New Ways to Approach Pain Management in the ED

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Pain is the number one patient complaint in the emergency department (ED) [Todd KH et al. *J Pain* 2007]. James Ducharme, MD, McMaster University, Hamilton, Ontario, Canada, reviewed current recommendations for alleviating patient pain in the ED and improving patients' overall satisfaction. He specifically addressed the pros and cons of low-dose ketamine, nerve blocks, and patient-controlled analgesia (PCA).

Adequate pain relief provides more than just immediate benefits. Relief of acute pain improves quality of life after discharge and reduces the likelihood of developing chronic pain [Daoust R et al. *Acad Emerg Med.* 2013]. Adequate pain relief also prevents cognitive deterioration in elderly patients, decreases the risk of posttraumatic stress disorder, and, among methadone addicts, reduces the risk of returning to drug abuse. Uncontrolled pain, on the other hand, has been shown to inhibit the immune response and increase the risk of sepsis in critically ill patients.

Opioids are the most effective drugs for severe pain, but they all carry potential for misuse. A study of opioid misuse among discharged ED patients defined misusers as patients who self-escalated their dose, obtained additional opioids without a prescription, or used opioids for a reason other than pain control [Beaudoin FL et al. *Am J Emerg Med.* 2014]. The study found that 42% of patients misused opioids at either 3 or 30 days. Most of the misuse was because of self-escalation. Key points from the American College of Emergency Physicians clinical policy on opioid prescribing [Cantrill SV et al. *Ann Emerg Med.* 2012] are shown in Table 1.

Dr Ducharme recommended that emergency physicians who are concerned about opioid misuse discuss their concern directly with the patient, using the Opioid Risk Tool. Physicians who remain uncomfortable prescribing opioids should offer alternatives, such as nonopioid analgesics or nerve blocks.

Low-dose ketamine has emerged as a valuable tool for management of acute pain in a variety of settings. Table 2 summarizes studies of low-dose ketamine for pain.

The use of nerve blocks avoids the systemic effects of pain medication and, when used early after an injury, can prevent wind-up pain and pain after discharge. Table 3 summarizes studies of nerve blocks for pain management.

A randomized trial compared PCA with usual bolus dosing for the control of acute traumatic pain [Rahman NH, DeSilva T. *J Emerg Med.* 2012] demonstrated that the PCA group experienced faster and greater pain relief. Pain scores ($P < .001$) and satisfaction ratings were

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Table 1. Key Points of American College of Emergency Physicians Clinical Policy on Opioid Prescribing

Opioid Use	Key Point
Low-back pain	There is little evidence that any short-acting medication (opioids or nonsteroidal anti-inflammatory drugs) relieves pain
At hospital discharge	Given the risk for drug misuse, opioids at discharge should be used for a short duration
Musculoskeletal pain	Low-potency opioids are as effective as high-potency opioids; hydrocodone or oxycodone should be used
Chronic noncancer pain	The emergency department should not renew opioid prescriptions

Source: Cantrill SV et al. *Ann Emerg Med.* 2012.

Table 2. Low-Dose Ketamine for Pain Management

Study	Patients and Methods	Results
Ketamine plus hydromorphone for severe pain [Ahern TL et al. *Am J Emerg Med.* 2013]	0.5 mg IV hydromorphone plus 15 mg IV ketamine, followed by 1 mg IV hydromorphone at 15 and 30 min in adult patients	Complete pain relief in 14 of 30 patients in 5 min Mean pain decrease of 5 points on 11-point NRS No significant AEs
Low-dose ketamine for pain in the ED [Herring AA et al. *Am J Emerg Med.* 2012]	0.1 to 0.3 mg/kg IV ketamine combined with IV opioid before burn dressing changes	Patients experience frequent dizziness, vision changes, or floating sensation These effects can be minimized by infusing > 10 min followed by infusion of the same dose each hour
Morphine plus ketamine for out-of-hospital analgesia [Jennings PA et al. *Ann Emerg Med.* 2012]	Ketamine vs morphine in patients with verbal pain score > 5 after 5 mg IV morphine	Mean pain score change of 5.6 with ketamine vs 3.2 with morphine The rate of AEs was 14% with morphine vs 39% with ketamine
Intranasal ketamine [Andolfatto G et al. *Acad Emerg Med.* 2013]	Patients with > 6 y moderate or severe pain; 0.5 to 0.75 mg/kg intranasal ketamine	34 mm (44%) median change in VAS at 30 min Minor AEs
Ketamine safety in head injury [Cohen L et al. *Ann Emerg Med.* 2014]	Systematic review of effect of ketamine on intracranial and cerebral perfusion pressure and health outcomes	No change in outcomes compared with other agents

AE, adverse event; IV, intravenous; NRS, numeric rating scale; VAS, visual analog scale.

Table 3. Nerve Blocks for Pain Management

Study	Patients and Methods	Results
Nerve block vs procedural sedation analgesia for shoulder dislocation reduction [Tezel O et al. *Am J Emerg Med.* 2014]	Titrated IV ketamine 1 to 2 mg/kg vs SNB with US guidance	SNB group spent significantly less time in the ED No AEs were observed in the SNB group Successful reduction in both groups. Same level of satisfaction in both groups
US-guided 3-in-1 FNB vs opioids [Beaudoin FL et al. *Acad Emerg Med.* 2013]	US-guided 3-in-1 FNB plus morphine (FNB group) vs sham injection plus morphine (SC group) in elderly patients with hip fracture	NRS scores at 4 h were significantly lower in the FNB group ($P < .001$) No one in the SC group had a clinically significant reduction in pain Patients in the SC group received significantly more morphine ($P = .028$)

AE, adverse event; ED, emergency department; FNB, femoral nerve block; IV, intravenous; SC, sham injection plus morphine; SNB, suprascapular nerve block; US, ultrasound.

better in the PCA group despite almost identical total morphine dosing.

Another study in patients with acute abdominal pain compared physician-managed analgesia vs PCA [Birnbaum A et al. *Acad Emerg Med.* 2012]. All patients experienced a decline in mean numeric rating scale (NRS) scores within 30 minutes. However, NRS scores continued to decline up to 120 minutes in PCA patients but not in non-PCA patients ($P = .004$).