Concepts of Pain Management
Module II
Stevan Cordas DO MPH
Clinical Associate Professor
TCOM/UNTHSC
• In recent years physicians have come to look at chronic pain differently than acute pain and finally understand that all pain is not the same. In module 1, I explained that there is nociceptor pain, neuropathic pain and idiopathic pain, some of which is psychogenic pain. Many mediators are involved with both somatic and visceral types of nociceptor pain.

A Change in Perspective
Opioids

- Opioid medications were once withheld from suffering cancer patients because of fear of addiction, exaggerated concern about side effects, or, in some cases, doubt about the morality of treatment.
- Today pain is regarded as a symptom that must and should be adequately treated. Especially for a patient with malignancy, appropriate control of pain is mandatory.
Times Are Changing

• We are going through a transitional period in our understanding of pain management. While some physicians still have the attitude that “a little pain won’t kill you” and “live with your pain because that is all we can do”, there is evidence that pain can accelerate tissue damage and death.
Times Are Changing

• All state medical boards have set guidelines recognizing that not only cancer but chronic painful nonmalignant diseases require long term analgesic support. It is acknowledged that the best analgesics work on opioid receptors. The current trend is to supply adequate relief of pain in a managed situation.
Consensus

• The US department of health and human services has published clinical practice guidelines for the management of acute and chronic pain. This has been endorsed by the American academy of pain medicine and the American pain society.
Setting Goals

• It is important that the physician and patient collaborate in developing the goals to guide treatment and the means to assess progress. In many cases, there is no realistic hope of cure, and patients must come to terms with the fact that treatment will probably continue for a long time.
Patient’s Bill Of Rights

1. The right to information about pain and pain relief tools (patient education);
2. The right to expect clinicians committed to prevention and treatment of pain (staff education);
3. The right to prompt response to reports of pain (ongoing assessment);
4. The right to clinicians who believe patient reports of pain (validation);
5. The right to contemporary pain management protocols, equipment personnel and medication (capability/ policies and procedures/ outcome measurement).
Opioids

- Opioid medications allow us to treat chronic pain as aggressively as we would any pathogen, but we must first overcome ingrained misconceptions about patients' motivations for seeking treatment and about the addictive properties of the drugs. With controlled use, the newer sustained-release formulations give real hope for safe and sustained pain relief.
Goals

• The goal in chronic pain management is to return the patient to as close to his or her premorbid activities of daily living as possible.
• There are many psychological issues compromising such patients and obtaining adequate psychological assistance is as important as supplying the proper medication.
Responsibility

- One of the most important ground rules for such a trial, as well as for subsequent treatment, is that a single physician must take full responsibility for establishing the protocol and writing all prescriptions.
- When you prescribe narcotics ethical and moral decisions immediately come into play.
- It is generally agreed that the legitimate chronic pain patient rarely has a problem with abusive addiction.
Consent

- Treatment plans should be presented in lay terms that acknowledge the risks, benefits, alternatives, expectations, complications and limitations of proposed care, to the best of your knowledge. All questions should be addressed to mutual satisfaction. At this point, written consent for treatment should be obtained before proceeding with anticipated care.
MAA

• A separate, complimentary medication access agreement (MAA) should be tendered if long-term opiate therapy (LTOT) is part of the treatment plan. The details and consequences of non-compliance should be understood by the patient, appropriate family members or caregivers, before the opiate access the provider and patient activate MAAs.
Ethics

• Benefit (beneficence) of treatment must always outweigh the burden (malevolence) in treatment of chronic pain patients. Their inherent desperation requires an ethical analysis of the short and long-term benefit when measured against the burden of treatment…in financial, clinical, personal, moral and social terms.
What Generally Happens

- Opiate-naive patients are usually started with a short half-life drug (e.g., hydrocodone, hydromorphone, oxycodone, codeine, or morphine). Because of their rapid clearance, these drugs must be taken every three to four hours. For severe pain, the usual starting dose is 10 to 15 mg of hydrocodone or oxycodone, 2 to 4 mg of hydromorphone, 30 to 60 mg of codeine, or 15 to 30 mg of morphine. These are provided usually "as-needed" with intermittent dosing,
What Generally Happens

- These drugs have a short half life and the prn method does not usually provide sufficient coverage. As a result, the patient is subjected to periods of anxiety and pain that are not only unnecessary but also contribute to the patient's distrust of the physician's instructions.
WHO Pain Ladder

• A simple, widely used, and effective approach to pharmacotherapy for cancer and other pain has been devised by the world health organization (WHO). The five essential concepts in the WHO approach to drug therapy of pain are:
  • By the mouth.
  • By the clock.
  • By the ladder.
  • For the individual.
  • With attention to detail.
WHO Pain Ladder

• It has been shown to be effective in relieving pain for approximately 90 percent of patients with cancer and over 75 percent of cancer patients who are terminally ill. Called the WHO pain ladder, this approach incorporates the concept of an analgesic ladder, a rational, stepwise approach to pain management.
WHO Pain Ladder

• The first step in the ladder is the use of acetaminophen, aspirin, or another NSAID for mild to moderate pain. Adjuvant drugs to enhance analgesic efficacy, treat concurrent symptoms that exacerbate pain, and provide independent analgesic activity for specific types of pain may be used at any step.
WHO Pain Ladder

- When pain persists or increases, an opioid such as codeine or hydrocodone should be added (not substituted) to the NSAID. Opioids at this step are often administered in fixed dose combinations with acetaminophen or aspirin, because this combination provides additive analgesia. Fixed-combination products may be limited by the content of acetaminophen or NSAID, which may produce dose-related toxicity.
WHO Pain Ladder

- Pain that is persistent, or moderate to severe at the outset, should be treated by increasing opioid potency or using higher dosages. Drugs such as codeine or hydrocodone are replaced with the more potent opioids (usually morphine, hydromorphone, methadone, fentanyl, or levorphanol),
Long Acting Opioids

• In the patient with response to short acting opioids who have continuous pain, long acting opioids are now favored by pain specialists. Oxycodone is available in an eight- to 12-hr formulation, morphine in both eight- to 12- and 24-hr formulations, and fentanyl in a 72-hr controlled-release skin patch.
Long Acting Opioids

• Due to their steady plasma levels, there is less sedation, less side effects and withdrawal manifestations than with shorter acting products. With careful titration sleep patterns are more normal and the pain can be better managed.

• The compliance is better and they are harder to convert into “street drugs”.
Morphine

• Of the sustained-release opioids, morphine is considered by many to be the gold standard, probably because it was the first sustained-release drug that allowed adequate dosing. The designation is more historic than clinically significant, however. In comparison to other opioids, morphine generally causes more nausea and pruritus.
Morphine

- It also has the disadvantage of being relatively hydrophilic, which delays its transport across the blood-brain barrier. In addition, morphine has several active metabolites whose levels can vary with renal or hepatic function. The drug apparently induces its own metabolism, which makes it difficult to maintain a steady serum level.
Fentanyl

- First synthesized in Belgium in the late 1950s, fentanyl, with an analgesic potency of about 80 times that of morphine, was introduced into medical practice in the 1960s as an intravenous anesthetic under the trade name of Sublimaze® because fentanyl does not traverse the gastrointestinal tract, it causes less constipation than other sustained-release opioids and does not induce liver metabolism through first-pass effects. It also does not appear to have active metabolites.
Fentanyl and Analogs

• Thereafter; Two other fentanyl analogues were introduced; alfentanil (Alfenta®), an ultra-short (5-10 minutes) acting analgesic, and sufentanil (Sufenta®), an exceptionally potent analgesic (5 to 10 times more potent than fentanyl) for use in heart surgery. Today, fentanyls are extensively used for anesthesia and analgesia.
Fentanyl

- Duragesic®, for example, is a fentanyl transdermal patch used in chronic pain management, and Actiq® is a solid formulation of fentanyl citrate on a stick that dissolves slowly in the mouth for transmucosal absorption. Actiq® is intended for opiate-tolerant individuals and is effective in treating breakthrough pain in cancer patients.
"Perc-o-pop's" or "lollipop's" are street terms for Actiq®, (raspberry-flavored lozenge attached to a handle) a form of fentanyl.
Fentanyl

- The biological effects of the fentanyls are indistinguishable from those of heroin, with the exception that the fentanyls may be hundreds of times more potent. Fentanyls are most commonly abused by intravenous administration, but like heroin, they may also be smoked or snorted. Illicit use is rising but the use as a legitimate analgesic is increasing.
Oxycodone

- Oxycodone is sometimes thought of as a weak opioid, probably because it has been formulated in low-dose pills. Like fentanyl, however, it is more potent than morphine and is associated with fewer adverse effects. A sustained-release formulation, introduced about five years ago, has quickly become the most popular opioid for treatment of chronic noncancer pain in the United States.
Oxycodone

• Oxycodone is actually a prodrug. The active metabolite, oxymorphone, is produced in the liver by the enzymatic activity of cytochrome P450 2D6.

• Approximately 10% of the population have genetically low levels of P450 2D6 and thus require higher than usual doses of the prodrug to obtain pain relief. Less than optimal effects may also be expected in patients taking neuroleptics, quinine, or selective serotonin reuptake inhibitors such as fluoxetine that inhibit P450 2D6 activity.
Oxycodone Abuse

• Oxycodone abuse and diversion is of great concern to U.S. Health officials and law enforcement groups. Abusers can easily extract the full dose of oxycodone from currently marketed time-release preparations, resulting in an immediate and large spike in oxycodone blood levels. This provides abusers with a fast and powerful morphine-like high. Remoxy, another long acting oxycodone is designed to defeat this abuse and is undergoing US trials.
Oxycodone

• Within legitimate medical practice, Oxycontin is an effective long-acting oral opioid product, very similar to Oramorph ® SR and MS Contin ®. what distinguishes Oxycodone CR from these other products is that it is the only long-acting opioid to be marketed for use as a treatment for post-operative pain, when moderate to severe pain is expected to persist for an extended period of time.
Oxycodone

- The product information for Oxycontin indicates a dose conversion ratio from morphine at: 30 mg oral morphine = 15 mg Oxycontin (2:1).
- Oxycontin is more expensive than other long-acting oral opioids; The veteran affairs pharmacy benefits management Oxycontin clinical guideline indicates that Oxycontin is 6.5-10 times more expensive than controlled release morphine products.
Hydromorphone

- The clinical trials of sustained-release hydromorphone indicate that it has analgesic effects similar to those of morphine but that it has fewer side effects. None of hydromorphone's metabolites are pharmacologically active, which will make this drug particularly useful for patients with renal failure.
Methadone and Levorphanol

• By virtue of their intrinsically long half-lives, methadone and levorphanol are also useful for treatment of chronic pain. Both have significant nonopioid effects that may contribute to their utility as pain relievers, especially for neuropathic pain. Methadone appears to be a potent n-methyl-d-aspartate (NMDA)-receptor blocker. Levorphanol also has some NMDA inhibitory effect and may, in addition, inhibit reuptake of serotonin and noradrenalin.
Methadone and Levorphanol

• These drugs are generally reserved for second-line treatment, however, because they are difficult to titrate and have delayed-onset side effects. To control pain effectively, methadone must be administered at intervals (6-8 hr) shorter than its metabolic half-life (15-90 hr). As serum levels of the drug increase, so does the risk of toxicity, primarily sedation.
Rescue Medication

- It is often required to prescribe a short acting analgesic for breakthrough pain. This should be a dose about 15% of the total 24 hour daily dose and may be required every 3 or 4 hours.
PCA

• Another very effective method of parenteral pain medication administration entails the use of patient controlled anesthesia (PCA). The effectiveness of PCA is based on its individualization, a primary component of pain management. With PCA the patient receives either intravenous or subcutaneous medication when he presses a button on the PCA machine to which he is attached.
PCA

• The nurse, following prescriptive order, presets the medication, dosage, and timing before the patient is attached to the machine. The machine can be set to include a lockout time. This is when the patient can push the button to deliver medication but no medicine is released until a certain time elapses, thus preventing overdose.
### Oral dose equal to 10 mg Morphine IM in mg

<table>
<thead>
<tr>
<th>Drug</th>
<th>Equivalent Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codeine</td>
<td>200 mg</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>40 mg</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>7.5 mg</td>
</tr>
<tr>
<td>Levorphanol</td>
<td>4 mg</td>
</tr>
<tr>
<td>Meperidine</td>
<td>300 mg</td>
</tr>
<tr>
<td>Methadone</td>
<td>20 mg</td>
</tr>
<tr>
<td>Morphine</td>
<td>60 mg</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>20 mg</td>
</tr>
<tr>
<td>Transdermal Fentanyl</td>
<td>25 μgms</td>
</tr>
</tbody>
</table>
Supportive Agents

• From a traditional point of view the use of ancillary medication to assist the analgesics are often required. These include laxatives for chronic constipation, soporifics, antidepressants, muscle relaxants, anxiolytics, antinausea medication such metoclopramide, hydroxyzine, promethazine or prochlorperazine, NSAI agents, GABA agonists and anticonvulsants
Summary

• Earlier intervention is suggested in severe chronic pain disorders.
• Use long acting opioids for less side effects and better results.
• Use a contract and monitor goals and drug use.
• The physician is still responsible for appropriate prescribing habits.