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## Clinical update on the pharmacology, efficacy and safety of transdermal buprenorphine.

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### Abstract

Buprenorphine was not used widely in clinical practice over many years, mainly due to analgesic potency and clinical safety concerns based on misinterpreted animal data. Contrary to previous concerns, however, no analgesic ceiling effect and no antagonism of combined pure mu-opioid receptor agonists is seen within the therapeutic dose range. In recent studies, buprenorphine could be effectively and safely combined with full mu-agonists, and switching between buprenorphine and another opioid provided comparable pain relief based on equianalgesic doses. Moreover, buprenorphine exerts an antihyperalgesic effect, which is due -- at least in part -- to antagonistic activity at kappa-opioid receptors. Buprenorphine pharmacokinetics are not altered by advanced age or renal dysfunction. In addition, the risk of respiratory depression is lower than with other opioids including morphine, hydromorphone, methadone and fentanyl. Unlike morphine and fentanyl, there is no immunosuppressive activity with buprenorphine at therapeutic analgesic doses. Transdermal buprenorphine has significantly improved the clinical use of the drug, providing continuous buprenorphine release for up to 96 h. In clinical trials, patients receiving transdermal buprenorphine experienced significantly greater pain relief, better sleep, and a reduced need for rescue therapy, compared to placebo. Large-scale post-marketing studies have confirmed the effectiveness of transdermal buprenorphine in treating moderate-to-severe cancer and non-cancer pain including neuropathic syndromes. Finally, the comparably low incidence of CNS adverse events and constipation, and the possibility of use in severe renal dysfunction without a need for dose adjustment make buprenorphine well suited for chronic pain management in at-risk patients, such as diabetics, elderly or renally impaired individuals including those requiring haemodialysis.

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