EMS Subspecialty Certification
Review Course

Prehospital Pain Management
1.4.3 Pain Assessment and Management
In the Field

Version: 2017

Question
Which of the following are true
A. Non pharmacologic pain strategies are important in managing prehospital patients
B. Patient pain scales should be recorded in the written record
C. Medication shortage may present challenges to prehospital providers regarding analgesia
D. All of the above

Learning Objectives
Participants will be able to:
• Describe current state of EMS pain assessment and management
• Describe most common prehospital uses of analgesia
• Describe most common prehospital medications
• Describe barriers to effective analgesia and strategies to overcome barriers
Introduction

- Pain is among most common reasons for EMS contact
- Wide variation in EMS assessment and management of pain
- Research shows under treatment / oligoanalgesia is common
- Significant barriers to more effective performance identified in recurrent studies.

Recurrent studies indicate 20-43% of patient requests for EMS due to moderate to severe pain. EMS Outcomes project has identified pain management as one of the “most relevant outcome measures” for EMS system performance. Variations are particularly wide in pediatrics due to communication issues, comfort level of paramedics, need to use injectables. Geriatrics also have wide variation due to concerns on dosing and variable response to pain medications. Oligoanalgesia common for hip fx. Other variations in performance and oligoanalgesia identified in women, African American and Hispanic populations.

Conditions for EMS Pain Management

- Most common:
  - Cardiac / Chest, Isolated extremity, Burns
- Less common but growing rationale:
  - Sickle cell, pediatrics
- Controversial:
  - Trauma extrication, multitrauma w/wo TBI, non-differentiated abdominal, Pregnancy/ Labor, Patients with pain related condition, using other prescribed or non-prescribed medications
Most EMS systems have standing orders for common pain syndromes. Recurrent administration often requires additional on-line medical order. Non-managed pain increases stress catecholamine's and tied to increased morbidity. Often require on-line medical order for less common dx. with associated pain. Paramedics may or may not request orders for less common dx. Available formularies are changing, ie. MS being replaced by Fentanyl. Many EMS units have limited amounts of pain medications for major problems, ie. Burns. Controversial requests may result in significant oligoanalgesia secondary to risk benefit and on-line physician confidence in paramedic assessment and concerns over respiratory depression and difficulty assessing patient on ED arrival.

EMS Formulary

- Non-pharmacologic management generally needs more attention
- Morphine remains most common
- Fentanyl increasing replacement of Morphine due to concerns about untoward side effects.
- Less common: Ketamine, Dilaudid, nitrous
- Ketamine promising for future (uncertain implications for exam)

Studies show basic splinting and RICE– rest, ice, compression, and elevation are not used to full effect. Most EMS medications are injectable. International EMS systems often use NO at basic EMT level as safe and effective analgesia. Multiple studies indicate Fentanyl is as effective as MS with less side effects. Debate continues on Fentanyl vs. MS effectiveness with cardiac chest pain. Multiple studies show limited effectiveness of Nalbuphine and Keteracs in EMS arena due to time to effect. Ketamine remains controversial due to anesthesia qualities and emergence syndrome side effect. Ketamine may be very effective for painful extrications and use with synthetic hallucinogens, i.e. bath salts to chemically restrain patients.
Individual Barriers to Pain Management

- Poor pain assessment skills and reluctance to use in absence of significant objective signs
- Excessive concerns over “maligners” and drug seeking behavior
- Opioid crisis stigma
- Fear of masking and aggressive dosing
- Limited education on pediatric and geriatric assessment and communication problems

Multiple studies on variable EMS performance with both individual practitioner and structural / protocol issues.
Assessment skills are variable and studies indicate increased variation with pediatric (grimace type scores) and elderly communication problems.
“Maligner” issue may be tied to ethnicity, age, (young adults) and sex (M) of patients
Poor assessment skills lead to need for overwhelming signs of deformity / hypertension before paramedics are willing to manage pain
With unclear endpoints, ie. “pain medication is to take the edge off” paramedics are often reluctant to aggressively manage pain leading to oligoanalgesia
Poor understanding of morbidity tied to pain and fear of masking symptoms is common for both EMS and on-line orders especially for less common and controversial dx.

Structural Barriers to Management

- Requirements for direct orders (on-line)
- Dosing regimen’s (initial doses are limited) and limited total amount carried on EMS units
- Pediatric assessment support tools, ie. weight based tapes and injectables as primary analgesia.
- Increased paperwork post call with increased turnaround times
- Paramedic education on pain management
Standing orders shown to improve analgesia and time to analgesia.
Initial dosing is generally conservative and requirements for on-line control for additional dosing may decrease effectiveness of management.
Most EMS units carry limited amounts of pain medications due to concerns for control. May not have enough for major problems, e.g., Burns.
Injectables are challenge for paramedic management of pediatrics due to concerns of inflicting pain on child.
Control requirements for restocking may lead paramedics to under treat patients due to increased turn around time.
Paramedic education is limited in pain management leading to unclear targets, endpoints, and comfort using medications.
Variable paramedic education in differences between analgesia, sedation, and anesthesia complicate pain management.

Strategies to Improve Pain Management

• Studies indicate targeted education improves paramedic confidence and performance
• Required use of pain assessment and documentation
• Using standing orders vs. on-line orders
• Consideration of non-injectables may improve analgesia performance especially for non-paramedics

Multiple studies indicate targeted education intervention improves overall performance and specific performance with challenging populations such as pediatrics, geriatrics, and patient ethnicity.
Studies indicate requirements for documented use of simple universal pain scoring systems as “5th vital sign” improve performance.
Scoring systems and improved assessment skills are especially important for pediatrics.
Studies show standing orders improve performance and time to analgesia. NO / Nitronox were more widely used years ago for initial rapid management.
Improving paramedic education in pain physiology and classes of medications vs. specific medications may improve paramedic performance and decrease risk to patients for comingled analgesia, sedation, and anesthesia.
Analgesia for fractures as performance measure.
Emerging Issues

- Shortages of injectables are affecting EMS and ED medication availability
- Unpredictable shortages leading to rapid changes in formulary and concentrations.
- Changes in formulary and concentrations increase risk of medication errors to patients and providers
- DEA control requirements are further exacerbating shortages
- Provider diversion
- Unclear use of analgesia agents for pharmacologically assisted airway management and painful extrication.

EMS systems increasingly challenged with availability of injectables. Nationally this is complex issue and is projected to have at least 3-5 years duration before systemic solutions completely in place. Day to day may need to change agents due to non-availability leading to need to widen formulary. Paramedic education tied to single medications vs. classes of medications is barrier to rapid need to change formulary. Systems for alerting agencies and paramedics to shortages, changes in formulary, and concentration are essential role for EMS Medical Directors. Need for rapidly disbursed education modules by EMS Medical Director. DEA control requirements on moving medication between hospitals or agency bases complicates issue (Maximum allowed 5% movement within 12 month period). Provider diversion is increasing issue and Medical Directors need to be assured of agency level control systems. Limited education on physiology of pain and related conditions leading paramedics to potentially misuse medications for other purposes, i.e. Analgesia for sedation for airway management. Ketamine remains controversial but may be valuable agent for painful extrication and as chemical restraint.

Take-Home Points

- Improvements to paramedic education on pain physiology needed to improve prehospital pain management
- Critical populations for improvement are pediatrics, geriatrics, and ethnic
- Targeted education and requiring documented pain scoring improve pain management performance
- Changing paramedic education
- Improvements needed in non-pharmacological interventions and potential non-injectable routes of administration
- Standing orders improve performance and time to analgesia
- Medical Directors need to assess system and practitioner performance.
- “pain is inevitable, suffering is optional” anonymous (probably not the ABEM approach)
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