

Public Health Administration
Large Conference Room
2240 E. Gonzales, 2nd Floor
Oxnard, CA 93036

Pre-hospital Services Committee
Agenda

July 10, 2014
9:30 a.m.

I.	Introductions
II.	Approve Agenda
III.	Minutes
IV.	Medical Issues
	A. Spinal Motion Restriction
	C. Other
V.	New Business
	A. 705.26 – Suspected Stroke (Revision) Karen/Chris
	B. 451 – Stroke System Triage and Destination (Revision) Karen/Chris
	C. Other
VI.	Old Business
	A. CAM/ART & ACLS/BLS
	B. PRESTO Trial
	C. Cardiac Arrest Survivor Interview
	D. air-Q Study
	E. Other
VII.	Informational/Discussion Topics
	A. Elderly Fall Prevention Coalition (EFPC)
	B. Policy 1404 Revision
	C. Sidewalk CPR
	D. Bariatric Rescue Training Suit and Mannequin
	E. Other
VIII.	Policies for Review
	A. No policies to review this month.
IX.	Agency Reports
	A. Fire Departments
	B. Ambulance Providers
	C. Base Hospitals
	D. Receiving Hospitals
	E. Law Enforcement
	F. ALS Education Program
	G. TAG
	H. EMS Agency
	I. Other
X.	Closing

Health Administration
 Large Conference Room
 2240 E. Gonzales, 2nd Floor
 Oxnard, CA 93036

Pre-hospital Services Committee
 Minutes

May 8,, 2014
 9:30 a.m.

Topic	Discussion	Action	Assigned
II. Approve Agenda			Approved by Dede Utley Seconded by Robin Shedlosky
III. Minutes	.		Approved by Dede Utley Seconded by Robin Shedlosky
IV. Medical Issues			
A. Choking in Cardiac Arrest	Discussion regarding memo that was distributed.		
B. Cardioversion	Angelo would like to recommend to providers that Cardioversion start at 200. Dr. Canby agrees. AMR and GCA start at 200 currently..	This issue was brought for discussion only. No changes will be made to the policy.	
C. Other			
V. New Business			
A. 111- Ambulance Company Licensing Procedure	Steve Carroll went over the changes which outline what outside ambulance companies would need to do to work in Ventura County. Steve Frank stated "Any ambulance company coming into Ventura County, whether qualified or not, will put the current provider contracts in jeopardy".	Motion to accept 17 yeah 0 opposed Motion passed Current Amb. Providers were asked to abstain from voting.	Approved by Stephanie Huhn Seconded by Robin Shedlosky
B. 334- Prehospital Personnel Mandatory Training Requirements	Change EMT-1's to EMT	Motion to accept Passed	Approved by Robin Shedlosky Seconded by Tom O'Connor
C. 504- ALS and BLS Unit Equipment and Supplies	Added Defib/AED to BLS amb. Add Hemostatic Gauze to Optional Section Move Tourniquet to Sec. A Add Occlusive Dressing to Sec. A	Motion to accept Passed	Approved by Debbie Licht
D. 905- Ambulance Provider Response Unit Required Frequencies	Steve Carroll will make appropriate changes.	Motion to accept Passed	Approved by James Rosolek Seconded by Scott Zeller

VI	Old Business			
A.	131- Multi-Casualty Incident Response	Chris Rosa went over the changes that were made.	Motion to accept Passed	Approved by Karen Beatty Seconded by Tom O'Connor
B.	722- Interfacility transfer of patients with IV Heparin and Nitro	Julie surveyed each hospital on their standard dose. SJPVH and SJRMC's standard was 25,000 units in 250 ml. All additional hospitals were 25,000 units in 500 ml.		
C.	I.O Success Rates	Angelo requested that we table this and bring back next meeting.	Tabled	
D.	PRESTO Trial	Dr. Chase received approval to do the trial at VCMC. Debbie Licht will be the Southern California Coordinator. Need Board of Supervisors approval. Slated to go before the Board on June 10 th .		
VII.	Informational/Discussion Topics			
VIII.	Policies for Review			
A.	321- MICN Authorization Criteria		Chris will develop a draft with suggested changes and work with PCC's.	
B.	322- MICN Reauthorization Criteria		Chris will develop a draft with suggested changes and work with PCC's.	
XI	TAG Report			
X.	Agency Reports			
A.	Fire departments	VCFPD – 19 firefighters will graduate from the academy. Robin shared that there is an increase of measles in L.A. Agencies should check to make sure their personnel are up to date on vaccinations. VCFD – 2 firefighters graduating from the academy. OFD – none FFD – 100 th anniversary dinner at the golf course on June 7, 2014. Fed. Fire – none		
B.	Transport Providers	VCSSO – none AMR/GCA – (GCA) Purchased 4 new ambulances. Hired 6 new paramedics. 3 new Assoc. Supervisors are going through training. (AMR) Have 4 new Assoc.		

		Supervisors.	
C.	Base Hospitals	<p>SVH – none</p> <p>LRRMC – Great learning experience at Operation medical Base. Debbie received a prestigious award for all her work with survivors and Sidewalk CPR. Congratulations Debbie!</p> <p>SJRM – Changing to Cerner, please be patient with them. Construction on parking lot. Loved OMB!</p> <p>VCMC – Have 4 MICN interns. Please pick up backboards, they are overflowing and causing problems.</p>	
D.	Receiving Hospitals	<p>CMH – Construction is on-going.</p> <p>PVH - none</p> <p>OVCH – The façade will be done at the end of June.</p>	
E.	Law Enforcement	CSUCI PD – Will participate in Sidewalk CPR in June.	
F.	ALS Education Programs	Ventura College – Graduation is May 23, 2014.	
G.	EMS Agency	<p>Angelo – On June 3rd and 4th, VCMC surgeons will be getting re-accredited. Ventura County was given the “Silver Award” from American Heart Assoc.</p> <p>Steve – Debbie Haney is returning on an as needed basis to assist with training and special projects. EMS will be moving to a new larger area upstairs in the same building. The contract has been signed and the move is planned for December 2014.</p> <p>Chris – Putting the finishing touches on ePCR training.</p> <p>Julie – none</p> <p>Randy – CPR meeting after PSC.</p> <p>Karen – Thanks to all hospitals for participating in OMB. Everyone did a great job.</p> <p>Katy - none</p>	
H.	Other		
XI.	Closing	Meeting adjourned at 1130.	



**TEMPORARY
PARKING PASS
Expires July 10, 2014**

**Health Care Services
2240 E. Gonzales Rd
Oxnard, CA 93036**

For use in "Green Permit Parking" Areas only, EXCLUDES Patient parking areas

Parking Instructions: Parking at workshop venue is limited. Arrive early to allow for offsite parking if venue parking lot is full.

2240 Gonzales Rd. location

If you park in a designated "green permit parking" slot, fold this flyer in half and place pass face-up on the dash of your car, to avoid receiving a ticket.

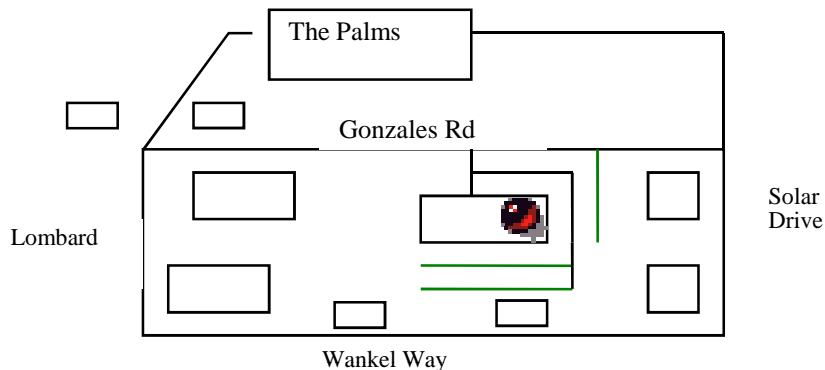
2100 Solar Drive

An additional amount of "Green Permit Parking" spaces (only 30) are available in adjacent parking lot, those that back-up against venue parking area, (Enter this parking lot off of Gonzales[3rd driveway] or Solar Drive). **Place this flyer on your dash.** If all of those stalls are occupied, overflow parking is available at The Palms shopping area or side streets.

The Palms - shopping mall

Enter The Palms at Lombard and Gonzales. Allow for a ten minute walk to venue location.

Additional parking is available on side streets, Lombard, Solar and Wankel Way.





Why We Need to Rethink C-Spine Immobilization

BY KARL A. SPORER, MD, FACEP, FACP (CONTACT/10813749/KARL-A-SPORER-MD-FACEP-FACP)
CREATED: NOVEMBER 1, 2012

We need to reevaluate current practices and develop a saner cervical policy



Dan Limmer

The spinal immobilization of trauma patients suspected of having spinal injury has been a cornerstone of prehospital care for decades. Current practices are based on the belief that a patient with an injured spinal column can deteriorate neurologically without immobilization. This concern has ballooned to include large numbers of patients with little or no chance of such an injury and caregivers with little appreciation for the complications caused by use of the cervical collar and spinal board. Somewhere between 1 million and 5 million patients receive spinal immobilization each year in the United States.^{1,2}

The injury of concern is not the cervical spine fracture but the unstable cervical fracture with the potential for further neurological deficits.³ It is clear that among severely traumatized patients admitted to hospitals, the rate of cervical spine fractures is 2%–5% and the rate of unstable cervical fractures is 1%–2%.^{4–6} For patients with head injuries, the rate of cervical spine injuries increases substantially.⁷ Among patients with known unstable cervical spine fractures, half in one study demonstrated neurological deficits upon hospital arrival.⁸ Most clinicians would agree that this high-risk group would benefit from spinal immobilization, and we are truly concerned about that 0.5%–1% with unstable cervical spine fractures and intact spinal cords.

It is logical that among patients with lesser mechanisms of injury, the potential for unstable cervical spine fractures is much smaller. It is with this group that we must consider the trade-offs with the complications of cervical spine immobilization. Several studies have examined the rate of cervical fracture among generic blunt-trauma patients, whose mechanisms included MVCs, falls from standing, falls from heights and assaults. In these commonly encountered patients, the rate of cervical fracture is 1.2%–3.3%,^{9–12} and the rate of cervical spinal cord injury is 0.4%–0.7%.^{13,14}

One of the larger studies of blunt-trauma patients with high-energy mechanisms had clear inclusion criteria and used a well-defined endpoint of clinically important cervical spine injury (essentially an unstable cervical spine fracture). In this Canadian system, patients with blunt assaults and falls from standing are generally not assessed for cervical spine injury. Among this cohort of patients with high-energy mechanisms, the rate of clinically important cervical spine injury was 0.6%.¹⁵ This study outlined a clear method (the Canadian C-Spine Rule) for evaluating patients with normal GCS and determining by exam those who do not have clinically important cervical spine injuries. This method has been validated in the field.¹⁵ Other criteria have also been well studied to safely discriminate a subgroup without risk of cervical spine fracture.¹⁰ Many EMS systems have incorporated these methods of clinical clearance.

Trauma expert Peter Rhee, MD, and colleagues did a retrospective study of 4,390 blunt-assault patients and noted a cervical spine fracture rate of 0.4% and cervical spinal cord injury rate of 0.14%.⁶ Only 4 (0.03%) of 51 patients with fractures were considered to be unstable. There has been no study that specifically examines patients who fall from standing.

The subgroup that has been most studied is those who have penetrating trauma. One recent study led by Johns Hopkins' Elliot Haut, MD, examined the national trauma registry for such patients.¹⁶ The authors demonstrated a doubling of mortality among patients who received cervical spine immobilization. It is unclear whether this implies causality or is a proxy for more severe injury. From more than 30,000 patients with penetrating trauma, 443 (1.43%) had spine fractures, and 116 (0.38%) had unstable spine fractures. Of those with unstable spine fractures, 86 (74%) had completed spinal injuries prior to immobilization. The authors concluded that in order to potentially benefit one person with spinal immobilization, 1,032 people would have to be immobilized. But in order potentially harm/contribute to one death, just 66 would have to be.

Many other case-control studies have also examined this issue.^{6,17-22} A recent systematic review of the literature pointed out the low rate of unstable fractures and the relatively rare appearance of patients with unstable spine fractures and no neurologic deficits.²³ The authors, led by LSU's Lance Stuke, MD, concluded there is no data to support routine spine immobilization in patients with penetrating injury to the neck, head or torso. They recommended the use of spinal immobilization only in the setting of obvious focal neurologic deficits. Following this logic, we could reach the same conclusion for patients who have suffered blunt assault and less-than-high-energy blunt trauma.

Complications

There are clearly clinical complications with cervical spinal immobilization as it is currently practiced. Pain is almost universal with the use of a hard board,²⁴⁻²⁶ as well as the radiation and expense of x-rays and CTs. One recent study concluded that exposure to ionizing radiation (mostly from iatrogenic causes) is the leading environmental factor associated with breast cancer.²⁷ There are other potential problems with unclear clinical significance, such as mild respiratory compromise,²⁸ increased intracranial pressure^{29,30} and the rare cases of distracting an unstable fracture.³¹

For such a commonly performed procedure, there has been a remarkable lack of progress in recent years on alternative methods of immobilization. The vacuum splint has some promise and should be further evaluated, especially for severely injured patients.³² It poses significant logistical issues to work out, such as decontamination and acceptance by trauma centers.

For patients with a much lower likelihood of cervical spinal cord injury, such as victims of blunt assaults and falls from standing or alcohol-intoxicated patients with minor scalp or facial injuries, we can consider other, much less restrictive methods of immobilization. These could range from using the hard collar without a board to using a soft roll with tape. We should be asking the inventive among us or our more creative prehospital supply companies to develop new and novel methods to accomplish less-restrictive immobilization. Alameda County is embarking on such a protocol. Those with severe trauma will be immobilized with a hard collar and backboard or a vacuum splint. Those with less-severe trauma will have spinal restriction with a hard collar alone or some other combination of soft restrictive devices.

Hopefully we can move away from the forest of used hard boards in the ambulance bays of our community hospitals and at the same time develop a saner policy for our patients with lower-energy injuries.

Main Points to Remember

- 1 million to 5 million patients receive spinal immobilization each year in the U.S.
- Of severely traumatized patients, 1%–3% have cervical spine fractures.
- In severely traumatized patients, we are concerned about the 0.4%–0.7% with unstable cervical spine fractures and intact spinal cords.
- 50%–70% of patients with unstable cervical spine fractures present with a completed spinal injury.
- Patients with a lesser mechanism of injury will have substantially lower rates of unstable cervical spine fracture.
- The rate of unstable cervical spine fracture varies predictably by the mechanism of injury.
- For patients with a lesser mechanism of injury, consider less-restrictive methods of immobilization.
- Clinical clearance for awake patients without distracting injury should be applied when appropriate.
- For patients with penetrating trauma, cervical spine immobilization is not helpful and likely harmful.

Clinical Examples

- *A 39-year-old male in a high-speed MVC; GCS of 9, multiple extremity fractures.*

This patient's high-speed mechanism puts him at risk for cervical spine injury. His head injury increases this risk eightfold. Use appropriate cervical spine immobilization, preferably a collar and board or vacuum splint.

- *A 67-year-old female who was a restrained driver rear-ended at 20 mph.*

This patient does not have a high-energy mechanism of injury per the Canadian C-Spine Rule, but her age could be of concern. In the absence of significant cervical pain, distracting injury or paresthesias, appropriate care could range from no immobilization to some less-restrictive methods of spinal motion restriction.

- A 37-year-old male who was a restrained driver rear-ended at 40 mph.

This patient has a more significant mechanism of injury. If he is awake and without a distracting injury, some method of clinical clearance could be applied. With some cervical spine pain in this cooperative patient, a less-restrictive method of spinal motion restriction could be considered.

- A 45-year-old male found intoxicated at a bus stop with an eyebrow laceration; his GCS is 12, and he moves all extremities.

He does not meet criteria for a severe mechanism of injury and is at very low risk for cervical spine fracture and even lower risk for cord injury. But since he is not at zero risk for cord injury and he is unable to cooperate with a physical exam, we could consider a less-restrictive method of spinal motion restriction and observation in an emergency department. A later evaluation, when his mental state has improved, can guide further care.

References

1. Stiell IG, Wells GA, Vandemheen KL, et al. The Canadian C-Spine Rule for radiography in alert and stable trauma patients. *JAMA*, 2001; 286: 1,841–8.
2. Orledge JD, Pepe PE. Out-of-hospital spinal immobilization: is it really necessary? *Acad Emerg Med*, 1998; 5: 203–4.
3. Hauswald M. A re-conceptualisation of acute spinal care. *Emerg Med J*, 2012 Sep 8 [epub ahead of print].
4. Grossman MD, Reilly PM, Gillett T, Gillett D. National survey of the incidence of cervical spine injury and approach to cervical spine clearance in U.S. trauma centers. *J Trauma*, 1999; 47: 684–90.
5. Lowery DW, Wald MM, Browne BJ, et al. Epidemiology of cervical spine injury victims. *Ann Emerg Med*, 2001; 38: 12–6.
6. Rhee P, Kuncir EJ, Johnson L, et al. Cervical spine injury is highly dependent on the mechanism of injury following blunt and penetrating assault. *J Trauma*, 2006; 61: 1,166–70.
7. Morris CG, McCoy EP, Lavery GG. Spinal immobilisation for unconscious patients with multiple injuries. *BMJ*, 2004; 329: 495–9.
8. Scannell G, Waxman K, Tominaga G, Barker S, Annas C. Orotracheal intubation in trauma patients with cervical fractures. *Arch Surg*, 1993; 128: 903–5, discussion 5–6.
9. Meldon SW, Brant TA, Cydulka RK, Collins TE, Shade BR. Out-of-hospital cervical spine clearance: agreement between emergency medical technicians and emergency physicians. *J Trauma*, 1998; 45: 1,058–61.
10. Hoffman JR, Mower WR, Wolfson AB, Todd KH, Zucker MI. Validity of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma. National Emergency X-Radiography Utilization Study Group. *NEJM*, 2000; 343: 94–9.
11. Domeier RM, Swor RA, Evans RW, et al. Multicenter prospective validation of prehospital clinical spinal clearance criteria. *J Trauma*, 2002; 53: 744–50.
12. Burton JH, Dunn MG, Harmon NR, Hermanson TA, Bradshaw JR. A statewide, prehospital emergency medical service selective patient spine immobilization protocol. *J Trauma*, 2006; 61: 161–7.
13. Domeier RM, Frederiksen SM, Welch K. Prospective performance assessment of an out-of-hospital protocol for selective spine immobilization using clinical spine clearance criteria. *Ann Emerg Med*, 2005; 46: 123–31.
14. Kwan I, Bunn F. Effects of prehospital spinal immobilization: a systematic review of randomized trials on healthy subjects. *Preh Dis Med*, 2005; 20: 47–53.
15. Vaillancourt C, Stiell IG, Beaudoin T, et al. The out-of-hospital validation of the Canadian C-Spine Rule by paramedics. *Ann Emerg Med*, 2009; 54: 663–71 e1.
16. Haut ER, Kalish BT, Efron DT, et al. Spine immobilization in penetrating trauma: more harm than good? *J Trauma*, 2010; 68: 115–20, discussion 20–1.
17. Brown JB, Bankey PE, Sangosanya AT, Cheng JD, Stassen NA, Gestring ML. Prehospital spinal immobilization does not appear to be beneficial and may complicate care following gunshot injury to the torso. *J Trauma*, 2009; 67: 774–8.
18. Connell RA, Graham CA, Munro PT. Is spinal immobilisation necessary for all patients sustaining isolated penetrating trauma? *Injury*, 2003; 34: 912–4.
19. DuBose J, Teixeira PG, Hadjizacharia P, et al. The role of routine spinal imaging and immobilisation in asymptomatic patients after gunshot wounds. *Injury*, 2009; 40: 860–3.

20. Kaups KL, Davis JW. Patients with gunshot wounds to the head do not require cervical spine immobilization and evaluation. *J Trauma*, 1998; 44: 865–7.
21. Klein Y, Cohn SM, Soffer D, Lynn M, Shaw CM, Hasharoni A. Spine injuries are common among asymptomatic patients after gunshot wounds. *J Trauma*, 2005; 58: 833–6.
22. Lanoix R, Gupta R, Leak L, Pierre J. C-spine injury associated with gunshot wounds to the head: retrospective study and literature review. *J Trauma*, 2000; 49: 860–3.
23. Stuke LE, Pons PT, Guy JS, Chapleau WP, Butler FK, McSwain NE. Prehospital spine immobilization for penetrating trauma—review and recommendations from the Prehospital Trauma Life Support Executive Committee. *J Trauma*, 2011; 71: 763–9, discussion 9–70.
24. Cordell WH, Hollingsworth JC, Olinger ML, Stroman SJ, Nelson DR. Pain and tissue-interface pressures during spine-board immobilization. *Ann Emerg Med*, 1995; 26: 31–6.
25. Chan D, Goldberg R, Tascone A, Harmon S, Chan L. The effect of spinal immobilization on healthy volunteers. *Ann Emerg Med*, 1994; 23: 48–51.
26. March JA, Ausband SC, Brown LH. Changes in physical examination caused by use of spinal immobilization. *Preh Emerg Care*, 2002; 6: 421–4.
27. Smith-Bindman R. Environmental causes of breast cancer and radiation from medical imaging: findings from the Institute of Medicine report. *Arch Internal Med*, 2012; 172: 1,023–7.
28. Totten VY, Sugarman DB. Respiratory effects of spinal immobilization. *Preh Emerg Care*, 1999; 3: 347–52.
29. Davies G, Deakin C, Wilson A. The effect of a rigid collar on intracranial pressure. *Injury*, 1996; 27: 647–9.
30. Kolb JC, Summers RL, Galli RL. Cervical collar-induced changes in intracranial pressure. *Amer J Emerg Med*, 1999; 17: 135–7.
31. Ben-Galim P, Dreiangel N, Mattox KL, Reitman CA, Kalantar SB, Hipp JA. Extrication collars can result in abnormal separation between vertebrae in the presence of a dissociative injury. *J Trauma*, 2010; 69: 447–50.
32. Luscombe MD, Williams JL. Comparison of a long spinal board and vacuum mattress for spinal immobilisation. *Emerg Med J*, 2003; 20: 476–8.

Karl A. Sporer, MD, FACEP, FACP, is EMS medical director for Alameda County EMS in California. Reach him at karl.sporer@acgov.org (karl.sporer@acgov.org20%20)

Do you recommend this article?

Recommend 108



Post a new comment

Login

- Or -

Guest

Post

0 Comments

SPINAL MOTION RESTRICTION: AN EDUCATIONAL AND IMPLEMENTATION PROGRAM TO REDEFINE PREHOSPITAL SPINAL ASSESSMENT AND CARE

James F. Morrissey, EMT P, MA, Elsie R. Kusel, EMT-P, Karl A. Sporer, MD, FACEP, FACP

ABSTRACT

Introduction. Prehospital spine immobilization has long been applied to victims of trauma in the United States and up to 5 million patients per year are immobilized mostly with a cervical collar and a backboard. **Objective.** The training of paramedics and emergency medical technicians on the principals of spine motion restriction (SMR) will decrease the use of backboards. **Methods.** The training for SMR emphasized the need to immobilize those patients with a significant potential for an unstable cervical spine fracture and to use alternative methods of maintaining spine precautions for those with lower risk. The training addressed the potential complications of the use of the unpadded backboard and education was provided about the mechanics of spine injuries. Emergency medical services (EMS) personnel were taught to differentiate between the critical multisystem trauma patients from the more common moderate, low kinetic energy trauma patients. A comprehensive education and outreach program that included all of the EMS providers (fire and private), hospitals, and EMS educational institutions was developed. **Results.** Within 4 months of the policy implementation, prehospital care practitioners reduced the use of the backboard by 58%. This was accomplished by a decrease in the number of patients considered for SMR with low kinetic energy and the use of other methods, such as the cervical collar only. **Conclusion.** The implementation of a SMR training program significantly decreases the use of backboards and allows alternative methods of maintaining spine precautions. **Keywords:** Emergency Medical Services; humans; spinal injuries/therapy; transportation of patients; cervical vertebrae/injuries; emergency medical services/methods; emergency medical technicians; immobilization/methods; spinal motion restriction

PREHOSPITAL EMERGENCY CARE 2014;18:429-432

INTRODUCTION

Prehospital spine immobilization has long been applied to victims of blunt or penetrating trauma who

Received July 18, 2013 from the Alameda County EMS Agency, San Leandro, California. Revision received November 5, 2013; accepted for publication November 5, 2013.

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Address correspondence to Karl A. Sporer, MD, Alameda County EMS Agency, 1000 San Leandro Blvd, Suite 200, San Leandro, CA 94577, USA. e-mail: karl.sporer@acgov.org

doi: 10.3109/10903127.2013.869643

have experienced a mechanism of injury forceful enough to possibly damage the spinal column. Emergency medical services (EMS) textbooks commonly stress that any significant mechanism of injury requires full body immobilization, which is typically defined as the patient being secured to a backboard and a cervical collar being applied.^{1,2} It is estimated that up to 5 million patients receive spine immobilization each year in the United States, most of who have no evidence of spine injuries.^{3,4}

The rate of cervical spine fractures among severely traumatized patients is 2–5% and the rate of unstable cervical fracture is 1–2%.^{5–7} Among patients with lesser mechanisms, such as a motor vehicle crash without multisystem trauma or a fall from standing and assault, the cervical fracture rate (1.2–3.3%)^{3,8–11} and the cervical spine cord injury rate (0.4–0.7%) are substantially lower.^{12,13}

Recent research among patients with penetrating trauma demonstrated a doubling of mortality among those who received spine immobilization.^{7,14–20} A recent systematic review of this literature pointed out the relatively rare appearance of patients with an unstable spine fracture and no neurologic deficits.²¹ They concluded that there are no data to support routine spine immobilization in patients with penetrating injury to the neck, head, or torso.

There are clinical complications with cervical spine immobilization as it is currently practiced. Pain is almost universal with the use of a backboard.^{22–25} There are other potential problems, such as mild respiratory compromise²⁶, increased intracranial pressure,^{27,28} or the rare cases of distracting an unstable fracture.^{29,30} A recent pediatric study demonstrated that immobilized children with a similar level of trauma had higher rates of pain and were more likely to undergo radiographic evaluation and admission to the hospital.^{31,32} A recent position statement by NAEMSP and the American College of Surgeons on the use of backboards states that they are largely unproven and their use should be judicious, so that the potential benefits outweigh the risks.³³

The Alameda County Emergency Medical Services Agency developed a unique training program to continue to immobilize those patients with a high risk of an unstable cervical spine injury, and to avoid the use of the backboard in our patients with lesser mechanisms of injury. Our hypothesis is that the implementation of this program will result in fewer patients receiving immobilization with backboards.

METHODS

Alameda County is an urban/suburban/rural county in Northern California that is 737 square miles with a population of 1.5 million. Our paramedic-staffed first response engines and paramedic/EMT-staffed transport ambulances respond to 125,000 EMS calls each year and transport 90,000 patients each year. This county was one of the early adopters of the State of Maine and later NEXUS criteria to allow paramedics to omit spine immobilization on selected trauma patients.^{11,12,34–39} The past practice was to place minor and major trauma patients who could not be cleared by the NEXUS criteria on an unpadded hardboard and cervical collar. The UCSF Committee on Human Research decided that approval was not required for this study because the data was extracted from a performance improvement data set with no identifiable personal information.

The initial training of over 800 paramedics (approximately 90% of practicing paramedics) for modifying our spine injury assessment and treatment procedures was delivered to EMS providers as a component of the County's mandatory annual policy update training (see Table 1). This training consisted of

- 1) Video lecture – 11 minutes of the 41-minute policy update video was devoted to spine injury assessment and treatment.
- 2) "Train the trainer" session to the leaders of the County's various agencies' clinical education departments. Discussion period of varied duration for providers to address questions and concerns regarding pathophysiology, assessment, spine motion restriction (SMR) techniques, and liability.

TABLE 1. Spinal motion restriction (SMR) teaching points

- No longer use mechanism of injury as the sole criteria for spinal immobilization
- Education about the mechanics of spinal injuries and stable versus unstable cervical column injuries
- Differentiated the critical multisystem, multitrauma victim from more common moderate, low kinetic energy trauma
- Emphasized the full and complete assessment of the patient before making a decision regarding immobilization
- Omit SMR altogether for those that meet "clearance" criteria
- Victims of penetrating trauma should not be immobilized unless neurological deficits are present
- Lack of evidence and potential harm in unpadded backboard immobilization and avoiding its use
- Stable spine injuries need very little in terms of field stabilization (cervical collar and gurney)
- Alternative methods of SMR, including the vacuum mattress
- Stressed that any SMR method should conform to the patient, not the other way around
- Allow patients to be comfortably secured in a myriad of positions such as sitting, reclined, or on their side

- 3) Hands-on practice of spine injury assessment and SMR (including vacuum mattress use and alternative methods maintaining spine precautions).
- 4) Post-test and evaluation.

A similar mandatory training was also delivered to new accreditation candidates at our orientation. Reference articles and research papers, as well as spine injury and SMR policies from other areas are made available electronically (www.acphd.org/emtpara/edutrain/spineinjuryresources.aspx). More condensed versions of training (brief lecture with demonstration of techniques and no practicum) were presented to various stakeholders, including receiving hospitals, trauma audit committee, and local EMS educational institutions. The lesson plan emphasized physically assessing patients prior to performing procedures, avoiding placing patients with suspected spine injury directly on a backboard and supporting alternative methods of maintaining spine precautions with other methods that are more comfortable and with fewer complications.

The curriculum differentiated the critical multisystem, multitrauma victim from more common moderate, low kinetic energy trauma correlating that information to stable vs. potentially unstable spinal column injuries. The concept that stable spine injuries need very little in terms of field stabilization was emphasized. Many patients require only a cervical collar and to be secured just like any other nontrauma patient. We also demonstrated alternative methods of maintaining spine precautions, including the vacuum mattress that allows patients to be comfortably secured in a myriad of positions such as sitting, reclined, or on their side. We stressed that any SMR method should conform to the patient, not the other way around.

Our electronic patient care records were queried for the number of patients who received cervical spine immobilization from April 2012 through April 2013. During the period of April 1 through November 31, 2012, the only option was no immobilization or full immobilization with a hard collar and a backboard. Specific data elements on cervical spine management in the electronic patient care record were expanded to include cervical spine immobilization with backboard and collar, cervical collar only, Kendrick Extrication Device (KED), self-limited, or other.

RESULTS

The training on spine motion restriction began in September and was completed by December 2012. In the pretraining period of April through September 2012, an average of 604 (SD, 39; range 564–643) patients each month were considered for spine immobilization and placed in a cervical collar and backboard. In the post-training period, 241 (SD 9.5; range 232–250)

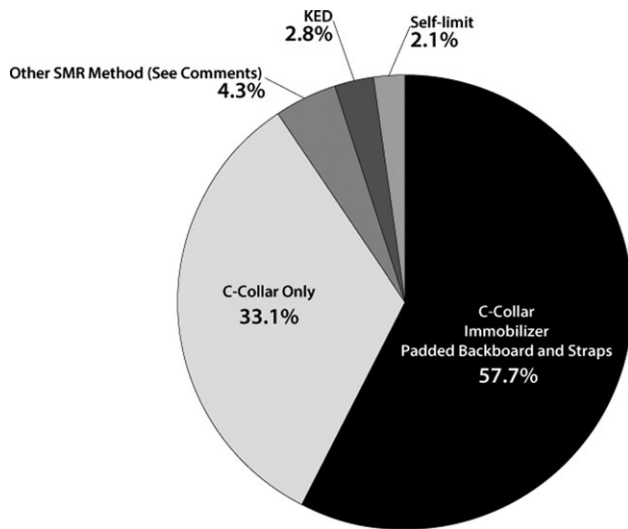


FIGURE 1. Method of immobilization used after the implementation of Spine Motion Restriction.

patients were immobilized with a cervical collar and backboard.

The number of patients considered for spine motion restriction under the new policy decreased to approximately 400 per month. Among these patients considered for SMR, 63% received immobilization with the traditional cervical collar, immobilizer, and backboard (see Figure 1). The remaining 37% were immobilized with either a cervical collar only, car seat, KED, self-limiting of motion by the patient, or some other method of restriction. Between the decrease in consideration and the use of SMR, our community has decreased the use of the backboard by 58% (see Figure 2).

DISCUSSION

The Spine Motion Restriction training program has decreased the use of backboards in our system. The existing ambiguity about the mechanism of injury coupled

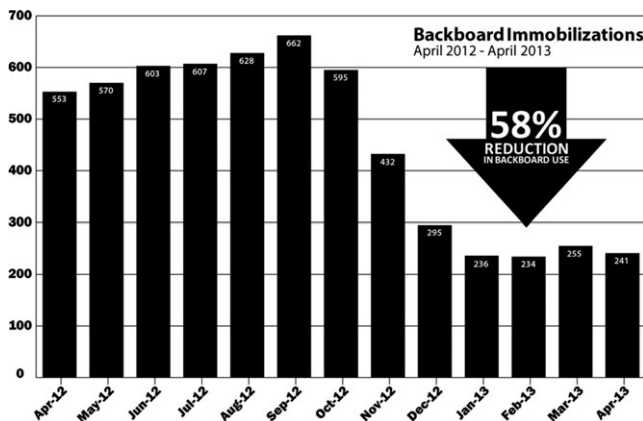


FIGURE 2. Monthly utilization of backboards.

with the concern about potential missed injuries and the fear of reprisals and litigation led to a relatively high rate of spine immobilization even among those patients with lesser mechanisms. Our overarching goal is to continue to appropriately immobilize those patients with a significant potential for an unstable cervical spine fracture and to use alternative spine immobilization for those with lower risk.

This educational module demonstrated the significant and mounting body of evidence showing the detrimental effects of standard spine immobilization (see Table 1). This curriculum included a more thorough understanding of spinal anatomy and pathophysiology as well as concepts of essential traumatic spine mechanisms, injury patterns, and definitive care for spinal cord injuries.^{40,41} This curriculum educated EMS practitioners on the concept of stable versus unstable column injuries and the mechanics of spine injuries secondary to kinetics, edema, and compromised spinal cord perfusion. It helped EMS personnel to differentiate between critical multisystem trauma patients from the more common moderate, low kinetic energy trauma patients.

The lesson plan emphasized physically assessing patients prior to performing procedures, avoiding placing patients with suspected spine injury directly on a backboard, and supporting methods of protecting patients' spines with other methods that are more comfortable.

Our training emphasized the concept that stable spine injuries need minimal field stabilization and can commonly be accomplished with only a cervical collar. Alternative methods such as the vacuum splint or the use of other more comfortable positions were also taught. Our goal was to have the SMR method conform to the patient and not the other way around.

LIMITATIONS

A major limitation of our Spine Motion Restriction training program is the lack of outcomes among our patients. There is no consistent or objective measure of the rate of stable or unstable cervical spine fractures or the rate of spinal cord injuries found in the emergency department. We currently get clinical feedback from our community hospitals through our usual performance improvement process. Our agency has been notified of two stable cervical spine fractures without full immobilization in the first year of our implementation. These two patients both under the age of 50 had cervical spinous fractures, one from a pedestrian struck by a vehicle and the other from a motor vehicle accident.

CONCLUSION

Our unique spine motion restriction training program incorporated recent clinical research. The

Prehosp Emerg Care Downloaded from informahealthcare.com by 157.145.220.3 on 07/03/14 For personal use only.

implementation of this program resulted in a 58% reduction in the use of unpadded backboards.

References

1. NAEMT, American College of Surgeons CoT. Prehospital Trauma Life Support. Jones & Bartlett Learning; 2010.
2. Pollak AN, Barnes L, Ciotala JA, et al. Emergency: Care and Transportation of the Sick and Injured. Jones & Bartlett Learning; 2011.
3. Stiell IG, Wells GA, Vandemheen KL, et al. The Canadian C-spine rule for radiography in alert and stable trauma patients. *JAMA*. 2001;286(15):1841–8.
4. Orledge JD, Pepe PE. Out-of-hospital spinal immobilization: is it really necessary? *Acad Emerg Med*. 1998;5(3):203–4.
5. Grossman MD, Reilly PM, Gillett T, et al. National survey of the incidence of cervical spine injury and approach to cervical spine clearance in U.S. trauma centers. *J Trauma*. 1999;47(4):684–90.
6. Lowery DW, Wald MM, Browne BJ, et al. Epidemiology of cervical spine injury victims. *Ann Emerg Med*. 2001;38(1):12–6.
7. Rhee P, Kuncir EJ, Johnson L, et al. Cervical spine injury is highly dependent on the mechanism of injury following blunt and penetrating assault. *J Trauma*. 2006;61(5):1166–70.
8. Meldon SW, Brant TA, Cydulka RK, et al. Out-of-hospital cervical spine clearance: agreement between emergency medical technicians and emergency physicians. *J Trauma*. 1998;45(6):1058–61.
9. Hoffman JR, Mower WR, Wolfson AB, et al. Validity of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma. National Emergency X-Radiography Utilization Study Group. *N Engl J Med*. 2000;343(2):94–9.
10. Domeier RM, Swor RA, Evans RW, et al. Multicenter prospective validation of prehospital clinical spinal clearance criteria. *J Trauma*. 2002;53(4):744–50.
11. Burton JH, Dunn MG, Harmon NR, et al. A statewide, prehospital emergency medical service selective patient spine immobilization protocol. *J Trauma*. 2006;61(1):161–7.
12. Domeier RM, Frederiksen SM, Welch K. Prospective performance assessment of an out-of-hospital protocol for selective spine immobilization using clinical spine clearance criteria. *Ann Emerg Med*. 2005;46(2):123–31.
13. Kwan I, Bunn F. Effects of prehospital spinal immobilization: a systematic review of randomized trials on healthy subjects. *Prehosp Disaster Med*. 2005;20(1):47–53.
14. Brown JB, Bankey PE, Sangosanya AT, et al. Prehospital spinal immobilization does not appear to be beneficial and may complicate care following gunshot injury to the torso. *J Trauma*. 2009;67(4):774–8.
15. Connell RA, Graham CA, Munro PT. Is spinal immobilisation necessary for all patients sustaining isolated penetrating trauma? *Injury*. 2003;34(12):912–4.
16. DuBose J, Teixeira PG, Hadjizacharia P, et al. The role of routine spinal imaging and immobilisation in asymptomatic patients after gunshot wounds. *Injury*. 2009;40(8):860–3.
17. Kaups KL, Davis JW. Patients with gunshot wounds to the head do not require cervical spine immobilization and evaluation. *J Trauma*. 1998;44(5):865–867.
18. Klein Y, Cohn SM, Soffer D, et al. Spine injuries are common among asymptomatic patients after gunshot wounds. *J Trauma*. 2005;58(4):833–6.
19. Lanoix R, Gupta R, Leak L, et al. C-spine injury associated with gunshot wounds to the head: retrospective study and literature review. *J Trauma*. 2000;49(5):860–3.
20. Haut ER, Kalish BT, Efron DT, et al. Spine immobilization in penetrating trauma: more harm than good? *J Trauma*. 2010;68(1):115–20.
21. Stuke LE, Pons PT, Guy JS, et al. Prehospital spine immobilization for penetrating trauma – review and recommendations from the Prehospital Trauma Life Support Executive Committee. *J Trauma*. 2011;71(3):763–69; discussion 769–70.
22. Cordell WH, Hollingsworth JC, Olinger ML, et al. Pain and tissue-interface pressures during spine-board immobilization. *Ann Emerg Med*. 1995;26(1):31–6.
23. Chan D, Goldberg R, Tascone A, et al. The effect of spinal immobilization on healthy volunteers. *Ann Emerg Med*. 1994;23(1):48–51.
24. March JA, Ausband SC, Brown LH. Changes in physical examination caused by use of spinal immobilization. *Prehosp Emerg Care*. 2002;6(4):421–4.
25. Smith-Bindman R. Environmental causes of breast cancer and radiation from medical imaging: findings from the Institute of Medicine report. *Arch Intern Med*. 2012;172(13):1023–7.
26. Totten VY, Sugarman DB. Respiratory effects of spinal immobilization. *Prehosp Emerg Care*. 1999;3(4):347–52.
27. Davies G, Deakin C, Wilson A. The effect of a rigid collar on intracranial pressure. *Injury*. 1996;27(9):647–9.
28. Kolb JC, Summers RL, Galli RL. Cervical collar-induced changes in intracranial pressure. *Am J Emerg Med*. 1999;17(2):135–7.
29. Ben-Galim P, Dreiangel N, Mattox KL, et al. Extrication collars can result in abnormal separation between vertebrae in the presence of a dissociative injury. *J Trauma*. 2010;69(2):447–50.
30. Dreiangel N, Ben-Galim P, Lador R, et al. Occipitocervical dissociative injuries: common in blunt trauma fatalities and better detected with objective computed tomography-based measurements. *Spine J*. 2010;10(8):704–7.
31. Leonard JC, Mao J, Jaffe DM. Potential adverse effects of spinal immobilization in children. *Prehosp Emerg Care*. 2012;16(4):513–8.
32. Hauswald M. A re-conceptualisation of acute spinal care. *Emerg Med J*. 2013;30(9):720–3.
33. National Association of EMS Physicians and American College of Surgeons Committee on Trauma. EMS spinal precautions and the use of the long backboard. *Prehosp Emerg Care*. 2013;17(3):392–3.
34. Domeier RM. Indications for prehospital spinal immobilization. National Association of EMS Physicians Standards and Clinical Practice Committee. *Prehosp Emerg Care*. 1999;3(3):251–3.
35. Muhr MD, Seabrook DL, Wittwer LK. Paramedic use of a spinal injury clearance algorithm reduces spinal immobilization in the out-of-hospital setting. *Prehosp Emerg Care*. 1999;3(1):1–6.
36. Stroh G, Braude D. Can an out-of-hospital cervical spine clearance protocol identify all patients with injuries? An argument for selective immobilization. *Ann Emerg Med*. 2001;37(6):609–15.
37. Barry TB, McNamara RM. Clinical decision rules and cervical spine injury in an elderly patient: a word of caution. *J Emerg Med*. 2005;29(4):433–6.
38. Shafer JS, Naunheim RS. Cervical spine motion during extrication: a pilot study. *Western J Emerg Med*. 2009;10(2):74–8.
39. Vaillancourt C, Charette M, Kasaboski A, et al. Evaluation of the safety of C-spine clearance by paramedics: design and methodology. *BMC Emerg Med*. 2011;11:1.
40. Sporer KA. Why we need to rethink C-spine immobilization: we need to reevaluate current practices and develop a saner cervical policy. *EMS World*. 2012;41(11):74–6.
41. Morrissey J. Spinal immobilization: time for a change. *JEMS*. 2013;38(3):28–30, 32–26, 38–29.

MEDICAL CONTROL GUIDELINE: SPINAL MOTION RESTRICTION (SMR)

DEFINITION: Spinal Motion Restriction (SMR) describes the procedure used to care for patients with possible unstable spinal injuries. SMR includes: Reduction of gross movement by the patient; prevention of additional damage to the spine; and regular reassessment of motor/sensory function.

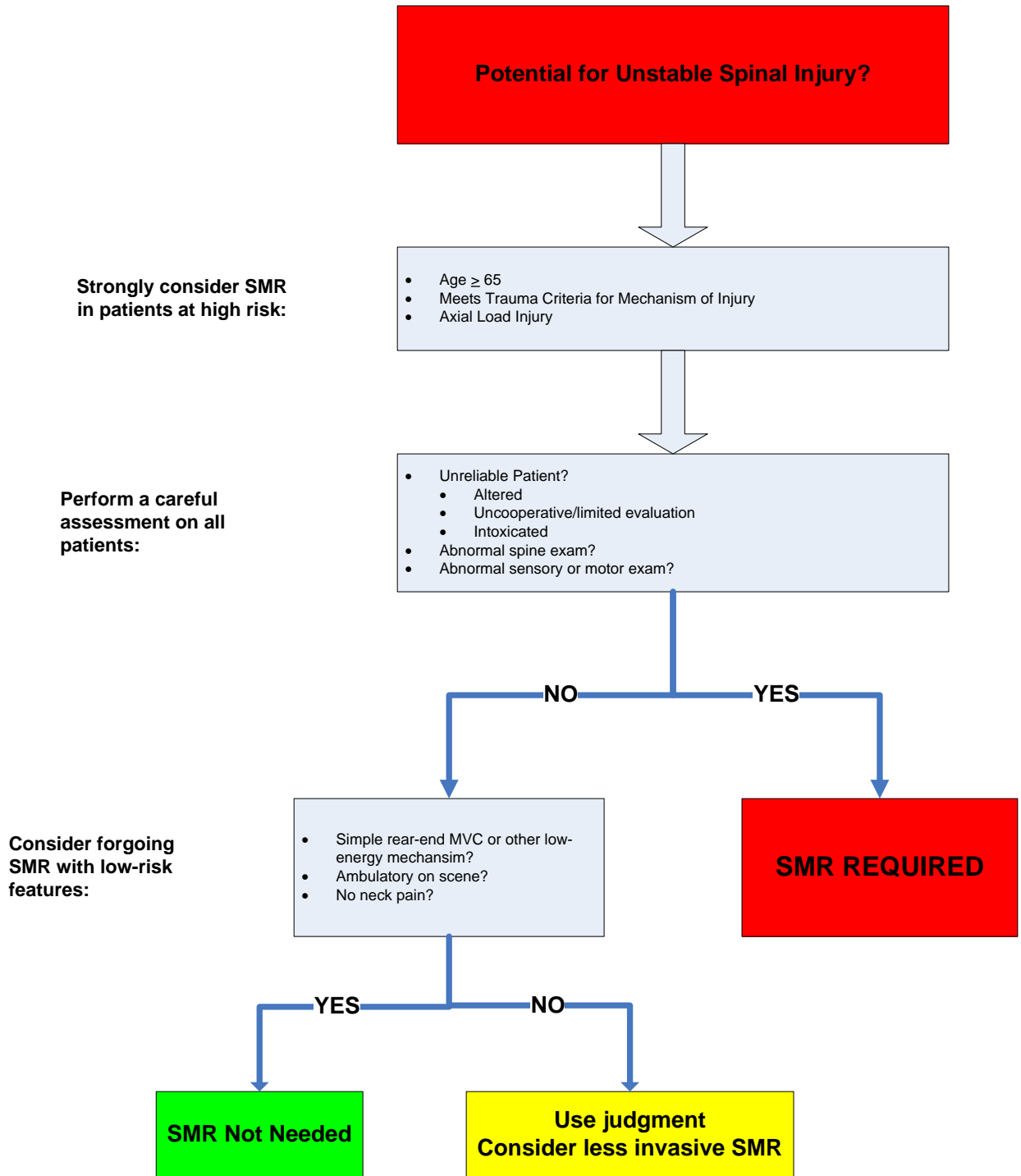
PRINCIPLES:

1. There are multiple methods of SMR; current evidence does not support any one method over another. In addition, there are harmful side effects of SMR that must be considered.
2. SMR Methods: (least to most invasive) cervical collar in fowler's, semi-fowler's or supine on the stretcher, vacuum mattresses/ scoops / skeds, shortboards and keds, backboard and head blocks with straps.
3. Prehospital provider assessment will determine what method is needed. Every patient with trauma must receive an assessment. If any assessment component is positive, the patient requires SMR.
4. Prehospital provider should use judgment and consider less invasive means of SMR for patients without neurologic findings, but in whom one is still concerned for unstable spinal injury.
5. Ambulatory patients generally do not need a backboard.
6. SMR for penetrating injuries is generally not indicated and transport must not be delayed to apply SMR. Treatment of patients with penetrating trauma should not involve a backboard unless it is required as an extrication device or if there is a significant concomitant blunt mechanism.
7. Safe and proper removal of the helmet should be done by two people following steps outlined in an approved trauma curriculum.
8. Once SMR has been initiated based upon prehospital provider assessment, only hospital personnel should discontinue it. However, if a patient is not tolerating a particular method of SMR, alternate methods may be used when appropriate. In particular, management of the patient's airway may necessitate alternate SMR and should take precedence.

GUIDELINES:

1. An unreliable patient is anyone who is altered or intoxicated. Limited evaluation may be due to communication barrier, uncooperative patient or patient too distracted by other injuries and circumstances.
2. An abnormal spine exam is any deformity or tenderness along the spine.
3. Neurological examination includes: A) Test of sensation and abnormal sensation (parasthesias) in all 4 extremities B) test of motor skills in all 4 extremities with active movements by the patient (avoid just reflexive movements like hand grasp) to include: wrist/finger extension and flexion, foot plantar and dorsiflexion C) Frequent reassessment.

ADULT ALGORITHM:



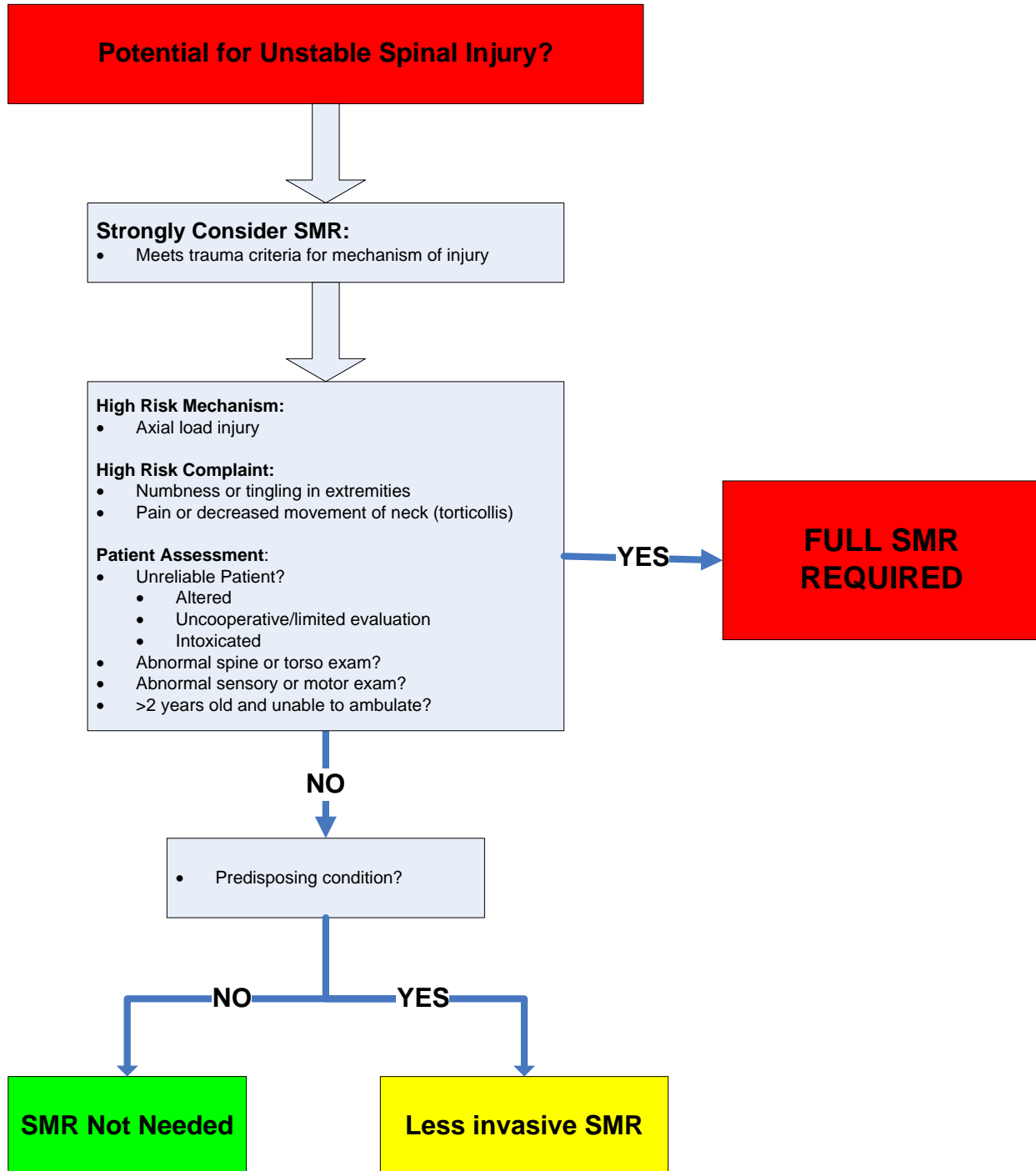
PEDIATRIC GUIDELINES:

1. SMR requires the patient's head, neck and torso to be appropriately stabilized.
 - a. < 3 years – cervical collar plus backboard with occipital recess or thoracic padding plus straps to secure patient to the board
 - b. 3-14 years - cervical collar plus backboard with thoracic padding as needed plus straps to secure patient to the board
2. Infants in rear facing car seats may be immobilized and extricated in the car seat as long as the patient is stable and does not exhibit signs of respiratory distress or shock.
3. Children restrained in a car seat with a high back should be extricated in the car seat and then be placed in SMR as appropriate.
4. Children in booster seats (without a back) should be placed in SMR as appropriate.
5. Predisposing conditions are any of the following: Family members who fracture bones easily, child with spinal deformity, dysmorphic features, or childhood rheumatoid arthritis.

[Specific conditions include: Down syndrome, hydrocephalus, dwarfism (achondrodysplasia), Klippel-Feil syndrome, mucopolysaccharidosis, Ehlers-Danlos syndrome, Marfan syndrome, osteogenesis imperfecta, Larsen syndrome, juvenile rheumatoid arthritis, juvenile ankylosing spondylitis, renal osteodystrophy, rickets, scoliosis, history of cervical spine injury /surgery.]

6. Abnormal torso exam refers to evidence of substantial torso injury, defined as injuries thought to be potentially life threatening to the thorax including the chest wall, abdomen, flanks, back and pelvis with an unstable chest wall, abdominal distension or significant chest or abdominal tenderness.

PEDIATRIC ALGORITHM



EMS SPINAL PRECAUTIONS AND THE USE OF THE LONG BACKBOARD – RESOURCE DOCUMENT TO THE POSITION STATEMENT OF THE NATIONAL ASSOCIATION OF EMS PHYSICIANS AND THE AMERICAN COLLEGE OF SURGEONS COMMITTEE ON TRAUMA

Chelsea C. White IV, MD, EMT-P, Robert M. Domeier, MD, Michael G. Millin, MD, MPH, and the Standards and Clinical Practice Committee, National Association of EMS Physicians

ABSTRACT

Field spinal immobilization using a backboard and cervical collar has been standard practice for patients with suspected spine injury since the 1960s. The backboard has been a component of field spinal immobilization despite lack of efficacy evidence. While the backboard is a useful spinal protection tool during extrication, use of backboards is not without risk, as they have been shown to cause respiratory compromise, pain, and pressure sores. Backboards also alter a patient's physical exam, resulting in unnecessary radiographs. Because backboards present known risks, and their value in protecting the spinal cord of an injured patient remains unsubstantiated, they should only be used judiciously. The following provides a discussion of the elements of the National Association of EMS Physicians (NAEMSP) and American College of Surgeons Committee on Trauma (ACS-COT) position statement on EMS spinal precautions and the use of the long backboard. This discussion includes items where there is supporting literature and items where additional science is needed. **Key words:** EMS; spinal injury; backboards

PREHOSPITAL EMERGENCY CARE 2014;Early Online:1-9

INTRODUCTION

The National Association of EMS Physicians (NAEMSP) and the American College of Surgeons Committee on Trauma (ACS-COT) have published a new position paper on "EMS Spinal Precautions and the Use of the Long Backboard."¹ This paper is the resource document for the position paper and is

Received March 12, 2013 from the Department of Emergency Medicine, University of New Mexico School of Medicine, Albuquerque, New Mexico (CCW), Department of Emergency Medicine, St. Joseph Mercy Hospital, Ann Arbor, Michigan (RMD), and Department of Emergency Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland (MGM). Revision received January 10, 2014; accepted for publication January 13, 2014.

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Address correspondence to Robert M. Domeier, MD, Department of Emergency Medicine, St. Joseph Mercy Hospital, Ann Arbor, MI 48197, USA.

doi: 10.3109/10903127.2014.884197

designed to guide practitioners in understanding of the new position statement. Each item in the position is quoted and followed by a discussion and a review of the literature.

- "Long backboards are commonly used to attempt to provide rigid spinal immobilization among EMS trauma patients. However, the benefit of long backboards is largely unproven."

HISTORY OF THE BACKBOARD

Field spinal immobilization using a cervical collar and a backboard has been standard practice for patients with suspected spine injury since the 1960s. Prior to that time no formal immobilization practice was used and advanced first aid was the highest level of training for ambulance personnel.

A 1966 report by Geisler et al. attributed "delayed onset of paraplegia" in hospitalized patients with spinal fractures to "failure to recognize the injury and protect the patient from the consequences of his unstable spine."² This retrospective study of the surgical management of spinal column injury includes a discussion of only two patients, one who incurred a depressed skull fracture from a motor vehicle crash in 1955, but was otherwise "observed to move all four limbs." The authors write that after the patient began to develop paraplegia with a sensory level at T10, an x-ray identified a thoracic spine fracture and the patient was taken to operative management with a decompressive laminectomy. The patient eventually developed permanent paralysis at the T4 level, leading the authors to write that the patient "would surely have been protected from the paraplegic condition had the spinal instability been recognized and precautions taken." Further, the authors write that "the importance of proper first-aid was deduced from the fact that 29 patients [in their dataset] developed further paralysis through faulty handling."²

After the publication of the report by Geisler et al., the medical community subscribed to the belief that patients with blunt-force trauma (primarily from motor vehicle crashes) should be immobilized on rigid devices to minimize the risk of delayed paralysis in

Suspected Stroke	
ADULT	
BLS Procedures	
Cincinnati Stroke Scale (CSS) Administer oxygen as indicated <ul style="list-style-type: none">Administer oxygen if SpO2 less than 94% or unknownIf low blood sugar suspected, refer to VC EMS Policy 705.03 – Altered Neurologic Function	
ALS Prior to Base Hospital Contact	
IV/IO access Cardiac monitor – document initial and ongoing rhythm strips Determine Blood Glucose level, treat according to VC EMS policy 705.03 – Altered Neurologic Function If patient meets Stroke Alert Criteria, as defined in VC EMS Policy 451, expedite transport to nearest Acute Stroke Center (ASC)	
Base Hospital Orders only	
Consult with ED Physician for further treatment measure	
Additional Information <ul style="list-style-type: none">Cincinnati Stroke Scale (CSS).<ul style="list-style-type: none">Facial Droop<ul style="list-style-type: none">Normal: Both sides of face move equallyAbnormal: One side of face does not move normallyArm Drift<ul style="list-style-type: none">Normal: Both arms move equally or not at allAbnormal: One arm does not move, or one arm drifts down compared with the other sideSpeech<ul style="list-style-type: none">Normal: Patient uses correct words with no slurringAbnormal: Slurred or inappropriate words or mutePatients meeting Stroke Alert Criteria, as defined in VC EMS Policy 451, shall be transported to the nearest Acute Stroke Center (ASC).Stroke patients in cardiac arrest with sustained ROSC (>30 seconds) shall be transported to the nearest STEMI Receiving Center (SRC).For seizure activity, refer to VC EMS Policy 705.20 Seizure.Minimize scene time and transport Code 3 if symptoms present for 4.5 hours or less.; Remove	

DRAFT

Effective Date: December 1, 2012
Next Review Date:

Date Revised:
Last Reviewed:

G:\EMS\ADMIN\EMS Admin\Committees\PSC\2014\10_July\
Stroke705.26_Apr13.Docx

VCEMS Medical Director

DRAFT

COUNTY OF VENTURA HEALTH CARE AGENCY	EMERGENCY MEDICAL SERVICES POLICIES AND PROCEDURES
Policy Title: Stroke System Triage and Destination	Policy Number 451
APPROVED: Administration: Steven L. Carroll, EMT-P	Date:
APPROVED: Medical Director: Angelo Salvucci, M.D.	Date:
Origination Date: October 11, 2012	
Date Revised:	Effective Date:
Date Last Reviewed:	
Review Date:	

- I. PURPOSE: To outline the process of prehospital triage and transport of suspected acute stroke patients to facilities designated as an Acute Stroke Center (ASC).
- II. AUTHORITY: California Health and Safety Code Sections 1797.220 and 1798, California Code of Regulations, Title 22, Division 9, Sections 100147, and 100169
- III. DEFINITIONS:
 - Acute Stroke Center (ASC):** Hospitals that are designated as an Acute Stroke Center, as defined in VCEMS Policy 450
 - Stroke Alert:** An early notification by prehospital personnel to the base hospital that a patient is suffering a possible acute stroke.
 - Last Known Well Time (LKWT):** The date/time at which the patient was last known to be without the signs and symptoms of the current stroke or at his or her baseline state of health.
- IV. POLICY:
 - A. Stroke System Triage: A patient meeting **all of** the following three criteria shall be triaged into the VC EMS stroke system and transported to the nearest ASC.
 1. Identification of any abnormal finding of the Cincinnati Stroke Scale (CSS).
 - Facial Droop
 - Normal: Both sides of face move equally
 - Abnormal: One side of face does not move normally
 - Arm Drift
 - Normal: Both arms move equally or not at all
 - Abnormal: One arm does not move, or one arm drifts down compared with the other side
 - Speech
 - Normal: Patient uses correct words with no slurring
 - Abnormal: Slurred or inappropriate words or mute

2. ~~Patient was last seen normal within the last 4.5 hours.~~ Patient's LKWT is within 4.5 hours.
3. Blood Glucose is greater than sixty (60) OR patient continues to exhibit signs and symptoms of an acute stroke after prehospital treatment of abnormal blood glucose levels.
4. Stroke Alert: Upon identification of a patient meeting stroke system criteria, Base Hospital Contact (BHC) will be established and a Stroke Alert will be activated.
 - a. The base hospital will determine the closest appropriate ASC based on several factors including patient presentation, hospital availability, and transport time. Upon receipt of the Stroke Alert, the Base Hospital will notify the appropriate ASC, unless the base hospital receiving the Stroke Alert will also be the receiving the patient.
5. Destination Decision: patients meeting stroke system criteria shall be transported to the nearest ASC, except in the following cases:
 - a. Stroke patients in cardiac arrest shall be transported to the nearest receiving hospital. Patients who have greater than thirty seconds of return of spontaneous circulation (ROSC) shall be transported to the nearest STEMI Receiving Center (SRC).
 - b. The nearest ASC is incapable of accepting a stroke alert patient due to CT or neuro diversion. In the event of CT or neuro diversion, the patient shall be transported to the next closest ASC.
 - c. The patient requests transport to an alternate facility, not extending transport by more than twenty (20) minutes, and approved by the Base Hospital.
6. Documentation
 - a. Care and findings related to an acute stroke patient shall be documented in the Ventura County electronic patient care reporting (VCePCR) system in accordance with VCEMS policy 1000.

1) **Protocol Title**

Interview Study of Survivors of Sudden Cardiac Arrest

2) **Objectives**

The primary objective of this study is to characterize symptoms associated with sudden cardiac arrest (SCA), and determine whether certain symptoms before SCA may correlate with patient characteristics (for example, age, gender, or self-reported health history).

3) **Background**

Sudden cardiac arrest (SCA) has a major impact on public health, is fatal in more than 90% of cases, and causes about half of all cardiac-related deaths in the United States. Although SCA is perceived as a sudden, unexpected circulatory collapse, there is recent evidence that a substantial proportion of patients experience symptoms in the hours, days, and weeks before their arrest. Furthermore, evidence suggests that patients who recognize these symptoms and call 911 immediately have much higher survival rates than patients who experience symptoms but do not call 911. Given this background, there has been relatively little research on symptoms prior to arrest, particularly in the subset of patients who survived the SCA. By focusing our research on survivors, we will be able to collect more detailed information regarding symptoms experienced at the time of SCA, as well as the patient's behaviors leading up to the 911 call, and management of the patient following the arrest. In addition, we will be able to collect information about the patient's family history and health history.

4) **Study Design**

Our study will consist of an in-person or telephone interview (patient preference) with patients who have survived an out of hospital SCA.

5) **Study Population**

a) **Number of Subjects**

We plan to identify approximately 300 individuals who suffered an out of hospital SCA in Ventura County, and who survived the SCA (there are an estimated 50 cases per year; we will use data from 2008 – 2014).

Using a conservative estimate that 33% of survivors can be contacted and will agree to participate in the interview, we expect to include 100 survivors of SCA from Ventura County in this study.

b) **Inclusion and Exclusion Criteria**

Adults aged 18 and older will be included in this study.

Subjects will be identified through the Ventura County EMS records, and will be those who suffered an out of hospital sudden cardiac arrest of likely cardiac origin, who were treated by EMS personnel and survived to hospital discharge. Out of hospital cardiac arrest will be defined as a sudden collapse that required resuscitation, and will include any type of presenting initial rhythm (ventricular fibrillation/tachycardia, pulseless electrical activity, and asystole). Patients with a cardiac arrest caused by trauma or other obvious non-cardiac cause will not be included.

c) Vulnerable Populations

No individuals from vulnerable populations (listed below) will be included in this study.

- Children
- Pregnant women
- Decisionally impaired and institutionalized adults
- Prisoners

d) Setting

Research activities for this study will be coordinated by Principal Investigator Dr. Sumeet Chugh at Cedars Sinai Medical Center. Dr. Angelo Salvucci, Medical Director of Ventura County Emergency Medical Services, will ascertain potential study participants. Dr. Chugh's research staff at the Cedars-Sinai Heart Institute will prepare and mail introductory letters on behalf of Dr. Salvucci as well as obtain consent and conduct interviews.

e) Recruitment Methods

Potential subjects will be sent an introductory letter, no sooner than 4 weeks after their event, to their home address from Dr. Angelo Salvucci, Medical Director of Ventura County Emergency Medical Services. This letter will briefly describe the study and will include an information sheet about the study. The letter will contain a telephone number to call if the patient does not wish to be contacted about the study.

Approximately two weeks after mailing the letter, a member of Dr. Chugh's research staff will contact the potential participant by telephone. Research staff will answer any questions and offer the opportunity for the person to enroll in the study. If an individual chooses to participate, the consent form will be mailed and the phone interview will be scheduled. For individuals who do not wish to be enrolled, all information will be removed from the dataset and they will not be contacted again.

f) Consent Process

Informed consent forms will be mailed if the subject expressed interest in participating after the follow up phone call.

Upon receipt of the signed consent form, study staff will contact the subject. At this time, study staff will reiterate the voluntary nature of the interview as well as the freedom for them to decide to withdraw from the study at any stage.

Non-English Speaking Subjects

Consent forms and introductory letters will be translated to Spanish for any non-English speaking Hispanic subjects. A translator will be present at all stages from consent to completion of interview.

6) Study Procedures

- 1) Identify potential subjects using EMS records
- 2) Mail introductory letter and information sheet
- 3) Follow up phone call approximately 2 weeks later, ascertain interest in participation, if interested, mail consent form
- 4) Call for interview, gain verbal consent, schedule in-person or over-the-phone interview
- 5) Administer interview

7) **Data Banking**

All information is collected and stored with complete confidentiality. Upon entry into this study, participants are assigned an individual identification number. The code linking name and number is maintained in a password-protected secure server and only accessible by Cedars study staff. All analysis will be conducted in a coded manner.

8) **Data Analysis**

This study is primarily descriptive, and data analysis will primarily involve describing frequencies of types of symptoms, patient characteristics, and demographics. Statistical associations between symptoms and patient characteristics will be tested using chi-square tests for categorical variables and Student's independent samples *t*-tests for continuous variables.

9) **Privacy, Confidentiality and Data Security**

Electronic data will be stored in a custom database housed on a password-protected Cedars secure server. Access to data is restricted to study staff personnel. Access to data requires Cedars ID/password authentication.

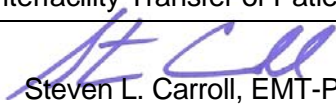

10) **Risks and Benefits**

a) **Risks to Subjects**

Potential risks could be psychological trauma associated with remembering and discussing the event for the subject or possible family members who also are present at the time of the interview.

b) **Potential Benefits to Subjects**

Potential benefits to subject may include the knowledge that by sharing their experience, they may help others who are faced with a life-threatening arrest. Possible benefits to society could be earlier detection and treatment/prevention of at-risk patients, as well as educating the general population regarding signs and symptoms of possible sudden cardiac arrest and alerting them to seek earlier care.

COUNTY OF VENTURA HEALTH CARE AGENCY		EMERGENCY MEDICAL SERVICES POLICIES AND PROCEDURES	
Policy Title: Guidelines for Interfacility Transfer of Patients to a TraumaCenter		Policy Number 1404	
APPROVED: Administration:  Steven L. Carroll, EMT-P		Date: June 1, 2014	
APPROVED: Medical Director:  Angelo Salvucci, M.D.		Date: June 1, 2014	
Origination Date: July 1, 2010		Effective Date:: June 1, 2014	
Date Revised: May 28, 2014			
Date Last Reviewed: March 4, 2014			
Review Date: March 31, 2017			

- I. PURPOSE: To establish guidelines for the transfer of a trauma patient from a hospital in VenturaCounty to a Level II trauma center.
- II. AUTHORITY: Health and Safety Code, §1797.160, §1797.161, and §1798, and California Code of Regulations, Title 22, §100255.
- III. DEFINITIONS:
 - A. **EMERGENT** Transfer: A process by which a patient with potential life-or-limb threatening traumatic injuries is transferred to a trauma center. The patient requires an immediate procedure at a trauma center, and a delay in transfer will result in deterioration of the patient’s condition, and the treating physician requests immediate transport to a trauma center.
 1. Trauma Call Continuation: A process by which a patient with potential life-or-limbthreatening traumatic injuries who has been taken to the emergency department by ALS ambulance is transferred to a trauma center. The patient requires an immediate procedure at a trauma center, the ALS ambulance is still on the premises, and the treating physician requests immediate transport to adesignated trauma center.
 - B. **URGENT** Transfer: A process by which a patient with time-critical traumatic injuries is transferred to a trauma center. The patient requires a timely procedure at a trauma center, and a lengthy delay will result in deterioration of the patient’s condition, and the treating physician requests prompt transport to a trauma center.
- IV POLICY: The following criteria will be used as a guideline for the transfer of a trauma patient to a trauma center.

- A. For patients who are in the emergency department at a community hospital and have one or more of the following injuries, if the referring physician requests transfer to a trauma center, the trauma center will immediately accept the patient
1. Carotid or vertebral arterial injury
 2. Torn thoracic aorta or great vessel
 3. Cardiac rupture
 4. Bilateral pulmonary contusion with PaO₂ to FiO₂ ratio less than 200
 5. Major abdominal vascular injury
 6. Grade IV, V or VI liver injuries
 7. Grade III, IV or V spleen injuries
 8. Unstable pelvic fracture
 9. Fracture or dislocation with neurovascular compromise
 10. Penetrating injury or open fracture of the skull
 11. Glasgow Coma Scale score <14 or lateralizing neurologic signs
 12. Unstable spinal fracture or spinal cord deficit
 13. >2 unilateral rib fractures or bilateral rib fractures with pulmonary contusion
 14. Open long bone fracture
 15. Significant torso injury with advanced co-morbid disease (such as coronary artery disease, chronic obstructive pulmonary disease, type 1 diabetes mellitus, or immunosuppression)
 16. Blunt or penetrating injury to the globe at risk for vision loss
- B. VenturaCounty Level II Trauma Centers:
1. Agree to immediately accept from Ventura County community hospitals, patients with conditions included in the guidelines above.
 2. Will publish a point-of-contact phone number for an individual authorized to accept the transfer of a patient with a condition included in the guidelines above, or to request consultation with a trauma surgeon.
 3. Will establish a written interfacility transfer agreement with every hospital in Ventura County.
 4. Immediately post on ReddiNetand notify EMS Administrator on-call when there is no capacity to accept traumapatients due to:
 - a. Diversion for internal disaster
 - b. CT scanner(s) non-operational

- c. Primary and back-up trauma surgeons in operating rooms with trauma patients
- C. Community Hospitals:
1. Are not required to transfer patients with conditions included in the guidelines above to a trauma center when resources and capabilities for providing care exist at their facility.
 2. Will enter into a written interfacility transfer agreement with every trauma center in Ventura County.
- D. **EMERGENT** Transfers
1. **EMERGENT** transfers are indicated for patients with life-or-limb threatening injuries in need of emergency procedures at a trauma center. Criteria **MUST** include at least one of the following:
 - a. Indications for an immediate neurosurgical procedure.
 - b. Penetrating gunshot wounds to head or torso.
 - c. Penetrating or blunt injury with shock.
 - d. Vascular injuries that cannot be stabilized and are at risk of hemorrhagic shock or loss of limb acutely (excluding fingers/toes).
 - e. Pregnancy with indications for an immediate Cesarean section.
 2. For **EMERGENT** transfers, trauma centers will:
 - a. Publish a single phone number (“hotline”), that is answered 24/7, for an individual authorized to accept the transfer of patients who have a condition as described in Section D.1 of this policy.
 - b. Immediately upon initial notification by a transferring physician, accept in transfer all patients who have a condition as described in Section D.1 of this policy.
 3. For **EMERGENT** transfers, community hospitals will:
 - a. Assemble and maintain a “Emergency Transfer Pack” in the emergency department to contain all of the following:
 1. Checklist with phone numbers of Ventura County trauma centers.
 2. Patient consent/transfer forms.
 3. Treatment summary sheet.
 4. Ventura County EMS “Emergency Trauma Patient Transfer QI Form.”

- b. Have policies, procedures, and a quality improvement system in place to track and review all **EMERGENT** transfers and Trauma Call Continuations.
 - c. Maintain an ambulance arrival to emergency department (ED) departure time of no longer than ten minutes.
 - d. Establish policies and procedures to make personnel available, when needed, to accompany the patient during the transfer to the trauma center.
 4. For **EMERGENT** transfers, Ventura County Fire Communications Center (FCC) will:
 - a. Respond to an **EMERGENT** transfer request by immediately dispatching the closest available ALS ambulance to the requesting hospital.
 - b. Consider Trauma Call Continuation transfers to be a follow-up to the original incident, and will link the trauma transfer fire incident number to the original 911 fire incident number.
 5. For **EMERGENT** transfers, ambulance companies will:
 - a. Respond immediately upon request.
 - b. For “Trauma Call Continuation” requests, immediately transport the patient to a trauma center with the same ALS personnel and vehicle that originally transported the patient to the community hospital.
 - c. Not be required to consider **EMERGENT** transports as an “interfacility transport” as it pertains to ambulance contract compliance.
- E. **URGENT** Transfers
 1. **URGENT** transfers are indicated for patients with time-critical injuries in need of timely procedures at a trauma center.
 2. For **URGENT** transfers, trauma centers will:
 - a. Publish a single phone number, that is answered 24/7, for a community hospital to request an urgent trauma transfer. Additionally, this line may be used to request additional consultation with a trauma surgeon if needed
 3. For **URGENT** transfers, community hospitals will:
 - a. Maintain an ambulance arrival to emergency department (ED) departure time of no longer than twenty minutes.

4. For **URGENT** transfers, ambulance companies will:
 - a. Arrive at the requesting ED no later than thirty minutes from the time the request was received.

V. PROCEDURE:

A. **EMERGENT** Transfers

1. After discussion with the patient, the transferring hospital will:
 - a. Call the trauma hotline of the closest trauma center to notify of the transfer.
 - b. Call FCC, advise they have an **EMERGENT** transfer, and request an ambulance. If the patient's clinical condition warrants, the transferring hospital will call FCC *before* calling the trauma center's hotline.
 - c. Complete transfer consent and treatment summary.
 - d. Prepare copies of the ED triage assessment form and demographic information form.
2. Upon request for an **EMERGENT** transfer, the dispatch center will dispatch the closest ALS ambulance and verbalize "MEDxxxE MERGENCY Trauma Transfer from [transferring hospital]". The trauma center will be denoted in the incident comments, which will display on the mobile data computer (MDC). If a unit does not have an operational MDC, the transferring hospital will advise the responding ambulance personnel of the destination trauma center.
3. Upon notification, the ambulance will respond Code (lights and siren).
4. FCC will track ambulance dispatch, enroute, on scene, en-route hospital, at hospital, and available times.
5. The patient shall be emergently transferred without delay. Every effort will be made to limit ambulance on-scene time in the transferring hospital ED to ten minutes.
 - a. All forms should be completed prior to ambulance arrival.
 - b. Any diagnostic test or radiologic study results may either be relayed to the trauma center at a later time, or if time permits, copied and sent with the patient to the trauma center.
 - c. Intravenous drips may be discontinued or remain on the ED pump.
 - d. The transporting paramedic will contact the trauma base hospital enroute and provide updated patient information.

B. Trauma Call Continuation

1. Upon determination of a Trauma Call Continuation, and after discussion with the patient, the community hospital will:
 - a. Direct the ambulance personnel to prepare to continue the transport to the trauma center.
 - b. Notify the designated trauma center ED of the immediate re-triage of a trauma patient, and communicate the patient's apparent injuries or reason for the re-triage, after the call is continued and the patient is enroute to the trauma center.
2. Upon notification of Trauma Call Continuation, the ambulance personnel will notify FCC of their assignment to a Trauma Call Continuation. FCC will link the trauma transfer to the original 911 incident and continue tracking enroute hospital (departure from community hospital), at hospital (arrival at trauma center) and available times.
3. When the transferring physician determines the patient is ready and directs ambulance personnel to continue the transport, the ambulance will emergently transport the patient to the trauma center. The transporting paramedic will contact the trauma base hospital enroute and provide updated patient information.

C. **URGENT** Transfers

1. After discussion with the patient, the transferring hospital will:
 - a. Call the trauma hotline for the closest trauma center to request an urgent trauma transfer. This call may be used to request additional consultation with the trauma surgeon if needed.
 - b. Call the transport provider to request an ambulance.
 - c. Complete transfer consent and treatment summary.
 - d. Prepare copies of the ED triage assessment form.
 - e. Limit ambulance on-scene time in the transferring hospital ED to twenty minutes.
2. Upon request for an Urgent transfer, the transport provider will dispatch an ambulance to arrive no later than thirty minutes after the request.

D. For all **EMERGENT** and **URGENT** transfers, the transferring hospital will submit a completed Emergency Trauma Patient Transfer QI Form to the Ventura County EMS Agency within 72 hours. The transfer will be reviewed for appropriate and

timely care and to identify opportunities for improvement. Results will be reviewed and discussed at the Countywide EMS Trauma Operational Review Committee.

SIDEWALK CPR 2014

<i>Facility Provider Name</i>	<i>Coordinator Name</i>	<i>Address/Location</i>	<i>Time of Event</i>	<i>Number of Attendees</i>
CSU Channel Islands	Al & Lynn Rice	CSU Channel Islands University Dr. Camarillo, CA 93012	10:00-12:00	32
Los Robles Hospital	Debbie Licht	The Oaks Mall 350 W. Hillcrest Drive Thousand Oaks, CA 91360	10:00-4:00	197
Ventura Emergency Training & Supply	Rochelle Angel	Westlake Promenade 100 Promenade Way Westlake Village, CA 91362	10:00-4:00	100
Oxnard Fire Dept.	Stephanie Huhn	The Esplanade 411 Esplanade Drive Oxnard, CA 93036	10:00-2:00	58
Santa Paula Fire Dept.	Matt Klein	Vons Market 576 W. Main Street Santa Paula, CA 93060	9:00-1:00	65
Fillmore Fire Dept.	Bob Scott	Vons Market 636 W. Ventura Street Fillmore, CA 93060	9:00-1:00	23
Ventura Fire Dept	Dede Utley	Pacific View Mall 3301 East Main Street Ventura, CA 93003	10:00-1:00	72
Ventura County Fire Dept.	Erica Gregson Mike Lindbery	Starbucks 540 Las Posas Rd. Camarillo, CA 93010	10:00-2:00	49
Simi Valley Hospital	Jennie Hoffman	Civic Center Plaza 2679 Tapo Canyon Rd. Simi Valley, CA 93063	9:00-1:00	69
Ventura County EMS Agency	Randy Perez	Ventura Government Center Jury Services 800 S. Victoria Avenue Ventura, CA 93003	9:00-1:30	260
			TOTAL	925



SEARCH



View Cart

- SIMULATORS
- ALS
- BLS
- MOULAGE
- MEDICAL
- RESCUE
- PARTS
- EDUCATION

RESCUE

See our [Water Rescue Manikins](#) for **Water Retrieval** exercises.

Rescue Randy



I.A.F.F. Rescue Randy #1475



Rescue Randy #1338



Official Manikin of the Firefighter Combat Challenge

Rescue Randy was developed for lifelike adult or juvenile victim handling, transportation, and extrication training. These manikins can be safely used in situations too hazardous or uncomfortable for human volunteers. Made of durable vinyl with 4,100 lb. test plastic-coated cables. Features include: articulated joints, weight distribution according to human weight distribution chart. Used by the U.S. Military, Fire, and Police Departments, Safety Teams, and Emergency Personnel for rescue and extrication from pole top, confined spaces, collapsed buildings, smoke rooms, and ladder carry-down protocols worldwide.

See Simulaids optional training vests to simulate firefighter's equipment.

Rescue Randy Combat Challenge

**Rescue Randy Combat Challenge
6' 1" 145 lbs.**
Size: 56" x 27" x 13" Sh. Wt. 165 lbs
No 1434 - \$1081.70

Buy #1434

**Rescue Randy Combat Challenge
6' 1" 165 lbs.**
Size: 56" x 27" x 13" Sh. Wt. 185 lbs
No 1435 - \$1235.25

Buy #1435

I.A.F.F. Rescue Randy

**I.A.F.F. Rescue Randy (with Additional
Reinforcement) 6' 1", 165 lbs.**
Size: 56" x 27" x 13"; Sh. wt. 185 lbs.
1475 - \$1295.85

Buy #1475

**Carry/Storage Bag for 6 ft. 1 in. Combat
Challenge and I.A.F.F Training Manikin**
PP2094 - \$159.55

Buy #PP2094

Rescue Randy 5' 5"

Rescue Randy 5' 5" 55 lbs.
Size: 50" x 21" x 12"; Sh. wt. 65 lbs.
1338 - \$819.10

Buy #1338

Rescue Randy 5' 5" 105 lbs.
Size: 50" x 21" x 12"; Sh. wt. 125 lbs.
1335 - \$913.05

Buy #1335

Rescue Randy 5' 5" 145 lbs.
Size: 56" x 27" x 13"; Sh. wt. 165 lbs.
1344 - \$1082.70

Buy #1344

Rescue Randy 5' 5" 165 lbs.
Size: 56" x 27" x 13"; Sh. wt. 185 lbs.
1345 - \$1235.20

Buy #1345

Carry/Storage Bag for 5 ft. 5 in. Full-Bodied Manikin
1373 - \$159.60

Buy #1373

[TOP](#) | [Back to Quick-View and Select](#)

[CONTACT US](#) • [SEARCH](#) • [ABOUT US](#) • [SOFTWARE](#) • [CATALOG](#) • [CLOSE OUT SALE](#) • [INSTRUCTION](#) • [EDUCATION](#) • [FAQ'S](#) • [ROTATIONAL MOLDING](#)

© 2014 Simulaids, Inc. — Site Design: [RHSDesign](#)



SEARCH



SIMULATORS

ALS

BLS

MOULAGE

MEDICAL

RESCUE

PARTS

EDUCATION

RESCUE

See our [Water Rescue Manikins](#) for water retrieval exercises.



Bariatric Rescue Suit

Simulaids was approached by a physician after he was involved with a difficult house extrication of a rather large patient. It became evident that standard patient handling techniques were not suitable for the extrication of morbidly obese patients. The physical limitations of the buildings in which some of these patients reside also required special consideration. The Bariatric Rescue Manikin Suit replicates the weight and the movement in body tissue associated with morbidly obese patients. This simulation is made possible by an "exo-suit" which allows the user to add up to 440 lbs. of water. When the exercise is complete, the water can be simply drained away thus making the manikin more "portable." In its dehydrated version, the manikin can be easily transported between locations. The Bariatric Suit fits only the Regular Rescue Randy original 5 ft. 5", bald manikins. For manikin use only.

Bariatric Rescue Suit

1500 - \$2454.30

[Back to Quick-View and Select](#)

[CONTACT US](#) • [SEARCH](#) • [ABOUT US](#) • [SOFTWARE](#) • [CATALOG](#) • [CLOSE OUT SALE](#) • [INSTRUCTION](#) • [EDUCATION](#) • [FAQ'S](#) • [ROTATIONAL MOLDING](#)

© 2014 Simulaids, Inc. — Site Design: [RHSDesign](#)