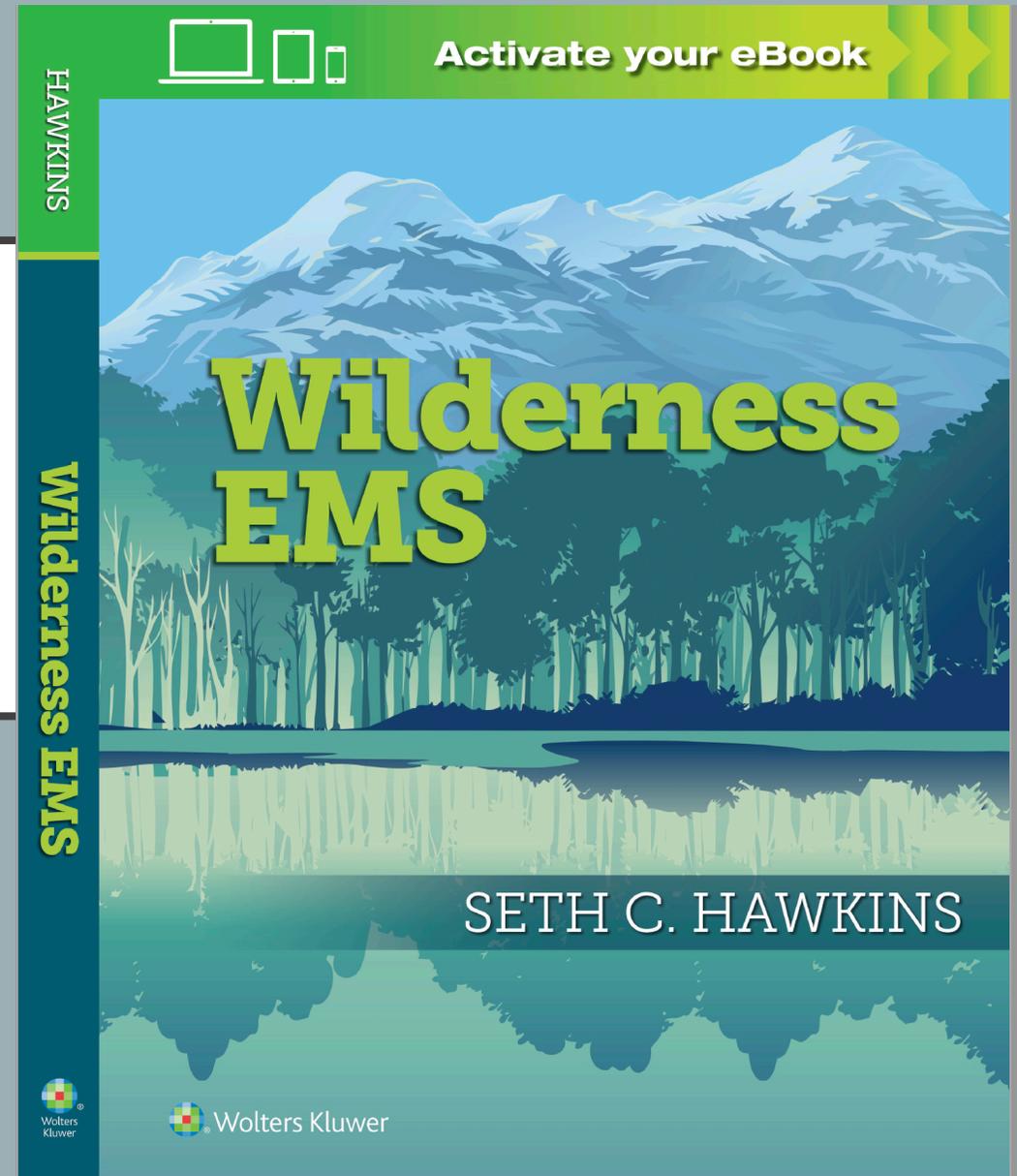


INNOVATIONS IN WILDERNESS MEDICINE

Seth C. Hawkins, MD

Wilderness Risk Management Conference

October 31, 2019



STRUCTURE

32 Chapters

- Section One: Principles of WEMS Systems
- Section Two: Management of Wilderness Medical Conditions
- Section Three: Medical Interface with Technical Rescue Operations

52 Authors

- Alaska to Florida, Maine to New Mexico

Audience

INNOVATIONS



Wolters
Kluwer

WHAT IS
WILDERNESS
MEDICINE?

Duration of Time to
Definitive Care?

Environmental Medicine?

Remote Care?

INNOVATIONS: DEFINITIONS

Anthropology-driven definition of wilderness medicine:

Medical care and problem-solving when the surrounding environment has, or has been allowed to have, more power over us than does the infrastructure (and underlying social structure) of our civilization.

WEMS Intro:3

INNOVATIONS: DEFINITIONS

- Wilderness medicine:
medical care delivered in those areas where fixed or transient geographic challenges reduce availability of, or alter requirements for, medical or patient movement resources.
- Wilderness EMS:
the systematic and preplanned delivery of wilderness medicine by formal health care providers

WEMS 1:22-23

Also Auerbach's Wilderness Medicine 7e and NAEMSP 2e

SO...

- Do experiential education training programs, camps, etc provide wilderness EMS services?



INNOVATIONS: DEFINITIONS

Independonym

initials that no longer reference, or never referenced, an underlying meaning or definition.



INNOVATIONS: HISTORY

- 6 page timeline
- Premodern Era: Prehistory-19th Century
- Early Modern Era: First Half of 20th Century
- Golden Era of Growth: Late 1960s-Early 1980s
- Consolidation, Expansion, & Academic Era: Late 1980s-2006/2013
- Consensus & EBM Era: 2006/2013-Present Day

INNOVATIONS: EVIDENCE-BASED MEDICINE



INNOVATIONS: EDUCATION

- WFR vs WEMR
- Box 2.1: US-based WM & WEMS Training Organizations
- Box 2.8: Current Medical Student Electives with WM Focus
- Box 2.9: Current WM Fellowships

INNOVATIONS: EDUCATION

Organizational Nomenclature

- **Wilderness medicine school:** has its own proprietary curriculum and its own instructors
- **Outdoor school:** uses an external WM school's curriculum, often has its own instructors (but not required), multiple WM offerings
- **Program host:** uses an external WM school's curriculum, uses external instructors, few WM offerings, and WM is not its primary institutional mission

INNOVATIONS: TRANSITIONS IN CARE



DAWSON ET AL, 2001-2012 LIT REVIEW OF
CONCERNS IN PATIENT HANDOFF

- Professional relationships, respect, barriers to communication
- Need for structure or handover tool
- Multiple/repeated handovers
- Education and training in handovers
- Vital signs
- Documentation and other data formats

INNOVATIONS: TRANSITIONS IN CARE

Box 6.1

Minimum Key Information per National Association of EMS Physicians (NAEMSP) Position Paper on Transfer of Patient Care

- Vital signs
- Treatment interventions
- Time of symptom onset (for time-sensitive illnesses)
- Copies of results of medical testing performed by emergency medical services (EMS)

Adapted from Transfer of Patient Care between EMS Providers and Receiving Facilities. *Prehospital Emerg Care*. 2014;18(2):305-305.

VERBAL COMMUNICATION TOOLS

Table 6.2 Verbal Communication Tools

Mnemonic	Description	Background/Use
Hospital-Based Tools		
SBAR ^{33,34}	Situation, Background, Assessment and Recommendations	Developed from the US Navy into medical tool by Kaiser Recommended by the Joint Commission's Institute for Healthcare Improvement and the National Australian Clinical Handover Initiative Institute for Healthcare Improvement, and National Australian Clinical Handover Initiative
I-PASS ³⁵	Illness Severity, Patient Summary, Action Items, Situation Awareness and Contingency Plans, Synthesis by Receiver	Studied as a resident transition of care tool Demonstrated statistically significant decrease in medical errors and preventable adverse events Extensive training process required for use of the tool
Out-of-hospital Based Tools (both In-Person and Pre-Arrival)		
SOAP ± SAMPLE ³⁶	Subjective, Objective, Assessment, Plan ± Signs/Symptoms, Allergies, Medications, Past Medical History, Last Ins/Outs, Events Leading to Injury/Illness	Well known to most EMS providers
ASHICE ¹⁷	Age, Sex, History, Injuries, Condition, Expected Time of Arrival	Out-of-hospital Notification Commonly used in England and Wales
ISBAR ^{12,37-39}	Identification, Situation, Background, Assessment and Recommendations	Variation of SBAR, emphasizes need to introduce patient and identify providers involved in transition of care Potential benefit in transitioning care of an acutely decompensating patient
(De)MIST ^{40,41}	Demographics, Mechanism of injury/illness, Injury or illness found, Signs, ^a Treatment given	Adopted from Military Medicine originally used in civilian trauma Limited Data to support use Familiar to providers (especially UK, Australia)
IMIST-AMBO ^{20,42} (combination of MIST and ISBAR)	Identification, Mechanism/medical complaint, Signs, ^a Treatment—Allergies, Medications, Background (PMHx ^b), Other (Social)	May reduce need for clarifying questions, reduce duration of handoff, and lead to fewer repetitions of handoff

INNOVATIONS: PSYCHOLOGICAL FIRST AID & STRESS INJURIES

Laura McGladrey

Overwhelmed, Alone, Helpless

1. Safety
2. Calm
3. Connection
4. Self-Efficacy
5. Hope

LAURA MCGLADREY



Laura McGladrey, aka “Glad,” is a family and psychiatric nurse practitioner who specializes in emergency medicine, mental health and traumatic stress, especially in the wilderness and remote parts of the world. She has been an instructor with NOLS Wilderness Medicine since 1999.

INNOVATIONS: WORDS MATTER

Table 10.1 Recommended Terminology for Working With Stress-exposed Persons

Recommended Terminology	Commonly Used Terminology
Distress Anguish Tormented Overwhelmed Psychological and social problems	Trauma
Terrifying/life-threatening/horrific events/devastation	Traumatic events
Reactions to difficult situations Signs of distress Problems	Symptoms
Reactions to difficult situations Signs of distress Problems	Traumatized children or traumatized adults
Structured activities, community social support	Therapy, Counseling, Treatment
Survivors	Victims

From Inter-Agency Standing Committee. *Guidance Note for Mental Health and Psychosocial Support*. Port of Prince, Haiti: IASC; 2010.

INNOVATIONS: WORDS MATTER

- “Victims”
- Horizontal hierarchy
- Gendered language

WEMS 10:193, Intro:4-10

INNOVATIONS:
MARCH MNEMONIC

Massive hemorrhage

Airway

Respirations

Circulation

Hypothermia

Military version

INNOVATIONS: MARCH MNEMONIC

Massive hemorrhage

Airway

Respirations

Circulation

Hypothermia, **H**yperthermia, **H**ike/**H**elo

AWLS version

INNOVATIONS:
MARCH MNEMONIC

Massive hemorrhage

Airway

Respirations

Circulation

Hypothermia, **H**yperthermia, **H**ike/**H**elo/**H**unker down, **H**anging

Vertical Aid version

INNOVATIONS:
INDIAN MNEMONIC

Intoxication

Neurological deficit

Distracting **I**njury

Altered mental status

Neck pain/tenderness



INNOVATIONS: CHANGING SPINAL TRAUMA CARE



INNOVATIONS: CHANGING SPINAL TRAUMA CARE



INNOVATIONS: CHANGING SPINAL TRAUMA CARE

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ACADEMIC EMERGENCY MEDICINE MAR 1998 VOL 5/NO 3

■ PRELIMINARY REPORTS

Out-of-hospital Spinal Immobilization: Its Effect on Neurologic Injury

Mark Hauswald, MD, Gracie Ong, MBBS, Dan Tandberg, MD, Zaliha Omar, MBBS

■ ABSTRACT

Objective: To examine the effect of emergency immobilization on neurologic outcome of patients who have blunt traumatic spinal injuries.

INNOVATIONS: CHANGING SPINAL TRAUMA CARE

EMJ Online First, published on September 8, 2012 as 10.1136/emmermed-2012-201847

Original article

A re-conceptualisation of acute spinal care

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Accepted 10 August 2012

ABSTRACT

The emergency care of patients who may have spinal injuries has become highly ritualised. There is little scientific support for many of the recommended interventions and there is evidence that at least some methods now used in the field and emergency department are harmful. Since prospective clinical trials are not likely to resolve these issues I propose a reconceptualisation of spinal trauma to allow a more rational approach to treatment. To do this I analyse the basic physics, biomechanics and physiology involved. I then develop a list of recommended treatment variations that are more in keeping with the actual causes of post impact neurological deterioration than are current methods. Discarding the fundamentally flawed emphasis on decreasing post injury motion and

that acceptance of an innovation does not occur until individuals believe that the innovation is reasonable. This requires a theoretical model that is compatible with the proposed change. The generally accepted theoretical model of preventable post injury neurological deterioration is that visible movement of the spine as a unit is an adequate surrogate for movement at the injured site and that movement at the injured site causes unstable segments or sharp bony fragments to 'cut' the cord. This leads to an emphasis on 'immobilisation' that is, restricting gross motion. I will show that this model violates accepted principles of injury mechanics and elementary physics and propose a re-conceptualisation of spinal trauma to allow a more rational approach to treatment.

INNOVATIONS:
CHANGING SPINAL TRAUMA CARE



INNOVATIONS: SPINAL CORD PROTECTION

or in its absence, by soft, supportive padding around the patient's head and neck. Rigid cervical collars are not a required component of patient care in a WEMS operation even in the case of suspected spinal injuries. Not only are rigid cervical collars not useful for general WEMS operations, the lack of utility for cervical collars has also been shown for teams in specific WEMS environments, such as ski patrols.³⁵ For a more

INNOVATIONS:
2019 WILDERNESS MEDICAL SOCIETY
PRACTICE GUIDELINES

242 ***Recommendation.*** A patient requiring extrication should be encouraged to reduce movement of
243 the neck, especially painful movement, and allowed to exit the situation under their own volition
244 if alert and reliable. If injuries or other circumstances such as unconsciousness prevent controlled
245 self-extrication, patients' cervical spines should be packaged to reduce passive motion and
246 adequately manage the airway without a goal of absolute immobilization. There is no requisite
247 role for a commercially made or improvised rigid cervical collars in an out-of-hospital
248 environment (1C).

INNOVATIONS:
2019 WILDERNESS MEDICAL SOCIETY
PRACTICE GUIDELINES

301 ***Recommendation.*** Spinal cord protection should be considered an appropriate goal in patients
302 with actual or suspected spinal injury; current evidence suggests spinal motion restriction and not
303 immobilization is the safest and most effective means of spinal cord protection (2C).

INNOVATIONS:
2019 WILDERNESS MEDICAL SOCIETY
PRACTICE GUIDELINES

378 ***Recommendation.*** Vacuum mattress (Figure 1) provides superior motion restriction and
379 improved patient comfort (with corresponding decreased risk of pressure sores) and is preferred
380 over a backboard for motion restriction of either the entire spine or specific segments of concern.
381 Backboards and other rigid carrying devices may be used for temporary patient movement if
382 needed but should not be applied as a medical tool with an immobilization goal (1C).

INNOVATIONS: CHANGING SPINAL TRAUMA CARE



INNOVATIONS: CHANGING SPINAL TRAUMA GOALS



Spinal Immobilization
(SI)



Spinal Motion
Restriction (SMR)



Spinal Cord Protection
(SCP)

INNOVATIONS: DROWNING

- DROWNING IS THE **PROCESS** OF EXPERIENCING RESPIRATORY IMPAIRMENT FROM SUBMERSION/IMMERSION IN A LIQUID
- THERE IS NO LONGER NEAR-DROWNING, DRY DROWNING, ETC

INNOVATIONS: BLEEDING CONTROL



STOP
THE BLEED®

SAVE A LIFE



AMERICAN COLLEGE OF SURGEONS
*Inspiring Quality:
Highest Standards, Better Outcomes*
100+ years



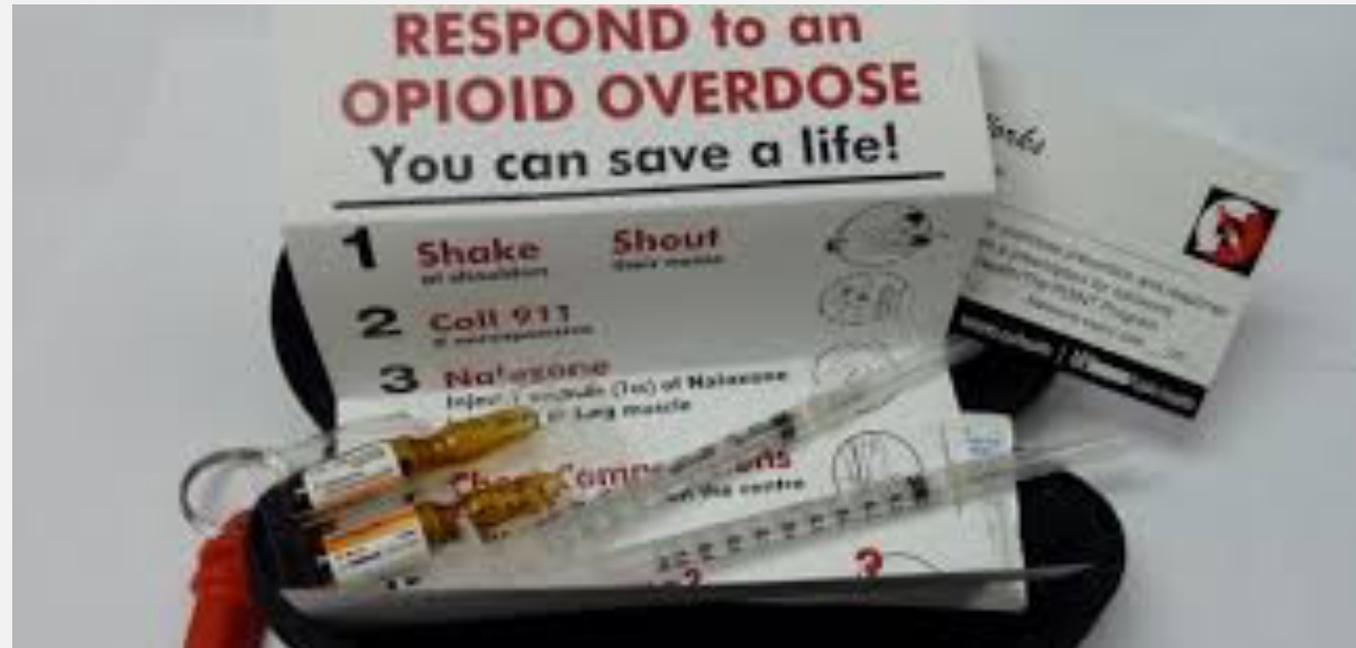
THE
COMMITTEE
ON TRAUMA



BLEEDINGCONTROL.ORG



INNOVATIONS: NALOXONE



INNOVATIONS: SNAKE ANTIVENOM



Venom Has Met Its Match¹

ANAVIPTM
Crotalidae Immune F(ab')₂ (Equine)

The advertisement features a photograph of a rattlesnake on the left, with its head raised and tongue flicking. The snake is coiled on a textured orange surface that resembles snake skin. To the right of the snake is the text 'Venom Has Met Its Match¹'. Further right is the logo for ANAVIP, which includes a stylized snake head with its mouth open, showing a black and white interior. Below the logo is the text 'ANAVIPTM' in large orange letters, and 'Crotalidae Immune F(ab')₂ (Equine)' in smaller black letters. The entire advertisement is set against a white background.

INNOVATIONS: EPINEPHRINE



SYMJEPI™ (epinephrine) Injection
THE DEVICE FOR ALLERGIC EMERGENCIES THAT FITS YOUR LIFE

SYMJEPI keeps the confidence to handle allergic emergencies close at hand, wherever you are

SYMJEPI contains the same medicine as in the most widely used epinephrine auto-injectors (EAI), and it is packaged in a compact, easy-to-carry, and ready-to-use device.*

*SYMJEPI is not an EAI.



INNOVATIONS: SAFETY THIRD



EXCLUSIVES, OPERATIONS

Safety is Third, Not First, and We All Know It Should Be

By [Christopher Davis, MD, NRP, FAWM](#), [Benjamin Abo, DO, EMT-P, FAWM](#), [Sarah Frances McClure, DO, NRP](#) and [Seth C. Hawkins, MD, FAEMS, FACEP, MFAWM](#) | 11.13.18



hawkaerie.org/s3

CONCLUSION & QUESTIONS



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