

Pain Medication

Non-narcotic analgesics and opioid analgesics are common drugs used to treat pain. It is important to know the basic mechanisms of some common drugs in these categories:

NSAIDs: These have been mentioned previously to be COX-1 and COX-2 inhibitors. They reduce the production of eicosanoids (prostaglandins and leukotrienes). Since some eicosanoids can contribute to increased inflammation and nociceptor stimulation, the decreased production of these products can help reduce pain and discomfort.

Acetaminophen: It is not well known how acetaminophen acts to decrease pain. It does not have a great effect on the COX enzymes of the body, though it seems to affect COX enzymes of the brain. It is postulated that there may be a type III COX enzyme in the brain that acetaminophen can selectively block. This may explain why it can affect fever and pain but does not work so well as an anti-inflammatory.

Opioids: These are powerful analgesics that work by stimulating the opioid receptors of the midbrain, medulla, and spinal cord to inhibit ascending pain signals to the brain.

Local anesthetics: Block voltage-gated Na^+ channels to prevent Na^+ influx and depolarization of neurons.

Glucocorticoids: These are powerful anti-inflammatory drugs. Decreasing inflammation can help pain and discomfort as the inflammatory cytokines that contribute to the release of histamine, bradykinin, and other inflammatory chemicals will be decreased.

Antidepressants: These drugs are sometimes used to treat the emotional consequences of pain by adjusting levels of neurotransmitters in the brain. These drugs can increase the availability of the signals for “well-being” which can help a person cope with pain. Tricyclic medications for depression and anxiety seem to be particularly useful for neuropathic pain.

Anticonvulsants: These drugs are typically used to treat seizure disorders. However, some of these medications appear to be helpful in treating some cases of chronic pain. The mechanism of action for this effect is not completely known.



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