

October 16, 2020



## Safety Innovation and the Future of EMS

EMS LEADERSHIP SUMMIT  
 EMSLeadershipSummit.com  
 @911Leadership

Nadine Levick, MD MPH  
 Research Director, EMS Safety Foundation  
 CEO, Objective Safety  
 Director of Research and Innovation, Emergency Health Services



www.EMSSafetyFoundation.org

Much of what you shall hear today is thanks to the work of all of those in the:



and the National Academies of Science, Medicine and Engineering  
 Transportation Research Board's ANB10(5) EMS Safety Subcommittee



## Today's Outline

- Future is now!
- New World Order
- Cross skilling Industry and providers
- Innovation dimensions
- Cheaper Better Safer
- Open source
- Challenges



## The Future is NOW!



## Space based solar power, million mile battery, eVTOL & XR

**Morning Brief: Secret Air Force space plane to beam solar power to Earth, Tesla's 'million-mile' battery**

Also in the brief: DOE kicks off \$230 million advanced reactor demonstration program, and the global coal industry will never recover from the Covid-19 pandemic.

MAY 18, 2020 ERIC WESOFF

The U.S. Air Force launched its secret X-37B space plane on Sunday for a long duration mission in low Earth orbit. Ahead of its launch, the Air Force gave some new details about its cargo: a solar panel developed by the Naval Research Lab will be used to conduct the first orbital experiment with space-based solar power. The panel is to convert the sun's energy into microwaves and beam it down, an idea from science fiction.

Access in the 1940s.

This experiment is closely related to the Air Force Research Lab's Space Solar Power (SSP) which is to collect solar energy with high-altitude solar cells, convert it to microwaves, and beam it to earth — providing an energy source to transport operating bases with no traditional power sources. At 10, awarded Northrop Grumman a \$500M contract for development and testing of the program. Source: U.S. Space Force, 9/19

Tesla CEO Elon Musk has been teasing investors and rivals with promises to reveal significant advances in battery technology at a "Battery Day" this month — now postponed. The new "million mile" battery at the center of Tesla's strategy was developed with China's Contemporary Amperex Technology (CATL) and a team of battery experts recruited by Musk. Tesla's new batteries rely on low-cobalt and cobalt-free battery chemistries, and the use of additives, materials and coatings that will reduce internal stress and enable longer duration. The cost of CATL's cobalt-free lithium iron phosphate battery packs has fallen below \$100/kWh. CATL's low-cobalt NMC battery packs are close to \$100/kWh. Source: Reuters.



## eVTOL and XR

electric Vertical Take Off & Landing and mixed reality





## Next is now!

- Fleet mix
  - Vertical take off vehicles
  - Drones
  - Unmanned Drones
- Smart Technologies
  - AI dispatch
  - Voice activated commands
  - Advanced Smart phone technology
- XR - Mixed reality
- Covid PPE and innovation
- Connected health
- Wireless patient monitoring
- Health Information Exchange (HIE) Applications



## Be ready to deploy new and effective tools for both training and operations



## Chris Cebollero, 2020

- "Leadership is not about position, it's about professional development."
- Leadership as a verb, it's an action not a position and everyone will influence someone else... for the good or the bad.



## New Solutions

- Training and education
- Operational tools
- Transport Vehicles
- PPE innovation
- Support tools and adjuncts



## Leadership and Innovation

- "Being responsible sometimes means pissing people off... By procrastinating on the difficult choices, by trying not to get anyone mad, and by treating everyone equally "nicely" regardless of their contributions, you'll simply ensure that the only people you'll wind up angering are the most creative and productive people in the organization."



A Leadership Primer from General (Ret.) Colin Powell, Former Secretary of State, USA



## So what is safety?

- condition of being protected against undergoing or causing harm, injury or loss



## And.. what is innovation?

- Something new, original and more effective



## Joe Bourgraf, President, Ferno Group

- “To create an innovative and model EMS system..., we must engage in a collaborative and cross-functional conversation among the many contributing partners in the EMS industry. EMS suppliers should embrace and drive new innovation.. to improve the process and efficiency of delivering service, while advancing the level and outcome of emergency care”



## From low tech to high tech

- System of Safety
- Think of the overall impact
- Small low cost changes in practice
- Policies that augment safety
- Innovation in design from micro to macro
- Preparedness and Training



## Safety of the...

- Provider
- Public
- Patient



## Safety is a tool to save

- Lives
- Time
- Money

must be evidenced based



## Work Smarter NOT Harder



## To Do...

- The right thing:
  - At the right place
  - At the right time
  - For the right person
  
- How best to achieve that goal now and for the future??



June 9, 2020



## EMS Safety's frontier -

- the interface of disruptive new tech and operational practice at all levels of the EMS system and across disciplines



1980's Then....



And NOW!...



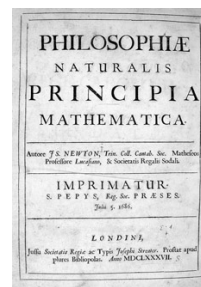
USA 1980's Then....



And 2020...



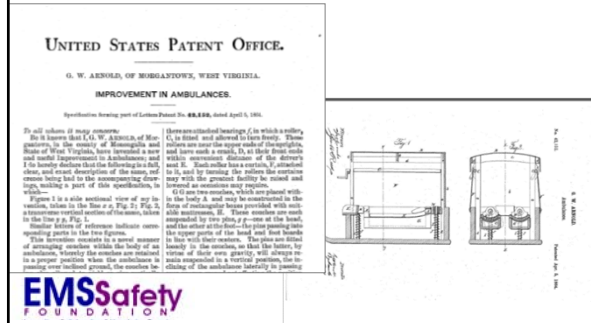
The Laws of Physics Prevail..



Philosophiæ Naturalis Principia Mathematica, July 1687



## 1864 Ambulance Design Patent re: safety of ambulance design > 150 years ago



## If you were to survey for what would enhance safety and efficiency then....

- Likely “more rest stations”
- Not likely – “the combustion engine”
- Let alone the Hydrogen powered eVTOL



## EMS Safety timeline

- Didn't know it was an issue – 60's-70's
- Knew it was an issue – but didn't really know what to do – 80's-90's
- Safety technical data rolls out – past 10 years
- **Change and adoption challenges – we are here now**



## Safety Dimensions we know

- Safe systems – CRM / transport system safety
- Risk perception
- Fleet and operations management
- Vehicle design safety
- Scene safety
- Patient Handling: physical & biological hazards
- Health and wellness
- Hours of service



## TRB EMS Safety Summit

<http://www.EMSSafetyFoundation.org/2012TRBSummitMultimedaiwithLinks.pdf>



## The 2012 TRB EMS Safety Summit

print this page & your smart phone will play the 8 sessions from the QR codes

- 1: Intro & Data and Recent Initiatives
  - 2: Transport, Human Factors - Bridging Diverse Disciplines
  - 3: Testing and Standards
  - 4: New systems safety technology solutions & telematics
  - 5: Fleet management strategies
  - 6: Innovative Vehicle Design
  - 7: Operationalizing Safety
  - 8: Panel: How to optimize the safety of your existing fleet
- Wrap up – from Prof. Art Cooper



## Now we have many new technologies

- Fleet management tools
- Diverse vehicle types and design
- Drones
- Robotic tools
- XR – AR, VR, AI
- Connected Digital Health
- The Cloud
- The Crowd

..... that we need to harness



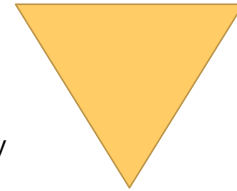
## Very Important Principle

Ambulance transport safety is part of a SYSTEM, the overall balance of risk involves the safety of all occupants and the public

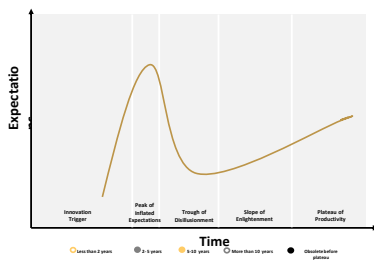


## How does design happen in EMS

- Tradition
- Experience
- Vision
- Interdisciplinary



## Change, Adoption and Sustainability



## Gartners Hype Cycle 2017



## Gartners Hype Cycle 2019



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## Gartners Hype Cycle 2020

Hype Cycle for Emerging Technologies, 2020



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## New World Order

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## Covid19, the 2020 Pandemic



© Bronx-Lebanon Hospital Center medical staff stand outside of the emergency room bay, April 8, 2020 in New York City. David J. Delgado/Getty Images

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## June 2020

### New patterns of morbidity and mortality - a 10 fold increase in Out of Hospital Cardiac Arrest Deaths

Research

JAMA Cardiology | Original Investigation

Characteristics Associated With Out-of-Hospital Cardiac Arrests and Resuscitations During the Novel Coronavirus Disease 2019 Pandemic in New York City

Parvathi H, LA, MD, PhD, MSc; Elizabeth A. Lanza, DPH, MPH; Michael D. Weiden, MS, MD; Maysa F. Wadler, DPH, MPH; Rachel Zeng-Owen, DPH, MPH; Charles B. Hall, PhD, David J. Prezant, MD

**IMPORTANCE** Risk factors for out-of-hospital death due to novel coronavirus disease 2019 (COVID-19) are poorly defined. From March 1 to April 25, 2020, New York City, New York (NYC), reported 17 188 COVID-19-related deaths. On April 6, 2020, out-of-hospital cardiac arrests peaked at 305 cases, nearly a 10-fold increase from the prior year.

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## October 14, 2020

### NEWS - INTERVENTIONAL TCT 2020 Delays, Deaths, and More Cardiogenic Shock Among ACS Patients With COVID-19

Public health messaging should reassure patients they needn't be scared to go to the hospital, a COVID-ACS researcher says.

By Todd Newson OCTOBER 14, 2020



Patients with ACS and COVID-19 took longer to get to the hospital, had a much higher rate of cardiogenic shock, and were more likely to die in the hospital compared with ACS patients treated in the pre-pandemic era, findings from a global COVID-ACS registry show.

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## New Tragic Hazards for EMS April 21, 2020

Coronavirus News: FDNY mourns death of EMT from COVID-19

By **EMSSafety News**  
March 21, 2020



NEW YORK CITY (OABC) — The Fire Department of New York is mourning the loss of Emergency Medical Technician Idris Bey, 49, from COVID-19.

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## April 22, 2020

NYC EMT Idris Bey dies of coronavirus, becoming 8th active FDNY member killed by pandemic

By **EMSSafety News**  
New York Daily News — APR 22, 2020 • 5:28 PM



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## April 28, 2020 > 24 Covid19 USA EMS Provider deaths

NEWS PRODUCTS VIDEOS TOPICS TRAINING JOBS GRANTS COVID-19

COVID-19: EMS deaths  
Tracking the coronavirus-related deaths of EMTs and paramedics  
Apr 28, 2020

**EMSSPECIAL**  
**CORONAVIRUS (COVID-19)**  
**SPECIAL COVERAGE**

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## May 1, 2020

NY ambulance volunteer dies from COVID-19

Sal Mancuso, 66, who volunteered driving ambulances for Blooming Grove Volunteer Ambulance Corps, died Thursday

Yesterday at 8:43 PM



By Laura French

BLOOMING GROVE, N.Y. — A New York ambulance service volunteer died due to COVID-19 on Thursday night.

Sal Mancuso, 66, who volunteered for Blooming Grove Volunteer Ambulance Corps driving ambulances, was on a ventilator for almost two weeks before his death, according to the Times Herald-Record. He first became ill on

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## August 6, 2020

Entire Mo. FD quarantined after FF tests positive for COVID-19

All 27 firefighters of the Lemay Fire Protection District, including the fire chief and deputy chiefs, are quarantined pending further test results

Kim Bell  
St. Louis Post-Dispatch

LEMAY, Mo. — Every firefighter in the Lemay Fire Protection District was under quarantine at home Thursday after a colleague tested positive for the coronavirus, a district official said.

The 911 calls that Lemay normally would handle were being rerouted to fire houses in Valley Park, Fenton, Affton and elsewhere. Crews are rotating the responsibility of filling in for Lemay, according to Jerry Schloss, chairman of

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## October 14, 2020

FDNY monitoring new COVID-19 outbreak at Queens EMS station

Five EMS providers at the Astoria station have tested positive; union officials warned that the department may not be prepared for a second wave

Oct 14, 2020

By Laura French

NEW YORK — Five FDNY EMS providers at a station in Queens have tested positive for COVID-19, renewing warnings from union leaders regarding a potential second wave of the pandemic.

The department is closely monitoring the outbreak at the Astoria EMS station with contact tracing and additional

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## USA: 36 Covid19 EMS Provider Deaths AND 3 + suicide... in NYC alone March 2020 to September 2020



The 36 deaths came from 11 states. Figure 1 shows the distribution of states. Thirty six percent of the EMS providers were from New Jersey and 22% from New York. It should be noted that although we report that most of these victims died in their home states, at least one California EMS provider died while on the ride national ambulance company (NAC) deployment to New York City under the National Response Framework (Emergency Support Function #8 Public Health and Medical Services [2]).

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## Solutions out there

- PPE
- Handwashing
- Patient Barriers
  - Spectrum – high and low tech
- Air filtration systems - ?

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## April 2020 - PPE Shortages

EMSWORLD  
PRINT ONLINE EXPO

### Calif. EMS Agencies Manufacture PPE Amid Shortage During COVID-19

04/29/2020

#### PRESS RELEASE

April 28th marks National Superhero Day and some California Ambulance services are leveraging their individual super powers to manufacture their own capes and masks. With continuing shortages of personal protective equipment (PPE) and lengthy delivery schedules, California Ambulance Association members have taken matters into their own hands and are locally manufacturing PPE. Members of the CA's Inter Facility Transfer (IFT) Committee identified the ways they were individually creating PPE and



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## 2020 - Cross skill development with Lowes Home Improvement



**BOB PHOTO**  
 (caption text partially obscured)



**Tower Summit, For The Daily News**  
 (caption text partially obscured)



(caption text partially obscured)

### Dynamics of isolation chamber transports

Media  
 Play 2020  
 News Open  
 Share  
 Facebook, Twitter, LinkedIn, YouTube icons

...ant Director of Medical  
 ...ulance, shares the

## EMS Patient Isolation Design requirement/constraints

- Easy to get the patient in and out
- Contain aerosol pathogens
- Tolerable for the patient
- Cleanable or disposable
- Cost effective
- Time effective
- Does the WHOLE patient need to be contained



## Whole Vehicle Air Filtration Systems

- Is this a realistic tool in the time and physical constraints of an EMS system
- ? Practical
- ? Effective
- ? Cost effective
- ? System of solutions



## CDC EMS Guidelines – July 2020

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-for-ems.html>

Interim Recommendations for Emergency Medical Services (EMS) Systems and 911 Public Safety Answering Points/Emergency Communication Centers (PSAP/ECCs) in the United States During the Coronavirus Disease (COVID-19) Pandemic

This guidance applies to all medical first responders, including fire services, emergency medical services, and emergency management officials, who anticipate close contact with persons with suspected or confirmed Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection in the course of their work.

Updated July 15, 2020

## New Tools, New Vehicles new industry relationships



## Innovation!!



## A Simple Practical Solution compact patient barrier – Ferno Covid Shield



## 2020 Pandemic Innovation PPE to contain the patients aerosol

Experium Protect™ 

- Add-on patient scavenger mask
- Actively minimizes escape of patient aerosolized air



[www.experium.co.il](http://www.experium.co.il)

October 2020 AWARDS



1<sup>st</sup> prize  
Hardware Finals competition



1<sup>st</sup> prize  
Impact Award



## 2020 – Industry Cross-skilling soda to O2 delivery systems



Israeli Company SodaStream Creates New Breathing Machine to Fight COVID-19



## eVTOL, October, 2020



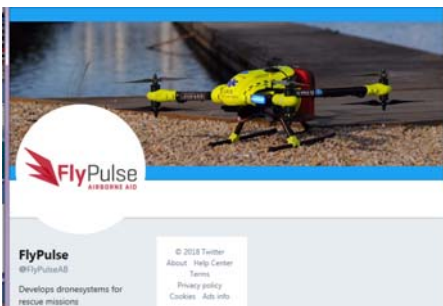
The Vertical Flight Society's 76<sup>th</sup> Annual Forum & Technology Display is the world's leading international technical event on vertical flight technology. The virtual conference will span 4 days and include 230+ technical papers on every discipline from Acoustics to Unmanned Systems, as well as invited presentations and discussions by leaders in the military, government agencies and industry.

The Technology Display, running concurrent with the Forum, is the most extensive exposition of cutting-edge vertical flight technologies in the world, and also includes other technologies more broadly applicable to aerospace in general. Leading manufacturers, service providers, defense agencies, universities, and research and development organizations will showcase the very latest in vertical flight technology in our virtual exhibit hall.

Take a look at our Forum 76 Program Overview to see what we have planned!



## Unmanned Ambulance drones



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## Manned Drones



## eHang passenger drone



## ? The ambulance of the future

First passenger drone makes its debut at CES

Chinese entrepreneurs bring their one-person craft, which is controlled by tablet and capable of flying 60mph, to the annual technology convention



Passenger drone powered by batteries unveiled at CES

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A Chinese company claimed a world first on Wednesday by unveiling a drone capable of carrying a human passenger.

August 24, 2020



Urban Aeronautics To Develop Emergency Response Flying Vehicle With Hatzolah Air

By [Jennifer Zilberstein](#), NoCameras — August 24, 2020

An illustration of the UrbanAerics eVTOL flying vehicle in New York City, courtesy of UrbanAerics. Technology trends

Flying vehicles have been called the future of urban transportation in the smart mobility sector, with companies like Amazon, Tesla, and Boeing creating some of the most cutting-edge flying car technologies — from delivery drones to all-electric passenger aircraft.

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## Thought leaders – Urban Aeronautics Ambulance Transport Safety 2002

*X-Hawk:  
The Revolutionary, Modular, Aerial Vehicle*



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Whereas most designs for new, aerial vehicles offer incremental improvements in the state of the art, the X-Hawk flying platform presents a revolutionary advance in both the mobility and utility of aerial vehicles. Simply put, nothing like it has ever hit the market before.

## September 2020

JERUSALEM POST

Urban Aeronautics CEO has designed a made-in-Israel flying car

The car is able to take off the ground with two compressors located at its base.

By YAGAR NACHOBY, SEPTEMBER 4, 2020 11:26



The City Hawk would ascend a few centimeters (shown scale) (CREAT ARCHITECTS)

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## Unmanned operational Prototype



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### Urban Aeronautics CityHawk for Rescue & EMS




Unprecedented Safety "fly anywhere, land anywhere"

Copyright © 2020 Urban Aeronautics, Ltd.

All any helicopter pilot...  
 - No exposed rotors  
 - Emergency parachute  
 - Flight in long tunnels  
 - Automatic safety  
 - One-way  
 - Unconventional safety


Emergency, instant stabilized and fully automatic parachute activation need for activation

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## September 29, 2020

### Jet suit paramedic takes Lake District test flight

Inventor Richard Browning puts potentially life-saving suit through its paces in groundbreaking exercise



Defying gravity as they hover over water before slipping across mountainous landscapes and landing with pinpoint accuracy, the jet suit paramedic could soon form part of what could become an extraordinary new service being trialled in the Lake District.

If given the green light by ambulance service chiefs, the paramedic powered by lightweight jet-packs would fit across treacherous terrain within minutes to reach stranded casualties.

In an awe-inspiring test flight, the inventor Richard Browning, looking distinctly like Marvel's Iron Man, put the suit through its paces on the Langdale Piles.

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## Ambulance Safety Innovation Design Module 1.0

[www.INDEMO.info](http://www.INDEMO.info)

the future concepts you can  
have right now!!!

*Better, safer and cheaper*


**INDEMO** 1.0
 


POWERED BY EMS SAFETY FOUNDATION

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## Configurable!

## LED lights on the stretcher

Simple equation

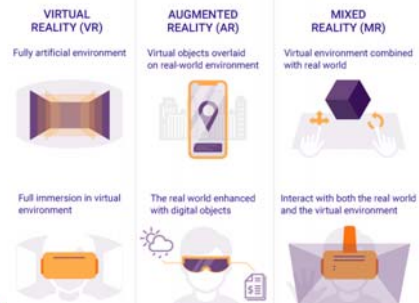
- Strip of LED lights + small battery + switch = \$20
- Can see where the stretcher is going at night
- Fewer tripping injuries, fewer dropped patients



## Voice Activated



## The Virtual World XR (VR, AR, MR) – and EMS



## Virtual Reality First Aid/EMS

- Just released - Virtual Reality Scenarios that you can build, April 2020 -- and with gratis Covid19  
<https://www.vrpatients.com>
- Real First Aid, First Aid and MCI VR both physical simulation scenarios Jan 2018  
<https://www.realfirstaid.com.au>
- Haseeb Iqbal, Published on Jan 27, 2018  
 - Virtual Reality CPR created for the Oculus Rift using Unreal Engine 4. Integrated with Leap Motion technology  
<https://www.youtube.com/watch?v=Vz7k-Kg7J4c>
- IRC ircouncil, Published on Oct 10, 2017  
 - Project by Italian Resuscitation Council  
 - Scientific Supervision: Federico Semeraro, Andrea Scapigliati & Giuseppe Ristagno  
 - VR development: Studio Evil s.r.l.  
<https://www.youtube.com/watch?v=r6Spd4hrvXQ>
- ResusCouncilUK, Published on Sep 8, 2017  
 - A virtual reality game-in-a-film that teaches you to save a life. Step inside, save a life.  
 - Play now - <http://ifesavemv.org.uk/> <https://www.trustedtraining.co.uk/vr-training> <http://dualgoodhealth.com/info/>  
<https://www.youtube.com/watch?v=GuUevS3W5SA>
- Virtual Education Systems, Published on May 16, 2017  
 - This video is showcasing the abilities of VRPatients.  
[https://www.youtube.com/watch?v=k\\_HFS7C0dg](https://www.youtube.com/watch?v=k_HFS7C0dg)  
<https://virtualeducationsystems.com/>
- Marco Vettorello, Published on Sep 3, 2017  
 - First test of teaching defibrillation (AED) with the HTC Vive in a homemade Unity scenario  
<https://www.youtube.com/watch?v=pMPhz-zd9xw>



## VR Training for ACLS



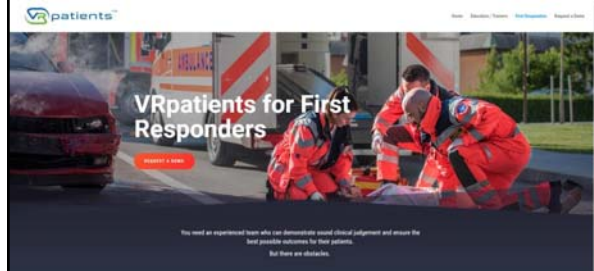
<https://healthscholars.com>

IMMERSIVE, REPEATABLE ACLS SIMULATION TRAINING DESIGNED FOR FIRST RESPONDERS.

## The NEXT LEVEL VR Scenario Training AUTHORABLE – by YOU!!



## Virtual Reality Patients – EMS



## DIY VR Training and evaluation tools

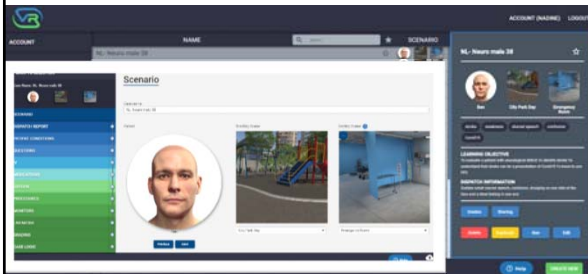
just like making a Power Point



## [www.VRpatients.com](http://www.VRpatients.com)



## VR Training that you can create

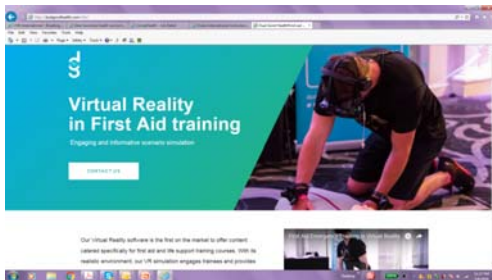


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REAL LIFE TRAINING *without* REAL LIFE CONSEQUENCES  
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## VR – CPR training <http://dualgoodhealth.com/info/>



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## VR EMS violence training

- AmbulanceVic,
    - Feb 2017, Virtual Reality training for all Ambulance Victoria paramedics to better protect them from violence as they respond to medical emergencies.
    - Ambulance Victoria is using Virtual Reality to help paramedics manage violence and aggression in the workplace.
- [www.globalfrontline.com.au](http://www.globalfrontline.com.au)  
<https://www.youtube.com/watch?v=iQhxrF5tvFA>

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### AMB NEWS Ambulance Victoria Offers Virtual Reality Training on Violence Prevention

Video Mar 01, 2017  
Print Version

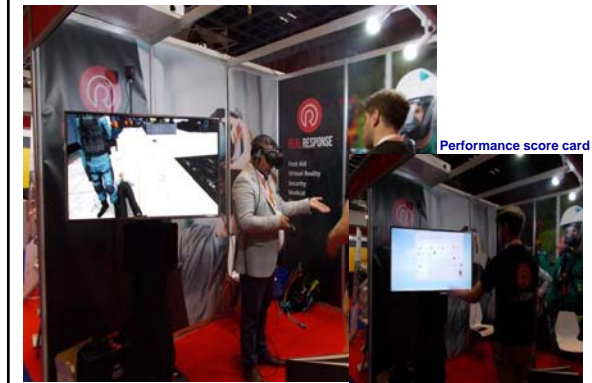


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## VR MCI – [www.RealResponse.com.au](http://www.RealResponse.com.au)



## Virtual Reality A new design tool too

### Exploring the inside of a virtual ambulance



## AI and EMS

### AI ambulances and robot doctors: China seeks digital salve to ease hospital strain

**Revealed: how AI will transform Dubai ambulance services**  
Immediate Response project aims to transform every Dubai resident into a potential lifeline

## AI and EMS Dispatch

### Becoming The Best In The World At Detecting Cardiac Arrest

**AI detects cardiac arrest**

## AI and Dispatch

### AI that detects cardiac arrests during emergency calls will be tested across Europe this summer

**Revealed: how AI will transform Dubai ambulance services**  
Immediate Response project aims to transform every Dubai resident into a potential lifeline

## Fleet telematics tools

**ORBCOMM**

Home > Transportation > News/Content/Press/Partners and Content/Performance with Trusted Telematics

### Beyond Compliance: Driving Fleet Safety and Operational Performance with Trusted Telematics

There's been a lot of coverage in the media recently about commercial vehicle telematics thanks to the new ELD (Electronic Logging Device) mandate that went into effect last December by FMCSA. The US Public Works Career Safety Administration. The mandate also addressed fleet safety officers, all professional drivers and many carriers who are required to provide hours of service (HOS) records of July since 2015, although fleets with existing commercial vehicle telematics already (ORBCOMM) have until December 2019 to comply.

But regulatory compliance is only part of the telematics story. Fleets of all shapes and sizes - from light vehicles up to the most heavy-duty haulage - can benefit from significant increases in driver performance, safety and operational effectiveness by correctly selecting and implementing a telematics solution. Regardless of whether they are affected by the ELD rule or not, they should consider the case for where adding it in and with the right tool, will address increasing fuel costs and rising operational expenses, where compliance is simply a given and a "license to operate."

So, should you be investing in telematics, what should you expect and demand from your solution and how can you ensure maximum return on investment?



## Telematics

- How much technology and data and of what type do you need to improve fleet safety performance



## CAD - Crowd and the Cloud

**PULSE**  
WAZE

- Simplify dispatching
- Reduce decisions
- Save money

Enhancing CADs so our customers can save time, money, property, and lives



## Integrated crowd sourcing

**GENESIS PULSE**  
SAVING TIME. SAVING LIVES.

Integrates with Waze to help call centers pinpoint calls, events and send emergency units along faster routes

Alerts users upon detection of service that does not meet established standards

Displays real time unit and incident data on Google Maps - including location for PULSE Live and PULSE Mobile

Replays system-wide events to review and optimize unit assignments and route changes

Delivers customized analytics, real time status feedback, and an advanced reports

## Cardiac Arrest.... Engage bystanders!

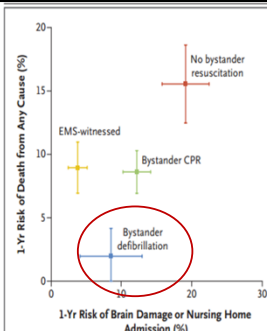


Figure 4. Absolute Risk of Anoxic Brain Damage or Nursing Home Admission and Death from Any Cause at 1 Year of Follow-up According to EMS-Witnessed and Bystander-Intervention Status.



## Wearable tech..





## EU funded COVID-19 Acute Mx Support Tool

- The European Open Science Cloud (EOSC)
- To be deployed globally
- <https://www.eoscsecretariat.eu/sites/default/files/euocovid19acutemx1-0.pdf>

## Spun out of the Covid-19 Sprint Program

@ Assuta Ashdod University Hospital, Israel

**The Team**

- Or Adiel - Project Manager, Tech. M
- Naama Lesh, MD, MPH, FACEM Emergency Physician and Infectious Disease Researcher, Assuta
- Abigail, and CEO, Founder, EMS Safety Foundation
- Professor Shoshita Tzipi Zaki-Rony, PhD, DR, MPH, Professor, Bar Ilan University, School of Nursing
- Avish Reichel, MPH, Tel Aviv University and MD Candidate, Tufts University Medical School
- Sarah Shalvutsky-Katz, MD, Director Pediatrics ICU, Sheba Tachler Hospital
- Jeffrey Green, MD, Emergency Physician, Assuta Hospital, Ashdod, Minkovits US Medical Center
- Jack Kuznetsov, BS, MS, CEO, Pave 360 Ltd, Israel, Microsoft Plus Technologies, USA

## Covid19AcuteMx Support Tool

### So what is this?

A Frontline Healthcare Provider:

- Decision support tool
- Acute care clinical Management (Mx) guide
- Disease and treatment alerts
- Educational resource
- Reference information

## Some examples of Global Innovation

## Learning from our international colleagues

[www.Rettmobil.com](http://www.Rettmobil.com)



## Israeli Innovation



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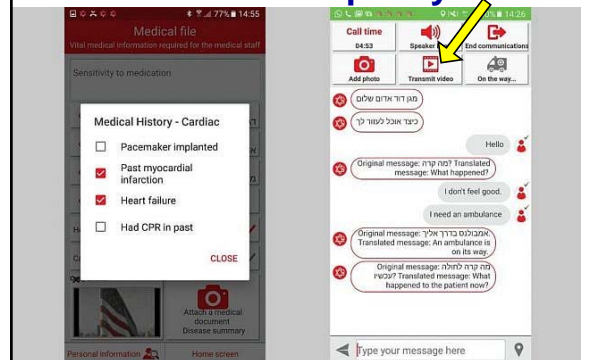
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## Israel Magen David Adom - MDA

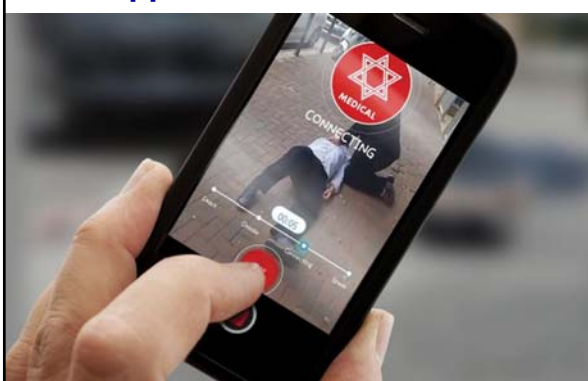
- The MDA fleet
  - Mobile Advanced Life Support Units (MALSUs [Hebrew: "NATAN"])
  - Advanced Life Support Ambulances (ALSAs [Hebrew: "ATAN"])
  - Standard Ambulances
  - Mobile Mass Casualty Incident Units (MMCIUs [Hebrew: "TARAN"])
  - Command and Control Vehicle
  - Ambulances equipped with 4 X 4 wheel drive
  - All Terrain Vehicle – Ambulance (ATV - Ambulance)
  - MDA - Helicopter, Segway
  - Advanced Life Support Motorcycles
  - Supervisor Vehicle.

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## MDA App – Medical Hx & Video transmit capacity



## MDA App with scene video connect

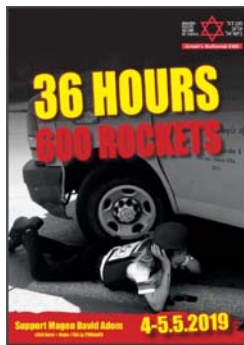


## MDA Dispatch



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## Constant preparedness a reality



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## MADA Innovation Eli Jaffe EMT-P, PhD – MDA Deputy Director General-Community & International Relations

### Israeli EMTs train Americans to deal with mass casualties

Magen David Adom paramedics provide Jewish, Muslim and Christian Americans with tools for dealing with emergencies.



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## Mass casualty drills & Eli Jaffe EMT-P, PhD's moulage T-Shirts



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## New Models in the Corona Era

- 25- 30% EMS runs are non transport
- 30% of EMS transports to the ED are discharged home within 4 hours
- 24/7 national physician video interactive telemedicine support for these cohorts

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## EMS Triage... no.. Voting booth



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## Multicultural service



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## October 2020 Developing world Innovation also



October 2020 Eric Kroner - Chad Team, a rear-motorcycle ambulance cart designed by Scott and a short-term visitor Patrick with local resources and labor

## Clever innovation can be very simple, yet cost efficient



## Today's Challenges

- Adopting new technologies and practices that augment EMS performance and safety
- Embracing decentralization of health care
- Doing more with less – money and workforce
- Cross skilling EMS, industry and the community
- Systems thinking and practice

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## Very Important Principle

Ambulance transport safety is part of a SYSTEM, the overall balance of risk involves the safety of all occupants and the public

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**Things can go wrong – but when there are sound safety policies and technologies in place, and the system is well prepared, you can minimize harm**



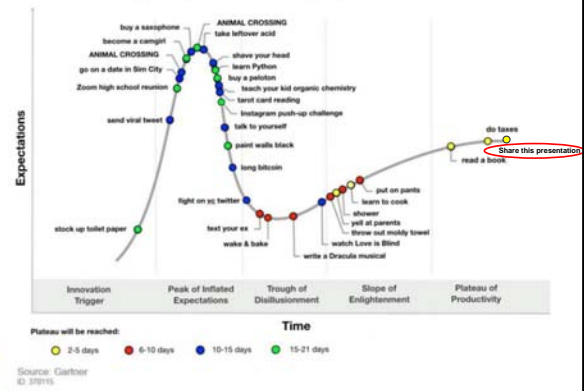
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## EMS Systems Safety

- Technical Collaboration is key
- We cannot afford to play the silo game here, it is costing lives, time and money
- We MUST have a meaningful evidenced based approach to design, operations and policy
- We must be true outcomes driven



Gartner Hype Cycle for Emerging Quarantines, 2020



## Conclusion

- Future is now!
- Safety must be inherent to operational process, design and practice
- Adoption challenges of new disruptive technologies and applied innovation exist
- Cross skilling industry, providers and community
- Interplay between patient, provider and public safety from a systems perspective is key to effective and safe operational EMS performance



## Your electronic handout/resource link with all text slides



[www.objectivesafety.net/PDFHO.htm](http://www.objectivesafety.net/PDFHO.htm)



<http://www.objectivesafety.net>  
Your Handout and Additional Resources

