Management of Pain

Objectives:

1. Identify physiological and behavioral responses to pain.
2. Discuss methods of evaluating/assessing pain.
3. Differentiate between acute and chronic pain.
4. Identify pharmacological approaches to pain management.
5. Identify non-pharmacological approaches to pain management.

Please use the following outline, along with the readings, to fulfill the objectives of the course.

Readings:

Pain

Pain is produced by unpleasant, noxious stimuli
-heat
-extreme cold
-mechanical injury

Perception depends on the transmission of electrical
-impulses from the site of tissue injury in the
periphery to higher centers in the brain
-called nociception

Receptors
respond to noxious stimuli – producing electrical potentials in neurons
-called nociceptors

**High concentration of nociceptors**
- subcutaneous tissue
- periosteum
- deep fascia
- ligaments
- joint capsules
- cornea of eye

*Thus these areas can be very painful if injured.*

**Low concentration of nociceptors**
- skeletal muscle
- bone
- cartilage

*And these areas are not as painful if injured.*

**Higher brain centers for pain**

**Thalamus**
-increased hypothalamic activity
-increased sympathetic tone
- tachycardia
- increased cardiac output
- hypertension

**Parietal Lobe**
- pain discrimination
- localization & intensity

**Frontal Lobe**
- limbic system
- regulates emotional aspect of pain

**Components of Pain**

**Sensory-discriminative**
- recognition of the sensation as painful

**Affective-motivational**
- emotional and behavioral dimension of pain; structures in the Limbic system, reticular formation, and hypothalamus control these emotional and behavioral responses to pain

**Cognitive-evaluative**
- controlled by the cerebral cortex; involves responses to pain that are determined by memories of past experiences, learned behavior, conditioned response, and person's analysis and interpretation

**Pain Tolerance**
Point at which a person feels that the pain can no longer be tolerated

**Facilitating Mechanisms**
- those factors which lower pain threshold or pain perception
  - Progressive Sensitization
    progressive lowering of the nociceptive threshold by massive mobilization of endogenous pain-inducing substances such as histamine, serotonin, the kinins, some prostoglandins
Facilitation
- stimulus from preceding neuron that is normally not strong enough to produce a nerve impulse "primes" the succeeding neuron so that a second similar stimulus can evoke a nerve impulse - thought to be a component in chronic pain syndromes

Adaptation
- in response to a steady, constant stimulation, a receptor exhibits a decrease in sensitivity
- Pain receptors are non-adapting - they can maintain a rate of discharge over minutes, often hours

Inhibiting Mechanisms
- increase nociceptive threshold & pain perception
- endorphins
- endogenous opiates

Types of Pain Syndromes

Acute Pain Syndrome
- once the cause of pain is known, it serves no useful purpose

Post-operative Pain
- quality, quantity, and duration related to the specific surgery; skin and soft tissue are well supplied with free nerve endings - so incisional pain is experienced as sharp and well-localized; deeper tissues have fewer pain endings and have a decreased ability to localize pain

Referred Pain
- perhaps occurs when involved viscera and skin share a common dorsal root synapse

Chronic Pain Syndrome
- continuous or regularly appearing pain over 6 months or more

Intractable Pain
- severe, chronic pain that is incapacitating and resistant to therapeutic measures
Physiologic Responses to Pain

**Sympathetic Stimulation**
- Pain of low to moderate intensity
  - dilation of bronchial tubules
  - increased respiratory rate
  - increased heart rate
  - peripheral vasoconstriction
  - increased blood glucose
  - diaphoresis
  - increased muscle tension
  - dilation of pupils
  - decreased gastric motility

**Parasympathetic Stimulation**
- severe to deep pain
  - pallor
  - muscle tension
  - decreased heart rate and blood pressure
  - rapid, irregular breathing
  - nausea and vomiting
  - weakness, exhaustion

Pain Management Techniques

**Dermal Stimulation**
- massage
- pressure
- vibration
- heat
- cold

**Transcutaneous Nerve Stimulation**

**Nerve Blocks**

**Medications**
- *Narcotic Agonist* (Narcotic Analgesics)
  *bind to the opiate-receptor site in the CNS to block pain transmission*
  *tends to alter perception of pain experience and behavioral response to*
pain
*tolerance and physical dependence can occur
*Common side effects
 - respiratory depression
 - nausea and vomiting
 - ileus
 - urinary retention

*Note: Demerol has some significant side effects, caused by the accumulation of the metabolite, nor-meperidine, and should not be used in amounts of over 600mg. in 24 hours. It takes the metabolite about 30 hours to clear from the system and has caused seizure activity in patients. Morphine does not have any residual accumulation of the drug or metabolite and is considered not to have any ceiling dosing; as the patient's tolerance to the drug increases, the dose can be increased and it is the drug of choice for Cancer patients.

  - Agonist-Antagonists (Stadol, Nubain, Talwin)
    *when given in combination with other narcotic agents, there can be severe symptoms of acute withdrawal, anxiety, hallucinations, or loss of analgesia

  - NSAIDS (non-steroidal anti-inflammatory drugs)
    *tend to act on the peripheral sites to reduce pain by prostaglandin inhibition
    *useful with mild to moderate pain
    *no drug or physical tolerance, no CNS depression, often used in combination with narcotics due to different sites of action

  - Serotonin Blockers
    *alter sensory-discriminative component of pain (Elavil)

  Narcotic reversal agent: Naloxone (Narcan)
    - used to reverse respiratory depression caused by over medication with narcotics

Techniques to alter Affective-Motivational & Cognitive – Evaluative Components of Pain

  Cognitive Strategies
    - distraction
-imagery
-hypnosis

Behavioral Approaches
-relaxation
-biofeedback

Pain Management Programs

Pain Assessment

PAIN IS WHAT THE PERSON EXPERIENCING IT SAYS IT IS, WHENEVER HE SAYS IT DOES

P = place
A= amount
I= interventions
N= neutralizers

Scales
-1-10
-Faces

Post-op Protocol

Round the Clock Dosing
-based on assessment, medicate with the drugs ordered PRN by the physician often enough to keep the patient comfortable - You do not have to wait for them to become painful or for them to ask for the medication.
-Research shows that 80% of the patients hospitalized report severe, unrelieved pain

Cancer Pain

Long Acting Narcotics given on a routine basis with short acting opiates given for "break-through" pain
Administration methods:
- oral route preferred – most convenient and cost effective
- rectal or transdermal tried if cannot take oral
- nasal
- IV, subcutaneous
- Intraspinal
- Intraventricular
- PCA’s/CADD pumps

Side Effects:

**CONSTIPATION!**