**Chronic Disease Assignment:**

**Opioid Dependency and Abuse**

V00837207

Health Information Science, University of Victoria

HINF 280: Biomedical Fundamentals

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**Introduction**

* What is Opioid Dependency and Abuse
  + Type of disorder
    - Neurobiological disorder (Kosten, 2002)
    - “Persistent use of opioids despite adverse consequences of its use.” (Blanco, 2019)
  + Number of cases in Canada
    - (Carrière, 2022)
      * 2018
      * 12.7% of Canadians (roughly 3.7 million) aged 15 years and older reported use of opioid pain relievers in the previous 12 months
        + 9.7% of these (roughly 351,000) engaged in problematic use.
  + Fatality rate
    - * 20 deaths per day
  + Diagnosis
    - (American Psychiatric Association, 2013)
      * Severity:
        + Mild: 2-3 symptoms
        + Moderate: 4-5 symptoms
        + Sever: 6 or more symptoms
      * The patient:
        + Takes increasing amount of opioids over more time than intended.
        + Is unable to cut down or control opioid use.
        + Spends considerable time obtaining, using, and recovering from opioids.
        + Experiences strong desire to use opioids.
        + Fails obligations at work, home, or school due to opioid use.
        + Uses opioids in physically hazardous situations.
        + Continues use despite knowledge of having physical or psychological problems due to opioids.
        + Exhibits tolerance
        + Exhibits withdrawal
  + Timeline
    - (Health Canada, 2019), (Public Health Agency of Canada, 2022)
      * Increase from 11 deaths per day in 2017 to 20 deaths per day in 2022
* Risk factors
  + Demographics
    - (Hatt, 2022)
      * Age 30 to 39 years
      * 76% of deaths due to overdose in 2021 were male
      * 5.6 times higher rates among First Nations individuals as opposed to non-indigenous

**Pathophysiology**

* Root cause
  + Neurological process
    - Chronic Pain (Stein, 2016)
    - Bloodstream to the brain (Kosten, 2002)
      * Mu opioid receptors (specialized proteins) on opiate-sensitive neurons (brain cells)
        + Triggers the same biochemical brain processes that reward people with feelings of pleasure when engaging in basic life functions, such as eating and sex.
        + Opioids are prescribed to relieve pain, but when opioids activate these reward processes in the absence of significant pain, they can motivate repeated use of the drug simply for pleasure
      * Brain circuits activated by opioids is the Mesolimbic (midbrain) Reward System.
        + Generates signals in ventral tegmental area (VTA) that result in the release of dopamine (DA) in the nucleus accumbens (NAc). Results in feelings of pleasure

Other areas of the brain create a lasting record of memory that associates these good feelings with the circumstances and environment in which they occur.

These memories, conditioned associations, lead to cravings for the drug when the abuser re-encounters those persons, places, or things and drive abusers to seek out more drugs in spite of many obstacles.

* + - * + (alternative wording)

Drugs stimulate mu opioid receptors in the brain, cells in Ventral Tegmental Area (VTA) produce dopamine and release it into the Nucleus Accumbens (NAc), giving rise to feelings of pleasure. Feedback from the Prefrontal Cortex (PFC) to the VTA helps us overcome drivers to obtain pleasure through actions that may be unsafe or unwise, but this feedback appears to be compromised in individuals who become addicted. The locus ceruleus (LC) is an area that plays an important role in drug dependence.

* + What does a healthy system look like?
    - Feedback from the Prefrontal Cortex (PFC) to the VTA helps us overcome drivers to obtain pleasure through actions that may be unsafe or unwise, but this feedback appears to be compromised in individuals who become addicted.
* Disease and process: what is the physiopathology of the disease?
  + Physical examination and tests:
    - What is normal & what is the variation?
    - Chart levels
      * What do these findings indicate?
      * How did the disease cause this change?
    - What physiologic and physiopathologic mechanisms were involved?

**Symptoms and Progression**

* How do you get it?
  + Contraction
    - (Kosten, 2002)
      * “Brain abnormalities from chronic use of heroin, oxycodone, and other morphine-derived drugs are causes of dependence”
        + The need to keep taking drugs to avoid withdrawal syndrome
      * social context of initial opiate use
  + Early warning signs
    - Intense drug craving and compulsion to use
    - Stress, withdrawal syndrome
    - Intense feelings of pleasure
  + How does it progress (symptoms)?
    - The compulsion to use opiods builds over time to extend beyond a simple drive for pleasure. Increased compulsion is related to tolerance and dependence.
    - Opioid Withdrawal synrome
  + What is the cause of death?
* What long-term damage & symptoms may there be after recovery?
  + Symptoms
    - Cravings that lead to relapse months or years after individual is no longer opioid dependant (Kosten, 2002)
  + Survival rates
  + Life expectancy
  + Homelessness

**Assessment and treatment**

* Early diagnosis & predictive factors
  + Standard testing for opioids
    - Different methods
      * Methods of action for tests
      * Rates of false positives and negatives
* What are the most common forms of intervention and treatment?
  + Critical moments of intervention
  + Interventions for neonates
  + Cold-turkey
    - Chances & effectiveness
    - Barriers to treatment
  + Rehab
    - Chances & effectiveness
    - Barriers to treatment
  + Methadone
    - Chances & effectiveness
    - Barriers to treatment
  + Must be used in conjunction to psychosocial treatment
    - LAAM (Kosten, 2002)
    - Buprenorphine (Kosten, 2002)
    - Naltrexone (Kosten, 2002)
* What are the chances of recovery?
  + Most effective treatment (or multiple)
    - Method
    - Cost
    - Timeline
    - Chance of recovery

**Patient and their Environment**

* + What is the daily life of a patient like?
    - Untreated patient
      * Demographics
      * Situation & environment
    - Symptom management
    - If left untreated
      * How does the patient change from development to death?
  + How does the patient’s role in society change?
    - What does the patient lose with the disease?
      * How does the loss affect the patient?
    - How does the family and support systems get affected?
    - What kinds of strategies can a family develop to cope?
      * What parents, friends, and family can do?
* What can be done for early diagnosis?
  + Critical stage
    - What do the health care providers care about?
      * How do they interact with the patient?
      * Recommended Options for treatment
  + Recommended treatment and prevention
    - What is the experience of going through treatment?
    - How can they manage ongoing effects?
      * physiological
      * Depression
        + Damage to synapses
      * Cravings, etc
      * Risk of relapse

**Conclusion**

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