

Two Truths and a Lie

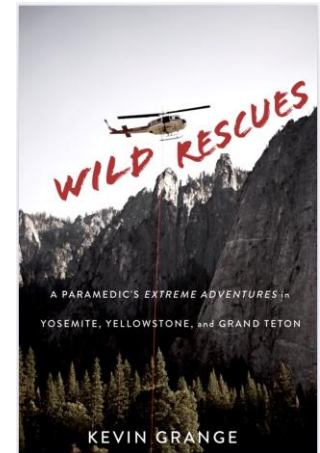
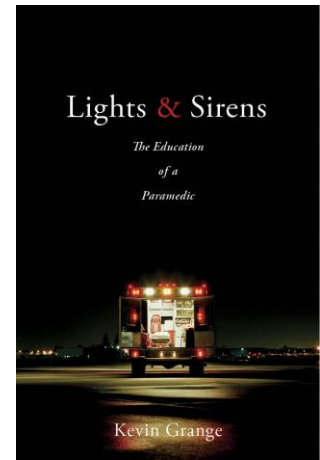


Separating Fact from Fiction in Prehospital Medicine

Kevin Grange

Who I am

- Kevin Grange
- Firefighter Paramedic
- Jackson Hole, Wyoming
- Author





Strive to be an expert learner...

Not *the* expert!



The tribe!



2 Truths and a Lie

- **Icebreaker Game at Parties**
 - **2 Facts**
 - **1 Believable lie, or myth**
 - **Wilderness Medicine: Lessons learned**
-



**2 Truths
and a Lie**

Protocols are in black and white, but the job is a hazy
shade of GREY



2 Truths and a Lie: Allergic Reactions

- Wheezes are narrowing/spasm of bronchus, heard primarily on expiration
- Adult dose for an anaphalactic reaction is 0.3mg Epi 1:1
- Prehospital providers are very good at administering Epinephrine in critical patients




True: Wheezes are narrowing/spasm of bronchus, heard primarily on expiration

<p>RALES</p> <ul style="list-style-type: none"> -Crackles -Smaller airways -Fluids in lungs (aveoli) <p>CHF; Pneumonia</p>	<p>RHONCHI</p> <ul style="list-style-type: none"> -Larger airways -Obsatruction or fluid accumulation in the larger airways <p>COPD; Pneumonia</p>
<p>WHEEZING</p> <ul style="list-style-type: none"> -Effects Bronchi -Constriction -Air trying to pass through the bronchioles <p>Asthma Bronchitis</p>	<p>STRIDOR</p> <ul style="list-style-type: none"> -Upper airway -Over trachea -Foreign airway obstruction

Paramedic Student Central, Division of BTA Learning, An Accurso Company.



True: Adult dose for an anaphalactic reaction is 0.3mg Epi 1:1



Myth: Prehospital providers are very good at administering Epinephrine in anaphalactic reactions



Only 15%
given Epi!



Medscape



[News](#) > [Medscape Medical News](#) > [American College of Allergy, Asthma & Immunology \(ACAAI\) 2012 Annual Scientific Meeting](#)

Paramedics Often Fail to Give Epinephrine for Anaphylaxis

Fran Lowry

November 20, 2012

ANAHEIM, California — Paramedics who respond to emergency calls for patients with signs and symptoms of acute allergic reaction and anaphylaxis are failing to give life-saving epinephrine, according to a study presented in an oral session here at the American College of Allergy, Asthma & Immunology 2012 Annual Scientific Meeting.

Pediatrics

- Only 36% given Epi by EMS
- 14% in British Study
- 69% given Epi by school nurses



1,627

Views

31

CrossRef citations to date

22

Altmetric

Research Article

Pediatric Anaphylaxis Management in the Prehospital Setting

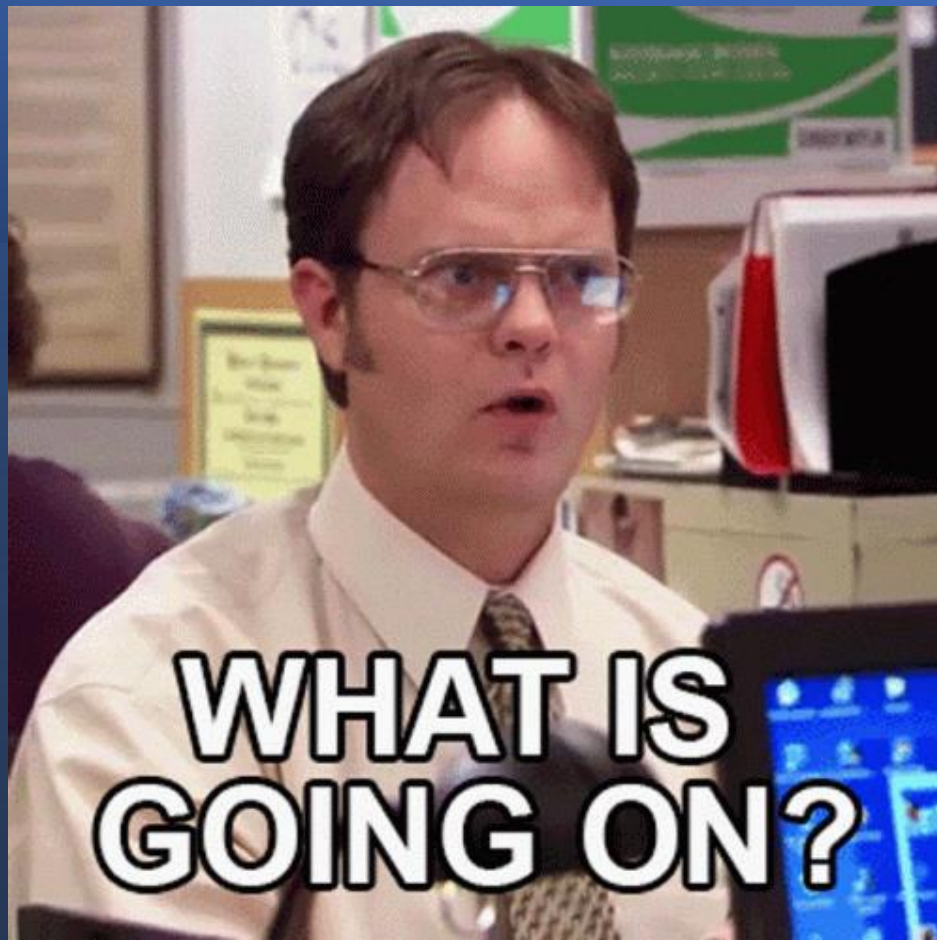
Gunjan Kamdar Tiyyagura ✉, MD,

Linda Arnold, MD, David C. Cone, MD &

Melissa Langan, MD

Pages 46-51 | Received 21 Jan 2013, Accepted 30 May 2013,

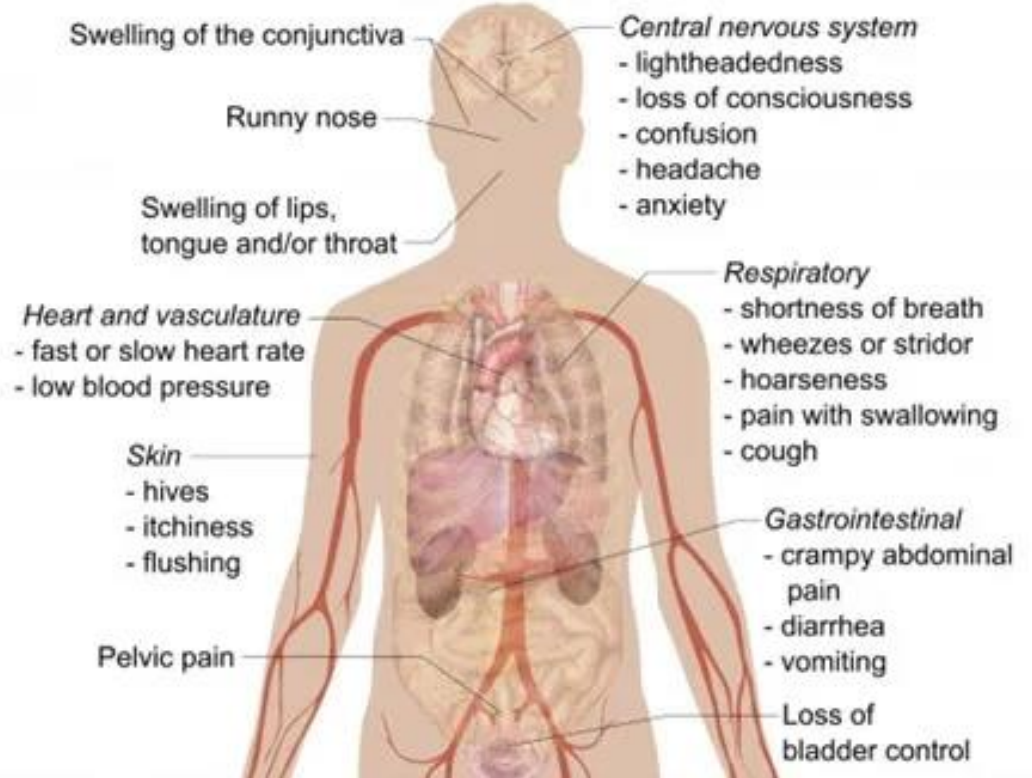
Published online: 12 Sep 2013



**WHAT IS
GOING ON?**

Paralysis by analysis

Signs and symptoms of Anaphylaxis



2 organ
systems
= Give Epi!

- Low BP
- Oral / Throat
- Shortness of breath
- Skin rash or hives
- Vomiting



Additional information

- Rash/hives absent or delayed in 14% of cases
- Allergen not always present
- Benadryl and steroids have delayed onset
- Sxs can be delayed (ingestion vs. sting)
- Pts can become **critical** in seconds
- Pts often don't use home epipens
- Only Epi treats **acute** phase
- Error of omission vs. commission
 - IV Epi causes problems!



IF you're thinking about
giving Epi...Give Epi





What if Patient didn't
need it????



Emergency Reflex Action Drills by Mike Lauria

- Anaphalaxis
- Major Trauma
- First two minutes
Cardiac Arrest
- 2 IV attempts then
drill (IO)

2 Truths and a Lie: Stop the bleed

- Once a tourniquet is applied, it should never be removed, except by a surgeon.
- You should obliterate the distal pulse when you apply a tourniquet
- The neck, armpits, inguinal/groin areas are junction bleeding sites



2 Truths



- Obliterate distal pulse when TQ is applied
- Junctional sites
 - Pack the wound
 - Apply pressure for 3 minutes
 - Pressure dressing (confirm presence of pulse)



Myth: Once a tourniquet is applied, it should never be removed, except by a surgeon.

A person is seen rappelling down a rope against a backdrop of a mountain range. The person is silhouetted against the sky, and the rope extends from the top left towards them. The mountains are rugged and covered in dense evergreen forests. The sky is a clear, deep blue.

Prehospital Medicine: a
profession of pendulums

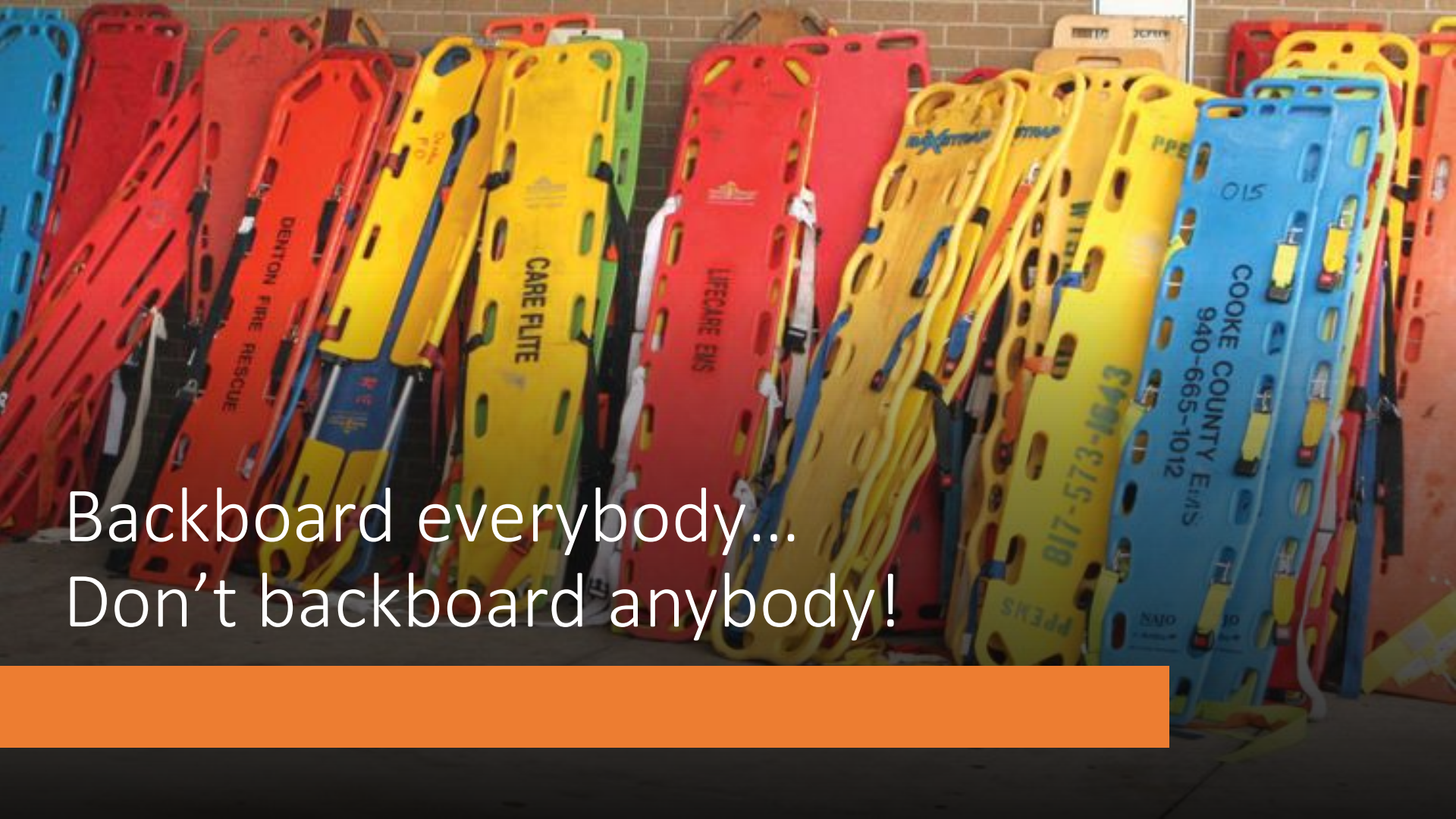
2 Bags of Normal Saline Wide Open

Permissive hypotension
(titrate to mental status
or SBP >90)





High flow to
everybody!



Backboard everybody...
Don't backboard anybody!

Backboards still
have a place...
**Critical trauma
with ALOC**



Everything
takes longer
than you
expect





Tourniquets are being applied!

- By law enforcement
- By off-duty EMS
- By bystanders
 - Lots of improvised tourniquet use

Tourniquets

- Arterial bleeds
- 2-3" inches above the wound
- Not over a joint
- In tactical situation = over clothes, high & tight
- Obliterate distal pulse
- Remove within in 6 hours



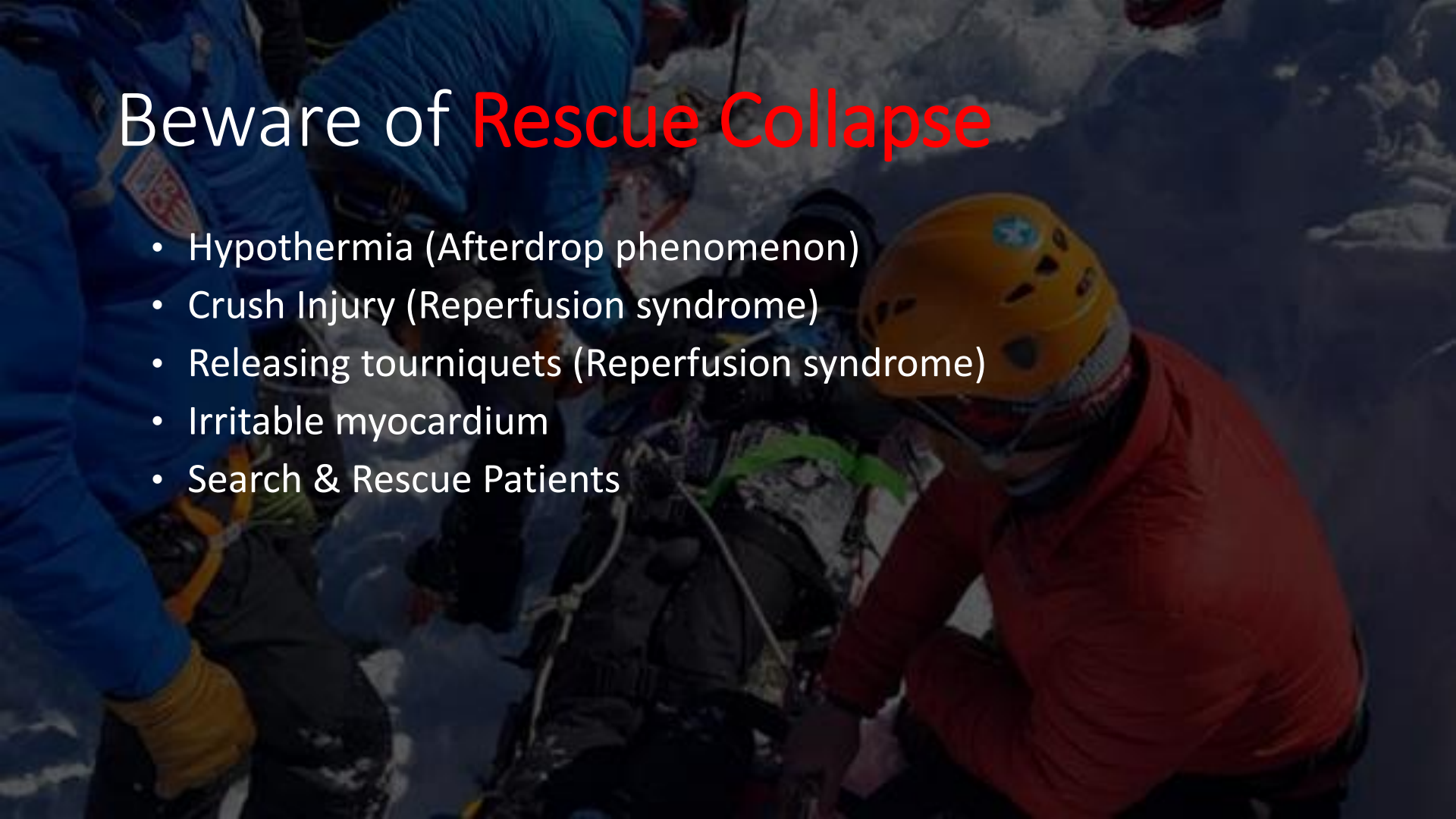
Tourniquets: Adverse Effects

-
- Painful
 - Reperfusion injury
 - Nerve damage



Beware of **Rescue Collapse**

- Hypothermia (Afterdrop phenomenon)
- Crush Injury (Reperfusion syndrome)
- Releasing tourniquets (Reperfusion syndrome)
- Irritable myocardium
- Search & Rescue Patients



Improvised tourniquets

As a last resort!

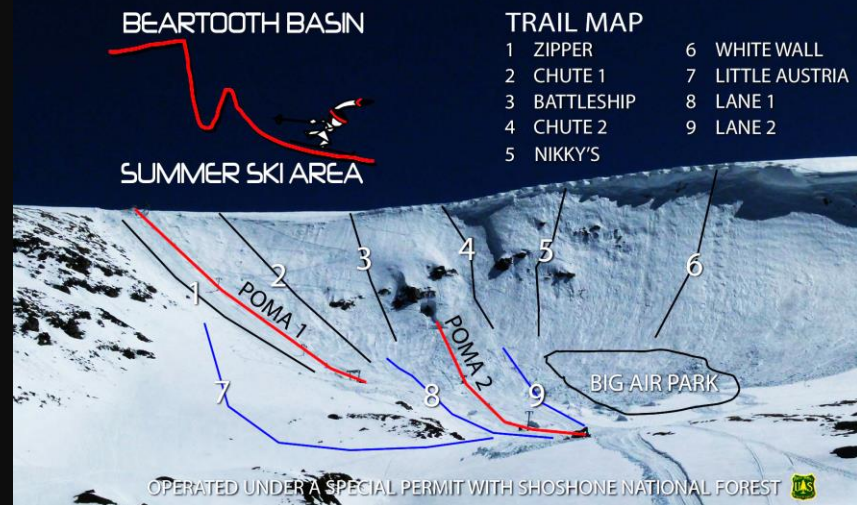
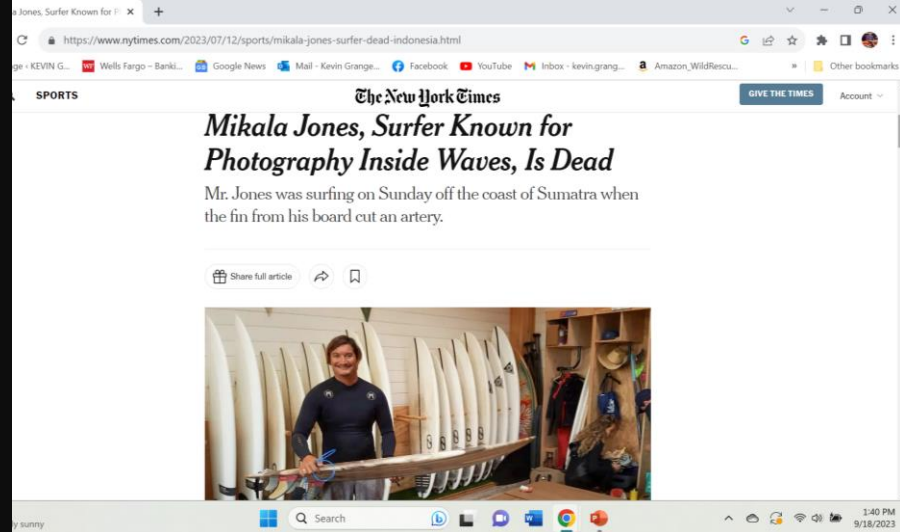
Cause nerve damage

Belts

Climbing rope

Surfboard leash

Ideally: 2" inches or wider





TQs may not
be needed!



New Recommendations

- Check the TQ
- If bleeding controlled = pack wound and pressure dressing (confirm pulse)
- Especially with delayed transport
 - SAR Teams & Ski Patrol
- 6 hours to save a limb
 - 50% less time in the setting of shock



2 Truths and a Lie: Opioid Overdoses

- Constricted pupils and ineffective respirations are signs of an opioid OD
- OD patients are frequently combative following Narcan administration
- Emerging groups of synthetic opioids may be more potent than fentanyl



A woman with dark hair is lying on her side on a concrete floor, her eyes closed and her head resting on her hand. She is wearing a black top. To her left is an open, brown and black striped suitcase. The background is a dark, industrial-looking wall with some pipes and a light fixture. The overall scene is dimly lit, creating a somber and urgent atmosphere.

The Opioid Dilemma

- Go light on Narcan because patient could be combative

vs

- Go heavy on Narcan because synthetic opioids might require multiple and bigger doses

A photograph of a woman in a car, with a blurred child in the background. The image is dark and serves as a background for the text.

Two Truths:

- * Constricted pupils and ineffective respirations are signs of an opioid OD
- * New synthetic opioids may be more potent than fentanyl

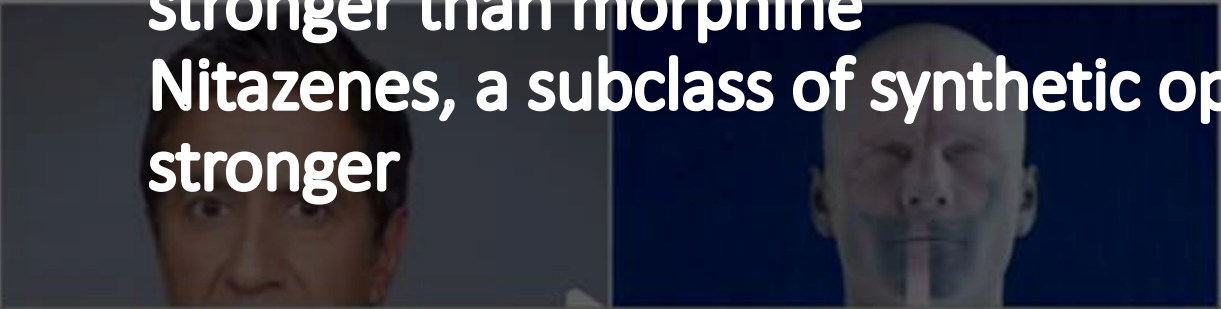
Sternal rub = pupil check = NPA

Emerging group of synthetic opioids may be more potent than fentanyl, study warns

By Jacqueline Howard, CNN
Updated 2:56 PM EDT



150 die every day from ODs
Fentanyl is 50x stronger than heroin & 100x stronger than morphine
Nitazenes, a subclass of synthetic opioids are even stronger



MORE FROM CNN

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Gisele Bündchen says divorce from Tom Brady and oth...

The Science

FirstNet LTE

10:45 AM



Case Reports

Naloxone-associated patient violence: an overlooked toxicity?

G M Gaddis et al. Ann Pharmacother. 1992 Feb.

Show details



Full text links

Cite

...

Abstract

Objective: To report two cases of a previously unreported adverse effect, violent patient behavior, after the reversal of sedation by intravenous naloxone.

Design: Case report.

Patients/interventions: Responses of two individuals who had reversal of sedation by intravenous naloxone are compared.

Results: Placement of patient restraints before the administration of intravenous naloxone to obtunded or unconscious patients

Evidenced-based approach

- Ryan Marino, MD, and Jeremiah Escajeda, MD

Only 2 cases in 1992 (not substance users)

Not reproducible over subsequent decades

Assault with ALOC always possible

No causation with narcan

Less than 3% rate of behavior disturbance

FirstNet LTE 10:48 AM

MEDPAGETODAY

Perfect Is the Enemy of Good, and So Is Narcan Misinformation

— There is no justification to oppose increased access to naloxone

by Ryan Marino, MD
May 8, 2023

f t in Print Email



On March 29 the FDA approved the first Advertisement

As the world dermatology community works to ENSURE PATIENTS OF EVERY SKIN COLOR FEEL SEEN AND



Forget Narcan. Can't we just support
with BVM?

500ml
a most dangerous tool





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Supreme Court opens term with case on prison terms for drug offenders
COURT BATTLES - 15M 1S AGO

White House will stay out of looming fight over McCarthy's Speakership
NEWS - 30M 40S AGO

Watch live: Biden celebrates Americans with Disabilities Act
VIDEO - 36M 13S AGO

Delta to carry Narcan on flights after reported passenger overdose

BY TAL AXELROD - 07/17/19 9:38 AM ET

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A photograph of two paramedics in blue uniforms and gloves attending to an elderly patient lying on a stretcher. One paramedic is holding a white container, and the other is looking at the patient. The scene is outdoors, possibly at an ambulance. The text '2 Truths and a Lie: Patient Assessment' is overlaid in large white outline font on the left side of the image.

2 Truths and a Lie: Patient Assessment

- In a case with a mass exsanguination, your patient assessment algorithm should be XABC
- If a carotid pulse is palpable then the systolic blood pressure is 60-70 mm Hg; if both the carotid and femoral pulses are palpable then the SBP is 70-80 mm Hg; and if the radial pulse is also palpable then the SBP is >80 mm Hg.
- During a lightning strike MCI, we should practice “reverse triage” and focus on those patients who appear dead and without a pulse.

True: Lightning Strike

– Reverse Triage

- Cardiac and respiratory arrest
- Asystole or V Fib
- BLS saves lives!





True: xABC

Advanced trauma life support guidelines for predicting systolic blood pressure from carotid, femoral, and radial pulses: observational study

Consultant anaesthetist^a and [J Lorraine Low](#), medical statistician^b

[Article notes](#) [Copyright and License information](#) [PMC Disclaimer](#)

Materials

Advanced trauma life support course teaches that if only the patient's carotid pulse is palpable, the systolic blood pressure is 60-70 mm Hg; if carotid and femoral pulses are palpable, the systolic blood pressure is 70-80 mm Hg; and if the radial pulse is also palpable, the systolic blood pressure is 80-90 mm Hg.¹ The only study to examine the accuracy of this model used non-invasive blood pressure measurements, which have a tendency to underestimate systemic arterial blood pressure in hypotension.² No reliable data are therefore available to support the current advanced trauma life support guidelines on which clinical decisions are made. We assessed whether we could reliably predict systolic blood pressure by palpation of radial, femoral, and

Myth: Carotid pulse = 60-70 SBP
Femoral = 70-80 SBP
Radial = SBP > 80 mm

- Overestimate SBP
- Underestimate hypovolemia

> Mil Med. 2020 Dec 30;185(11-12):e1903-e1907. doi: 10.1093/milmed/usaa197.

An analysis of radial pulse strength to recorded blood pressure in the Department of Defense Trauma Registry

Jason F Naylor ¹, Andrew D Fisher ², Michael D April ³, Steven G Schauer ^{4 5 6 7}

Affiliations + expand

PMID: 32754740 DOI: [10.1093/milmed/usaa197](https://doi.org/10.1093/milmed/usaa197)

Abstract

Introduction: Hemorrhage is the leading cause of potentially preventable death on the battlefield. The tactical combat casualty care guidelines recommend the use of the radial pulse strength to guide the administration of blood products or intravenous fluids when equipment for blood pressure monitoring is not available. Data supporting this measurement tool are limited. We sought to validate this method in a deployed trauma population.

Materials and methods: This is a secondary analysis of a previously published dataset from the Department of Defense Trauma Registry. In this subanalysis, we focused on emergency department radial pulse strength documented in conjunction with systolic blood pressure readings.

FULL TEXT LINKS



ACTIONS

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PAGE NAVIGATION

< Title & authors

Abstract

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Results

- Dr. Andrew Fisher, Jason Naylor, et al
- 28,222 patients Dept of Defense
- **615 patients w/ low BP**
 - 55% had strong radial
 - 29% had weak radial
 - 15% had absent radial



We've lost the art of hands-on assessment

- Don't play Blood Pressure Slot Machine!
- If patients is symptomatic, assume SBP is low and move on.



The art of hands-on assessment

- Critically important for SAR
 - * Ski Patrol
- 30-seconds is all you need
 - Complaint
 - Mental Status*
 - Work of breathing/Lung sounds
 - Skin signs
 - Radial pulse



Radial Pulse: Still Important

- If absent > low BP > ECG changes
- **If present > might still be hypotensive / critical!**
- Treat patient, not the number!





Resources: Order Big, Order Early...and
Don't be Afraid to stand units down

2 Truths and a Lie: Chest Pain

- Possible causes of chest pain include heart attack, pneumonia, pulmonary embolism, pericarditis, and trauma.
- If you're patient has chest pain and just took 81mg of ASA, you should give him 243mg of ASA to reach the correct dose of 324mg.
- Patients with inferior ST elevation myocardial infarction (STEMI), associated with right ventricular infarction, are at higher risk of developing hypotension when administered nitroglycerin (NTG).





Prove what it is... by proving what it's not

- Possible causes of chest pain:

True: Acute coronary syndrome, pneumonia, pulmonary embolism, pericarditis, and trauma


Complacency
kills

heart attack, skiing - Google Se... x SafeBeat Initiative: Miss Teen Un... x +

← → ↻ https://safebeat.org/newsroom/tragic_losses/miss_teen_universe_dies_one_day_before_her_20th_birthday/

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Miss Teen Universe Dies After Suffering a Heart Attack while on a Skiing Holiday One Day Before Her 20th Birthday




© Provided by Associated Newspapers Limited Lotte van der Zee's parents broke

SafeBeat has been featured by ABC News, Fox News, The Tampa Tribune, St. Petersburg Times, Tampa Bay Online, EP Lab Digest, South Tampa News & Tribune, Clay Today, First Coast News, Boston Herald, Health and Fitness PR News, and publicly endorsed by Former NFL Coach Tony Dungy.

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Early administration of Aspirin

- **True:** If you're patient has chest pain and just took 81mg of ASA, you should give him 243mg of ASA to reach the correct dose of 324mg.
- But I'm allergic.... What happens when you take it?

The Nitro Dilemma

- Paramedics: Perform 12-lead ECG. Avoid Nitro in right-sided heart attacks
- EMTs: Assist giving Nitro without performing an ECG





Benefits of Nitro

- Vasodilation
- Increases blood flow to heart
- Decreases workload of heart

Could we?

EMTs: Fear Nitro less

Medics: Give Nitro more...



9,558 Views
7 CrossRef citations to date
88 Altmetric

Full access

Focus on STEMI

Prehospital Nitroglycerin Safety in Inferior ST Elevation Myocardial Infarction

Laurie Robichaud , MDCM, Dave Ross, MD, Marie-Hélène Proulx, PCP, MSc, Sébastien Légaré, PCP, Charlene Vacon, AEMT-CC, PhD, Xiaoqing Xue, MSc & ...show all

Pages 76-81 | Published online: 29 May 2015

 Cite this article  <https://doi.org/10.3109/10903127.2015.1037480>  Check for updates

 Full Article  Figures & data  References  Citations  Metrics  Reprints & Permissions  View PDF 

Abstract

Patients with inferior ST elevation myocardial infarction (STEMI), associated with right ventricular infarction, are thought to be at higher risk of developing hypotension when administered nitroglycerin (NTG). However, current basic life support (BLS) protocols do not differentiate location of STEMI prior to NTG administration. We sought to determine if NTG administration is more likely to be associated with hypotension (systolic blood pressure < 90 mmHg) in inferior STEMI

In this article

- Abstract
- Introduction
- Methods
- Results


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Safety and Effectiveness of Field Nitroglycerin in Patients with Suspected ST Elevation Myocardial Infarction >

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Safety and Effectiveness of Field Nitroglycerin in Patients with Suspected ST Elevation Myocardial Infarction

Nichole Bosson , MD, MPH, Benjamin Isakson, MD, Jayson A. Morgan, MD, Amy H. Kaji, MD, PhD, Atilla Uner, MD, MPH, Katherine Hurley, MSN, ...show all
Pages 603-611 | Published online: 28 Jan 2019

 Cite this article  <https://doi.org/10.1080/10903127.2018.1558318>  Check for updates

 Full Article  Figures & data  References  Citations  Metrics  Reprints & Permissions  View PDF  View EPUB 

Abstract

Objective: While widely used in the treatment of cardiac conditions, only limited data characterize out-of-hospital nitroglycerin (NTG) use. We sought to determine the safety of out-of-hospital sublingual NTG administered for suspected ST-segment elevation myocardial infarction (STEMI) and its effect on the patient's pain score. **Methods:** We prospectively identified adult patients with suspected STEMI transported by paramedics to three percutaneous Coronary Intervention PCI-

In this article

- Abstract
- Introduction
- Methods
- Results

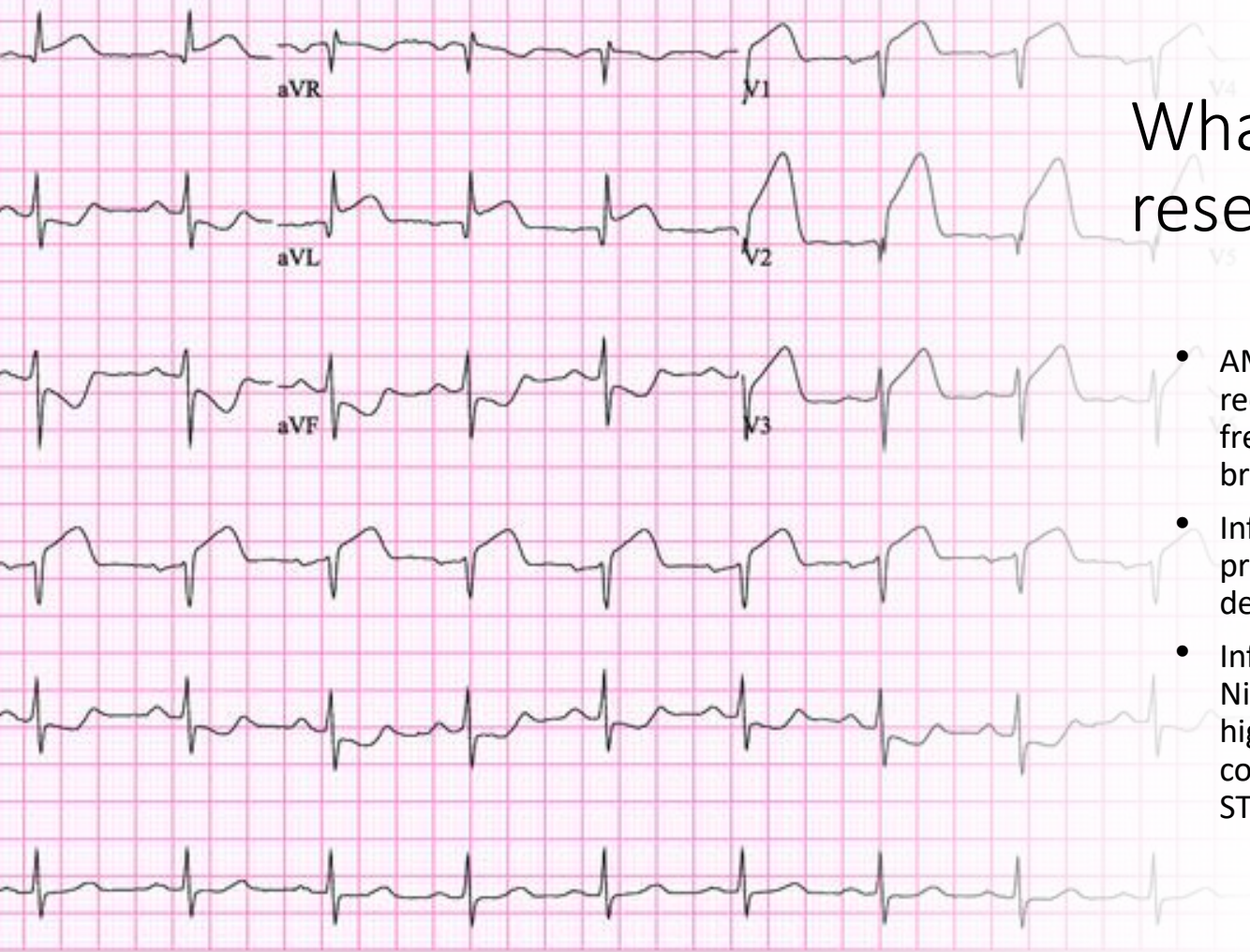
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Prehospital Nitroglycerin Safety in Inferior ST Elevation Myocardial Infarction >

Louis Bohisbaud et al.

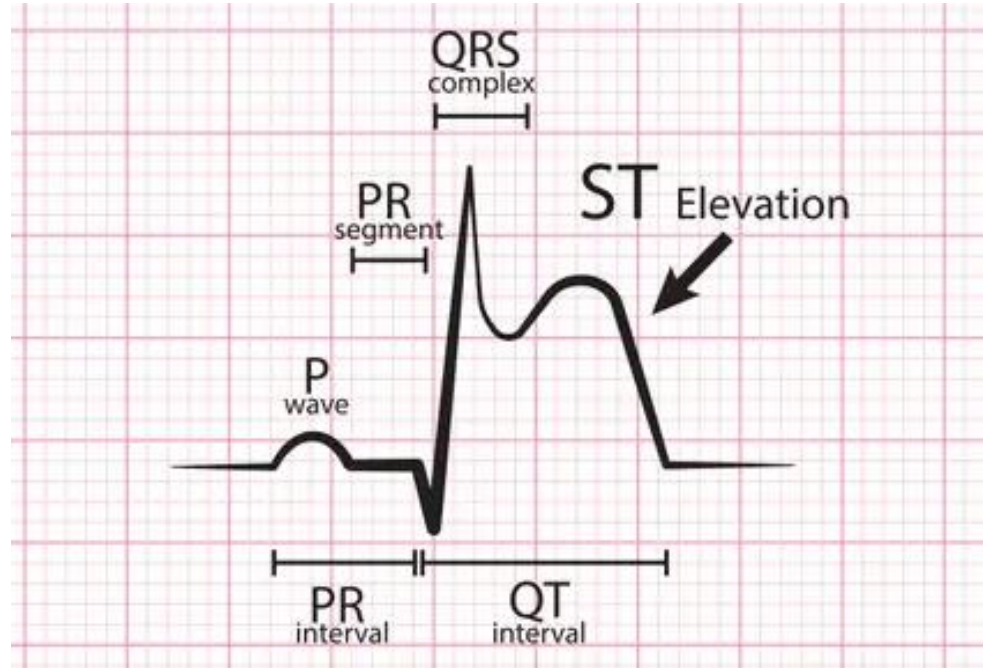
What the research found



- AMIs & Field NTG: Pain reduction; no increased frequency of hypotension or bradycardia
- Inferior STEMIs initially presented with a slightly decreased blood pressure
- Inferior STEMI + Chest pain + Nitro = Not associated with a higher rate of hypotension compared to patients with STEMI in other territories.

Nitro – Take Aways

- EMTs: Fear less
- Paramedics: Administer more
- Right-sided / Inferior?
 - Despite research, **do not give it without assessing SBP and contacting Medical Control** (AHA ACLS recommendations)



General Lessons Learned



Transporting patients
is a treatment

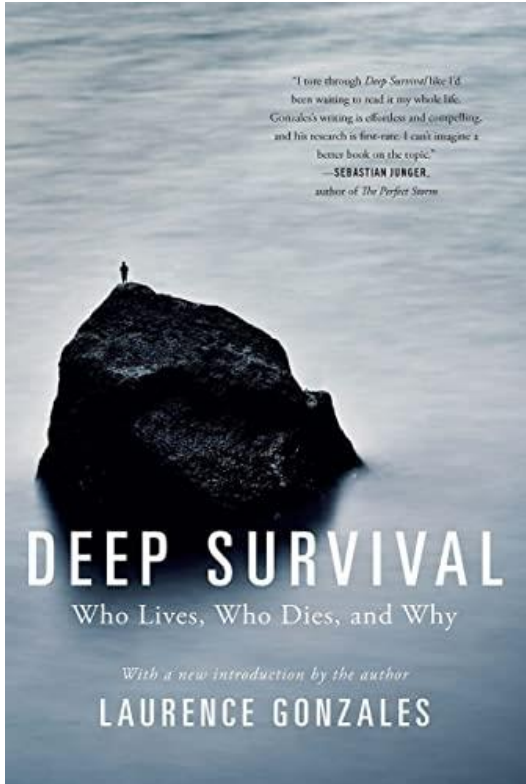
- Forward momentum
- Use least resources necessary
- Packaging matters



Beware: Rescue Collapse!

- Hypothermia
- Crush Injury
- Releasing tourniquets
- Mental aspect
 - Arriving of rescuers is most dangerous part of a 9-1-1 call!





"I tore through *Deep Survival* like I'd
been waiting to read it my whole life.
Gonzales's writing is effortless and compelling,
and his research is first-rate. I can't imagine a
better book on the topic."

—SEBASTIAN JUNGER,
author of The Perfect Storm

DEEP SURVIVAL

Who Lives, Who Dies, and Why

With a new introduction by the author

LAURENCE GONZALES

Estonia ferry sinking remembered

09/28/2014

The sinking of the ferry Estonia 20 years ago has been mourned at ceremonies in Stockholm and Tallinn. Europe's worst peacetime shipping disaster killed more than 800 people, including 501 Swedes and 290 Estonians.

f X v



Pain Management

- Be realistic: *I won't take all pain away*
- *I will take the edge off*
- Vasopressor aspect of pain



Two is one...and one is none

- Your extraction plan
- Your treatment plan



Treatment: BLS unless forced into ALS!

- IVs & Advanced Airways
 - Slow momentum
 - Complicate call
 - Demand extra providers
 - Possible Infection source



Delegate to the Experts

Can separate Rescue, Comms and Medical






Head Injuries are Airway Obstructions Waiting to Happen



Expect
weather to
change

A group of people are participating in a river activity, possibly rafting or kayaking. They are wearing helmets and life jackets. The background shows a rocky riverbank. A large, semi-transparent white box with a thin black border is overlaid on the center of the image, containing the text.

Think of Yourself as a
“Rescue Athlete”

A group of healthcare professionals, including nurses and doctors, are gathered around a patient lying on a gurney in a hospital setting. They are wearing blue scrubs and blue gloves, indicating a sterile or clinical environment. The scene is brightly lit, and various medical equipment and monitors are visible in the background. The text "Lead the call... but take a Tactical Timeout" is overlaid on the image in white, bold font.

Lead the call... but take a Tactical
Timeout

What am I missing?



Mindset Matters

From:

- “I hope this never happens.....”

To:

- “When it happens, I’ll be ready!”



Importance of Debrief

3 Up & 3 Down

Don't forget the Recovery Phase

- **First responders**
- **Event Volunteers**
- **The public**

RESPONDER STRESS CONTINUUM

READY	REACTING	INJURED	CRITICAL
Sense Of Mission	Sleep Loss	Sleep Issues	Insomnia
Spiritually & Emotionally Healthy	Change In Attitude	Emotional Numbness	Hopelessness
Physically Healthy	Criticism	Burnout	Anxiety & Panic
Emotionally Available	Avoidance	Nightmares	Depression
Healthy Sleep	Loss Of Interest	Disengaged	Intrusive Thoughts
Gratitude	Distance From Others	Exhausted	Feeling Lost Or Out Of Control
Vitality	Short Fuse	Physical Symptoms	Blame
Room For Complexity	Cutting Corners	Feeling Trapped	Hiding Out
	Loss Of Creativity	Relationships Suffering	Broken Relationships
	Lack Of Motivation	Isolation	Thoughts Of Suicide
	Fatigue		

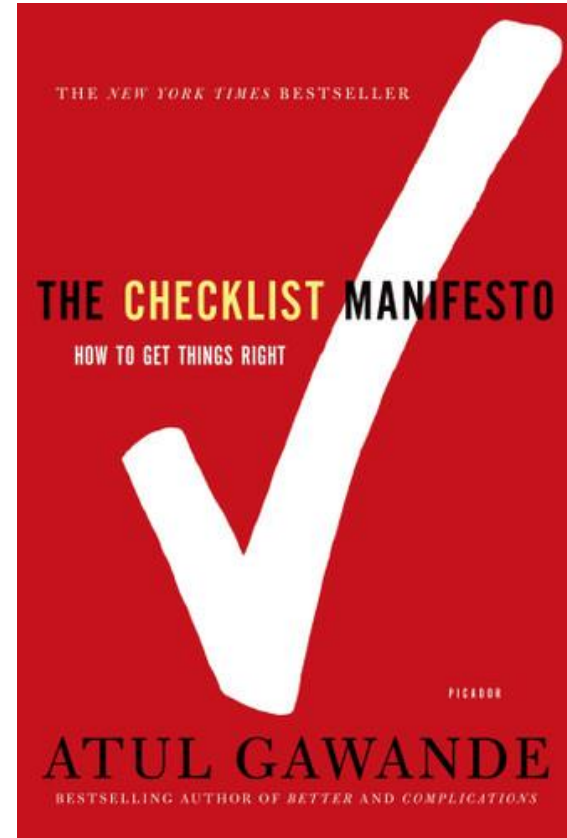
ADAPTED FROM COMBAT AND OPERATIONAL STRESS FIRST AID BY LAURA MCGLADREY | RESPONDERALLIANCE.COM



Heavy Drinking Doesn't Work

Checklist Approach to Tough Calls

- Debrief
 - Family/Friends
 - Journal
 - Hot yoga
 - Get Outside
-
- www.responderalliance.com



“The best way to find yourself is to lose yourself in the service of others.”

Gandhi





Thank You!

- Kevin.grange@gmail.com
- IG: @kevin.m.grange