

WILDERNESS MEDICAL SOCIETY PRACTICE GUIDELINES

Wilderness Medical Society Practice Guidelines for Spine Immobilization in the Austere Environment

Robert Quinn, MD; Jason Williams, BS, NREMT-P; Brad Bennett, PhD, NREMT-P; Gregory Stiller, MD; Arthur Islas, MD; Seth McCord, MD

From the Department of Orthopaedic Surgery, University of Texas Health Sciences Center, San Antonio, TX (Dr Quinn); EMS Academy (Mr Williams) and Department of Orthopaedic Surgery (Dr McCord), University of New Mexico, Albuquerque, NM; Military and Emergency Medicine Department, Uniformed Services University of the Health Sciences, Bethesda, MD (Dr Bennett); Department of Emergency Medicine, Sky Ridge Medical Center, Lone Tree, CO (Dr Stiller); and Department of Family and Community Medicine, Texas Tech Health Science Center, El Paso, TX (Dr Islas).

In an effort to produce best-practice guidelines for spine immobilization in the austere environment, the Wilderness Medical Society convened an expert panel charged with the development of evidence-based guidelines for management of the injured or potentially injured spine in an austere (dangerous or compromised) environment. Recommendations are made regarding several factors related to spinal immobilization. These recommendations are graded based on the quality of supporting evidence and balance between the benefits and risks or burdens for each factor according to the methodology stipulated by the American College of Chest Physicians. A treatment algorithm based on the guidelines is presented.

Key words: spinal injury, spinal trauma, spinal immobilization, cervical spine injury, cervical spine immobilization, cervical spine clearance

Introduction

Techniques for immobilization and extrication of the patient with a real or potential spine injury have been implemented for decades. These techniques use practical but not systematic approaches driven by a well-intentioned aversion to inflicting further serious injury. Furthermore, there is little evidence to support the effectiveness or necessity of these techniques. Prehospital care of the spine may represent one of the more illustrative examples of clinical medicine being driven more by medicolegal implications than sound clinical or scientific evidence. Although the high cost (in terms of both dollars and resources) of defensive medicine in this regard may or may not be justified in the civilized environment, in the austere (dangerous or compromised) environment any decision to immobilize a spine is directly associated with the potential for further injury to the patient as well as rescuers. When an injured, or potentially injured, patient is located in a compromised environment, rescuers will often literally be risking their

lives to both avoid further injury to the patient and effect a safe extrication. Under these circumstances, the need for sound evidence in clinical decision making is paramount.

In an effort to develop proper guidelines for spinal immobilization in the austere environment, based on best existing evidence, an expert panel was convened to develop evidence-based guidelines.

Methods

A panel with experts in the field was convened at the Wilderness Medical Society annual meeting in Snowmass, CO, in July 2011. Members were selected from multiple professional backgrounds based on clinical interest or research experience. The panel includes 2 orthopaedic surgeons, 2 experienced academic emergency medical technicians (EMTs; 1 military and 1 civilian), 1 emergency physician, and 1 family practitioner with sports medicine fellowship training. Relevant articles were identified through the PUBMED and Cochrane Collaboration databases using key word searches with the appropriate terms corresponding to each topic. Peer-reviewed studies related to spine immobilization including randomized controlled trials, observational studies, and case series were reviewed,

Corresponding author: Robert Quinn, MD, Department of Orthopaedic Surgery, University of Texas Health Science Center San Antonio, Mail Code 7774, 7703 Floyd Curl Drive, San Antonio, TX 78229-3900 (e-mail: quinnr@uthscsa.edu).

and the level of evidence supporting the conclusions was assessed. Abstract-only studies were not included. Conclusions from review articles were not considered in the formulation of recommendations but are cited below in an effort to provide context. When no relevant studies were identified, the expert panel recommendation was based on risk vs benefit perceptions derived from patient care experience. The panel used a consensus approach to develop recommendations regarding management of spinal injuries in the wilderness. These recommendations have been graded based on clinical strength as outlined by the American College of Chest Physicians (ACCP; Table).¹

Scope of the Problem

The incidence of spinal cord injury (SCI) in the United States is estimated at 40 to 50 cases per million people per year, representing 3% of hospital trauma admissions.²

Two to five per cent of patients with SCI will demonstrate neurologic deterioration regardless of the effectiveness of prehospital care, based on the pathophysiology of the injury itself (progressive neurologic ischemia, spinal cord edema, etc).^{3,4}

Authors have noted an improvement in neurologic status of SCI patients arriving in emergency departments during the past 30 years. During the 1970s, 55% of patients referred to SCI centers arrived with complete neurologic lesions, whereas in the 1980s that number

decreased to 39%.⁵ This improvement in neurologic status has been attributed to emergency medical services (EMS) initiated in the early 1970s. However, there is no evidence to support the belief that this improvement has anything to do with EMS protocols. Certainly, improvements in automobile safety and design, along with compulsory seat belt use laws, are at least partially responsible for these observations. Review of data from the National Automotive Sampling System data files between 1995 and 2001 revealed 8412 cases of cervical spine injury.⁶ Approximately half (44.7%) were unrestrained occupants, and the remainder consisted of belted only (38.2%), airbag only (8.8%), and both (8.4%) restraint systems.

It is important to interject some *a priori* clarity to the publication of these guidelines. Many articles have been repeatedly quoted in the literature as offering case evidence of neurologic deterioration in the presence of SCI secondary to inadequate prehospital immobilization.⁷⁻¹³ Careful review of these cases, however, reveals that virtually all represent missed or late diagnoses *after* hospital admission, or deterioration that occurred while *under treatment* for a known diagnosis.

The focus of these guidelines is to present an evidence-based approach to prehospital care that minimizes the possibility of neurologic deterioration in the presence of an existing or potential SCI from the time of extrication to arrival at a medical facility.

Table. ACCP classification scheme for grading evidence and recommendations in clinical guidelines¹

<i>Grade</i>	<i>Description</i>	<i>Benefits vs risks and burdens</i>	<i>Methodological quality of supporting evidence</i>
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

ACCP, American College of Chest Physicians; RCT, randomized controlled trial.

Download English Version:

<https://daneshyari.com/en/article/2614815>

Download Persian Version:

<https://daneshyari.com/article/2614815>

[Daneshyari.com](https://daneshyari.com)