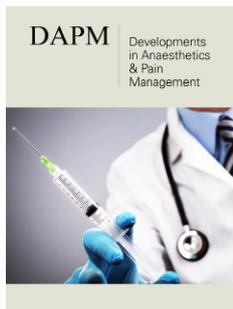


# Multimodal Analgesia-The Need of the Hour

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## Introduction

As per the IASP definition, pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage [1]. Modern day anesthesia, with focus on fast track techniques and ERAS, demands equally good perioperative analgesia with minimum possible side effects. There has been a shift towards opioid-sparing analgesia in the past decade. This along with recent advances in the field of analgesia has led to the propagation of administration of multiple pharmacological and non-pharmacological agents for pain management.

## Concept of Multimodal Analgesia

The pathophysiology of pain is not new to the physicians. The modern-day knowledge and improvisation of older techniques is the result of continuing research and understanding of the interactions at various levels of pain transmission and propagation. Multiple receptors are present throughout the pain pathway. At one point, there could be mu-receptors, NMDA receptors, alpha-2 receptors either individually existing or in a combination. Blockade of a single receptor cannot provide a fool-proof analgesic effect. However, targeting multiple receptors not only provides a better quality of analgesia but also lowers the side-effect profile of individual analgesic agents. Multi-modal analgesia involves the use of additive or synergistic combinations of analgesics to achieve clinically required analgesia while minimizing significant side effects associated with a higher dose of a single equianalgesic medication such as an opioid analgesic [2].

## Range of Pharmacological Agents

Various pharmacological agents with differing mechanisms of action target pain pathways. Some of these agents include alpha-2 agonists, NMDA receptor antagonists, dexamethasone, NSAIDs, gabapentinoids and acetaminophen. Alpha-2 agonists have been shown to have opioid-sparing effects but have a side effect profile of their own [3]. Hypotension and bradycardia should be considered seriously while administering these agents. Ketamine has been proven to be a wonderful analgesic agent, but tachycardia and hypertension are the limiting factors for its use. Dexamethasone when administered prior to initial insult in an appropriate dosage acts not only as a wonderful pre-emptive analgesic but also anti-emetic. Paracetamol [4] is widely used in the perioperative period as a safe analgesic agent.

NSAIDs like ketorolac and diclofenac are commonly used but patients with deranged renal profile and asthma are limiting factors for their use. Addition of magnesium sulphate [5], lidocaine and tramadol to the analgesic regime offers a superior analgesia. Regional anaesthesia techniques offer a safe alternative across a range of patient populations ranging from minimal to high-risk cases. Administration of multi-modal analgesia along with regional anaesthesia not only improves the quality of analgesia but also decreases the breakthrough pain and opioid requirement.

## Benefits of Multimodal Analgesia

The use of a combination of pharmacological and non-pharmacological agents for perioperative analgesia not only provides a better quality of analgesia but also decreases the opioid requirement and related side effects. The degree of patient satisfaction obtained

through early mobilization and hence earlier hospital discharge is attributed to a great deal to improved analgesia amongst other factors. Utilizing the understanding of mechanism of action of multiple analgesics and a judicious combination of multiple agents can not only provide a better quality of analgesia but decrease the side effects as well. Multimodal analgesia covering multiple facets of the pathophysiology of pain is, therefore, the need of the hour.

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