Disclosures

Purpose: Participants will be able to effectively integrate principles of pain assessment and management into their clinical practice.

Objectives:
1. Describe the different types of pain
2. Examine current options for pain management

Disclosures:
Criteria for successful completion include attendance at the entire event and submission of a completed evaluation form.

The planners and faculty have declared no conflict of interest.

Nursing Contact Hour will be provided.
MPRO (OH-219, 8/1/2015) is an approval provider of continuing nursing education by the Ohio Nurses Association (OBN-099-91), an accredited approval by the American Nurses Credentialing Center’s Commission on Accreditation.

Objectives

- Review the neuroanatomy & physiology of pain
- Discuss concepts of pain management
- Discuss options for pain assessment
- Review long-term complications associated with narcotics – diagnosis, dependence, tolerance, addiction
Take Home Points

- Pain is subjective
- Treatment of chronic pain is different than treatment of acute pain
- Goal for management of chronic pain is control, not total resolution
- Drugs are not always the answer

Pain is . . .

A. A nasty 4-letter word
B. A common reason for physician visits
C. Under-recognized
D. Under-treated
E. Measured as the “fifth vital sign”
F. All of the above

Pain is . . .

“An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”

“Whatever the pain-experiencing person says it is, existing whenever he/she says it does.”
Pain - Epidemiology

- ~100 million Americans with chronic pain
- ~25 million people with acute pain annually
- 9 out of 10 Americans self-report regular pain
- Incidence of chronic pain in NHs: 45-80%
- 55% uncomfortable taking medications for pain
- Serious effects on lifestyle:
  - >50% - interferes with sleep
  - 40% - interferes with work
  - 68% - anxious, irritable, depressed
- Estimated cost $100 billion per year

Source: American Pain Foundation

Myths & Misconceptions

- Pain is a normal part of aging
- The level of pain can be determined objectively
- Chronic pain always indicates presence of a serious disease
- Patients in LTC say they hurt in order to get attention
- Minor illnesses/injuries are less painful than severe ones
- “Psychological” pain has no physiologic basis
- Drug abusers overreact to pain
- Regular use of analgesics leads to addiction

Barriers to Adequate Treatment

- Blunted response by elderly patients
- Cognitive & communication barriers
- Cultural & social biases (patients and/or caregivers)
- Co-existing illnesses & multiple medications
- Poor assessment skills by staff
- SNF system issues – staff turnover, lack of leadership commitment to pain management
Consequences of Inadequate Pain Treatment

- Sleep disturbance
- Impaired mobility
- Decreased socialization
- Depression
- Inappropriate prescribing of psychotropic medications
- Increased health care costs

Cultural and historical origins

Prior to 19th century

- Bad air
- Imbalance of humors
- Motion of planets
- God/spirits

19th Century: What causes disease?

- Germ theory:
  - Little bugs are behind processes of disease
- These “hidden” processes are identified via science
20th century

- Explosion in knowledge and technology
- Tremendous medical advances
  - Pathophysiology
  - Pharmacology
- Development of the Biomedical Model
  - All “real” disease can be identified
  - Profound confidence (overconfidence) in contemporary scientific conceptions

Biomedical Model of Pain

Pain?

Is there an identifiable problem?

- Yes
  - Treat Patient
- No
  - Patient Obviously Crazy

4 Different Pain Types

- Nociceptive
- Inflammatory
- Neuropathic
- Functional
4 Different Pain Types

- Nociceptive
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Nociceptive Pain

- Requires noxious stimulus
- Potential harm perceived as unpleasant
- Response proportional to stimulus
- Purpose: prevent injury
- Part of body’s alarm system
Inflammatory Pain

**Peripheral Sensitization**

- Each nerve more sensitive
  - Lower threshold
  - Stronger response
- Wake up “silent nociceptors”
  - ½ of all nociceptors
  - “Wake up” in inflammatory milieu

**Allodynia** – things that normally wouldn’t hurt, now do

**Hyperalgesia** – more pain than usual from a noxious stimulus
4 Different Pain Types

- Nociceptive
- Inflammatory
- **Neuropathic**
- Functional

**Neuropathic pain**

- Pain system itself has been injured
- Pain present, but absence of:
  - Noxious stimuli
  - Tissue damage or inflammation
  - “Fire alarm is always on, but no emergency”
    - Spontaneous pain
    - Pain in response normally harmless stimuli

**Neuropathic pain: examples**

**Peripheral**
- Peripheral neuropathy (e.g., diabetic)
- Post-herpetic neuralgia
- Chronic LBP with damaged nerves

**Central**
- Spinal cord injury
- Stroke
- ? fibromyalgia
Neuropathic Pain

- Poorly understood by physicians
  - No anatomic disturbance? - must be psychological

- But, much of neuropathic pain is actually what was previously thought to be psychological (allodynia/hyperalgesia)

4 Different Pain Types

- Nociceptive
- Inflammatory
- Neuropathic
- Functional

Other Pain Descriptors

- Acute - duration < 6 months
- Chronic - duration > 6 months
- Causalgia – “burning” pain, typically due to injured nerve
- Breakthrough pain – acute exacerbations of chronic pain, not relieved with sustained release pain medication
Other Pain Descriptors

- **Cutaneous** – direct, acute, localized
  - Origin: epidermis, dermis, SQ tissue

- **Somatic** – easily localized
  - Origin: tendons, muscles, joints, bones, nerves
  - Throbbing, aching

- **Visceral** – poorly localized
  - Origin: internal organs
  - Squeezing, cramping, bloating, pressure

- **Referred** – pain felt in body part that’s remote from the site of injury

Neuroanatomy 101

- Limbic forebrain
- Thalamus
- Brain stem
- Interneurons
- Input system
- Nociceptive afferent fiber
- Spinal cord
Factors associated with Pain Expression

- Age
- Gender
  - Women more likely to express and seek treatment
  - Physicians have tendency to underestimate
- Cultural & Ethnicity
  - Presence or absence of family members
  - Learned behavior
- Emotional state
  - Anxiety, depression, level of social support
- Cognitive ability

Pain Assessment

- Assess for presence of chronic pain:
  - “Do you have any aching or soreness?”
  - For cognitively-impaired patients, ask family members or caregivers (eg, PCAs)
  - Look for subtle changes in behavior
  - What pain treatments is patient currently receiving?
  - How does pain affect patient’s mood, sleep, ADLs?
  - Standard assessment tools to quantify pain

Pain Assessment: P-Q-R-S-T

- Provoking factors
- Quality
- Radiation & region
- Severity & symptoms associated with pain
- Timing
**Visual Analog Scales**

![An Example of a Visual Analog Scale](image)

**FACES Pain Scale**

![Wong-Baker FACES Pain Rating Scale](image)

**Pain in the Elderly**

- **Increased pain threshold**
  - Threshold: earliest point at which a person perceives a stimulus as painful
- **Decreased pain tolerance**
  - Tolerance: lowest level of stimulation at which a person will stop (or seek to stop) the stimulus
- **Other influences**: delayed reaction times, physical impairments, cognitive deficits
Factors Associated with Chronic Pain in the Elderly
- Arthritis: degenerative joint disease, RA, gout
- Osteoporosis, vertebral compression fractures
- Neuropathic pain: diabetes, shingles, trigeminal neuralgia, chemotherapy
- Peripheral vascular disease (leg cramps, amputations)
- Pressure ulcers
- Post-stroke immobility, contractures

Pain Assessment in the Elderly
- Vital signs: more likely to be elevated in acute pain than chronic pain
  - But not always reliable
- Facial expressions: grimaces, frowns
- Non-verbal clues: grunts, moans, grinding teeth, whimpering, restless, agitated, incontinent
- Changes in activity: sleep, eating, gait, behavior

Acute vs. Chronic Pain

<table>
<thead>
<tr>
<th>Acute Pain</th>
<th>Chronic Pain</th>
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</thead>
<tbody>
<tr>
<td>Is a symptom</td>
<td>Is a disease</td>
</tr>
<tr>
<td>Has identifiable source and physical findings</td>
<td>Often without a clear source or physical findings</td>
</tr>
<tr>
<td>Has protective function in response to disease or injury</td>
<td>Is often maladaptive and becomes the disease itself</td>
</tr>
<tr>
<td>Often associated with autonomic response (HR, elevated BP)</td>
<td>Usually no observable changes</td>
</tr>
<tr>
<td>Resolves with treatment</td>
<td>Typically does not resolve with treatment</td>
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Pain Management

Pain Management Goals

- Identify cause
- Decrease level of pain safely
- Improve functioning & quality of life: mood, ADLs, sleep
- Minimize side effects of therapy

Institutional Commitment

Communication
- Standard vocabulary & pain assessment tools
- Pain management coordinator ± team
- Documentation of ongoing pain assessment and treatment

Education: initial and continuing education

Human Resources: staff retention, continuity of care
General Principles for Pharmacologic Therapy

- Administer pain medication routinely (not PRN)
- Use least invasive route of administration first
- Begin with low dose and titrate upward
- Reassess and adjust dose frequently to optimize pain relief

- Use only 1 drug if possible
- Only 1 long-acting drug at a time
- Use adjuncts: muscle relaxants, anxiolytics, antiemetics, antispasmodics, antidepressants
- Constipation prophylaxis
- Ongoing assessment for pain control and side effects

Makris UE, et al. JAMA 2014; 312:825-836
Acetaminophen (Tylenol)

- Multiple formulations
  - Standard: 325 mg, 500 mg
- 1000 mg q 6 hrs excellent first line choice for elderly with multiple co-morbidities
- Toxicity: liver (don’t mix regular Tylenol with Percocet, Vicodin, etc.) & avoid alcohol

Use of NSAIDs for nociceptive pain

- NSAIDs cause ↓ peripheral sensitization
- Better than PCA pump alone in post-op pain
- No constipation or drug dependence
- Have ceiling effect: the point after which increasing the dose produces no additional pain relief
- Ketorolac (Toradol) IV = drug of choice for opiate-naïve patients, kidney stones
  - 30 mg Toradol = 10 mg morphine

NSAIDs: risks in elderly

- Nausea & vomiting
- Renal risks:
  - ↑ K, edema, hypertension
  - GFR decreases 1% per year after 40, but don’t ”see” on creatinine lab result due to body muscle mass loss
  - Therefore, measure GFR & avoid NSAIDs if renal insufficiency
- Antiplatelet effects: G1 bleeding
- Adverse effects on bone fractures
  - ↑ Increased risk of delayed non-union
Narcotics/Opioids

- “Weak” narcotics: codeine, hydrocodone, oxycodone (Percodan)
  - Tylenol #3: codeine + acetaminophen
  - Percocet: oxycodone + acetaminophen
  - Norco: hydrocodone + acetaminophen 325 mg
  - Vicodin: hydrocodone + acetaminophen 500 mg
- “Strong” narcotics: morphine (OxyContin, Oramorph), hydromorphone (Dilaudid), fentanyl (Duragesic), meperidine (Demerol)

Morphine

- Significant pain relief often requires 20 mg or more
- Start at low dose if naïve to morphine
- Increase dose, re-dose q 2-4 hrs (inform RN)
- Huge individual variation in sensitivity
- Histamine release can cause vasodilatory affect
- Nausea & vomiting prominent

Hydromorphone (Dilaudid)

- 1.5 mg Dilaudid =10 mg morphine
- “Cleaner” + less incidence of vomiting
- Main reason for improved pain outcome is physician comfort with giving less of something
- Q3-4 hour dosing once pain controlled
Adverse Effects of Narcotics

- Sedation
- Constipation
  - Treat with stool softener + laxative + increased fiber
- Nausea/vomiting
  - Treat with antiemetic
  - Tolerance develops over time
- Respiratory depression
  - Seen in overdose situation
  - Treat with naloxone (Narcan) IM, IV, SQ, ET

Management of Chronic Pain

- Long-acting (sustained-release) narcotics for around-the-clock pain control
- Additional medication PRN for “breakthrough” pain
  - Use short-acting & immediate-release versions of long-acting medication
  - Ex: MS Contin daily + Roxanol Elixir PRN
  - Dose = 10-20% of total 24-hr dose
  - If you increase dose of long-acting med, increase dose of short-acting med as well
- Use agonist-antagonist combination to treat pain (agonist) & block the euphoria (antagonist)
Patient Controlled Analgesia (PCA)

- RN presets medication dosage & timing
- Lockout time: halts patient administration of medication until preset interval has been reached
- Advantages: individualization, no waiting for drug to be given
- Disadvantages: pump malfunction, stronger dose than required, inappropriate lockout times

Epidural Pain Control

- Catheter placed in epidural space
- Attached to pump, which patient wears
- Medication placed in pump reservoir
- Can be given continuously or intermittently
- Advantages: site-specific, rapid & prolonged pain relief, fewer systemic side effects
- Disadvantages: need pump refills, risk of infection, patient inconvenience

Adjunct Medications

- **Antiemetics**
  - May have analgesic effects of their own
  - Ex: promethazine (Phenergan), prochlorperazine (Compazine), metoclopramide (Reglan), ondansetron (Zofran)

- **Muscle relaxants**
  - For: muscle spasms
  - Ex: diazepam (Valium), cyclobenzaprine (Flexeril), baclofen (Lioresal), carisoprodol (Soma), metaxalone (Skelaxin), orphenadrine (Norflex)
Adjunct Medications

- **Steroids**
  - For neuropathic pain, bone pain, migraines, visceral pain, inflammatory pain
  - Ex: prednisone, dexamethasone (Decadron)

- **Antispasmodics**
  - For: GI or bladder spasms
  - Ex: Immodium (diphenoxylate+atropine), Lomotil (loperamide)

- **Antidepressants**
  - Especially useful for: migraines, burning pain
  - Enhance descending inhibitory pathway by blocking re-uptake of neurotransmitters
  - Ex: amitriptyline (Elavil), trazadone (Desyrel) & SSRIs (eg, fluoxetine [Prozac])

- **Anticonvulsants**
  - Especially useful for neuropathic pain & neuralgias
  - Ex: carbamazepine (Tegretol), gabapentin (Neurontin), pregabaline (Lyrica), valproate (Depakote), clonazepam (Klonopin)

Environmental Control

- Adjusting room temperature
- Changing wet/soiled sheets
- Repositioning patient
- Egg crate mattress
- Blankets
- Active ROM exercises (prevents contractures)
Complementary Therapies
- R.I.C.E. – Rest, Ice, Compression, Elevation
- Nerve blocks
- PT & OT
- Re-positioning (braces, splints, wedges)
- Cutaneous stimulation (superficial heat or cold, massage, pressure, vibration, accupressure)
- Neurostimulation (acupuncture)
- Chiropractic

Complementary Therapies
- Counseling: psychological, spiritual, peer group
- Alternative medicine: herbal, naturopathic
- Guided imagery (meditation, relaxation therapy)
- Aromatherapy
- Magnet therapy
- Music, art, drama therapy
- Biofeedback
- Hypnosis

Pain Treatment Pitfalls
- Under-estimation universal
- Under-dosing universal
- Remember the patient’s priorities
- Most things you can’t fix; pain you can
Narcotic Issues

Tolerance:
- Pharmacologic: need higher dose for consistent pain relief
- Apparent: abnormal pain sensitivity, or disease progression

Dependence:
- Abrupt cessation results in physiologic counter-reaction
- Beta-blockers, opioids

Addiction:
- Pervasive pattern of dysfunctional drug use
- Adverse consequences: loss of control, focus on procurement of drugs

Addiction

- Occurs when a patient’s psychological need for a drug exceeds physical need
- Behavior is then directed toward acquiring and using the drug for its psychic effect
Chronic Pain and Narcotics

- 15% of adults currently abuse alcohol/drugs
- 3-16% of chronic pain patients addicted

BACKDROP
- Often poorly managed (contract, function focus)
- Often under-treated (PCP tells patient to “go to the ED”)
- Non-medical use of opioids is 2nd most prevalent type of illicit drug use

“Drug-seeking Behavior”

- Clues
  - Repeated prescription loss
  - Multiple providers giving medication
  - Frequent ED visits
  - Requests for early refills
- Often simply a sign of inadequate analgesia, which is common (pseudo-addiction)

Tolerance and physical dependence have nothing to do with addiction

“Because 6 to 15% of the US population abuses drugs, the history of pain management is marked by the under-treatment of the other 85-94% of the population”

-Passik
Chronic Pain in the ED

- ED often deals with patients in whom chronic pain issues are not clear
  - You can’t tell
  - Giving an addict some meds, versus labeling someone with actual pain an addict and not treating

Guidelines
- Treat pain while patient in ED
- Give small outpatient supply
- Ensure close follow-up

Questions?

Thank you!


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