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Wilderness Medical Society Practice Guidelines for the Treatment of Acute Pain in Remote Environments

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The Wilderness Medical Society convened an expert panel to develop evidence-based guidelines for the management of pain in austere environments. Recommendations are graded based on the quality of supporting evidence as defined by criteria put forth by the American College of Chest Physicians.

Key words: pain control, analgesia, sedation, local anesthesia, wilderness medicine, austere, remote, oligoanesthesia

Introduction

Evidence suggests that oligoanalgesia, the undertreatment of acute pain, is a recurring issue in the management of patients in the prehospital setting.[1,2] A recent study evaluating helicopter transfers of 1200 trauma patients found that analgesia was inadequate in 43% of those transported.[2] Similar trends are likely to occur in austere environments where medical personnel and supplies are often limited.

Practitioners often report a reluctance to provide adequate pain management because of a wide range of different factors. These include inappropriate estimation of pain by the provider, a lack of medication or the means to administer the necessary analgesics, lack of pharmacologic knowledge, a fear of addiction, concern of masking potential clinical deterioration, and life-threatening side effects such as respiratory depression, hemodynamic instability, and aspiration.[3,4]

Acute untreated pain is not the only consequence of inadequate analgesia. Failure to adequately manage pain may also cause a significant stress response as well as an increase in the risk of developing posttraumatic stress disorder.[5] Patients may also become increasingly sensitive to painful stimuli the longer pain remains uncontrolled, making their pain more difficult to control.[6]

Pain management is exceedingly important in the austere environment as practitioners are often faced with the difficulty of providing prolonged care or dealing with technical extrications. Efficient analgesia reduces both physical and psychological stress and helps to facilitate the comfortable evacuation of these patients to definitive care.[7]

The following are qualities of an ideal pain medication for wilderness use, and should be kept in mind when used in these environments[8]:

- Compact and lightweight
- Durable
- Nonsedating
- Wide spectrum of use
- Biochemically and environmentally stable
- Multiple routes of administration
- Minimal side effects

The purpose of these guidelines is to provide a literature-based review and simple algorithm for the treatment of acute pain in austere environments. Although an ideal medication does not exist, these guidelines seek to follow such a set of requirements as closely as possible when making recommendations.

Given potential adverse complications of oligoanalgesia, together with the plethora of options now available, we believe that every effort should be made to obtain optimal pain control.

Methods

A panel convened during the 2013 Annual Winter Meeting of the Wilderness Medical Society in Park City,

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Utah. Invitations were based on the individual's extensive clinical or research experience, and included representatives from emergency medicine, anesthesiology, surgery, military medicine, and the field of prehospital emergency medical services (EMS). Relevant articles were identified through the PUBMED database using a key word search of the following terms: wilderness pain control, prehospital pain, prehospital narcotics, prehospital opioids, prehospital regional anesthesia, fentanyl vs morphine, acetaminophen trauma, ibuprofen trauma, ketamine efficacy, anxiolysis pain, and empathy pain. Searches were initially limited to randomized controlled trials and then expanded to include a broader spectrum of research. This literature review was further supplemented by a hand search of selected articles. The majority of information has been extrapolated from EMS and hospital literature, and very limited evidence is derived directly from the wilderness setting. For the purpose of this paper, the terms remote, austere, tactical, disaster, and wilderness are used interchangeably to describe the varied settings defined by extended patient care times and delayed or difficult access to definitive care. All articles were reviewed and the level of evidence assessed. The panel used a consensus approach to develop recommendations regarding each modality and graded the recommendations according to the criteria developed by the American College of Chest Physicians (Table 1).[9]

Overview of Pain Control

Indications for pain control in austere environments are typically directed at musculoskeletal injuries including strains, sprains, dislocations, and fractures. Other circumstances that may require similar management include acute medical ailments and environmental injury such as cold injury, bites, stings, and burns. Mechanisms requiring detailed assessment before pain control include traumatic brain injury, spinal cord injury, or airway-compromised patients. These guidelines do not address specific logistical evacuation issues, but they do aim to make evacuations, when required, more comfortable for patients through improved analgesia. Although narcotics are frequently used for analgesia, the committee recognizes that several other options are available and may be used first and in combination with other medications.

Pain scales are extensively used throughout the medical community. Although visual aids may not be

Table 1. American College of Chest Physicians classification scheme for grading evidence and recommendations in clinical guidelines[9]

Grade	*Description*	*Benefits vs risks and burdens*	*Methodological quality of supporting evidence*
1A	Strong recommendation, high-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	RCTs without important limitations or overwhelming evidence from observational studies
1B	Strong recommendation, moderate-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	RCTs with important limitations or exceptionally strong evidence from observational studies
1C	Strong recommendation, low-quality or very low quality evidence	Benefits clearly outweigh risks and burdens or vice versa	Observational studies or case series
2A	Weak recommendation, high-quality evidence	Benefits closely balanced with risks and burdens	RCTs without important limitations or overwhelming evidence from observational studies
2B	Weak recommendation, moderate-quality evidence	Benefits closely balanced with risks and burdens	RCTs with important limitations or exceptionally strong evidence from observational studies
2C	Weak recommendation, low-quality or very low quality evidence	Uncertainty in the estimates of benefits, risks and burden; benefits, risk and burden may be closely balanced	Observational studies or case series

RCT, randomized controlled trial.

Source: Guyatt G, Gutterman D, Baumann MH, et al. Grading strength of recommendations and quality of evidence in clinical guidelines; report from an American College of Chest Physicians task force. *Chest.* 2006; 129:174–181.