>CHF</th>
<th>Cancer</th>
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| **Pros** | 1) Improvement at rest and during exercise  
2) Improved functional capacity | 1) May improve scores for fatigue and breathlessness during steady exercise | 1) Some studies have shown a decrease in dyspnea |
| **Cons** | 1) Possible placebo effect | 1) Other studies showed no benefits with regards to scores on walking | 1) Some patients who responded to oxygen also responded to room air therapy as well |

Dyspnea: Pharmacologic Management

- Treat the underlying cause when possible/desirable: antibiotics, diuretics, nebs/inhalers
- Opioids- should be considered 1st line for those with advanced disease
  - Exact mechanism by which they work is not known.
  - Alter the perception of breathlessness by decreasing ventilatory response to decreasing oxygen and rising CO2 levels
  - Cause venodilation of pulmonary vessels: decrease preload to the heart
  - Improve dyspnea without causing significant deterioration in respiratory function


Dyspnea: Pharmacologic Management

**Opioid Dosing**

- **Intermittent dyspnea**
  - As needed dosing
  - Morphine IR (Roxanol®): 5-30mg po/sl every 3-4 hours prn
  - Nebulized morphine: 5mg in 3ml NSS every 2-4 hours prn and titrate to effect (second line)
- **Continuous dyspnea**
  - Around the clock dosing
  - Morphine LA (MSccontin®): 15mg po/pr q12h atc
- Adjust dose based on patient tolerance to opioids
  - Opioid naïve patient vs. non-opioid naïve patient
**Dyspnea: Pharmacologic Management**

- **Benzodiazepines**
  - Short-acting agents preferred and are recommended if dyspnea is a manifestation of a panic disorder or severe anxiety
  - May reduce ventilatory drive induced by low O2 levels (respiratory sedative)
  - Use 2nd line or in combination with opioids


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**Benzodiazepines**

- lorazepam (Ativan®)
  - 0.5-1mg po/sl every 4-6 hours atc or prn
- alprazolam (Xanax®)
  - 0.25-2mg po/sl every 4-6 hours atc or prn
- clonazepam (Klonopin®)
  - 0.5-1mg po every 6-8 hours atc or prn
- diazepam (Valium®)
  - 2-10mg po/sl every 6-8 hours atc or prn
- oxazepam (Serax®)
  - 10-15mg po 3-4 times daily atc or prn

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**Oral Corticosteroids**

- Effective in treating bronchospasm associated with COPD (or asthma)
- Majority of effect is from reduction of edema and inflammation, however, some benefit may be from positive effect on well-being
- May take up to 2 weeks to see complete response

- dexamethasone (Decadron®)
  - 4mg po/sl 1-2 times daily
- methylprednisolone (Medrol®)
  - 4mg po 1-2 times daily or Dosepak instructions
- prednisone (Deltasone®)
  - 20-40mg po daily
Inhaled Corticosteroids

- **Prophylactically** used to suppress inflammation locally in the airways
  - WILL NOT be effective for acute bronchospasm
- Recommended for use in COPD/asthma patients who have frequent exacerbations requiring antibiotics and/or corticosteroid therapy
- May cause oral thrush infection and hoarseness
  - Use spacer device; Rinse mouthpiece

Bronchodilators

- Useful in the management of bronchospasm and airflow obstruction seen in asthma and COPD patients
- Possibly stimulates respiration by increasing the ventilatory drive induced by high CO2 and low O2 levels

Types:
- Beta-adrenergic stimulants
- Anticholinergics
- Methylxanthines

Beta-adrenergic Stimulants

- **Mechanism**
  - CNS stimulant that relaxes bronchial smooth muscle
- **albuterol** (Proventil®, Ventolin®)
  - **MDI**: Inhale 2 puffs every 4 hours qid or prn
  - **Nebulizer**: Use 1 vial every 4 hours qid or prn
  - **Tablets**: 2mg by mouth 3 to 4 times daily
  - Max 32mg/day
- **Adverse effects**:
  - Tachycardia, nervousness, nausea, hyperactivity
**Anticholinergics**

- **Mechanism**
  - Blocks acetylcholine in the bronchial smooth muscle causing bronchodilation

- ipratropium (Atrovent®)
  - **MDI**: Inhale 2 puffs every 4 hours atc or prn
  - **Nebulizer**: Use 1 vial every 4 hours atc or prn
  - **Adverse effects**
    - Since poorly absorbed, systemic effects rare but may include: dizziness, nervousness, nausea, cough
    - Blurry vision from eye contamination
    - Increased effect with albuterol

**Methylxanthines**

- **Mechanism**
  - Stimulant that causes bronchodilation, diuresis, cardiac/CNS stimulation and gastric acid secretion.

- **Possible effects on dyspnea**
  - Muscle relaxation in airway causing bronchodilation
  - Increased cardiac output
  - Decreased peripheral resistance
  - Stimulation of respiratory center
  - Improved strength and effectiveness of respiratory muscles (i.e. diaphragm)

- **Theophylline salts** (theophylline, aminophylline)
  - Theophylline is most commonly used
  - **Usual dose (sustained release)**
    - 250-500mg every 12 hours
  - **Increased cardiac output**
  - **Decreased peripheral resistance**
  - **Stimulation of respiratory center**
  - **Improved strength and effectiveness of respiratory muscles (i.e. diaphragm)**

**Case 2**

- Mrs. Jones is a 90 year old nursing home patient end stage breast cancer. She appears comfortable and has been comatose for the past 24 hrs. Over the past few hours, she has begun breathing irregularly and is making gurgling sounds. The noisy breathing is upsetting the staff and her family.
Questions

• What is this noisy breathing called?

• Why does this symptom frequently occur during the dying process?

Etiology: End Stage Respiratory Secretions

• Patients with lung or brain malignancies or those with a prolonged dying phase are at increased risk
  – Strong predictor of impending death
• Type 1 secretions - due to accumulation of oral pharyngeal salivary secretions
• Type 2 secretions - due to accumulation of bronchial secretions
  – Type 2 secretions are less likely to respond to anticholinergics

Owens, DA, J Hosp Pall Nursing, 2006
Berger, AM, Palliative and Supportive Oncology, 1998

End Stage Respiratory Secretions: Nonpharmacologic Management

• Reposition patient - turn on side or position semiprone
• Avoid suctioning - suction only for bleeding into throat, fulminate pulmonary edema or in a tracheostomy with copious secretions
• IV hydration and/or tube feedings may increase secretions at the end of life - d/c or cut back on fluids
• Provide education/support to family about what is happening and why

Owens, DA, J Hosp Pall Nursing, 2006
End Stage Respiratory Secretions: Pharmacologic Management

- Consider possible underlying causes and treat if indicated: fluid overload, flash pulmonary edema, pneumonia, aspiration
- Anticholinergic agents* inhibit secretion production but have no effect on secretions already present therefore, at onset of symptoms or if at high risk for developing initiate:
  - Atropine- 1% ophthalmic solution, 1-4 gtts SL q 4 h
  - Hyoscyamine (Levsin®) drops po/SL 0.125-0.25 mg q 4 h
  - Glycopyrrolate (Robinul®) 1-2 mg po/SL tid (associated with slow, erratic absorption) or 0.2-0.4 mg parenterally q 4 h
  - Transderm scopolamine (Transderm Scop®) - up to 3 patches behind ear (patch takes up to 12 hr to take effect so not recommended in actively dying patients)
- *Careful- anticholinergics can cause delirium in some patients

Wildie & Menten, JPSM, 2002

Case 3

- Mr. Robinson is a hospice patient who reports that he has had the hiccups for the past 4 days. He’s tried “everything” but nothing will make them go away.
- How do you respond?

Etiology of Persistent Hiccups

- Stress
- Grief
- Anorexia
- Esophageal obstruction
- PUD
- Electrolyte disorders
- Infection
- Bowel obstruction
- Malignancy: lymphomas, liver
- Stroke
- Pulmonary edema
- Cerebral contusion or hematoma
Hiccups: Nonpharmacologic Treatment

- Hold breathe
- Fright
- Hyperventilation or breathing into a paper bag
- Sneezing
- Gargling
- Pineapple juice, lemon wedges with bitters, sugar, honey, vinegar
- Ice water, drinking water hard
- Massage and relaxation

Note: Medications that worsen hiccups; sulfonamides, methyldopa, dexamethasone, diazepam, short acting barbiturates

Hiccups: Pharmacologic Management

- If related to peptic ulcer disease or GERD, treat with metoclopramide 5-10 mg po tid
- If caused by offending medication, discontinue medication
- Other therapies
  - Baclofen (Lioresal®) 5-10 mg po q 8 h
  - Chlorpromazine (Thorazine®) 25-50 mg po tid/qid
  - Haloperidol (Haldol®) 1 mg po bid-tid
  - If ineffective, try valproic acid (Depakote®) 15 mg/kg/day in divided doses po or pr; increase dose by 250 mg every 2 weeks as needed.


Case 4

- Mr. Donley is a 56 year old male with advanced metastatic colon cancer. He is extremely fatigued, and has lost 15-20 pounds during the past month. He states that he simply has no appetite, despite trying to force himself to eat. His wife is concerned that she can now “see her husband’s bones”. She has heard that a feeding tube will help him to put weight back on.
- How do you respond to the wife’s request for a feeding tube? Is a feeding tube (or TPN) indicated?
Overview of Anorexia/Cachexia

• ~80-90% advanced cancer patients will experience anorexia and cachexia

• Anorexia = loss of appetite
  – Associated with shorter survival time

• Cachexia = weight loss & wasting of muscle mass
  – May/may not accompany anorexia
  – Results from the underlying disease process & is usually NOT reversible with improved nutrition unless cancer responds to therapy

• Often accompanied by conditions
  – Severe lethargy and fatigue

Etiology in Cancer

• **Metabolic Abnormalities**
  – Interaction of immune system and tumor
    • Produces inflammatory cytokines (IL-2, TNF, interferon)
    • Changes in metabolism of protein, carbs, and lipids
    • Increase in protein turnover and muscle catabolism, and decrease in protein synthesis

  – Lipid and Protein mobilizing factors are tumor derived and directly break down:
    • Adipose tissue
    • Skeletal muscle

Etiology

• **GI Dysfunction**
  – Nausea/vomiting/constipation/diarrhea
  – Bowel obstruction
  – Malabsorption
  – Mouth problems
    • Xerostomia
    • Infection
    • Ulceration
    • Taste alteration
What we used to think.....

Cancer

- Protein Stealing and Energy Demand
- Release of Toxins
- Anorexia
- Cachexia

What we’re thinking now...

Cancer

- Immune System
- Cytokines
- Metabolic Abnormalities
- Tumor Products
- Lipolysis
- Protein Loss
- Cachexia

Treatment Overview

- Identify treatable causes
  - Disease related
    - i.e. pain, oral infections, constipation, anxiety, etc.
  - Medication related
    - i.e. chemotherapy/radiation/opioids/NSAIDs can cause mucositis, nausea and GI changes
- No treatable causes
  - Symptom management through various non-pharmacological and pharmacological methods
## Non-pharmacological Treatment

- Small, frequent meals
- Serve food at room temperature
- Remove unpleasant odors
- Companionship at mealtime
- Relax dietary restrictions
- Explore emotional/spiritual issues
- Education
  - Cachexia is a “normal” part of the dying process
  - Forcing the patient to eat has no positive effect on well-being or survival

## Pharmacologic Management

### Antibestamines
- Cyprioheptadine (Periactin®)
  - Thought to increase caloric intake
  - Does not promote weight gain and only slight improvement in appetite
  - Sedating effects

### Prokinetic agents
- Metoclopramide (Reglan)
  - May increase gastric emptying time and decrease early satiety – Not much data to support

## Pharmacologic Management

### Cannabinoids
- Dronabinol (Marinol®)
  - May improve mood and appetite
  - No effect on body weight gain
  - Significant neurological effects outweigh benefits in most circumstances

### Progestins
- Megestrol (Megace®) and medroxyprogesterone (Provera®)
  - Mechanism not completely known – may increase glucocorticoid activity, down regulate synthesis and release of proinflammatory cytokines
  - Better appetite, less fatigue, greater sense of well-being despite significant weight gain (mostly fat)
  - Risks: thromboembolic events, peripheral edema, hyperglycemia, Cushing’s syndrome
Pharmacologic Management

- **Corticosteroids**
  - Induce temporary appetite stimulation, food intake, general euphoria and pain relief
  - Have antiemetic properties that help increase appetite
  - Inhibit prostaglandin activity
    - Suppression of IL-1 and TNF
  - Use in short term situations
  - Increase QOL – but not bodyweight
  - Effects may only last 4-6 weeks

Does Medically-Administered Nutrition “treat” cachexia?

- Cachexia is caused by the underlying disease process and is usually not reversible with improved nutrition unless the underlying cancer responds to therapy
- Effects of aggressive nutrition therapy in patients with advanced cancer:
  - Little or no increase in survival
  - NO improved tumor shrinkage, increased tumor growth
  - Minimal decrease in toxicity of chemo or XRT
  - Minimal decrease in surgical morbidity

Case 5

Mrs. Banks is a 57 year old woman diagnosed with ovarian cancer 2 years ago. Despite multiple courses of chemotherapy, her disease has progressed. She has extensive peritoneal met. She recently started oral morphine for her abdominal pain. Although her pain is improved, over the past few days she reports that she has developed nausea with intermittent vomiting.
Nausea and Vomiting: Etiology

The 11 “M’s” of Emesis:
- Metastases (brain, liver)
- Meningeal irritation
- Movement
- Mental anxiety
- Medications
- Mucosal irritation
- Mechanical obstruction
- Motility (constipation)
- Metabolic
- Microbes (infection)
- Myocardia (CHF, ischemia)

Risk Factors

- Nausea and vomiting can be experienced by all hospice patients
- Those who may be at an increased risk include:
  - Women
  - Patients less than 65 years of age
  - Patients with stomach or breast cancer
  - Patients who recently received chemotherapy
  - Patients initiated on opioid therapy

Nausea/Vomiting Pharmacologic Management

- Dopamine antagonists
- Antihistamines
- Anticholinergics
- Prokinetic agents
- Anxiolytics
- Antacids
- Cytoprotective agents
- Serotonin antagonists
- Other medications
  - Initial agent: prochlorperazine or haloperidol
**Pharmacologic Management**  
(Gastric Stasis- GI receptor)

- Prokinetic agents
  - Metoclopramide (Reglan®) - 10mg ac & hs
  - Erythromycin – 250mg bid to tid

**Pharmacologic Management**  
(Vestibular Agents)

- Antihistamines
  - Meclizine (Antivert®) - 12.5 to 25 mg TID/QID
  - Others: hydroxyzine (Atarax®, Vistaril®)

- Anticholinergic/Antimuscarinics
  - Hyoscyamine (Levsin®) 0.125-0.25mg po/d q4th prn
  - Glycopyrrolate (Robinul®) 1-2 mg po tid
  - Scopolamine (Transderm Scop®) 1-3 patches q72h
### Pharmacologic Management
(Cerebral Cortex Agents)

<table>
<thead>
<tr>
<th>Class</th>
<th>Medications</th>
<th>Dosages</th>
</tr>
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<tbody>
<tr>
<td>Benzodiazepines</td>
<td>Lorazepam (Ativan®)</td>
<td>Lorazepam 0.5-2mg po/id/pr q 4-6h pm</td>
</tr>
<tr>
<td></td>
<td>Diazepam (Valium®)</td>
<td>Diazepam 2-10 mg po tid pm</td>
</tr>
<tr>
<td></td>
<td>Alprazolam (Xanax®)</td>
<td>Alprazolam 0.25-2mg po/id q 4-6h pm</td>
</tr>
<tr>
<td>Dopamine antagonists</td>
<td>Haloperidol (Haldol®), Prochlorperazine (Compazine®), Promethazine (Phenergran®), Chlorpromazine (Thorazine®)</td>
<td>Haloperidol, Prochlorperazine, Promethazine, Chlorpromazine</td>
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</tbody>
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### Pharmacologic Management
(Increased Intracranial Pressure)

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<tr>
<th>Class</th>
<th>Medications</th>
<th>Dosages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steroids</td>
<td>Dexamethasone (Decadron®)</td>
<td>Dexamethasone (Decadron®)- 4mg po/pr QD</td>
</tr>
</tbody>
</table>

### Other Effective Treatments

- Compounded Meds (in PR, po, SC, IV, dermal gels)
- For general nausea/vomiting and especially effective for bowel obstruction
  - BDR: Benadryl 25/Decadron 4/Reglan 10
  - ABHR: Ativan 1/ Benadryl 25/ Haldol 1-2/Reglan 10
  - BAHID: Benadryl 25/Ativan 1/Haldol 2/Decadron 4
  - DO NOT USE REGLAN IN COMPLETE BOWEL OBSTRUCTION
Non-pharmacologic Therapy

- Dietary changes
  - Avoid sweet, salty, fatty, spicy foods
  - Eat small meals of carbs, carbonated beverages
  - Avoid noxious smells
- Prevent dehydration
- Avoid vestibular stimulation
- Acupuncture/acupressure

Malignant Bowel Obstruction

- Common complication of advanced malignancy
- 40% advanced ovarian cancer
- 10-20% advanced GI cancers
- Clarify goals of care
- Most are inoperable at presentation
  - Variables include level of obstruction, available anti-tumor therapy, nutritional status

Management of Partial Bowel Obstruction

- Reversibility
- Metoclopramide (Reglan®) (+/- colic)
- Dexamethasone (Decadron®)
  - Trend to resolution with 6-16mg
  - “Extremely low” incidence of side effects

Feuer et al. Cochrane Database 2000
Partial Bowel Obstruction
Nausea with Colic

- No controlled trials
- Haloperidol
- Additional medications if haloperidol ineffective:
  - Hyoscine hydrobromide (Scopolamine®) (or Transderm Scop®)
  - Octreotide (Sandostatin®)
  - Corticosteroids

Management of Complete Bowel Obstruction

- Treat pain with opioids: titrate to relief
- For colic pain: Hyoscyamine sulfate (Levsin®) SL 0.125 mg q 4-8 hrs (also will control gastric secretions)
- Nausea/Vomiting
  - Haloperidol (Haldol®) 2-15 mg SC, PO, or IV
  - Chlorpromazine (Thorazine®) 25-100 mg tid PO, PR, or IV
  - Octreotide (Sandostatin®) for persistent N/V 0.1-0.6 mg/d by continuous infusion or bolus tid. Acts by reducing gut secretions.
  - Dexamethasone (Decadron®) 4 mg PO or SC bid-qid, reduces inflammation in the gut

Complete Bowel Obstruction with Colic

- Antimuscarinic Agents
  - Hyoscyamine sulfate (Levsin®)
  - Hyoscine hydrobromide (Scopolamine®)
  - Glycopyrolate (Robinul®)


Ripamonti, et al JPSM 2000
Case 6

- Mrs. Collins is a 55 year old terminally ill with breast cancer metastatic to the brain. She is being cared for by her husband and 2 teenage children at home with home hospice support.

- The hospice nurse calls to report that Mrs. Collins is very agitated, restless, moaning, and hearing things. Her husband and children find these changes very upsetting.

- What is the differential diagnosis?

Delirium/Agitation

- Clinical diagnosis made at the bedside
- Hallmark features
  - Acute onset and fluctuating course
  - Inattention: difficulty focusing, easily distracted
  - Altered level of consciousness: anything other than “alert”
  - Cognitive impairment: disorganized, incoherent, irrelevant, illogical, thinking

Types of Delirium

- **Hyperactive**: often associated with hypoxia. Marked by hypervigilance, agitation, restlessness and hallucinations,
- **Hypoactive**: often associated with drug intoxication or metabolic toxicity. Slow psychomotor activity, lethargy, apathy, decreased LOC with somnolence, often mistaken as sedation due to opioids or obtundation in final days. Also goes unnoticed because the pt is not disruptive to hospital routines.
- **Mixed**: alternates between agitated and quiet forms
Prevalence of Delirium

- Most commonly encountered mental disorder in hospital settings
- Occurs in 75% of terminally ill cancer patients, 57% of advanced AIDS patients and 42% of dying patients experience terminal restlessness in the final 48 hours of life
- 25-35% of delirium episodes are reversible.

Misdiagnosed & Mismanaged

- Due to similarity of symptoms between the “3 Ds”: dementia, depression and delirium.
- 3 Ds may occur simultaneously, but they each have a different pathophysiological basis, thus treatment will be different.
- Again, HALLMARK SYMPTOMS: sudden onset and fluctuating ability to focus, inattention.

Risk Factors for Delirium

- Advanced Age
- Polypharmacy - anticholinergics, opioids, sedatives, withdrawal
- Cardiopulmonary - MI, hypoxia, hypotension
- CNS - stroke, dementia
- Infections - UTI, pneumonia, sepsis
- Electrolyte Imbalances
- GI/GU - bleeding, constipation, urinary retention
- Sensory deprivation, over-stimulation, environmental changes
Treatment of Delirium
Non-Pharmacologic

- Treatment is largely symptomatic with focus on comfort
- Improve orientation, decrease sensory overload or deprivation, and provide reassurance
  - windows, clocks, calendars
  - quiet, well lit room with familiar surroundings
  - presence of family
  - follow fixed daily schedules
  - one to one care may be necessary

Management of Delirium

- Drugs
  - Stop, wean or decrease if possible offending agent(s)
- Sepsis
  - Start antibiotics/ consider goals of care
- Opioid toxicity
  - Change to another opioid, esp. one with fewer metabolites. Avoid high doses of morphine.

Delirium: Pharmacological Treatment

- Neuroleptics: can improve cognitive function in both hyper/hypoactive delirium
  - Haloperidol (Haldol): 0.5-2mg po/SL/IV q 6-8 hrs
  - Olanzapine (Zyprexa): 2.5-5mg po QD-bid
  - Risperidone (Risperidol): 0.5mg po bid
  - Quetiapine (Seroquel): 25-50mg hs/bid; titrate to max 400mg/day
- Anxiolytics
  - Lorazepam (Ativan): 0.5-1 mg po/SL/IV q 4
  - Diazepam (Valium): 2-10 mg po/SL q 6-8 hr
  - Clonazepam (Klonopin): 0.5-1mg po q 6-8 hr
- Note: Benzodiazepines may worsen delirium in some patients. Use neuroleptics first line
Delirium: Pharmacological Treatment

- Psychostimulants: for hypoactive delirium
  - Methylphenidate (Ritalin): rapid effect
  - Cylert (Pemoline)

Jackson & Lipman, Cochrane Collaborative, 2005; Friedlander, Yanina & Breitbart, Oncology, 2004

Approach to the Care of the Dying Patient

- Discontinue useless medications and those not directly related to symptom control
- Discontinue diagnostic testing/blood work
- Institute specific symptom-relief measures

Approach to the Care of the Dying Patient

- Do not d/c symptom control medications for changes in respiratory rate, sedation or hypotension
- Family support/education
Selected Resources

- Center to Advance Palliative Care
  http://www.capc.org/research-and-references-for-palliative-care/
- End of Life/Palliative Education Resource Center
  http://www.eperc.mcw.edu/
- Hospice Pharmacia’s “Evidence Matters” at
  www.hospicepharmacia.com

Thank you!