

# Paramedic – Evidence Based Medicine (P-EBP) Program

## Paramedic CAT (Critically Appraised Topic)

### Title:

Physical and mental recovery with prehospital administration of narcotic analgesia in patients suffering from fractures

### Report By:

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### Clinical Scenario:

A 64 y/o female suffers from an isolated lower extremity (femur) fracture caused by a MVC with her 4X4 ATV. Her extrication from the remote site to the designated trauma centre was delayed due to travel to and from the scene over rough terrain. There was no analgesia provided. Her memory of the event is very negative and she blames the EMS personnel for lack of treatment and causing her mental stress. The quality & assurance department of the provincial emergency health services department, under medical direction, are considering implementation of narcotic analgesics for advanced care providers to deal with such cases as well as for other applications.

### PICO (Population – Intervention – Comparison – Outcome) Question:

In patients with fractures, encountered by prehospital providers, does the use of opiate/opioid analgesia versus no analgesia affect outcomes with regards to physical recovery and satisfaction?

### Search Strategy:

*Conducted via PubMed-NCBI:*

("emergency medical technician" OR "out of hospital") OR (prehospital OR pre-hospital OR "emergency medical services " OR ambulance) AND (fracture OR fractures) AND (opiate OR opioid) AND (analgesia) AND (shock OR pain OR memory OR vital signs OR recovery OR physiologic stress)

### Search Outcome:

48 results

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## Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
J.A. Chambers & H.R. Guly 1993	<p>Clinical records review of 502 patients that arrive at the Accident and Emergency department (A&amp;E) with patients categorized for "pain" and further into "injury" vs. "non-injury"</p> <p>Ambulance service survey amongst 65 ambulance services covering the UK</p>	<p>II</p> <p>Retrospective analysis of Clinical Records of all patients that arrive at the Accident and Emergency department over 20 days (UK) &amp; Ambulance Service Survey to all Chief Ambulance Officers in UK</p>	<p>-To assess pain suffered by patients during the transport phase to hospital and in the A&amp;E department</p> <p>-Detail present practice and future development of analgesia practice in prehospital setting</p>	<p><i>Clinical Records:</i></p> <p>-273 (54%) have pain. -340 (68%) due to trauma -69 (14%) given opioid analgesia -60 of 69 had single limb fracture</p> <p><i>Survey:</i></p> <p>Few services currently providing opioid analgesia{3 – nalbuphine(nubain) , 1- diamorphine (heroin)} - Nitrous oxide utilization (wide) showed that patient compliance and efficacy are poor</p>	<p>(+)Clinical records include all records during study duration (-)Clinical record retrieval duration was limited to 20 days ( limited sample) (+)63 of 65 (97%) return compliance of ambulance service survey (high compliance)</p>
Lynn J. White, et al 2000	<p>Clinical records review for 1073 patients treated with suspected extremity fractures In one year by Akron Fire EMS Dept. 1000 patients enrolled (73 excluded based on criteria). Standing order &amp; direct physician order available for all providers in the study to provide Morphine or Nitrous Oxide.</p>	<p>III</p> <p>Observational study involving retrospective analysis of EMS call reports between June(1997)- July (1998)</p>	<p>-To assess the use of prehospital analgesia in patients with suspected extremity fracture</p> <p>-authors cite room to improve the quality of pain control in the prehospital setting</p>	<p>-18 patients (1.8 %) received analgesia -16 patients received nitrous oxide (1.6 %) -2 patients received morphine (0.2%)</p>	<p>(-)no indication of patient satisfaction or outcomes of analgesic effect (+)included all data from a one year system wide study</p>
Nick Castle & Raveen Naidoo 2010	<p>A single patient with an isolated femur fracture whose pain prevented application of a traction splint.</p>	<p>III</p> <p>Observational Case Study</p>	<p>-Goal of achieving prehospital analgesia</p> <p>-prevent sedation-induced hypo-ventilation</p>	<p>-low dose ketamine (0.25mg/kg) selected with intended analgesic effect</p> <p>-synergistic effect with morphine identified and used for analgesic</p>	<p>(-)Study is small to change practice (+)Study completes its objective (+)respectable references</p>

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## **Comments:**

Most prehospital systems utilize some form of analgesia. Although these studies reflect internal validity, I experienced PICO drift which diverted focus to a variety of analgesic options. Consistency with the populations of this PICO was present. However, outcomes were vague in the first two articles (J.A. Chambers & H.R. Guly (1993) & Lynn J. White, et al (2000)) and the third (Nick Castle & Raveen Naidoo (2010)), although relevant, was a single case study.

## **Consider:**

For practice to change, the evidence will need to obtain more scrutiny. I was unable to access any LOE I studies consistent with more randomized controlled studies from the applied search strategy.

## **Clinical Bottom Line:**

Consensus amongst these studies indicates that more needs to be done in regards to prehospital analgesia. The proponents of these studies suggest the need for the prehospital arena to reflect current practice within the hospital setting. Authors quote lack of current prehospital activity in the direction, identification and use of opiate/opioid analgesia within ambulance systems. Although these studies make for good reference none provided definitive evidence consistent with my PICO. It is promising that observational study has provided insight into how analgesia can both relax a patient and assist in treatment applications but this does not answer the question with regards to outcomes in physical recovery and event memory. As such, this presents future opportunities for research.

## **References:**

J. A Chambers & H.R Guly, (1993) The Need for Better Pre-Hospital Analgesia, Archives of Emergency Medicine (10) 187-192

Lynn J. White, MS, Joseph D. Cooper, DO, Rita M. Chambers, BBA, NREMT-P, Richard E. Gradisek, MD, (2000) Prehospital Use of Analgesia for Suspected Extremity Fractures, Prehospital Emergency Care, Volume 4/Number 3, 205-208

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Nick Castle, Raveen Naidoo, (2012) Achieving Prehospital Analgesia,  
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