

## **Buprenorphine: A Novel Antidote in Treatment of Methadone Overdose in Opioid-Dependent Patients**

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**BACKGROUND AND OBJECTIVE:** Naloxone is the drug of choice in opioid-induced respiratory depression although it may cause severe or life-threatening complications in dependent patients. Buprenorphine may be a good substitute as it displaces full mu-opioid receptor agonists while preventing respiratory depression with its partial agonist activity. We aimed to compare the efficacy/safety of buprenorphine and naloxone in reversing respiratory depression in methadone-poisoned opioid-dependent patients.

**METHODS:** Overdosed patients with respiratory depression were randomized to receive standard treatment (naloxone; group A), buprenorphine (10 $\mu$ g/kg; group B), or buprenorphine (15 $\mu$ g/kg; group C). The primary (respiratory depression) and secondary outcomes (acute opioid withdrawal, need for sedation, intubation, recurrent apnea, ICU admission, length of hospital stay, and mortality) were compared among the three groups.

**RESULTS:** Dramatic response was more common in buprenorphine group. Risk of withdrawal syndrome, need for sedatives due to withdrawal, intubation, development of ARDS, persistent respiratory acidosis, prolonged hospital stay, and death was significantly less in buprenorphine groups. Buprenorphine increased the oxygen saturation by a median of 20%. Group B had a lower risk of acute opioid withdrawal but a higher risk of recurrent apnea compared to group C. **Conclusions:** Buprenorphine seems to be a safe and effective substitute for naloxone in methadone-overdosed opioid-dependent patients. Further studies are warranted to find the best dose of buprenorphine to both reverse the respiratory depression and prevent withdrawal.