Pain – according to International Association for the Study of Pain (IASP), it is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage

- Types: Neuropathic and Nociceptive
  - Nociceptive (such as sprain ankle): pain arises from actual or threatened damage to non-neural tissue and is due to activation of nociceptors
    - Physiology – nociceptor (develop from neural crest stem cell) sensory neuron that responds to damaging stimuli and sends information up to central nervous system. It has two terminal nerve endings:
      1. Small diameter, unmyelinated nerves that conduct nerve impulse slowly (2 m/sec) called C fibers which responds to thermal, mechanical, and chemical stimuli.
      2. Large diameter, lightly myelinated nerves that conduct nerve impulses faster (20 m/sec) called Aδ fibers which responds to mechanical and mechano-thermal stimuli.
  - Neuropathic (such as in Diabetics): pain caused by a lesion or disease of somatosensory nervous system
    - Physiology – abnormalities due to peripheral or central nervous system; spontaneous firing of damaged nerve fibers, processes that result in oversensitivity of afferent pathways due to denervation, or through reorganization of higher processing mechanisms

Pain worse at night – no clear understanding

Potential Theories:
  - 2225 Caucasian women ≥ 65 years with hip pain
  - Wake minutes in the first 2 hours of sleep in women with and without hip pain did not differ
  - Disruptions to sleep were compounded by each additional hour in women with hip pain
  - Pain medications wear off during the night due to the time lapse between administering pain medications and bed time, so medications more potent at night and wear hour as night progresses
  - Pain while lying or at night in bed may be due to inflammation of the joints when pressure is placed on the joint and subsequently increases the intensity
  - "Sundowning" – set of neuropsychiatric symptoms occurring in elderly patients at time of night
  - Up to 66% elderly being reported, especially in Alzheimer patients
  - Mood goes down at night and become abnormally demanding and as a result their pain worsens
  - Epinephrine and norepinephrine decreases during REM sleep suggests that a suppression of sympathetic nervous system activity prevails during this period
  - Concentrations gradually increases during wake hours of morning
  - Since epinephrine (adrenaline) decreases at night, the pain threshold decreases and patient is more sensitive to pain, hence they become hyperalgesic

Other theories:
- Lack of surrounding stimulus and distractions makes patient more concentrations of the pain during the night
- Nerve Damage Cycle
  - Walking (avg: 10,000 steps/day) leads to compression of nerve and its terminal branches and excessive stress leads to further damage; hence the nerves might become numb; at night when we are not traumatizing the nerves, they take “vengeance” meaning they become active and cause pain