



Pharmacologic and Interventional Strategies for Effective Acute Pain Control

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DESCRIPTION

Acute pain is a sudden, often severe pain that typically arises from tissue injury, surgery, trauma, or illness. Unlike chronic pain, which persists over months, acute pain serves as an important protective mechanism, signaling harm and prompting behavioral responses to prevent further injury. While its transient nature may suggest simplicity in treatment, effective management of acute pain is essential, as inadequate control can lead to delayed recovery, increased morbidity, and, in some cases, the transition to chronic pain. Modern pain medicine emphasizes timely, evidence-based interventions that balance efficacy with patient safety.

The first step in managing acute pain is accurate assessment. Pain is inherently subjective, so standardized tools such as the Visual Analog Scale (VAS), Numeric Rating Scale (NRS), and Faces Pain Scale are widely used to quantify intensity. Comprehensive assessment also includes evaluating the pain's etiology, duration, and impact on functional ability. Additionally, clinicians must consider patient-specific factors such as age, comorbidities, and previous analgesic response to tailor appropriate interventions.

Pharmacologic therapy remains the cornerstone of acute pain management. Non-opioid analgesics, including acetaminophen and Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), are first-line options for mild to moderate pain and are frequently combined in a multimodal approach to improve efficacy. Opioids may be indicated for severe acute pain, such as post-surgical pain or trauma, but their use requires careful monitoring to minimize the risk of adverse effects, dependence, or misuse. Adjuvant agents, including muscle relaxants or anticonvulsants, can complement analgesics in cases where pain is associated with muscle spasm or nerve injury.

Non-pharmacologic interventions also play a vital role. Physical modalities such as ice, heat, immobilization, and Transcutaneous Electrical Nerve Stimulation (TENS) can provide symptomatic relief, particularly when combined with pharmacologic therapy. Early mobilization and physical therapy

may accelerate recovery by maintaining range of motion and preventing deconditioning. Patient education on activity modification and gradual return to normal function further enhances outcomes and reduces anxiety related to pain.

Interventional procedures are increasingly utilized in acute pain settings, particularly for post-operative or trauma-related pain. Nerve blocks, epidural analgesia, and regional anesthesia techniques allow targeted pain relief while reducing systemic opioid exposure. These interventions not only improve patient comfort but also facilitate faster recovery, earlier mobilization, and shorter hospital stays.

Acute pain management must also account for special populations. Pediatric patients require age-appropriate assessment tools and careful dosing to avoid toxicity, whereas older adults may have altered pharmacokinetics or increased susceptibility to drug-related complications. Additionally, patients with a history of chronic pain, opioid use, or mental health conditions may require individualized treatment plans to achieve effective analgesia while minimizing risk.

Timely and effective acute pain management is not solely about immediate comfort. Poorly controlled acute pain can lead to complications such as impaired wound healing, sleep disturbances, emotional distress, and even chronic pain development. Multimodal strategies that combine pharmacologic, interventional, and rehabilitative approaches provide the most comprehensive care and optimize patient recovery.

In conclusion, acute pain management is an important component of modern clinical practice, requiring prompt, individualized, and evidence-based interventions. By combining pharmacologic therapies, non-pharmacologic techniques, and interventional procedures, clinicians can effectively reduce pain intensity, prevent complications, and support functional recovery. Recognizing the potential consequences of inadequately treated acute pain and adopting a patient-centered, multidisciplinary approach remains essential for improving both short-term outcomes and long-term health trajectories.

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