Neurological Assessment & Common Neurologic Disorders of the Elderly

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Riddle Medical Group

Presentation Outline

- Consider practical applications of mapping the anatomy and function of the nervous system
- Review a systematic approach to neurological assessment
  - Comprehensive and Brief Neurologic Assessments
- Discuss common neurologic conditions
  - Neurodegenerative disease (Dementia & Parkinson’s Disease)
  - TIA & Stroke
- Outline Key Symptoms related to function of the neurologic system
  - Gait Disturbance
  - Pain
The Neurologic System
A Brief Overview of Anatomy and Function

Facts regarding the human nervous system:
1. 80% of the brain is made up of water.
2. In dehydrated states water is pulled from the brain to other parts of the body.
3. Our brain operates on the same amount of power as a 10v lamp.
4. It is estimated the brain can hold enough information the fill the national library 15 times.
5. The brain uses more oxygen than any other organ. 7 seconds without oxygen will cause fainting while 4 minutes will cause irreversible damage and death.
6. Whether you are a “night person” or a “day” person, the activity of the brain gains momentum at night.
7. While we are sleeping the brain becomes even more active reorganizing information, processing the day it has had, and preparing for the next day.
Neurons transmit signals in the same way that electric wires do. The axon is the large output channel of the neuron. It sends messages to muscles and glands.

Neurons must be linked to each other to transmit signals. The connection between two neurons is called a synapse. Neurotransmitters are chemicals that carry signals across a synapse from one neuron to another.
Effects of Cholesterol “Too Low”

- Cholesterol is needed to maintain healthy myelin sheaths.
  - Myelin is a white and waxy substance that coats cells throughout the body and works to allow conduction of nerve impulses. Myelin is composed primarily of proteins packs between two layers of lipids (primarily cholesterol).
- Low cholesterol linked to depression.
- Low cholesterol linked to premature births.
- In meta analysis of 23 clinical trials using statins, in an attempt to quantify the risk of liver and muscle toxicity, it was found that there was an increase in cancer (cancer of any type) with statin use and lower LDL levels.
## Mapping Brain Function

### Cerebrum and Cerebral Cortex

<table>
<thead>
<tr>
<th>Left Side</th>
<th>Right Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>➤ Right hand control</td>
<td>➤ Left hand control</td>
</tr>
<tr>
<td>➤ Spoken language</td>
<td>➤ Musical awareness</td>
</tr>
<tr>
<td>➤ Written language</td>
<td>➤ Artistic awareness</td>
</tr>
<tr>
<td>➤ Numeric skills</td>
<td>➤ Space ant pattern perception</td>
</tr>
<tr>
<td>➤ Scientific skills</td>
<td>➤ Insight</td>
</tr>
<tr>
<td>➤ Reasoning</td>
<td>➤ Imagination</td>
</tr>
<tr>
<td></td>
<td>➤ Generating mental images of sight, sound, touch, taste, and smell in order to compare relationships</td>
</tr>
</tbody>
</table>

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### Frontal Lobe

- ➤ Impulses
- ➤ Judgment
- ➤ Language Production
- ➤ Working Memory
- ➤ Sexual Behavior

The Frontal Lobe Does Not Fully Develop Until Age 25.
Cerebellum

- Second largest part of the brain
- Coordinates muscle activity
- Coordinates reflexes
- Maintains posture and balance
- Result of damage to this area
  - Tremors
  - Loss of muscle tone
  - Loss of balance

Brainstem

- Cardiac Center
  - Regulates heartbeat and force of contraction
- Respiratory Center
  - Regulates rate and depth of breathing
- Vasomotor Center
  - Controls diameter of blood vessels and plays a role in regulating blood pressure
Mapping Brain Function

<table>
<thead>
<tr>
<th>Emotions</th>
<th>Limbic System (Hippocampus/ Fornix)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appetite</td>
<td>Hypothalamus</td>
</tr>
<tr>
<td>Body Temperature</td>
<td>Hypothalamus</td>
</tr>
<tr>
<td>Short Term Memory</td>
<td>Cerebrum</td>
</tr>
<tr>
<td>Long Term Memory</td>
<td>Cerebrum</td>
</tr>
</tbody>
</table>

The hypothalamus coordinates activity of the pituitary gland and controls body temperature, thirst, hunger, and other homeostatic systems, and is involved in sleep and emotional activity.

The pituitary gland sits at the base of the brain and is referred to as the master endocrine gland as it controls the function of other endocrine glands in the body. It is controlled by the hypothalamus.
Focused Neurological Assessment

Focused Neurologic History
The Complete Neurologic Exam
The Abbreviated Neurologic Exam

First assess the ability to participate in an interview.

Initial Questions

- Any past history of head injury?
  - Location
  - Loss of consciousness
- Have there been frequent or severe headaches?
  - When, where, and how often
- Any dizziness or vertigo?
Focused Neurologic History

Initial Questions – Continued

Any difficulty swallowing solids or liquids.

Possible clue to CN IX – X abnormality

Any episodes of difficulty speaking (trouble forming words or saying what was intended)?

If yes, ask when it started and how long did it last.

Clue to undiagnosed TIA.

Have there been any coordination problems?

Possible issues with muscle tone and strength.

Do you have any numbness or tingling?

Any abnormalities would be described as parasthesias.

Have there been prior neurologic issues?

CVA

Spinal cord injuries

Neurologic infections (meningitis, encephalitis)

Congenital disorders
**Focused Neurologic History**

- Environmental or occupational hazards
  - Explain length and nature of exposure to any of the following:
    - Insecticides
    - Lead
    - Organic solvents
    - Drugs
    - Alcohol

- Any decrease in memory or change in mental function?
- Any tremors in the hands or face?
- Any sudden change in vision or sudden blindness?
  - If male: Inquire about use of medications for ED
- Any sudden weakness on one side of the body and not the other?
- Ever experience loss of consciousness?
  - If yes, what were the circumstances
The Neurologic Exam

The Complete Exam

Mental Status

Integrate obtaining the history into the mental status exam (ask about parts of the history that you are already familiar with and be careful to limit family interference).

Cognitive Ability
- Awareness and level of alertness
- Response to environment and senses
- Appearance and general behavior
- Mood and content of thought
- Orientation to time, place, and person
Mental Status

- If not alert, what does it take to make them alert
  - Calling their name
  - Light touch
  - Vigorous touch
  - Painful stimuli
Motor System Exam

- **Muscle Size**
  - Look for abnormally small muscles (for age) with a wasted appearance

- **Muscle Strength**
  - Test muscle strength against resistance using 0 – 5 scale

- **Muscle Tone**

- **Involuntary Movements**
Motor System Exam

- Cerebellar Function
- Romberg’s Test
  - Stand with feet together touching each other
  - Close eyes
- Rapid Alternating Movements
- Finger to Finger Test
- Finger to Nose Test
- Heel to Shin Test

Sensory System Exam

Assess the Spinothalamic Tract

Test ability to feel pain, temperature, and light touch.

- Test pain sensation by pin prick with patient’s eyes closed and observe for absent or exaggerated response (hypalgesia, hyperalgesia, and analgesia).
- Test temperature only if the pain test is normal by placing hot and cold objects on the patients skin at various locations on both sides of the body.
- Test light touch using a cotton ball or Q-tip to touch various points on both sides of the body while the patient has their eyes closed. Ask them to indicate when they have been touched. Observe for absent or exaggerated response (hypesthesia, anesthesia, hyperesthesia).

Sensory pathway that originates in the spine and transmits information to the thalamus.
Sensory System Exam

Assess Posterior Column Tract

- Vibration
  - Tuning fork over bony prominence
- Position
  - Move big toe up and down with eyes closed
- Tactile Discrimination
  - Test ability to recognize objects by feeling them
- Two point discrimination
  - Ability to detect two distinct pin pricks on the skin
- Reflexes
Testing Reflexes

<table>
<thead>
<tr>
<th>Reflex</th>
<th>Main Spinal Nerve Roots Involved</th>
<th>Rating</th>
<th>Reflex Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biceps</td>
<td>C5, C6</td>
<td>0</td>
<td>Absent reflex</td>
</tr>
<tr>
<td>Brachioradialis</td>
<td>C6</td>
<td>1</td>
<td>Trace</td>
</tr>
<tr>
<td>Triceps</td>
<td>C7</td>
<td>2</td>
<td>Normal</td>
</tr>
<tr>
<td>Patellar</td>
<td>L4</td>
<td>3</td>
<td>Brisk</td>
</tr>
<tr>
<td>Achilles Tendon</td>
<td>S1</td>
<td>4+</td>
<td>Non sustained clonus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5+</td>
<td>Sustained clonus</td>
</tr>
</tbody>
</table>

Clonus = repetitive vibratory movements

Abbreviated Exam
The Neurological Recheck

Intended for Reassessment of any Patient with a Neurologic Deficit
Level of Consciousness

- Monitors for signs of increasing intracranial pressures
- Is the patient oriented to person, place, and time?
- Is your patient alert? If not, what does it take to get them alert?
  - Calling their name
  - Light touch
  - Vigorous touch
  - Pain

Motor Function

- Upper extremity testing (strength and symmetry)
  - Ask patient to squeeze your fingers with their hands and let go
  - Ask patient to bend elbows and push and pull their arms toward and away from you
- Lower extremity Testing (strength and symmetry)
  - Ask patient to dorsiflex and plantarflex their feet while providing some resistance
  - Ask patient to do straight leg raises with and without resistance
Pupillary Response

- Size, shape, and symmetry of both pupils should be the same.
- Each pupil should constrict briskly when light is shined into the eyes.
- Each pupil should have consensual light reflex.
- Under normal conditions the pupils of both eyes will respond identically to a light stimulus. Light entering one eye should cause constriction of the pupil in the un-stimulated eye.

Glasgow Coma Scale

<table>
<thead>
<tr>
<th>Glasgow Coma Scale</th>
<th>1 No response</th>
<th>2 – Response to pain</th>
<th>3 Response to speech</th>
<th>4 Spontaneously</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Motor Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best Verbal Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best Eye Opening Response</td>
<td>1 – No response</td>
<td>2 – Abnormal extension</td>
<td>3 Abnormal flexion</td>
<td>4 – Flexion withdrawal</td>
</tr>
<tr>
<td></td>
<td>5 – Localized pain</td>
<td>6 – Obey verbal commands</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assesses how the brain functions as a whole and not as individual parts.

The scale assess 3 major functions: eye opening, motor response, and verbal response.

An intact person will score 15.

Scores under 7 reflect coma.
An 86-year-old male is admitted to your facility with history of Left CVA, Anemia of chronic disease, BPH, Hypertension, and Chronic kidney disease.

Since admission he has been having intermittent fever and not been eating or drinking well and has had progressive weight loss that now exceeds a loss of 7.5% over the past 2 months. He has not responded antibiotics or to medications to stimulate appetite.

Report of CT scan done while he was hospitalized shows a punctate low density focus involving the left thalamus consistent with a lunar infarct.

The Thalamus relays sensory information and acts as a center for pain perception. The hypothalamus lies just below the thalamus and coordinates both the autonomic nervous system and the activity of the pituitary, controlling body temperature, thirst, hunger, and is involved in emotional activity.
Neurologic Assessment

Q&A Session 1
You can ask questions in 2 ways

The Web Platform
Type your question into the box on the lower left side of your screen. Then click on the “Send” button.

The Telephone
Press *1 on your telephone and the operator will place you into the phone queue.

Neurodegenerative Disease

Alzheimer's Disease
Parkinson's Disease
Huntington's Disease
Amyotrophic Lateral Sclerosis (ALS)
Alzheimer’s Disease
And other Dementias

Types of Dementia

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alzheimer’s</td>
<td>60 – 80% of cases</td>
</tr>
<tr>
<td>Vascular</td>
<td>Multiple infarcts, Impaired judgment and Physical impairment</td>
</tr>
<tr>
<td>Lewy Body</td>
<td>Memory disturbance, difficulty sleeping and hallucinations, muscle rigidity and Parkinsonian movement</td>
</tr>
<tr>
<td>Mixed</td>
<td>Most common combination is Alzheimer’s with Vascular</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>Problems with retrieval of information from memory</td>
</tr>
<tr>
<td>Frontotemporal</td>
<td>Change in personality and behavior and difficulty with language</td>
</tr>
<tr>
<td>Creutzfeldt-Jakob</td>
<td>Rare and rapidly fatal. Possibly infectious.</td>
</tr>
<tr>
<td>Normal Pressure Hydrocephalus</td>
<td>Gait disturbance with impaired memory and inability to control urination.</td>
</tr>
<tr>
<td>Huntington’s Disease</td>
<td>Genetic defect. Uncontrollable movements. Poor mood.</td>
</tr>
</tbody>
</table>
Imaging The Brain

[Diagram showing a flowchart for diagnosing dementia, including conditions like Alzheimer's Disease, Ischemic Vascular Dementia, Levy Body Dementia, Frontotemporal Dementia, and Normal Pressure Hydrocephalus.]

[Images of brain scans labeled 'Brain with A.D.' and 'Normally Aged Brain.']
Poll Question

Dementia affects an individual's ability to
Poll Question

A reversible condition which COULD BE mistaken for Dementia is

Poll Question

When an Alzheimer's individual experiences aphasia, he or she may have difficulty
Poll Question

A resident follows you all day and repeatedly asks, “What do I do now?” When you answer the question she just asks again, over and over. What should you do

Poll Question

An Alzheimer’s resident who resists care is doing so because they
Poll Question

The BEST WAY to complete an ADL activity with an Alzheimer’s individual is to

 Poll Question

Combativeness occurs MOST OFTEN when an Alzheimer’s Resident is
Poll Question

The MOST EFFECTIVE intervention for a resident who repetitively bangs on the table is

Poll Question

Which of the following is NOT an example of validation
Poll Question

When dealing with an agitated resident, it is MOST helpful to

- Anxiety and Depression
- Psychosis
  - Delusions
  - Delusions of persecution are common
- Delirium
- Behavioral disturbances (Agitation and aggression)
- Sleep disturbance
Evaluation of Cognition

- Mini-mental status exam
- ADAS-Cog
- Clock draw test
- BIMS (MDS 3.0 – Section C) – Brief Interview for Mental Status

Brief Interview for Mental Status

**BIMS**

- 3 components
  - C0200 Repetition of 3 words
  - C0300 Temporal orientation
  - Recall

- Results are compiled into a summary score (C0500)
  - 13 - 15 Cognitively Intact
  - 08 - 12 Moderate Impairment
  - 00 - 07 Severe Impairment (99 if unable to complete test)
Treatment

Cognitive dysfunction

- Cholinesterase inhibitors initiated at mild stage
- Memantine (Namenda) for the moderate to severe stage

Psychosis and agitation/aggressive behavior

- Antipsychotics (Boxed warning)
  - Quetiapine often first line due to better side effect profile
  - Avoid PRN use
- Benzodiazepines can be used if the agitation/aggression is associated with anxiety, but they should be used on a PRN basis only

Depression

- SSRI’s preferred (Celexa, Lexapro, Zoloft)
- Venlafaxine, Mirtazapine, and Bupropion are effective second line choices
- Prozac and Paxil should be avoided in the elderly

Sleep Disturbance

- Trazodone 25 – 100 mg is frequently used because its side effect profile is favorable when compared to conventional sleeping pills.
- Zolpidem 5 – 10 mg PRN
- Benzodiazepines may be used short term if wakefulness is caused by anxiety.
Parkinson’s Disease

A small area of the brainstem called the substantia nigra controls movement. In patients with Parkinson’s Disease this area stops producing dopamine. Dopamine helps cells communicate with each other. With breakdown in communication between cells, they become less active.
2nd most common neurodegenerative disease after Alzheimer’s
Degeneration of dopaminergic neurons in the
Substantia Nigra Compacta
Symptoms of resting tremor, rigidity, bradykinesia,
and gait dysfunction
Average age of onset – 60
Slightly more common in men than women
Diagnosis based on history, physical examination, & response to Levodopa

Typical History

- Gradual decreased emotion displayed in facial features.
- General motor slowing and stiffness (1 or both arms do not swing with walking)
- Resting tremor (often initially limited to 1 hand)
- Soft/mumbling speech
- Difficulty with balance
- Falls
Physical Exam

- Resting tremor
- Tremor disappears with voluntary movement
- Tremor frequently more pronounced with walking and may present as pill rolling
- Bradykinesia
- Rigidity
  - Cogwheel (catch and release motion) or continuous rigidity
- Postural instability

Medication Induced Parkinson’s

- Neuroleptics
- Amiodarone
- Antiemetics
- Chemotherapeutic Agents
- SSRI’s
- Estrogen therapy
- Calcium Channel Blockers
- Valproic Acid
Commonly Associated Conditions

- Autonomic dysfunction
- Constipation
- Urinary urgency
- Sleep disturbances
- Cognitive dysfunction
- Mental status changes
- Depression
- Psychosis
- Hallucinations
- Dementia
- Orthostatic hypotension
- Pain

Treatment

- **First Line Agents**
  - Carbidopa-Levodopa
  - Carbidopa-Levodopa-Entacapone (Stalevo)
  - Dopamine Agonists (Mirapex & Requip)
  - Bromocriptine (Parlodel)
  - Selegiline (Eldepryl)
  - Rasagiline (Azilect)

- **Second Line Agents**: Anticholinergic drugs such as Cogentin, N-methyl-D-aspartic acid antagonists such as Amantadine, Catechol-O-Methyl transferase (COMT) inhibitors such as Comtan or Tasmar
Cerebrovascular Disease

Transient Ischemic Attacks
(Warning Sign of an Impending Stroke)

CVA/Stroke

More than 1.2 million Americans experience a TIA or stroke each year.

Approximately 15% of strokes are preceded by a TIA.

Definition if TIA was modified in 2009 to a transient episode of neurologic dysfunction caused by focal brain, spinal cord, or retinal ischemia, without acute infarction. The definition no longer included a statement about clinical symptoms lasting less than 1 hour.

87% of all strokes are ischemic

86% of stroke deaths occur in people 65 years of age and older
Ischemic vs. Hemorrhagic

- **Ischemic Stroke**
  - Damage to the brain caused by lack of blood flow to a section of the brain or blockage of an artery leading to the brain.

- **Hemorrhagic stroke** occurs when an abnormal blood vessel in the brain ruptures.

Ischemic Stroke “Missed or Misdiagnosed”

- Stroke is a leading cause of nursing home placement.

- Recognition of stroke may be difficult due to pre-existing cognitive and functional deficits.

- It is important to understand the resident’s baseline functional and cognitive abilities and be alert to behavioral changes that are so often labeled as urinary tract infections or other medical or neuropsychiatric conditions.
Observations & Management

- Monitor for new changes in motor function and mental status that could represent a new stroke.
  - May present as a wide variety of neuromuscular, neuropsychiatric, or psychiatric disease.

1st Line Treatment

- Manage controllable risk factors such as blood pressure, blood sugar, cholesterol levels.
  - Guidelines for initiation of cholesterol therapy for patients in Stroke Rehab are to treat if there is a history of TIA or stroke with evidence of atherosclerosis, LDL 100 or greater and no CHD.
  - Anticoagulation if mechanical prosthetic heart valve and ischemic stroke or TIA.
  - Antiplatelet therapy decreases relative risk of stroke, MI, or death by 22%.

Potential Care Plan Issues

- Aspiration (temporary dysphagia occurs in 50% just after a stroke)
- Skin breakdown due to loss of sensation and impaired circulation
- Malnutrition
- Sleep Apnea
- Depression (SSRI’s have been found to be the most effective antidepressant for stroke victims)
- Pulmonary embolism (highest risk 3 – 1290 days after stroke)
- Spasticity occurs in 35% of stroke survivors
- Seizures (more common after a hemorrhagic stroke (11%) than after an ischemic stroke (9%))
- Falls
- If IV fluids are required, avoid D5W due to risks of hyperglycemia and its secondary effects
Comprehensive Care Plan
Communication, Cognition, Education, Hearing, and Vision

PROBLEM

Resident recently admitted after a hospitalization for syncope and collapse. She was found to have a new left hemispheric evolving stroke with speech difficulty and right sided weakness. During her hospital stay she was diagnosed with mild dementia, however, her cognition remains intact and she is alert and oriented X3 and able to make her needs known. She makes reasonable daily decisions though her speech is somewhat unclear at times.

Her hearing is adequate and she wears glasses PRN since her cataract surgery.

Interventions
• Promote family visits
• Explain all procedures step by step to reduce anxiety and promote participation
• Provide quiet environment to promote extended conversation and facilitate communication
• Speak slowly and distinctly facing resident at her eye level
• Utilize simple language and attempt to keep routines
• Allow sufficient time to respond
• Monitor resident’s ability to follow instructions
• Provide clutter free environment at all times
Comprehensive Care Plan
Safety/ Falls

Resident is at risk for falls/ injuries secondary to use of multiple medications, impaired mobility, new diagnosis of seizure disorder, and significant decline in ADL’s due to new CVA with right sided weakness and history of prior CVA with left hemiparesis.

ADL Functional Status
(Bathing, Dressing, Mobility, and Transfer, Contractures)

Significant decline in ADL’s due to recent stroke. Now requires constant assist of 2/ Hoyer lift. Despite her limitations she tries to participate in upper body ADL’s within her abilities. She is currently on a restorative PT program 5X/week and is expected to show improvement in ADL’s. Goal is to restore safe ambulation and transfers.

Comprehensive Care Plan
Immobilization of a Joint by Device

Resident requires a left hand splint at night to prevent increased contractures secondary to CVA. Application of device puts resident at high risk for skin breakdown, muscle atrophy, infection, stiffness of joint, and local pain.

Infection

At risk for infection due to impaired mobility and functional incontinence.
Comprehensive Care Plan
Pain Management

Resident is at risk for pain secondary to gout, osteoporosis, neuropathy, history of Lyme disease, DVT, and CVA.

Behaviors

At risk for changes in mood and behavior, depression, and changes in sleep pattern secondary to recurrent CVA with decline in ADL’s resulting in increase dependence on others, NPO status secondary to neurogenic dysphagia, and inability to walk.

Neurologic Assessment

Q&A Session
You can ask questions in 2 ways

The Web Platform
Type your question into the box on the lower left side of your screen. Then click on the “Send” button.

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Gait Dysfunction

Neurologic Gait Disorders

Gait and balance both decline with normal aging.

Gait and posture tend to become Parkinsonian (looks like Parkinson’s disease)

- Stooped posture
- Reduced arm swing
- Reduced stride length
- Tendency toward a flat foot strike
Gait Disorders and Fall Risk

- Over 30% of community dwelling people over 65 years of age fall at least once each year.

- Death rates from falls skyrocket with aging:
  - Ten per 100,000 per year for age 65 – 74.
  - 147 per 100,000 per year for those over 85.

Preventable Falls

- The claim that falls among older adults are preventable has been compared to saying that “cigarette smoking, or drug obesity, or drug addiction” is preventable.

- The focus of the care plan should be on reducing the fall risk rather than preventing the risk.

- Falls cannot be prevented because of the impaired cognition that often accompanies gait disorders in the elderly.
Assessing Ambulation

- For ambulatory residents walking should be assessed during each regulatory medical assessment.

- In a study of hospitalized patients admitted after a fall, gait was not documented in the medical record. This may be because there is little training on how to evaluate and document gait.

Evaluating and Documenting Gait

- Walking requires the ability to do the following
  - Stand
  - Maintain position (keeping the center of gravity over the feet)
  - Advance from the starting position

- The Brain is the overall controlling mechanism but must coordinate with the feet, ankles, knees, hips to bear weight.

- The inner ear must be able to determine the direction of gravitational pull.

- Vision is needed to judge distance and compensate for other impaired sensory systems.

- Peripheral nerves must send information from the environment to the spinal cord.
Observing Gait

- Observe the person standing up from a chair with a firm bottom and armrests.
- Ask the resident to stand without using their arms. If they are not successful, allow them to use their arms.
- Observe how easily balance is maintained.
- Ask the person to walk 10 to 15 feet and observe how easily forward motion is initiated.
- Assess for presence of fear when ambulating (small cautious steps as if walking on ice), especially if there has been a history of falling.

Pain Management
Depression in Chronic Pain

Which comes first: Depression or Pain

Patients often say “if you take care of my pain the depression will go away”
Evidence Regarding Relationship

- Those with baseline depressive disorders have double the risk for new onset of back pain up to 13 years into the future.
- Severe depression triples the risk for incident back pain for 12 years.
- Major depression + Dysthymic disorder still increased risk for incident back pain by 75% 13 years later.
- Most data supports the concept that depression is also a consequence of chronic pain.
- Treatment of depression improves pain and disability.

Larsen et al. Psychol Med 2004

Do Opioids Cause Chronic Pain?

- Powerful positive reinforcement for use.
- Negative reinforcement for disuse (withdrawal and or return of pain).
- Set up of unreasonable standard for pain control.
- Injury that interferes with rehabilitation (injury when medications help you forget you are already injured).
- Intoxication produces psychological comfort but worsening functional disability.
Low Pain Threshold vs Catastrophizing

- An exaggerated negative mental set that happens during an actual or anticipated painful experience
- Multidimensional cognitive construct
  - Magnification: Fear that something serious will happen
  - Rumination: Can’t stop thinking about how much it hurts
  - Helplessness: Feeling that nothing can be done to reduce the intensity of the pain

Can Outcomes be Modified?

- Interventions
  - Cognitive behavioral psychotherapy
  - Adaptive coping skills training
  - Distraction, relaxation, and visual imagery
  - Social Support
- All interventions are aimed at changing the interpretation of events
Addiction

<table>
<thead>
<tr>
<th>Primary Addiction</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>- When the drug starts to change the way you interact with the world.</td>
</tr>
<tr>
<td></td>
<td>- When you want more drug, despite increasing consequences.</td>
</tr>
<tr>
<td></td>
<td>- Preoccupied with getting drug.</td>
</tr>
<tr>
<td>Pseudo-addiction</td>
<td>Pursuit of a treatment that you can't imagine giving up even though it has only been marginally effective.</td>
</tr>
</tbody>
</table>

Avoid putting the focus on the pain
“I'm going to take this medication away from you even though I know you're suffering”

Put the Focus on the Disease
“I don’t think you’re an addict but I think the medication is doing harm in that you may be having rebound pain or even a new pain that the medication is causing”

Clockwatching

“I was suppose to get that pill at 8:30”

“They never get it to me on time”
Withdrawing Opioids?

- Examine where the patient is in terms of function, quality of life, and productivity
  - If they are doing well in these areas leave them alone.
  - If they are not doing well they need a new treatment plan that may include use of more or less opioids and concert with other interventions

Assessing Pain in Advanced Dementia

Cognitive Impairment
Pain in the elderly

- Prevalence 49 – 83%
- Often under treated in this group
- Untreated pain can lead to agitation, depression, decreased socialization, and sleep disturbance

Assessing Pain
Mild to Moderate Dementia

- Often unable to communicate pain
- AGS Guidelines
  - Direct questioning
  - Ask all questions in present tense
  - Use of multidimensional pain instrument
  - Allow time to answer questions
Assessing Pain
Advanced Dementia

- Monitor behaviors as external markers of internals states
- Issues
  - There are no unique behaviors for pain though they are unique to the individual
  - Do care givers always understand the behaviors?

Herr et al. JPSM 2006 31(2) 170-192
Zwakhalen et al. BMC Geriatrics 2006, 6(3)

Behavior Tools for Pain

DisDAT

- No specific pain behaviors so that it works better in looking at distress
- Specific to the resident

PAINAD

- Derived from DS-Dat
- Quick and simple to use
- Scores reduced when pain treated in a small sample (indicating effectiveness in assessing pain that responded to therapy)
Study Results

- 79 participants with severe dementia were recruited from 4 skilled nursing facilities
- 16% were found to be in pain
- 33% had significant scores on the PAINAD scale but were not felt to be in pain
- 51% were not in pain and had low scores

16% found to be in pain

- Causes of Pain
  - Acute Pain due to toothache, cellulitis, DVT
  - Chronic pain secondary to arthritis and contractures
- Management
  - Scheduled doses of analgesics
  - Staff education and training
Causes of False (+) Results

- Anxiety and/or depressed mood
- Anger/ Frustration
- Disturbed by other residents
- Boredom
- Hallucinations

Rational Polypharmacy

Chronic Pain Management
Polypharmacy Defined

- Use of multiple medications: > 2 (minor) or > 4 (major)
  - Example; Nebulizer, Statin, Oral diabetic medication, antidepressant
- Intentional use of > 2 medications to treat one condition (Opioid + Tylenol to treat pain)
- Use of more medications than clinically indicated


Polypharmacy
Balancing Benefits and Toxicities

<table>
<thead>
<tr>
<th>Irrational</th>
<th>Rational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse Events</td>
<td>Improved Quality of Life</td>
</tr>
<tr>
<td>Decreased Quality of Life</td>
<td>Symptomatic and functional relief from chronic pain</td>
</tr>
<tr>
<td></td>
<td>Improved outcomes</td>
</tr>
</tbody>
</table>
Prescribing Cascade

- Patient complains of pain
  - Short acting opioid and observe
- 2 weeks later complains of no BM
  - Add docusate
- Few days later: Still constipated and now I’m nauseous as well
  - Add ondansetron PRN

“I still can’t move my bowels”
- Add lactulose, senna, and miralax
- I still have pain and I haven’t slept in days
  - Pain may or may not be controlled. Try Ambien.
- Still nauseous, not always asking for ondansetron
  - Add phenergan
- “The pain just won’t go away”
Rational Polypharmacy

- Many, if not most, patients will only get a partial response to monotherapy
- Many are not able to tolerate adverse events caused by analgesic doses of a single agent (principle of opioid sparing)
- May be able to obtain a positive synergistic effect with combined agents from different medication classes

General Roster of Analgesics

- Non-opioids
  - Acetaminophen
  - NSAIDs
  - COX-2 inhibitors
- Opioids
- Adjuvant Analgesics
  - Antidepressants, Antiepileptics, and topical agents
Importance of Opioids

- Cornerstone of pain management
- Typically the class of choice for moderate to severe pain
- Acute Pain
- Traumatic Pain
- Cancer Pain
- Chronic Non-Malignant Pain
- Neuropathic pain when used with adjuvants
- Breakthrough Pain

Chronic Pain Components

Persistent and Breakthrough Pain

Breakthrough Pain

Persistent Pain

Time

Around the Clock Medication
Chronic Pain Prescribing Pearls

- Long acting opioids are underutilized
- Initial treatment
  - Short acting opioid
  - Usually prescribed Q4-6H even though duration of action is typically 3 – 4 hours
  - Preferred to prescribe as Q4H PRN

Equianalgesic Opioid Dose Conversion

<table>
<thead>
<tr>
<th>Drug</th>
<th>Oral</th>
<th>IM, SC</th>
<th>IV</th>
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<tbody>
<tr>
<td>Morphine</td>
<td>15 mg</td>
<td>5 mg</td>
<td>5 mg</td>
</tr>
<tr>
<td>Codeine</td>
<td>150 mg</td>
<td>60 mg</td>
<td>60 mg</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>3 mg</td>
<td>1 mg</td>
<td>1 mg</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>7.5 mg</td>
<td>15 mg</td>
<td>7.5 mg</td>
</tr>
<tr>
<td>Tramadol</td>
<td>150 mg</td>
<td>300 mg</td>
<td>50 mg</td>
</tr>
<tr>
<td>Tapentadol</td>
<td>75 mg</td>
<td>150 mg</td>
<td></td>
</tr>
<tr>
<td>Meperidine</td>
<td>150 mg</td>
<td>37.5 mg</td>
<td>37.5 mg</td>
</tr>
<tr>
<td>Methadone</td>
<td>1.5 mg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>50 – 100 mcg</td>
<td>50 – 100 mcg</td>
<td></td>
</tr>
<tr>
<td>Fentanyl Patch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buprenorphine Patch</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: Craig Curtis B. Sc. (Pharm) Updated 2012
Chronic Pain Prescribing Pearls

Renal Impairment
- All opioids are metabolized through the liver with renal clearance of active metabolites
- M3G and M6G metabolites can accumulate quickly on moderate or high doses
  - Neurotoxicity
  - Seizures

Common adverse events
- Nausea
- Sedation
- Constipation
- Signs of overdose: respiratory depression, pupillary constriction
- Expected dependence (This is not addiction): Therefore must taper carefully and slowly
Appropriate Dose Increases

- Think in terms of percentage rather than mg
- Total daily dose should increase in 25% - 50% increments
  - Less than 25% increase equivalent to placebo
- For moderate to severe pain increase total daily dose by 50% - 100%

Dosing Rescue Therapy

- One dose of rescue therapy should be 10-15% of the total dose of oral long-acting opioid.
- Pain should be rated prior to and after administering the dose
Constipation during opioid therapy is common if not inevitable and may be different from ordinary functional constipation.

Anticipate constipating side effects and prescribe a laxative when prescribing the opioid.

Document prior constipation history at start of therapy to establish the baseline.

Characterizing a person as constipated based only on number of bowel movements per day or per week is not appropriate.

Available evidence does not suggest that opioid induced constipation will respond to increasing fluids or dietary fiber unless the patient is dehydrated or consumes insufficient amounts of fiber.
Constipation

- Bulk-forming laxatives are not appropriate in opioid induced constipation because peristalsis is inhibited in these patients.

- Effective treatment requires laxatives, a stool softener, and a stimulant.

Thank You

Q&A Session 3
You can ask questions in 2 ways

The Web Platform
Type your question into the box on the lower left side of your screen. Then click on the “Send” button.

The Telephone
Press *1 on your telephone and the operator will place you into the phone queue.
Please Help Us Evaluate this Program. Before closing your browser click on the link below.

https://www.surveymonkey.com/s/2013_CLINWEB2