

LEANING TOWARDS SCREENING: RULING OUT MITOTIC DISEASE

Godo Savinsky

www.mediaserver.hamburg.de / Maxim Schulz

2019| Dallas, TX

Structure and Qualification:

2630 volunteer firefighters

- 86 fire stations including
- 18 fire stations with EMT-Basic trained fire fighters

2751 professional firefighters

- all professional firefighters are EMT (520h)
- 800 are EMT Paramedics (3yr)
- 21 fire stations and 34 rescue stations

Responses

- 253.686 medical responses
- 34.713 technical assistance and firefighting

annual report 2017 – Hamburg Fire Brigade

www.mediaserver.hamburg.de / Andreas Vallbracht

IS THERE GOOD AND BAD SMOKE?



©Feuerkrebs

There are up to 1000 different substances in smoke

Some of them are harmful

Firefighters inhale substances from the smoke and also absorb them through the skin

Even if we think it smells good, it can be dangerous

Thanks to all the international studys and analysis about the risks for firefighters

THE THREE STEPS

1

Create Awareness
- short term - fast and
cheap -

2

Education
- mid term-

3

Equipment
- long term and
expensive -

ENLIGHTENMENT



How we look at our heroes...

CREATE AWARENESS



- **Lectures & communication**
- **Service regulations**
- **Concept for hygiene at the scene**
- **Analysis of early deaths**
- **Change the view to the heroes**

©Rüdiger Piorek

EDUCATION



©hamburg fire departement

- **Develop the curriculum**

- Use the respirator
- Use mask and filter (cold smoke)
- Protect your skin
- Change your PPE on the scene (smell & see)
- Don't drink, eat or smoke at the mission site before you have washed face and hands
- Don't transport the used suits and hoses in the driver's cabin

EQUIPMENT



Fire Stations

- Showers between garage and restrooms
- Spatial separation of clean and dirty areas
- Air lock
- Space for cleaning and storage

www.mediaserver.hamburg.de / Maxim Schulz

EQUIPMENT

Hygiene modules

- Modify the fire engines with a hygiene module for the washing of face and hands

Protective gear

- Change to a pool of PPE
- Purchasing more PPE
 - 2700 for 900,-€ each
- Rethink the process of cleaning the PPE
- Purchasing of clothes to change for the way back to the fire station



©Feuerkrebs / © Hygienebord Fa. Lentner

www.mediaserver.hamburg.de / Maxim Schulz

Ruling Out Mitotic Disease

Seite 9

CURRENT STUDIES

Biomonitoring

- DGUV study (German Social Accident Insurance)
- Search for polycyclic aromatic hydrocarbons
- Collecting blood and urine samples before and after a exposure
- Compare different functions of firefighters to the guy who is cleaning the hoses

Wipe sample

- Comparison of the driver's cabins of different fire engines
- Collecting samples with a white sheet, looking for fire residues

Start of a register of exposures (smoke log)



- **30% create awareness**
- **30% education**
- **30% equipment**
- **10% care for the affected firefighters & further studies**

www.mediaserver.hamburg.de / Andreas Vallbracht

FMS for EMS

Dan O'Donnell, M.D.

Medical Director

Indianapolis Emergency Medical Services

Indianapolis Fire Dept.



INDIANA UNIVERSITY

School of Medicine

Department of Emergency Medicine



INDIANA UNIVERSITY

EMS is Painful

FOCUS ON EMS SAFETY

OCCUPATIONAL
Br

FOCUS ON THE EMS WORKFORCE

COMPARISON OF PUBLIC SAFETY PROVIDER INJURY RATES

Joe Suyama, MD, Jon C. Rittenberger, MD, MS, P. Daniel Patterson, PhD,
David Hostler, PhD, CSCS



INDIANA UNIVERSITY

How Can We Prevent Injury

- Functional Movement Screening (FMS)
 - Movement assessment trying to find individuals **limitations** and **asymmetries**
 - Screen → Corrective exercises
- Who can perform screen?
 - Physical therapist
 - EMS provider who has done training
 - Safety officer
 - Wellness officer
 - Complete course and take test



<https://www.functionalmovement.com/system/fms>

IU Department of Emergency Medicine



INDIANA UNIVERSITY

What Happened in Indy?

- Performed FMS screening on 146 individuals
 - Volunteers
 - New hires as part of our academy
- 2 follow up exams after screening
 - 30 and 90 days
- Followed injuries from January-October
 - Looked at reported injuries
 - Looked at associated costs of the injuries

IU Department of Emergency Medicine



INDIANA UNIVERSITY

What Did We Find

146
screened

29
completed

117
Incomplete

IU Department of Emergency Medicine



INDIANA UNIVERSITY

What Did We See (21 Injuries)

	Completed FMS	Did not Complete FMS	Difference (%)
Injuries	8 (38%)	13 (62%)	24%
Work Hours Lost (per person)	50	100.6	50.6

IU Department of Emergency Medicine



INDIANA UNIVERSITY

Show Me the Money!



	With FMS	No FMS	Difference
Injury Cost (per person)	\$1,732.88	\$2,317	\$584.12
Cost to Replace Work hours	\$863	\$1,789	\$926
Total Cost of Therapy	\$224	\$532	\$308



IU Department of Emergency Medicine



INDIANA UNIVERSITY

Summary of Findings

- Overall saw a total savings of > \$37K over 10 months on 21 injuries
- Minimal investment in personnel
 - Can train safety officers and others
- Follow up was extremely difficult
 - Lost motivation
 - Hard to schedule

IU Department of Emergency Medicine



INDIANA UNIVERSITY

Barriers

- Must have a champion for this program
- When to introduce the program
 - Initial orientation
 - Mandatory training?
- Follow up is key
 - Are they doing corrective exercises?
 - Trend towards improved outcomes



INDIANA UNIVERSITY

Conclusions

- EMS is a house of pain!
- Consider FMS as part of your injury prevention strategy
- There are cost savings to be had
- Can lead to decreased stress for EMS providers

Dan O'Donnell,
Dapodonn@iu.edu
@cubsbank

IU Department of Emergency Medicine



Combating Fatigue in EMS: An Evidence-Based Guideline

Peter Taillac, MD, FAEMS

2019 Eagles Conflagration



Prehospital Emergency Care

Prehosp Emerg Care 2018 Feb 15;22(sup1):89-101

ISSN: 1090-3127 (Print) 1545-0066 (Online) Journal homepage: <https://www.tandfonline.com/loi/ipec20>

Evidence-Based Guidelines for Fatigue Risk Management in Emergency Medical Services

P. Daniel Patterson, J. Stephen Higgins, Hans P. A. Van Dongen, Daniel J. Buysse, Ronald W. Thackery, Douglas F. Kupas, David S. Becker, Bradley E. Dean, George H. Lindbeck, Francis X. Guyette, Josef H. Penner, John M. Violanti, Eddy S. Lang & Christian Martin-Gill



NHTSA-Convened Expert Panel on Fatigue in EMS

- EMS Providers
 - EMS Medical Directors
 - EMS Researchers
 - Sleep Medicine
 - Fatigue Science
 - Risk Management
 - Consumerism
-
- Recommendation of the National EMS Advisory Council
 - GRADE Process for EBGs used

Recommendation #1

Use a fatigue/sleepiness survey instrument to measure and monitor fatigue in EMS personnel

- ▶ Assess the magnitude of the fatigue problem for your agency
- ▶ Assess yearly
- ▶ Make adjustments to fatigue management plan based on results

Recommendation #2

Recommend that EMS personnel work shifts shorter than 24 hours in duration

- Shifts less than 24 hours in duration are associated with:
- improved outcomes related to
 - safety,
 - performance,
 - acute fatigue,
 - sleep,
 - and other outcomes than are shifts greater than or equal to 24 hours.

Recommendation #3

Recommend that EMS personnel have access to caffeine as a fatigue countermeasure

- There is no recommended optimal dose...
- Evidence shows that consumption of caffeine during shift work has positive effects on:
 - performance,
 - acute fatigue,
 - and acute sleepiness
- Duh...

Recommendation #4

Recommend that EMS personnel have the opportunity to nap while on duty to mitigate fatigue

- ▶ For shifts >12 hours or overnight
- ▶ Evidence shows that napping during shiftwork reduces feelings of acute fatigue (sleepiness)
- ▶ Nap length not specified
 - ▶ 10-15 minutes proven beneficial
- ▶ ***Can I hear an “Amen”?!***

Recommendation #5

Recommend that EMS personnel receive education to mitigate fatigue and fatigue-related risks

- Evidence shows that education and training in sleep health and fatigue has a positive impact on sleep and related outcomes among shift workers (i.e., sleep quality)
- Refresher training every 2 years

SUMMARY OF EVIDENCE-BASED RECOMMENDATIONS

Five recommendations comprise the 2018 Evidence Based Guidelines for Fatigue Risk Management in EMS.¹²

These recommendations include:

1. Recommend using **fatigue/sleepiness survey instruments** to measure and monitor fatigue in EMS personnel.
2. Recommend that EMS personnel work **shifts shorter than 24 hours** in duration.
3. Recommend that EMS personnel have **access to caffeine** as a fatigue countermeasure.
4. Recommend that EMS personnel have the **opportunity to nap** while on duty to mitigate fatigue.
5. Recommend that EMS personnel receive **education and training** to mitigate fatigue and fatigue-related risks.

- 
- **Most Excellent Implementation Guidebook**
 - NASEMSO website:
<https://nasemsso.org/projects/fatigue-in-ems/>

IMPLEMENTATION GUIDEBOOK

2018 FATIGUE RISK MANAGEMENT
GUIDELINES FOR EMERGENCY
MEDICAL SERVICES

October 2018

By:

P. Daniel Patterson, PhD, NRP
University of Pittsburgh

Kathy Robinson, RN, EMT-P
National Association of State EMS Officials

With Support From:

National Highway Traffic Safety Administration
Contract Number: DTNH2215R00029

