

Winter 2017 - Issue 4 | Volume 14

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Las Vegas on their response
to the worst mass shooting
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Declan Heneghan
Editor, Ambulance Today

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It's Time to Recognise the Superb Contribution of our Control Room Workers

This year *Ambulance Today* has reported on a number of high-profile and disturbing major incidents from across the globe. We've again seen ambulance personnel tested to the extreme as they've responded to major incidents which put them in immediately life-threatening situations whilst exposing them to the unrelenting glare of the world's media.

Here in the UK we've had four separate terrorist incidents - Westminster Bridge, Manchester Arena, London Bridge and Parson's Green - then there was the awful Grenfell Tower conflagration. In all cases, ambulance crews were on-scene quickly, despite the great risk.

Towards the end of November 305 innocent people died when ISIS attacked a mosque in Sinai, Egypt. Again the ambulance crews didn't hesitate to rush in.

But the incident that drew the greatest media focus was early October's shocking attack in Las Vegas when a lone gunman killed over 50 concert-goers and injured over 500 during a sustained and brutal multi-weapon attack at the Mandalay Bay hotel on the world-famous Las Vegas Strip.

I'm especially proud that the local Las Vegas ambulance provider, AMR (American Medical Response) have chosen *Ambulance Today* to present their first detailed account of how they coordinated what was the biggest single civilian shooter response ever mounted in American history. It gives a fascinating insight into the planning, protocols and by-the-minute decision-making that shaped the response of all the emergency services partners who dealt with the horrifying on-scene carnage taking place and then ensured that the unbelievable number of critically-injured victims were quickly transported to hospitals for life-saving treatment.

Like the incidents in Manchester and London this one touched me on a personal level as some of the first responders in all incidents were known to me as either friends or respected ambulance contacts. I was invited out to Las Vegas a couple of years ago to spend time with the highly-dedicated AMR team as they handled the weekend of the biggest boxing match in Vegas history - the now legendary fight between Mayweather and Pacquiao. Joining their crews as they attended a variety of incidents, including a shooting that took place as party-goers queued outside the MGM hotel for an after-fight party, I was struck then by how easy it is in America for just about anybody to get hold of a gun. Even the ambulance supervisor's car that ferried me from incident-to-incident had bullet-proof glass and Kevlar-coated side-panels! But of course, the idea of a shooting on the scale of the one that took place was beyond either mine or their wildest imaginings. I'm proud to say that I can now count quite a few of the Vegas AMR team as friends. We've stayed in touch so, not surprisingly when the first early morning news reports came on the radio, their individual and collective safety was on my mind.

One thing is certain though, and it's that most of the praise and gratitude expressed for our emergency services is largely directed towards our brave front-

line workers - those police officers, fire-fighters, EMTs and paramedics who step inside the inner-cordon to do their best to take control of chaotic and frightening situations that would overwhelm the rest of us.

But what we all know is that while our front-line workers do an amazing job, there's another invaluable group of workers who play an equally vital role in ensuring that our response to all calls, whether a major incident or just one of the many millions received every year in the UK alone, is handled effectively.

That group are our highly-skilled, unflappable and ultra-calm Control Room workers. Inside this edition are two articles focusing on the extraordinary achievements of our Control Room workers. The first is our regular IAED (International Academies of Emergency Dispatch) feature which gives a run down of the key winners in their own NAVIGATOR dispatch awards, given out annually across IAED's seven NAVIGATOR conferences around the world. The second is by MDA Israel, who offer a fascinating insight into the hi-tech software used by their Dispatch team to ensure the quickest and most apt response to the overwhelming number of often life-threatening calls they handle. In Israel there's no such thing as a quiet shift!

The thing is this - Dispatch as a function is all too often overlooked. But in a world where every second counts, taking that call quickly, obtaining the key information from often frantic callers and coordinating the right and most rapid response is a vital link in the chain of emergency services response. It takes a very special person to work in a Control Room and it takes some very special teams and managers to keep those Control Rooms working literally every second of the year without a break. I, for one, couldn't do either.

Which is why when we at *Ambulance Today* were told by global Control Room software specialists, APD, that next year they're launching a nationwide Control Room Awards for staff across all areas of UK emergency services, including of course mountain, sea and air rescue organisations, we were delighted. *Ambulance Today* is proud of every person who gives their skills, their compassion, their bravery and their dedication to working in the emergency services, but we definitely agree with APD Communications that the time has come to really give our wonderful Control Room workers the long overdue pat-on-the-back that they so richly deserve. So get to work immediately and think about who you'd like to nominate - details of how to make a nomination can be found on the front page of this magazine. The awards take place in early March so follow the example of every good dispatcher, and don't waste a moment in acting!

For now though as we close the book on 2017 it only remain to wish you all, wherever you are in the world as you read this, a very happy Christmas and a Happy and Peaceful New Year for 2018.

To us you're all heroes - each and every one of you.

Declan Heneghan
Editor, *Ambulance Today*





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CONTENTS

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INSIDE YOUR Winter 2017 EDITION:

P9. Answering the call: The AMR LAS Vegas Response to USA's Worst Ever Mass Shooting

On October 1st a gunman opened fire from an elevated position on the 32nd floor of the Las Vegas Mandalay Bay hotel into a crowd of 22,000 concert attendees. Read AMR Las Vegas Ambulance's exclusive case study on their response to the worst mass shooting in U.S. history.



P14. Celebrating a Year of Innovation Across UK NHS Ambulance Services

Justin Wand, Deputy Director of Fleet and Logistics, London Ambulance Service looks back at a year of innovation in fleet services.

P17. Challenging the Dogma of Spinal Immobilization

Spinal trauma can be a devastating injury, frequently encountered by prehospital clinicians. Experts from Dalhousie University, Nova Scotia, Canada present new research on evidence-based practice.

P22. Book Your Place Now for ALF2018!

We look forward to AACE's 2018 Ambulance Leadership Forum - the most significant date in the UK ambulance service calendar.

P24. GSM Finance Brings a Creative Touch to Ambulance Finance

Last month, London-based GSM Finance celebrated twenty years of growth as a forward-thinking provider of asset finance to ambulance providers across a range of sectors.

P27. Frailty and Sarcopenia: Identifying the Right Care for Older Patients

With the ever-increasing numbers of people living to old age, healthcare services must adapt to meet patient needs. Researchers Dr Miles Witham, Prof Avan Sayer, Dr Richard Dodds and Dr Gill Turner look at two of the most prevalent conditions in older patients.

P30. "All Improvements Matter When You're Relying on Rugged Technology to Save Lives"

In an exclusive interview, *Ambulance Today* Editor Dec Heneghan chats to Xplore Technologies' Vice President, Steve Priestly, about what to look for in your service's rugged tablet devices.

P33. Emergency Medicine Education in The DRC

Ambulance Today's Africa editor, Michael Emmerich, discusses the challenges facing emergency medicine educators in The Democratic Republic of Congo (DRC).

P34. Infection Prevention and Control Cleaning in Patient Transport Vehicles

All provider of health-care should have the best infection prevention and control (IPC) practices culturally ingrained into their service provision. Adam Murfitt, MD of infection control experts, ClearTrace, outlines the legislative and economic reasons to reassess your procedures.

P39. No Christmas for Halifax: Anniversary of the 1917 Halifax Explosion

On the 100th anniversary of one of Canada's worst humanitarian crises, *Ambulance Today's* own Les Pringle presents a gripping account of the biggest non-nuclear explosion ever to take place.

P43. Carbon Dioxide - It's Not Just a Gas

In this final article of three, Martin Betzer of Falck Denmark explains how end tidal carbon dioxide monitoring might guide you in your clinical assessment of critically ill, non-intubated patients.

P53. MDA: Leading the Way in New Communications Technology

Israel's Magen David Adom EMS service report on the dispatch room innovations which have put them at the forefront of comms technology.

P55. Canadian Paramedics Travel to Turkey

The Paramedic Association of Canada report on their visit to the recent Paramedic Association of Turkey's International Paramedic Congress & Rally.

Also in this edition...

UNISON update:
Pay Up Now

Letter from Amsterdam:
THE GERMANS

IAED: Emergency Dispatchers
Pull No Stops in Assisting Callers

GVK EMRI: Help on Two
Wheels

TASC: TASC Thanks East
Midlands Ambulance

Out & About
The latest EMS news from
around the world

Products & Suppliers News
The latest in new products,
services and technology

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DESIGN & Production: LI Media email: LImedia@yahoo.co.uk

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PUBLISHER'S STATEMENT: Ambulance Today magazine is published by Ambulance Today Ltd, 41 Canning Street, Liverpool L8 7NN. The views and opinions expressed in this issue are not necessarily those of our Editor or Ambulance Today. No responsibility is accepted for omissions or errors. Every effort is made to ensure accuracy at all times. Advertisements placed in this publication marked "CRB Registered" with the organisation's "CRB Registration No." means that the Organisation/Company meets with the requirements in respect of exempted questions under the Rehabilitation of Offenders Act 1974. All applicants offered employment will be subject to a Criminal Record Check from the Criminal Records Bureau before appointment is confirmed. This will include details of cautions, reprimands or final warnings, as well as convictions and information held by the Department of Health and Education and Employment

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Pay up Now

Enough is enough. The government's NHS pay policy has to change and that change is starting to look more and more likely. Austerity erodes the fabric of the NHS and harms our society. The government talks about efficiencies and saving money, and for a while the public have believed this rhetoric. But now there is a change of public opinion. People are starting to see the long-term effects of starving the NHS of funds and enough is enough.

**By Alan Lofthouse
National
Ambulance
Officer, UNISON**



Retention of staff is not a problem just for ambulance services. All over the NHS staff are taking the difficult decision to leave jobs they love as inflation has eaten into their living standards and the seven-year pay freeze has meant people are struggling to get by between pay days. As I travel the country meeting exceptional and dedicated NHS staff I hear firsthand the stories and the feelings of people worried about making ends meet, paying bills, feeding their children and putting fuel in their car to get to work.

It is time we changed that. This is why UNISON, along with the other 13 health unions, have submitted a pay claim to the government. NHS staff will not accept the pay freeze any longer. Our pay claim is based on 3 elements. First, a rise in line with inflation (RPI currently 3.9%); second, a sum of £800 to begin to address the wage stagnation caused by the pay freeze; thirdly, investment to reform Agenda for Change bands 1 – 3 to make the pay system for the lowest paid fairer and faster.

UNISON has launched its "Pay Up Now" campaign and, due to political pressure

from our members on politicians, there will be a parliamentary debate on NHS pay in early December. To make this successful we need all our NHS members to take part in local campaigning, keeping the pressure on employers and politicians alike. The government certainly won't hand this to NHS workers on a plate without a fight, but we don't know how much of a fight it will be.



We know that the government have signalled an end to the unpopular public sector pay cap, mostly due to the pressure from the public. As part of the pay claim the joint unions commissioned ComRes to undertake public polling in England, Scotland and Cymru/Wales. They sampled members of the public, asked about the overall position of NHS pay policy and tested different elements of the claim. They found that 84% of the public support removing the pay cap and 83% support an NHS pay increase in line with, or above cost of living

(RPI inflation), and finally just over two-thirds support a flat rate of £800 on top.

NHS pay is no longer a left versus right political issue. Politicians are asking their party what they are doing to protect jobs in the NHS and pushing for investment in nursing staff, ambulance staff, porters, cleaners and carers. We have already seen the treasury give the Secretary of State for Health some "latitude" over pay but worryingly this is used along with the term "increased productivities".

Those who work in the NHS will be forgiven for wondering what there is left to make more efficient in a health service that has been hit by year after year of cost saving plans. Maybe the productivity they are talking about is better retention of staff, lower turnover and higher morale. This will certainly help the NHS be more productive, but it still needs an element of investment which the government needs to find.

So, at the time of writing this in November, we are calling on the Chancellor of the Exchequer to make sure he puts up the cash in the Autumn budget to ensure NHS staff get a proper pay rise. We need to make sure the funding is made available to NHS organisations, not through yet more cuts.

The NHS is not alone. Other public services are seeking to end the pay cap. None of this is good for the economy or our society. Austerity has savaged parts of this country and left its mark. It is time we move to a better way of funding our public services. I say we start by paying the right amount to hard working NHS staff. Let us care for those who care for us.

UNISON has plenty of campaigning advice and materials. I urge the reader to not sit back and wait for the government to pay up, but find out what is going on locally and support it to ensure they pay up now. If there is no campaigning where you are then get active, get involved and become part of the movement that stands up for peoples' rights and pay.



Alan welcomes feedback from ambulance staff and can be contacted at:

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Answering the Call: AMR Las Vegas response to the mass shooting of 1st October 2017

The Night of October 1, 2017

In the late evening of October 1, 2017, a gunman opened fire from an elevated position on the 32nd floor of the Las Vegas Mandalay Bay hotel into a crowd of 22,000 concert attendees. AMR and MedicWest, along with Clark County Fire Department, Las Vegas Fire & Rescue, North Las Vegas Fire Department, Henderson Fire Department, and Community Ambulance responded. At the end of the rampage, 58 people were killed and more than 450 wounded, creating a catastrophic mass casualty incident (MCI). The concert was held at the Mandalay Bay and MGM Grand festival lot, located in the AMR service area. Here is AMR's perspective on what has been called the worst mass shooting in U.S. history.

Initial Response: Sending in Teams to Help Patients Immediately

Any given night in the tourist-heavy city of Las Vegas, NV could be fraught with events that seem unusual. But for Paramedic Instructor Michael Whitehead Jr. it seemed like a normal night in his town. It was almost time to relax and go to bed, he turned on the TV, and that's when the mundaneness of a normal Sunday night erupted into a horrific scene. He saw on the news that there was an active shooter situation next to Mandalay Bay. He got in his car and headed straight to the closest station - not his regular station, but that night it didn't matter.

Brett Dragun, Operations Supervisor, was on duty. Initial reports were that nine people had been shot, then 20. The numbers kept rising. He started calling in reinforcements; the focus was on immediately sending crews to help those who were injured. But because the law enforcement teams were still trying to contain the situation, there was no way to tell if the active scene was safe.

"It didn't matter," said Chris Cutting, dispatcher. "We were going in there and helping people. The first 15 minutes we were sending anybody we could towards the strip."

Dragun explained the chaos of incoming information for that night. An incident command was immediately established near the shooting, but there was disarray up and down the Las Vegas strip. "There were reports of active shooters at pretty much every casino," he said. "Patients were fleeing far away from the shooting scene and we were picking them up. There were people with gunshot wounds from miles away, even at hotels that were five miles from the scene. They got there after they had been shot. So, while it all happened in one spot, it

affected the entire strip. Everybody was on high alert."

When Whitehead got to the station he said: "I started to see the most amazing thing. Cars just pulling in after me and we have a line of ambulances down the side of the station." He grabbed a partner and they just headed to the scene. "I wasn't thinking about anything else other than 'my people are down there.' And not only the people of MedicWest, AMR, Community Ambulance, Fire and PD [Las Vegas Police



The Route 91 Harvest Festival site

Department], but the people of my community were down there. They needed help - and that's what we do."

By the end of the night, 383 AMR and MedicWest employees and 106 ambulance units responded. Additionally, 136 Community Ambulance and firefighter personnel along with 24 ambulances were dispatched. After the event, Clark County Fire Chief Greg Cassell said, "I have never seen so many ambulances."

Adaptive Decision-Making Amid a Chaotic Situation

Because catastrophic MCIs are different from natural mass casualty events, AMR/MedicWest leaders and crews had to think quickly and make smart, adaptive decisions for situations that weren't in their traditional MCI planning scenarios.

Deploying Every Available Resource to Get Providers on Scene

AMR brought in 45-50 additional ambulances from the closest operation within 45 minutes of the initial call. Off-duty personnel started pouring into the stations so they could be deployed. However, in the situation of transporting scores of patients quickly to hospitals and trauma centers, having fully-stocked and available vehicles became a challenge. AMR supervisors formed teams of 3-5 providers and assigned ambulances prepped by Vehicle Service Technicians. In less than 90 minutes, all available units had been assigned and dispatched. Wheelchair van drivers shuttled remaining EMTs and paramedics to triage and treatment zones to provide care to the hundreds of victims.



Photo credit: Rich Broberg, Paramedic MedicWest Ambulance

Engaging Civilians as First Responders

The night of the shooting everyday citizens became first responders. Numerous people used their own vehicles to start taking the wounded to nearby hospitals, and AMR teams, grateful for these bystander "first responders," engaged willing people to help. In one instance, an AMR supervisor who was one of the first on the scene, was separated from the designated triage site by about 1000 yards when people fleeing from

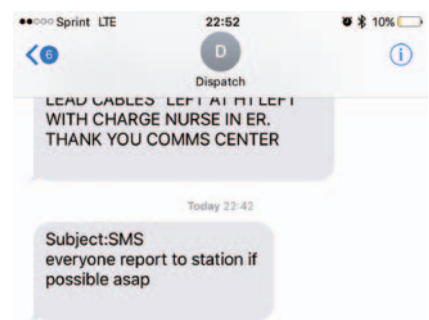
the shooter overran him. He took command and established a triage to separate the deceased from the critically wounded. He also formed task groups of willing civilians to load vehicles and drive the wounded to get medical care.

Using EMS Staff to Decompress Receiving Facilities

Two of the hospitals nearest to the shooting were not equipped for trauma patients, but because of their proximity to the shooting, they started receiving casualties from civilian transports. AMR's local Medical Director Dr Mike Barnum along with a strike team loaded a bus with patients to transfer them to outlying hospitals. AMR also sent paramedics to perform triage and basic care in the Emergency Department waiting rooms so nurses could concentrate on other patients.

Flexing Regional Resources

As the primary EMS responder to MCI shootings in San Bernardino, CA, in 2016 and Orlando, FL, in 2015, AMR executive leaders were acutely aware that there could be secondary attacks or that the shooting could be part of a multi-site terror attack. They immediately sent mutual aid from nearby operations to be ready for secondary events and to support the primary response. Even as the shooter was still active, the AMR leadership team had mobilized a virtual command center and immediately began moving regional ambulance units from nearby Arizona and California to staging areas. In total, 15 additional ambulances and two supervisors were activated; three Arizona units came into the operating theater while others staged regionally to respond in case there were additional threats. All units were

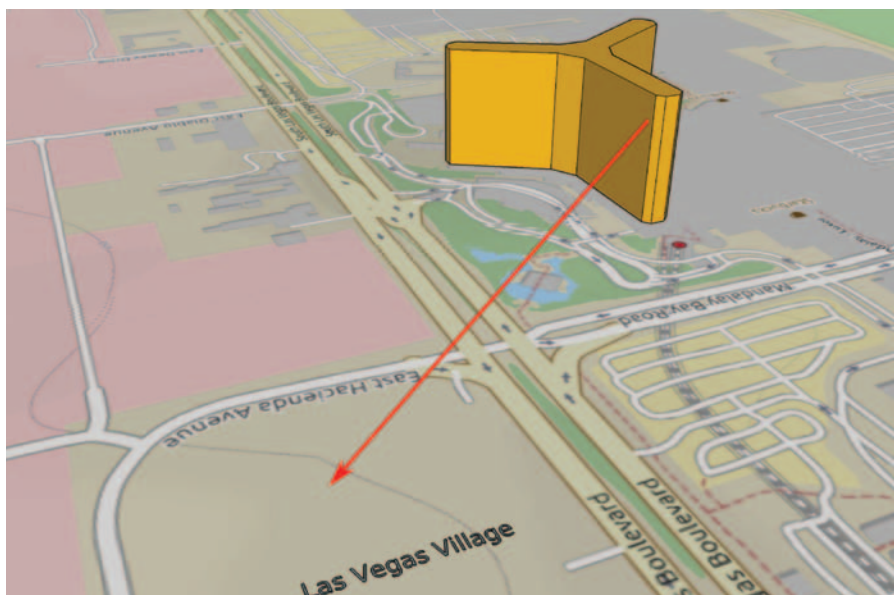


demobilized once it was confirmed the shooter was contained.

Returning to Service

The 911 emergency system was barraged with calls. Yet even as the events were unfolding and the teams were treating and transporting incident victims, AMR and MedicWest teams continued to maintain the Las Vegas 911 system. As the event concluded and fatigued crews started to return to base with empty units, the reality started to set in:

- Vehicle Supply Technicians cleaned and restocked units for incoming crews.
- The crews were able to collect and share experiences before going home. This provided immediate validation to the scope of the incident
- Requests from local, national and international media started pouring in for stories and statistics. The local operation has people trained in media relations, so they were able to respond to media inquiries.
- Data collection processes started immediately. Local managers began reviewing documentation of what happened: dispatch records, patient care reports, etc. to understand the full picture.



The shooter fired from the 32nd floor of the Mandalay Bay Hotel.



Photo credit: Rich Broberg, Paramedic MedicWest Ambulance

Planning for the Inconceivable

Preparing for these types of Active Shooter situations is one of the things AMR does regularly as an organization, and they have experiences with real-life situations. The company participates in frequent task force deployments as part of AMR's national FEMA (United States Federal Emergency Management Agency) responses and trains disaster response teams for catastrophic events. In Las Vegas in particular, the teams train regularly for Mass Casualty Incidents (MCIs). Because of the heavy tourism in the city there is potential for higher proportion of MCI incidents due to bus crashes, concert events, etc. A task force and ICS system are routinely used for MCI responses. All field providers trained in ICS: 100, 200, 700 and 800; supervisors also have 300 and 400. There is also a mandatory participation in annual MCI drills with Clark County Fire Department, Las Vegas Fire & Rescue, Las Vegas Metro Police Department, and other public safety agencies.

Capturing the Lessons Learned

Even with all the training that AMR does to prepare for these types of situations, this MCI was unprecedented. "We recognized this is an unusual event and we knew it was important to debrief immediately," said Scott White, Regional Director who leads the Las Vegas-based AMR and MedicWest teams. He and other AMR leaders regrouped shortly after to develop lessons learned to share with the larger organization as well as other ambulance providers. Here were the key learnings from this mass casualty incident:

- The most valuable tool for first responders is experience and training. Everything moved to a basic level with the goal of stabilizing lives with very few resources.

- Providers must adapt their assessment to the situation. First responders encountered hundreds of dazed patients soaked in blood and had to separate those who were truly injured from those covered with blood of other victims. They also had to ask each other, "are you hit?"

- The EMS focus was separating critical injuries from the deceased. Those with critical injuries were transported immediately and those with non-critical injuries self-evacuated.

- About 200 patients came to the hospitals from outside of the EMS system. In these situations, embracing alternative transport options, such as ride-share services, is necessary.

- Hospitals will be overwhelmed, so EMS can send additional resources to assist hospital staff.

- Send more resources than are requested because people only report what they can see immediately. Also, some people understandably flee and hide during mass shootings, so once they are discovered, additional resources could provide care for them.

An unconventional event requires an unconventional response

While there is extensive preparation for MCIs, in the end no amount of training or experience could approach the scale of the October 1st incident from a human standpoint. "Our teams responded with speed, care, professionalism and compassion," said Ted Van Horne, AMR President and CEO. "And they do that every day. October 1st was an inconceivable situation and I am incredibly proud of them for doing what they do best."

As the sun began to rise in Las Vegas, Van Horne, who is based in Dallas and on a business trip in California, was already en route to Las Vegas with Randel Owen, President of Ambulatory Services at AMR's parent company. A former paramedic, Van Horne knew what they would be experiencing and he wanted to get them everything they needed on their own personal paths to recovering from the horrific shooting. In a message to all AMR employees the following morning, Van Horne said that he knows firsthand that these events can take their toll. "As with any tragic event, it takes time to process everything that has occurred, and I want to assure you the AMR leadership team is here to help," he wrote.

"The AMR community is deeply saddened by the heartbreaking events in Las Vegas on October 1st," said Randel Owen, President of Ambulatory Services at AMR's parent company. "I am so proud of the work that our team did and the coordinated response from firefighters and law enforcement first responders in that situation and appreciate what all first responders do to prepare, protect and care for people in communities every day."

By early-morning October 2, Van Horne, Owen and other leaders from across AMR arrived in Las Vegas to see how they could help with recovery efforts.

"At this point, no idea was off the table," said Jeff McCollom, AMR South Region CEO. "The wellbeing of these teams was of utmost importance to us. We sent therapy dogs from Texas, CISD (Critical Incident Stress Debriefing) crews arrived immediately, and we started communicating with teams to let them know all the resources available to them."



Some employees expressed feelings of guilt over not being on duty during the time. Others were in shock as the adrenaline subsided. And many didn't want to be called a hero. "The images last forever," one employee said. Operations Manager Greg Schowen said, "Folks started coming back in around 5am and most of them didn't know how to feel. I didn't know how to feel. The stories started happening and you don't realize how this is going to affect not only the people that were there but all of us here."

Responders' mental health needs became AMR's primary concern. Public Information Officer Damon Schilling said that he recognized in the middle of the situation that the newer, younger medics and EMTs might be in a little shock at what they were about to experience. He said, "I was checking on the crews we were sending in and asking them, 'Are you ok? Do you know what you're about to get into?' They were about to enter into an incident that was going to forever change their lives. I knew when this incident was over we would need to do everything we could to help them process this unimaginable situation."

Vehicle Service Technician (VST) Supervisor Bessy Bautista said, "I've never seen my station this way. I saw so much blood, so many people. It was scary." Bautista and other VSTs played a particularly important role because they ensured the additional vehicles were stocked, then cleaned and restocked again so they could go back into service. The enormity of the events that night was hitting people.

The AMR leadership team immediately focused on helping the crews in multiple ways:

- Nine Las Vegas employees trained for CISD started to help employees process.
- AMR sent additional CISD teams from Rural/Metro (Tucson, AZ) and Northern California.
- A regional CISD team from Kingman, AZ volunteered to go to Las Vegas immediately.
- They activated public safety-specific Employee Assistance Program (EAP) resources and actively connected crews to resources.
- The leadership team brought in a videographer recognizing that crews may be more comfortable speaking to a camera than to a counselor.
- Local managers committed to ongoing surveillance of employees to identify signs of stress.



Photo credit: Rich Broberg, Paramedic, MedicWest Ambulance

- AMR also dispatched two specially-trained therapy dogs and their handlers from Amarillo and Houston, TX. Their unique ability to brighten moods was well received by the AMR and MedicWest crews.

Support and attention from the public also came in from everywhere. Local restaurants, hotels and even out of state fire departments and hospitals sent meals, signs, letters, notes and support. Strangers on the streets applauded and hugged the crews. There was even a visiting EMS team from Sweden that reached out to offer help. And local lawmakers visited the teams to thank them. The attention was a bit overwhelming at times, but the crews understood that people in the communities and across the United States just wanted to find a way to help, to say thank you and to say they supported them.

Visits from the Nevada Governor Brian Sandoval, Senator Catherine Cortez Masto, Congresswoman Dina Titus and other elected officials helped the healing process for the crews by confirming the magnitude of the event. During the initial days after, White felt the need to be available to crews who might want to talk at any time. He sent several messages, held meetings at the MedicWest and AMR operations, which comprises nearly 800 employees. The idea was to ensure every person understood that they played a significant role and they might be experiencing a range of emotions.

"At times, I couldn't sleep. Even if I didn't have any specific reason to be there, I had to be there. Somebody might need to talk to me. This isn't going to go away. We have to recognize that, and it's not about somebody's ability to hack it. We're throwing the macho stuff away. We're going to be here doing this as long as it takes. I'm not sure if that's being done in other organizations. It's being done at AMR and MedicWest. We're probably rewriting the way we handle these things post-incident. There's nothing usual about what happened that Sunday night, so nothing should be usual about the days that followed. We're

going to get through it together. And we're going to provide everything we can for our folks to make sure they feel comfortable."

Las Vegas 911 Call Timeline

Time during active shooting is in red

- 22:08 – Initial report by LVMPD officer of "shots fired" (Police)
- 22:09 – Multiple casualties reported (Police)
- 22:09 – First AMR units dispatched for possible shooting; initial 911 response was an ambulance and supervisor (EMS)
- 22:15 – First AMR unit on scene; scale of incident was immediately obvious and additional 911 units dispatched (EMS)
- 22:24 – Officers converge on room, taking fire (Police)
- 22:27 – AMR issues "all call" page to all off-duty staff; personnel respond from home to HQ for assignment (EMS)
- 22:35 – First additional off duty units placed in service and respond; all available ambulances in service within 90 minutes, most with crews of 3-5 EMTs and paramedics (EMS)
- 23:58 – Officers confirm suspect down (Police)

AMR and MedicWest in Las Vegas

AMR in Las Vegas

- Began serving Las Vegas area in 1953 as Mercy Ambulance
- Acquired by AMR in 1997 and rebranded
- Provides EMS response for City of Las Vegas (Alpha and Bravo calls) and Unincorporated Clark County
- 400 employees, 63 ambulances

MedicWest

- Began serving area in 2000, founded by Southwest Ambulance
- Acquired by AMR in 2007, but retains identity and operations
- Provides EMS response for City of North Las Vegas and parts of Unincorporated Clark County (including "The Strip")
- 350 employees, 54 ambulances

To find out more about AMR, please visit their website: www.amr.net

A Breathe of Fresh Air! - Celebrating a year of innovation across UK NHS ambulance services



By Justin Wand,
Deputy Director of Fleet and Logistics, London Ambulance Service

As we look back on 2017, we're reminded of what an innovative year it's been for fleet services across the UK. Our Ambulance services are facing year-on-year increases in demand as well as being under constant pressure to be more efficient and deliver more with ever-decreasing budgets.

Below Justin Wand, Deputy Director of Fleet and Logistics at London Ambulance Service takes a quick look back at some key fleet initiatives and successes stories from across the UK. Whether it's implementing leaner ways of working, minimising waste or introducing futuristic new vehicle designs and technologies, we've seen a wide range of strategies for optimising fleet services and, most importantly, delivering a better, more environmentally-friendly experience to our patients.

London Ambulance Service: Going the extra mile to reduce emissions

Like most, London Ambulance service is keen to define the next steps to implementing an operationally viable approach to a sustainable and environmentally efficient future.

With news that C10,000 premature deaths occur annually in the Capital as a result of vehicle emissions, the ambulance service has a moral obligation given the contradiction exhibited when operating large fuel hungry vehicles, the subsequent emissions they produce and the potential for contributing directly to the ill health of the communities we serve.

Key areas of the fleet strategy include;

Fleet Composition and Mix: Right-sizing the fleet to match the skill of our staff and the needs of our patient demographic

Driver Behaviour: supporting and informing driver development and training to improve the patient experience.

Vehicle design – Explore opportunities for staged introduction of hybrid and EV technology, trial and evaluate response vehicles in service during 2018, light-



weighting the vehicle build, improving safety and reducing the impact the trust has on the environment.

Vehicles such as the BMW i3 present a clear opportunity to Trusts in both operational and support roles with the technology creating familiarity and reassurance for our staff and wider competition in the market, improving the technology and driving innovation forward.

NWAS safeguards sustainability

Last year Ambulance Today reported on North West Ambulance Service's consolidation of 5 small, ageing ambulance workshops into their new, state-of-the-

art Fleet and Logistics Centre situated in Haydock. Not only was the new centre breaking new ground in efficiency with everything needed for the servicing of NWAS vehicles under one roof, but it has also been assessed at BREEAM (Building Research Establishment's Environmental Assessment Method) excellence in sustainability for its continued commitment towards energy-saving, the correct handling of clinical waste, general waste and recycling. This year NWAS have increased their drive towards environmental sustainability with the introduction of electric rapid responder vehicles.

Since then NWAS have introduced four electric vehicles to their fleet of 174 rapid responder cars. The BMW i3 REX AC, winner of Car of the Year and Green Car of the Year awards, was already being used in police and fire services across the UK. If the trial is successful it is estimated that NWAS will save up to £2.5 million in fuel costs over the next 4-years.

Neil Maher, Assistant Director Service Delivery Support said: "The trust relies heavily on rapid response vehicles to be able to attend patients as quickly as possible.



"The introduction of these electrically powered cars will not only provide huge cost savings for the Trust, it will also have a huge impact on our carbon footprint, reducing the carbon contribution from our RRVs by 90%"

Elsewhere, the i3 REx model has also been implemented by the Scottish Ambulance Service as part of their initiative *Taking Care to the Patient*.

SAS takes care to the patient

Last year Scottish Ambulance Service introduced a 12-month pilot of a new response model following the most extensive, clinically-evidenced review ever undertaken in the UK, with more than 500,000 patient calls examined. The 2020 strategy *Taking Care to the Patient* hopes to more accurately identify patients with immediately life-threatening conditions like cardiac arrest to ensure that all patients receive the response they need based on their clinical condition. As part of the strategy, SAS is also committed to seeing and treating more patients in their own homes and communities wherever possible, rather than unnecessarily taking them away from family support and into a hospital environment.

Delivering the transformational change will require ongoing investment into new vehicles and equipment. The service's approved £77.8 million vehicle replacement project is currently in its second of five years and has provided the opportunity to develop a fleet that will meet both immediate and long-term needs, taking emerging technology and innovation into account. Having considered hydrogen fuel vehicles and the short-term challenges around the supply infrastructure, SAS became the first UK service to bring electric powered paramedic rapid response vehicles on to its operational fleet with the introduction of converted BMW i3 REX response vehicles in Edinburgh, Aberdeen and Glasgow.

Trevor Spowart, General Manager of Fleet Services, said: "The acceleration and manoeuvrability even when fully-loaded was beyond our expectations and although the excellent range on the battery exceeds our normal paramedic response shift needs, with the range extender specification our staff have the reassurance that they will never be in a situation where they cannot respond due to range."

The i3 REx models use the latest technologies to reduce weight and manage power and have been designed for integration with the Telehealth communications hub providing the WiFi network for the removable tablets used by the service's frontline staff.

Midlands Air Ambulance unveil new rapid response vehicles

The Midlands Air Ambulance charity is a regional helicopter emergency medical service which covers the largest operating area in England. It's vitally important however; that when weather conditions become too bad to fly the expert aircrew still have some means of reaching their patients to administer prehospital care.

Early this year the charity was proud to unveil three new rapid response cars to complement their air operations.

The three authority specification BMW X5 vehicles will be located at the organisation's three airbases in Shropshire, Staffordshire and Worcestershire. Five percent of the calls attended by Midlands Air Ambulance are via the rapid response vehicles.

Becky Steele, Air Operations Manager for Midlands Air Ambulance Charity, explains the decision-making that brought them to the BMW X5 series model: "The X5 is a tried-and-tested rapid response vehicle for the emergency services. Its large interior is perfect for a bespoke medical equipment fit out, while the model's advanced capability means it is a reliable asset, ensuring our clinicians tend to incidents swiftly and safely."

Closing statement by Justin Wand

It is clear we're at the beginning of a revolution in ambulance fleet management and design which will see us examine the threads upon which we have built our operational history and knowledge.

The advantages offered by vehicles such as the BMW i3 Rex provide the basis for a step change in our approach to more environmentally efficient operations.

The challenge for Trusts and manufacturers alike is taking that next major step forward, in partnership with our staff, so we can ensure that patient care remains at the centre of all we do.

To discuss the contents of this article with Justin please contact him at the following email address: justin.wand@lond-amb.nhs.uk



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Challenging the dogma of spinal immobilization and other evidence from the Prehospital Evidence-based Practice (PEP) program

by Jennifer Greene^{1,2}, Jolene Cook^{1,2}, Ed Cain², Judah Goldstein^{1,2}, Jan Jensen^{1,2}, Janel Swain¹, Dana Fidgen¹, Alix Carter^{1,2}

1. Emergency Health Services Nova Scotia 2. Dalhousie University, Department of Emergency Medicine, Division of EMS

Spinal trauma can be a devastating injury, frequently managed by prehospital clinicians. Recognition of a potential spinal cord injury and prevention of any further injury are paramount for appropriate emergency care. Clinical care may include assessment with structured clinical rules, application of cervical collars and long spine board. Recommended practices may vary from region to region, and guidelines have changed over the last several decades, including in the recent publication of the 2015 ILCOR Consensus on Science and Treatment Recommendations.

Restriction of spinal movement was at one time a cornerstone of the prehospital management of these patients, but this is now falling out of favour. Indeed, Emergency medical services (EMS systems around the world vary greatly in the interventions being applied in the out-of-hospital environment for many clinical conditions). Also, interventions that were once thought to be “best practice” or standard of care later fell out of favour. Commonly, paramedics ask why an intervention is being applied in one setting but isn’t being done in another, or why we were trained to “always” do something, and then years later it is taken out of the protocols. An example of this is the care of patients with spinal cord injuries; for example, Australia has used spinal immobilization devices only for extrication for many years whereas for many other EMS systems, spinal immobilization for suspected spinal injury has become synonymous with the mandatory use of the long spine board.¹ The question of spine boards becomes even murkier if you consider that the concept of spinal immobilization with a spine board is based on a few cases of delayed recognition of spinal cord injuries in the 1960s!¹

As the body of research evidence for prehospital clinical care continues to grow, it is important for prehospital clinicians and leaders to have a resource to quickly find prehospital-relevant research that can inform clinical care. This is particularly needed for topics such as spinal trauma, when best practices and guidelines change over time and the evidence is of varying quality with conflicting results. The issue



is that up until recently there was very little research being done in the out-of-hospital environment to help guide decisions like the use of the spine board and many others. However nowadays, there is an exponentially expanding body of EMS evidence with conflicting results and of varying quality such that interpreting the evidence is tricky. This is where the Prehospital Evidence-based Practice (PEP) program becomes extremely valuable.

What is the Prehospital Evidence-based Practice (PEP) Program?

PEP (<https://emspep.cdha.nshealth.ca/>) is a robust online EMS resource that can help inform clinical practice regarding any patient presentation. The PEP Program aims to be the foremost evidence resource informing EMS. PEP is run by the Dalhousie University

Department of Emergency Medicine, Division of EMS, in Halifax Nova Scotia, Canada.

Using systematic approaches PEP synthesizes EMS-relevant research in an open-access format. Available evidence is searched, selected, appraised and synthesized in simple, easy to understand evidence matrices. PEP can shorten the knowledge-to-practice gap and ensure prehospital clinical practice is based on current sound evidence. PEP assists users by reducing or eliminating the need to search for research studies on prehospital clinical care. Since PEP was introduced in 1998, the PEP database has exponentially grown with studies relevant to prehospital clinical care. PEP is also useful to identify gaps where more evidence is needed to help better inform prehospital clinical practice.

The PEP program essentially helps you skip doing an extensive literature review for clinical questions by systematically identifying, cataloging and appraising relevant EMS studies and then providing an overall summary of the evidence for each clinical intervention.

PEP search and appraisal methods are updated as needed, in order to ensure the rigor and validity of PEP recommendations, and reduce potential bias

How can I use PEP to help me understand the evidence behind my clinical practice??

Within the PEP website, evidence is sorted by broad ‘Nature of Complaint’ categories (e.g., Major Trauma) then into, for example



Does he need a trauma centre or the local hospital?



Twenty-year-old male in a motor vehicle accident. Airbag has deployed. Car has significant front-end damage.

Is he bleeding internally? Will he need a trauma centre? These are some of the questions you need to answer on a suspected trauma call, as haemorrhage is the leading cause of death after injury.¹

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¹Acosta JA, et al. Journal of the American College of Surgeons. 1998;186(5):528-533.

Shock, or Trauma. Next, a list of Clinical Conditions (e.g. Spinal Trauma) is presented. For example, under Trauma you would find Abdominal trauma, or Spinal trauma. When the user clicks the name of a Clinical Condition, an evidence matrix is displayed, with each intervention plotted in a table, indicating the Level of Evidence (LOE) (table 1) and Direction of Evidence (DOE) (table 2).

Evidence is described by Level (or quality) of Evidence, with 1 being strong, 2 being moderate and 3 being weak evidence (see Table 1) and then also by Direction of Evidence, such that the evidence is summarized as to whether it supports, is neutral, or opposes the intervention (Table 2).

Table 1. PEP Levels of Evidence

Level 1

Evidence obtained from adequately powered properly randomized controlled trials on live human participants or systematic reviews or meta-analysis that contain only RCTs. No pilot studies to be included here.

Level 2

Evidence obtained from adequately powered non-randomized studies with a comparison group of live human participants or systematic reviews of non-randomized studies with a comparison group. Prospective or retrospective registry-type studies in which comparisons are made; Cohort and Case control studies are included here.

Level 3

Evidence from studies with no randomization and no comparison group, simulation/manikin studies and animal studies. Pilot Studies and underpowered studies are included here.

If you click on an intervention within the matrix (or scroll down) you will come to the individual papers that have been appraised for this topic. Each paper is also assigned a Level and Direction of Evidence. The matrix recommendation is a summary of the Level and Direction of all the individual papers for that intervention. You can reach the Pubmed (Medline) abstract by clicking on the individual citation.

What does PEP tell us about the care of spinal trauma patients?

The Spinal Trauma search was most recently updated in January 2016 using a systematic strategy developed with the help of a health sciences librarian. We used the following Population-Intervention-Comparison-Outcome (PICO) question as the base for our search: In (P) prehospital patients of any age who have experienced suspected spinal trauma, does the use of (I) (a list of individual interventions) result in improved/neutral/worse (O) outcomes? A single

Table 2. PEP Directions of evidence

Green	Direction of results of this study are supportive for the use of this intervention
Yellow	Direction of the results of this study are neutral for the use of this intervention
Red	Direction of the results of this study oppose the use of this intervention.
White	Direction of results of this study are not yet evaluated

author (JG) screened the list at the title and abstract levels for relevance, and two senior appraisers assessed the full text. The reference lists of all included studies and recent position papers on the topic were reviewed as well for other relevant citations. We included any primary research or systematic review reporting on emergency care of suspected blunt and penetrating spinal trauma. Emergency Department and simulation studies were included as they can inform EMS practice, but primarily the search was directed at answering the question of whether this intervention should be conducted in the prehospital/EMS/ Ambulance/Paramedic setting. The 2016 update added 45 new studies to our list of 33 publications already present in the PEP database, for a total of 77 papers.

The evidence

Evidence for adult and paediatric blunt spinal trauma interventions was made up primarily of supportive-moderate quality evidence and neutral-moderate and high-quality evidence (Table 3 & 4). (Accessed on May 20th, 2017 [https://emspep.cdha.nshealth.ca/LOE.aspx?VProtStr=Spinal Injury&VProtID=222](https://emspep.cdha.nshealth.ca/LOE.aspx?VProtStr=Spinal%20Injury&VProtID=222)). No evidence was identified for or against the use of hypertonic saline in spinal trauma.

It is clear that there is a growing body of research to inform EMS spinal trauma care. Let's review the green (supportive) evidence identified in PEP. Some commonly used interventions were supported by evidence: cervical-spine clearance, scoop stretcher, self-extrication, spinal precautions




(fair quality evidence), and "leaving helmet in place" (weak quality evidence).

C-spine clearance now contains 20 individual research papers. There is supportive evidence that C-spine clearance rules, such as the Canadian C-Spine rule, are able to reduce the need for imaging while being able to identify clinically important injuries in the prehospital environment. You may notice a number of studies have been assigned a neutral classification. In PEP, studies performed in non-EMS settings can be moved to neutral due to indirectness if the setting likely affected the results such that we wouldn't expect the same result in an EMS setting (see Stiell et al. 2009). The primary outcome for the majority of these studies was the ability of the rule to identify those who did have a spinal injury compared to the ability of the rule to identify those who truly did not have an injury.

Shifts in practice

Two of the interventions in the 3x3 matrix should jump out as a shift from the usual dogma of practice: steroids, and long spinal immobilization. These two examples really demonstrate how evidence can shift practice. A few early studies were very promising about the use of steroids, particularly whether there is benefit to giving them in the ambulance or prehospital setting. As many leading organizations now recommend, the balance of evidence in PEP on steroid use in the context of spinal trauma suggests the harms may not outweigh the benefits identified.

Table 3: PEP 3x3 Evidence Matrix for Adult Trauma - Spinal Care

Spinal Injury					
Recommendation		RECOMMENDATION FOR INTERVENTION			
		SUPPORTIVE (Green)	NEUTRAL (Yellow)	AGAINST (Red)	NOT YET GRADED (White)
STRENGTH OF EVIDENCE FOR INTERVENTION	1 (strong evidence exists)		<ul style="list-style-type: none"> In-line stabilization for intubation Steroid 		<ul style="list-style-type: none"> Hypertonic Saline
	2 (fair evidence exists)	<ul style="list-style-type: none"> C-Spine Clearance Scoop stretcher Self Extrication 	<ul style="list-style-type: none"> Cervical Collar 	<ul style="list-style-type: none"> Immobilization in Penetrating Trauma Long Spinal Immobilization Devices 	
	3 (weak evidence exists)	<ul style="list-style-type: none"> Leave Helmet in Place 	<ul style="list-style-type: none"> Spinal Precautions 	<ul style="list-style-type: none"> Short Extrication Devices (ex: KED) 	

Table 4: PEP 3x3 Evidence Matrix for Pediatric General Trauma Care

Recommendation		RECOMMENDATION FOR INTERVENTION			
STRENGTH OF EVIDENCE FOR INTERVENTION	1 (strong evidence exists)	SUPPORTIVE (Green)	NEUTRAL (Yellow)	AGAINST (Red)	NOT YET GRADED (White)
	2 (fair evidence exists)	• Fentanyl • Mechanical Intraosseous Insertion • Optimal Trip Destination	• BVM • Cervical Collar • C-Spine Clearance • Intubation • Long Spinal Immobilization Devices • Manual Intraosseous Insertion		• Crystalloid Infusion • Hypertonic Saline • Thermotaxis
	3 (weak evidence exists)	• Ketamine • Nitrous Oxide	• Intubation with in-line stabilization • Morphine		

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Until recently, long spinal boards were the accepted way to package and transport a suspected spinal injury. However, they were originally designed as extrication devices and not as transport mechanisms. Evidence is emerging that the practice of maintaining a patient on a long spinal board for the duration of transport and until they can be log-rolled and cleared off the board may be resulting in more harm than benefit. Leading organizations are now looking at this evidence and calling on emergency services to stop the use of this intervention as a prolonged immobilization and transport device.¹

There is evidence that this intervention causes harm with regard to tissue interface pressures, which can ultimately result in pressure sores. Another important outcome is patient (or volunteer) reported discomfort. There is one high quality paper; four moderate quality papers and six weak quality papers opposing this intervention. For quite a long time this was an intervention we just accepted as “the way things are done”, but the evidence strongly challenges this practice. In fact, only one paper showed any benefit in the use of spine board in preventing cervical motion during transport with several other papers showing that there wasn’t any benefit at all. For all of these reasons, many EMS systems have stopped using long spine boards except when necessary for patient extrication.

Overall, the evidence for EMS interventions in spinal injuries was neutral, in other words neither supported nor opposed, for inline stabilization during intubation, steroids, and cervical collars. The evidence was opposing the use of long spine board immobilization, short extrication devices and immobilization for penetrating trauma.

Limits of the evidence

The most common primary outcomes identified were spinal motion, diagnostic accuracy, and pressure/discomfort. There are not many studies that report on actual worsening of spinal cord injury or long term functional status, which would ultimately be the most important outcome. Instead many studies use these proxy measures as they are easier to obtain and can be done on healthy volunteers (for example spinal motion, discomfort).

A number of studies in the spinal trauma section were completed in non-EMS settings such as emergency departments. In these cases, the direction of recommendation is downgraded if it was felt that the intervention would be affected by the setting or health care provider applying the intervention. One particular limitation

to note is that many spinal trauma studies were performed in healthy volunteers using motion sensors in order to identify the effects of spinal immobilisation techniques on motion restriction. These studies in combination with the growing body of evidence on the negative outcomes of spinal immobilisation contributed to where interventions were placed within the evidence matrix.

Steroids were the only medication identified within the spinal injury section.

Implications to research

PEP also exposes gaps in the current research, and can help researchers determine what studies should happen next. One gap in the evidence for spinal trauma is the lack of sufficient evidence to make a recommendation about the use of hypertonic saline. Certainly the use of proxy measures such as spinal movement detected by sensors on health volunteers is also a gap; it would be ideal to have evidence on actual long term recovery of real patients. However, it is not always feasible or ethical to expose real patients to uncertain interventions just to study the difference between the outcomes, and so we make the best decisions with the evidence we have.

Clinical bottom line

The clinical bottom line supported by the synthesis of the currently available evidence on spinal trauma is that there is evidence to support EMS clearance of C-spine, use of scoop stretcher; self-extrication, spinal precautions, and leaving the helmet in place. The evidence opposes immobilizing patients with penetrating trauma, and use of short extrication devices. Most interestingly, the evidence is not supportive of using long spinal immobilization devices or steroids, and these practices are now being discontinued in many EMS services around the world.

PEP can be used as a quick link to a synthesis of existing evidence for many of the questions paramedics, administrators, medical directors, and other professionals involved in EMS systems might have about clinical care provided in the EMS environment.

1. White CC, 4th, Domeier RM, Millin MG, Standards and Clinical Practice Committee, National Association of EMS Physicians. 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. Prehosp Emerg Care. 2014 Apr-Jun;18(2):306-14.

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Biography: Jen Greene BSc ACP



Jen is the PEP Coordinator and Knowledge Translation Paramedic for the Division of EMS. She has been a paramedic for 10 years, and currently practices in ground ambulance and also in the emergency department at the Queen Elizabeth II Health Science Centre. She is currently completing a Masters program in Community Health and Epidemiology at Dalhousie University. Jen can be reached at jgreene@dal.ca

Biography: Jolene Cook MD



Jolene Cook completed the Dalhousie EMS fellowship in 2012-2013. She has been an emergency physician at the QEII since 2012 after completing the CCFP (EM) program in 2012. Prior to that she was a general duty medical officer in the Canadian Air Force and completed several tours internationally during her return of service 2007-2011. She's also a member of Médecins Sans Frontières (MSF)/Doctors Without Borders. She continues to do volunteer work with Team Broken Earth delivering emergency medical care and supervising Dalhousie Residents in Port-au-Prince, Haiti. Jolene Cook can be reached at jolene.jo@gmail.com

Biography: Judah Goldstein PCP PhD



Judah Goldstein is the Research Coordinator for Emergency Health Services. Judah is a Primary Care Paramedic and has worked in the EHS ground ambulance system since 2000. He received his Interdisciplinary PhD from Dalhousie University in 2013. Judah is an Assistant Professor with the Dalhousie University Department of Emergency Medicine, Division of Emergency Medical Services and holds an academic appointment with the Nova Scotia Health Authority, Department of Emergency Medicine. His areas of research are frailty assessment and management, geriatrics, and health services research. Judah can be reached at judah.goldstein@emci.ca.

Biography: Jan Jensen ACP MAHSR



Jan L Jensen is the Performance Manager for EHS Operations Management in Nova Scotia. She is an Advanced Care Paramedic and has worked in the EHS ground ambulance system since 2000. She received her Masters in Applied Health Services Research from Dalhousie University in 2010. Jan is an Assistant Professor with the Dalhousie University Division of EMS (Department of Emergency Medicine). Her areas of research are paramedic clinical decision making, evidence-based practice and health services research in EMS. Jan can be reached at jan.jensen@emci.ca

Biography: Alix Carter MD MPH



Alix is currently the Medical Director of Research at EHS Nova Scotia and Director of the Division of EMS. She is an assistant professor and attending emergency physician at Dalhousie University/ QE II Health Science Centre. She came to Halifax in the summer of 2008 after completing a Masters of Public Health and a fellowship in Emergency Medical Services at Yale University. Her research interests are in EMS policy and system design, recently focused on the impact of ED crowding and expanded scopes of paramedic practice including palliative care. Alix can be reached at: alix.carter@novascotia.ca



Focus on Leadership and Communications when Ambulance Chiefs Gather at ALF 2018

**Ambulance Leadership Forum (ALF) 2018:
20-21 March 2018 - Chesford Grange, Warwickshire, UK**

Against a backdrop of some of the toughest challenges UK ambulance services have ever faced, the clock is now ticking towards one of the most significant dates in the ambulance service calendar as we look forward to the next Ambulance Leadership Forum (ALF), hosted and produced by the London-based Association of Ambulance Chief Executives.

With year on year demand for UK ambulance services continuing to increase at a rate of 7% and 999 calls to ambulance services now at an all-time high of 11.2 million per annum (2016-17) there has never been a better time for senior managers and others with an interest in the effective management of ambulance services to come together and share ideas and best practice in a supportive and high-profile environment.

The recent introduction of the Ambulance Response Programme (ARP) will be an area of particular interest at this year's event, along with the operating model changes that have arrived as a consequence. Excellent leadership and communication skills have never been more relevant and delegates will be challenged to reflect on their own methods and develop new strategies. In addition there will also be sessions looking at a wide variety of topics including staff mental health and well-being along with updates on recent research in this area and other topical issues.



International Paramedic/EMS Mental Health Roundtable – Another ALF first

This year's event will also see an exciting new development in the introduction of the first ever international symposium to promote psychological welfare in Paramedic, EMS and Ambulance staff which will be held on Thursday 22 March and Friday 23 March 2018.

This event has been developed with the support of the International Roundtable on Community Paramedicine and leaders from the Association of Ambulance Chief Executives (UK & Ireland), the Council of Ambulance Authorities (AUS/NZL/PNG), the National EMS Management Association (USA) and the Paramedic Chiefs of Canada.

The purpose of this additional invite-only symposium will be to tackle the incidence of staff mental illness, self-harm and suicide within ambulance services by promoting understanding and strategic planning between these international ambulance



associations and to coordinate organised support and understanding regarding paramedic/EMS mental health.

ALF 2018 – An event to be proud of

As ever with our high-level conference and networking event, ALF 2018 is open to all with an interest in pre-hospital urgent and emergency care – clinicians and senior managers through to directors and board members of NHS and associated healthcare bodies.

As in previous years, staff from AACE member ambulance services receive subsidised places and these bookings are co-ordinated through each individual trust CEO's office. Delegates from non-member organisations can book online at www.aace.org.uk.

Reserve 20-21 March in your diary now, and book online at www.aace.org.uk.

We are grateful to our overall conference sponsor Lightfoot and also to our

supporting sponsors ORH and Priority Dispatch for helping fund our exciting conference line-up.

Although some of our speakers will be confirmed on our website closer to the time, as ever we guarantee that the final line-up will be of huge interest to our audience.

Aside from international speakers, we have already confirmed Niall Dickson, CEO of NHS Confederation, Chris Hopson, CEO NHS Providers and Nigel Risner, the award-winning speaker on Leadership who focuses on communicating and team relationships in the workplace.



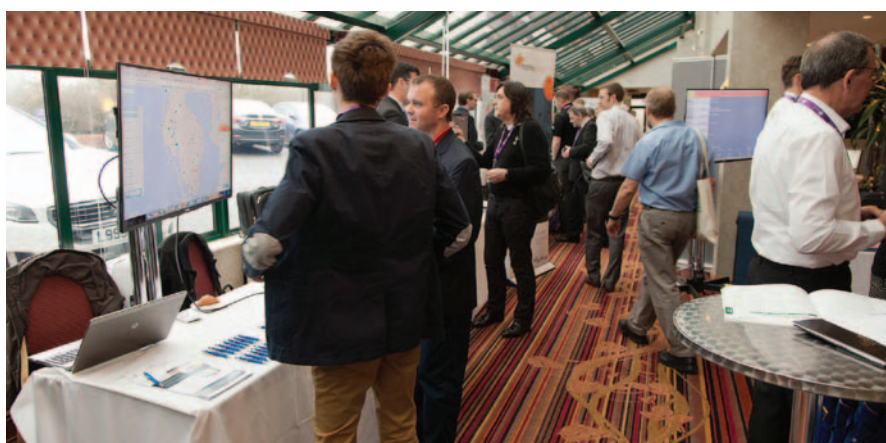
Niall Dickson CEO of NHS Confederation

Over the two days of ALF 2018 guests will have the opportunity to hear from a range of other important speakers, network with a broad spectrum of healthcare colleagues, participate in workshop sessions and applaud excellence at the ever-popular ALF Gala Awards Dinner.

Martin Flaherty, Managing Director of AACE says: "The pre-hospital care community has come to understand that ALF is the key annual event in the ambulance service conference calendar. It is where we come each year for stimulating debate and to discuss ideas about the ongoing



Chris Hopson CEO of NHS Providers



development of emergency and urgent care and the contribution made by UK ambulance services. With the intense challenges facing the ambulance service today, the 2018 ALF event is shaping up to be one of the most exciting yet, but places with accommodation are limited so I would strongly advise people to book now and avoid disappointment."

The ALF Gala Awards Dinner 2018

On the evening of Tuesday 20 March 2018, AACE is delighted to host the ALF Gala Awards Dinner to which all are welcome either by separate registration or included in their ALF package. Dress code is business suit / smart casual (uniform or black tie NOT required).

As always, the Gala Awards Dinner will be an excellent opportunity for Ambulance Leadership Forum attendees to applaud excellence, discuss developments from the last year and network with colleagues. We anticipate a great opportunity for social and business engagement.

However, most importantly, the evening provides an opportunity for AACE and colleagues to recognise members of staff from across all UK ambulance services who have provided truly outstanding service, going above and beyond the call of duty



Speaker Nigel Risner

in a variety of categories that represent the whole breadth of service delivery. It promises to be an exciting night with some real ambulance service stars unveiled on the night!

The venue – Chesford Grange

Chesford Grange is one of the most accessible and well-appointed conference venues in the west Midlands, being close to major road networks including the M40, M42, M6, M69 and M1. It has been traditionally popular with ALF delegates and has over 650 free car parking spaces and high quality free WiFi for all delegates as well as an indoor pool and fitness area.

National Workstream Groups

Following the main ALF conference, national groups (by prior arrangement) will have the opportunity to hold business meetings, hosted by AACE from 14.30 through till 17.30.

Sponsors and exhibitors

AACE is proud to welcome and extend sincere thanks to the following sponsors who help ensure that ALF remains an affordable and enjoyable event for all delegates:

- Lightfoot
- ORH
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And the organisers welcome enquiries from those wishing to support the ALF, sponsor or exhibit.

For more details please visit:
www.aace.org.uk
or contact Steve Irving at AACE
on 0207 783 2036
or via steve.irving@aace.org.uk.

Book your place today and keep up-to-date with ALF 2018 news at: www.aace.org.uk

GSM Finance Brings a Creative Touch to Ambulance Finance

Last month, London-based GSM Finance celebrated twenty years of year on year growth as a forward thinking provider of asset finance across a range of sectors. Founded in November 1997 by Guy Symmons, (the “G” in - GSM) the company has carved out a unique position in the finance market; arranging lease and HP agreements for niche business assets which high street banks typically do not like.



Drawn to GSM's “outside the box” approach, Roger Wood joined the company in 2009 as a Business Development Director after successful stints at Barclays and BNP Paribas in the City. Whilst still at Barclays, Wood worked on a series of fleet expansion deals for London-based Door 2 Door PTS. Having instinctively grasped the ins and outs of ambulance finance, he was invited to continue serving as Door 2 Door's finance broker after his move to GSM. Wood's acumen within the sector grew with his experience and he developed a similarly fruitful funding relationship with Stewart Lawson at AST Ambulance.

Roger and Stewart have worked closely together since 2012, financing new ambulances and equipment for a number of Stewart's companies from AST Ambulance to the relatively new company Ambulance Transfers Ltd. Although ATL are a fairly new company by underwriting criteria they have a very experienced management team and are well respected in the industry which makes obtaining funding for them easier due to the CVs and expertise of those involved. This has enabled GSM Finance to source funding for Ambulance Transfers' fleet of new PTS ambulances from GSM's panel of lenders. Stewart commented “GSM Finance's ability to fund our ambulance fleet meant we secured our NHS contracts enabling us to continue growing as a business.”



Dickie Henderson and Mark Sweeney, directors at Polaris Medical Services with one of the recently financed vehicles

Wood and GSM anticipated that, not only would private sector ambulance provision grow in emphasis thanks to government policy, but that this growth would lead to the formation of larger, more professional independent ambulance services. These new services would follow the lead of NHS ambulance trusts, running their own high-spec clinical vehicle fleets, underpinned with twenty-first century telecoms and new technical innovations, managed by highly trained clinical staff.

Joe Fraser joined GSM as a leasing executive from a creative background and now works alongside Wood in the independent ambulance sector specialising in frontline sales. As dedicated ambulance finance

specialists, they can often be found visiting customer sites, trade shows, events and at supplier production lines, inspecting new vehicles.

As the credit-crunch eased, Wood and Fraser focused increasingly on finding new ambulance industry customers and GSM's client base grew rapidly. Many of GSM's longstanding funder-panel members, seeking fresh investment opportunities, started to show an appetite for the ambulance sector. Wood was invited to share with them his expertise on the types and varieties of vehicles and medical equipment being purchased and his understanding of the equipment's residual values; a grasp of which helps massively with underwriting when

Profile: GSM Finance

- Celebrating 20 years in the industry
- Backed by over 30 banks, finance houses and specialist lenders
- Typically lending around £40m per annum
- Funding rates currently as low as 3%
- GSM can offer HP, Finance Lease, Balloon payments, Operating Lease, Business Loans, Refinance, Invoice Discounting & Factoring.
- The recommended finance partner of the Independent Ambulance Association

Over the last decade Roger has also assisted many companies with working capital requirements to provide capital for cash flow or new investment by refinancing or restructuring existing debt. By developing supplier relationships, such as with O&H Conversions and Blue Light Services, GSM have now become directly involved in the sales process, offering competitive finance solutions to the suppliers' customers. In the words of Graham Hunter, Finance Director at O&H Conversions "Roger and GSM made a complex transaction with a major customer appear simple. Clear communication with all parties ensured that deliveries, billing and payment all happened seamlessly."

it comes to putting deals together. One of the issues funders faced at the time was that they couldn't attribute values to ambulances being built by new suppliers as there were no 'historical' examples. Why would a Renault chassis with some add-ons cost in the region of £60k or £70k? With their specialist knowledge of the industry, GSM were in the perfect position to answer these questions, and as a result, they now have over 30 funders who specialise in financing ambulances and associated medical equipment. Thanks to these funders and GSM's expertise, they have been able to finance a wide range of companies from new start ups to well established industry names. Wood has also developed close ties with Alan Howson at The Independent Ambulance Association who promotes

Assets and equipment financed:

- New or Used Frontline, HDU, Bariatric and PTS Ambulances
- New or Used WAV and Renal and First Responder Vehicles
- Defibrillators
- Stretchers
- Diagnostic equipment
- Carry chairs
- IT equipment
- Telecommunications and navigation equipment
- Specialist beds
- Fixtures and Fittings/Office Equipment

GSM's specialist expertise in helping companies to secure their funding.

When securing funding for a client, new or existing, GSM's aim is to make it as easy as possible; with their ambulance team there is just one point of contact for underwriting a deal, which is Roger Wood himself.

Roger explains: "We offer a one-stop service, once the client has provided the information that we have requested, we secure funding from our panel of over 30 banks, raise documents and work with the supplier on the invoices. Although these days documents can be emailed, whenever required I'll visit the customer to assist with the paperwork as this can sometimes be a bit of a headache for them."



"We process the paperwork at GSM and ensure a speedy payout of funds so that the customer can get their vehicles out on the road and the supplier is paid quickly and without fuss. We're proud of the fact that we can often turn a deal around in just 2 to 3 hours, with more complex credits taking only between 24 to 48 hours. With a fair wind we can have a deal credit approved, signed up and paid out within 48 hours if required."

Detailed below are three typical examples of cases where GSM has stepped in to help ambulance companies to major success.

Case study No. 1

Dickie Henderson, the previous owner of Mediforce (NI) Ltd that was sold in 2012, returned to the market after taking time out due to a 3-year non-compete clause with his new company Polaris Medical Services Ltd. He decided that his best option was to grow the new business organically and naturally approached GSM to finance vehicles. Polaris Medical Services would provide ambulances initially to the events sector and thanks to GSM financing a fleet of 12 ambulances, the company was able to

begin trading immediately and start winning new contracts.

The company has grown to the point that they have now entered the front-line sector, purchasing five new GSM-financed HDU vehicles from AMZ, fitted with LIFEPAK 15 defibrillators, Ferno stretchers and Terrafix navigation equipment.

As Dickie Henderson said: "GSM provided outstanding service, very personal and catered to the bespoke needs of Polaris Medical Services."

Case Study No. 2

In 2014, GSM were approached by the new start-up Medi 4 Ltd. The company had no trade history, no accounts, and no contracts and had not yet passed the Care Quality Commission (CQC) inspection. The start-up was in urgent need of at least one High-Dependency Unit (HDU) Ambulance in order to pass the inspection.

Within five working days GSM had secured funding for two new HDUs purchased from Blue Light Services, enabling the company to pass CQC and immediately start working on ad-hoc contracts with their local NHS trust.

Case Study No. 3

GSM were approached by an existing customer who required funding for 40 Patient Transport Service (PTS) and Wheelchair Accessible (WAV) vehicles. Although the company was well-established in the industry, a recent change of ownership to a foreign parent meant that showing Universal Beneficial Ownership (UBO), a new funding regulation, was difficult. Utilising our panel of funders GSM secured over £2m of funding for this customer; enabling them to purchase vehicles from O&H Conversions.

With GSM's customary no-nonsense style Roger explains the company's impressive growth very simply: "As Brexit looms and trading conditions for UK businesses remain as challenging as ever but with increased economic uncertainty, our mantra here at GSM is very simple: We listen to our clients, we get them their finance and we help them manage their finance and their paperwork with the minimum of fuss. One thing that never changes is that great service matters!"

To find out more about GSM Finance Ltd call: Roger Wood on +44 (0)20 8874 9994

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Frailty and Sarcopenia: Identifying the right care for older patients

By Miles Witham, Avan Sayer, Richard Dodds, Gill Turner

With the ever-increasing numbers of people living to old age, both in developed and developing countries, healthcare services must adapt to the illnesses and needs of this rapidly growing segment of the population. In this article, we take a look at two conditions that are attracting a lot of attention from researchers, clinicians and service planners – frailty and sarcopenia. Both are central to understanding and caring for vulnerable older people throughout the healthcare pathway.

What are frailty and sarcopenia?

Frailty is the loss of the body's ability to withstand a stress – whether illness, trauma, or medication. Frailty is why an older person can lose independence and thus can be unable to get out of bed, confused, dehydrated with kidney failure after only a mild infection, whereas a person who is not frail would be able to withstand the infection and carry on with their daily life.

One of the main components of frailty is Sarcopenia - the loss of muscle size and strength that accompanies ageing. It's a concept that is as old as medicine itself – Hippocrates recognised it – but recent research has made significant progress in both defining ways to diagnose the condition and in understanding what causes it. It is not merely caused by getting old, but a complex mixture of other illnesses, changes in hormonal levels, inflammation, and a reduced ability of older muscle to regenerate itself all play a part.

Both sarcopenia and frailty are common; 5 to 8% of people in the UK aged over 65 have sarcopenia, but it is much more common in certain groups such as those in care homes, where 30% or more of

residents will have sarcopenia. Frailty follows a similar pattern, and becomes increasingly common with increasing age so that 25–40 % of people aged over 75 are affected by frailty. It is likely that large numbers of older people contacting ambulance services have sarcopenia and frailty. Not only are this group more likely to fall and injure themselves (see below), they are also likely



to have multiple other illnesses such as cardiovascular disease or lung disease, that in turn can trigger the need for prehospital care.

How are frailty and sarcopenia recognised?

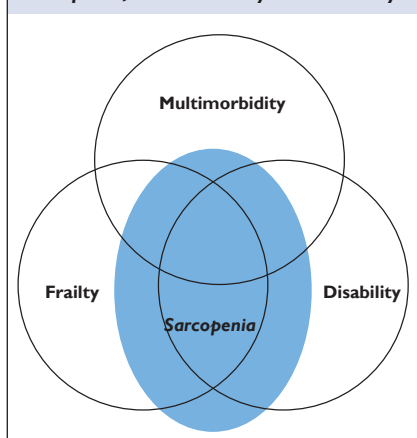
Sarcopenia is diagnosed by measuring muscle strength (usually handgrip strength and walking speed) and measuring muscle size (usually using CT scanning or DEXA scanning similar to that used to diagnose osteoporosis). As such, it is not a diagnosis that can be made at the prehospital stage of care.

Although the 'gold standard' method for diagnosis of frailty is a comprehensive geriatric assessment, there are a variety of simple screening tools that can be used. One simple way to highlight people who are likely to be frail is to look out for patients presenting with one of the five frailty syndromes – falls, immobility, delirium (acute confusion), incontinence, and medication side-effects. Not everyone who presents to prehospital care in these ways will have frailty, but a high percentage will. These are a group of patients for whom further comprehensive assessment is beneficial,

as we discuss later in the article. A simple tool that aligns reasonably well with gold-standard assessments is the Clinical Frailty Scale (box), which also allows users to gauge the severity of frailty. This scale relies on a global impression of a patient's function, taking into account what the patients and their relatives say about their usual level of function – not just how they are when acutely unwell. It is simple and quick to use, and can be used in the prehospital setting as well as in hospital inpatients, clinics and GP surgeries. In England and Wales, GP surgeries are now able to calculate an electronic Frailty Index (eFI) which highlights those people who are likely to have frailty.

Most people with sarcopenia are frail, but not all those with frailty have sarcopenia. Care is needed to ensure that the two terms are not used interchangeably. Similarly, frailty is distinct from disability (which describes impairment of ability to perform activities of daily living) and is also different from multimorbidity, which refers to having several diseases or conditions. It is perfectly possible to have multiple disease diagnoses without being frail. Fig 1 makes the distinction between all of these states.

Fig 1. The overlap between frailty, sarcopenia, multimorbidity and disability.



What are the consequences for older people?

People with sarcopenia and/or frailty are more likely to fall, are more likely to end up in hospital, than those who do not have frailty. People with frailty and sarcopenia are also more likely to need care from others, more likely to need to enter a care home, and have a much higher risk of dying than those without frailty. In the past, both muscle weakness seen with advancing age, and

frailty, were thought of as the inevitable price of getting older. It is clear that this is not necessarily the case – not everyone who is old has sarcopenia or frailty – and as our understanding of these conditions improves, it is likely that we will be able to slow down the onset, or even reverse these conditions.

Clinical practitioners, as well as lay people, “know” when someone is frail. For both sarcopenia and frailty however, standardised criteria are important in making the diagnosis, so that misdiagnosis does not occur and people are not denied access to appropriate care. For frailty in particular, there is a tendency for the word ‘frail’ to substitute for ‘old’ in healthcare discussions – a form of ageism by stealth.

Why are they important in prehospital care?

Older people with frailty and sarcopenia are particularly vulnerable when admitted to hospital – they are more likely to have long lengths of stay, are more likely to suffer from adverse effects from being in hospital such as delirium (confusion), loss of independence or even death. Being confined to a hospital bed can accelerate

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Clinical Frailty Scale*



1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.



2 Well – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.



3 Managing Well – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.



4 Vulnerable – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being "slowed up", and/or being tired during the day.



5 Mildly Frail – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.



6 Moderately Frail – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.



7 Severely Frail – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).



8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.



9. Terminally Ill - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. *CPA* 2005;173:489-495.

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the loss of muscle mass and strength seen in sarcopenia. However avoiding hospital admission can only really be effective when there is a viable alternative which manages the associated risks. Exciting models which work across the interface between the ambulance service and other community providers have the potential to do this.

In the New Forest in Hampshire, a new model of care is being developed for people with frailty who suffer a crisis - such as a fall, becoming immobile or developing acute confusion. Combining the skills of an ambulance technician in assessing for illness with the skills of a therapist looking at the impact of the crisis on independence, a rapid triage team helps medical staff to prioritise those patients who could and should be managed at home without delaying admission for those who really need it.

For some specific conditions the assessment of older people by prehospital care services has the potential to avoid hospital admission – and assessing for frailty is a key part of this. In Lanarkshire, Scotland, paramedic practitioners now form part of the Hospital at Home team, working alongside doctors, nurses and therapists to assess, signpost and treat older patients at home with a range of acute conditions including exacerbations of COPD, heart failure, infections and falls.

Addressing frailty and sarcopenia takes time – they are not conditions that are amenable to rapid prehospital care. However, prehospital practitioners are ideally placed to signpost those with frailty and sarcopenia to services that best meet their needs – which may involve assessment by community geriatric medicine or primary care services, rather than defaulting to the emergency room.

What are the treatments for frailty and sarcopenia?

The treatment that is proven to work for sarcopenia is resistance exercise training – using weights, elastic bands, or working against one's own body weight. The challenge for health services now is making sure that all those with sarcopenia, or those at risk of sarcopenia, can access such training. Other approaches being tested at present include nutritional supplements (such as protein supplements and leucine). Medications are also being tested in clinical trials – some new (such as myostatin inhibitors) and some familiar drugs which might help in sarcopenia (such as ACE inhibitors and allopurinol).

A similar approach – exercise training – also looks promising for frailty, and in clinical practice, rehabilitation services can make a great deal of difference to those who are frail. This doesn't have to mean an admission to hospital though; more and more rehabilitation services for older people are moving out into the community and even into people's own homes, reaching those who might be reluctant to attend hospital or clinic for rehabilitation and reducing competition for beds in hospitals. The important point is that the presence of frailty marks the point at which the priorities for care need to change from disease-based guidelines to a person-centred approach which meets the individual's own goals and aspirations. In practice this usually means they need a comprehensive or holistic assessment which includes a drug review - Comprehensive Geriatric Assessment.

Conclusion

Frailty and sarcopenia are important conditions that are having an increasing impact on how we care for older people.

Identifying those who are living with frailty has the potential to guide triaging decisions around where to transfer patients from the prehospital setting, what services they may benefit from being signposted to, and gives practitioners in all areas of health and social care valuable information that can modify how we deliver care to our older patients. New systems of care and new treatments are starting to come into use, and practitioners will need an awareness of these new treatments as they are introduced to this rapidly developing field.

Further Reading:

The British Geriatrics Society Guidance on frailty

Fit for Frailty Part 1 Recognition and management of older people with frailty in community and outpatient settings. British Geriatrics Society 2014. http://www.bgs.org.uk/campaigns/fff/fff_full.pdf

Fit for Frailty Part 2 Designing, commissioning and managing services for Older people with frailty. British Geriatrics Society 2015. http://www.bgs.org.uk/campaigns/fff/fff2_full.pdf

Biography:

Dr Miles Witham



Dr Miles Witham is Clinical Reader in Ageing and Health at the University of Dundee. He works as a consultant geriatrician in the community, and also runs clinical trials of therapies for sarcopenia. He is co-chair of the British Geriatrics Society Sarcopenia and Frailty Research group.

Biography:

Professor Avan Sayer



Professor Avan Sayer is Director of the NIHR Newcastle Biomedical Research Centre and Professor of Geriatric Medicine at Newcastle University and Newcastle upon Tyne Hospitals NHS Foundation Trust. She leads translational research on ageing syndromes such as sarcopenia, frailty and multimorbidity. She is co-chair of the British Geriatrics Society Sarcopenia and Frailty Research Group.

Biography:

Dr Richard Dodds



Dr Richard Dodds is an NIHR Clinical Lecturer in Geriatric Medicine at University of Southampton and also a Visiting Clinical Lecturer at Newcastle University. He combines hospital work in acute geriatrics with research into the development of sarcopenia across the life course.

Biography:

Dr Gill Turner



Dr Gill Turner is a Community Geriatrician in the New Forest where she is involved in work to develop a new workforce for acute frailty management. She has held several roles within the British Geriatrics Society, with a longstanding interest in frailty management, including the development of the Fit for Frailty guidelines.

“Marginal gains” add up - all improvements matter when you’re relying on rugged technology to save lives.



Steve Priestley,
Xplore VP

Steve Priestley is International Vice President of Xplore Technologies, the US-based tech business which has for more than 20 years built perhaps the world’s most rugged of rugged tablet tech, used operationally in sectors ranging from the US military to hospital and prehospital frontline clinicians worldwide. Based on Xplore’s experience, Steve is a firm believer that the effectiveness of EMS teams is increased by putting the right tools in the hands of the field operatives - and a true understanding of rugged is key. In the healthcare environment, where even the most marginal of advantages provided by the very best rugged devices can save lives, he suggests that understanding exactly what a rugged tablet can add to clinical performance is critical. Ambulance Today Editor, Dec Heneghan, met with Steve recently to find out how using the very best rugged devices can also add up to huge knock-on efficiencies. Read on to find out more.

Steve Priestley is perplexed, but his Yorkshire-deadpan face hardly gives it away. He needs another phrase to replace the now worn-out “marginal gains” in describing just what a difference rugged technology - near-everything-proof tablet PCs - can make. One rugged device makes an operational difference: widespread adoption is a complete game changer, or a life changer in EMS terms.



The diplomatic issue is perhaps more challenging for the International Vice President of Xplore Technologies



which launched the rugged tablet to the market more than 21 years ago, well before the advent of consumer tablet products.

“The majority of UK and European ambulance services and HART and HART-equivalent organisations are absolutely on the case with rugged technology, and the difference it can make to field effectiveness in carrying out the primary job of saving people’s lives,” says Steve.

“The world of EMS is complex and relies on the individual services collaborating in the most difficult of circumstances, and more frequently in the toughest of environments. The teams need to know the tech is up to it and that they can rely on each other. Our job is to help educate on what is the best tech.



“We, like our competitors, supply ambulance and EMS around the world. That means we see what the best are doing, and what the most-challenged have to battle every day.

“The problem, at times, can be simultaneously the most visible and invisible of features, but there are commercial complexities - and not all budgets are created equal, just like all rugged devices are not equal.

“To those who are not absolutely up to speed on technology - and, in fairness they may not even know their lack of knowledge is an issue - a consumer grade tablet in a rugged protective case may appear to be just the job; it certainly appears cheaper.



"After all, while the biggest issue most of us encounter is a cracked screen if we drop our personal device, an EMS professional needs to keep working in this and much, much worse scenarios. Let's not forget, for paramedics and other healthcare users, 'marginal gains' are key - all improvements matter when you're relying on technology to save lives.



"In the commercial sector, we come across all manner of tech failures: dropped devices, malicious damage, overheating, cold temperature and moisture, and these failures impact on the company, employee and individual. Our job is to mitigate as much as we can and just keep working. As an example, the operating temperature range of rugged can be minus 30C to plus 70C. Consumer grade gets nowhere near that.

"Let's not lose sight of the fact that consumer grade tablets are extremely good. But they're not specifically designed for extreme conditions.



Rugged connections and fixings are significantly stronger and more robust and are fundamentally designed to work anywhere, tested against standards involving the equivalent of being bolted to a bin lorry for a thousand miles of pot-holed tarmac.

"There's separate antennae for GPS and data, meaning it'll stay connected to the very last metre of coverage while being able to download essential data at the same time. Screen glass is super-strong, and unaffected by moisture.



"Now, in business it's a cost issue. In EMS, it's not just a cost issue - it's a life issue, whether for rescued or rescuer.



"That marginal gain of connectivity or data download speed may save minutes or even seconds and go barely noticed, but, in the EMS world, seconds are vital in a very personal way. Literally a matter of life or death. That makes it a very big consideration.



"It's pretty normal these days to watch somebody meandering around looking at their screen trying to get a single bar of coverage. In personal and business life it's an inconvenience. We live with it. Not in EMS.



"And try hot-swapping a consumer grade battery halfway through a shout, or switching a failed component in minutes or even seconds in the field.

"There are numerous models which will address just about any EMS requirement, and their physical appearance and features make that very evident. But the invisible features can be a much bigger issue.



"Techies will know what IP67 certification is all about. In-the-field users don't need to know what it's about: they're likely to be HART teams, and they're likely to be

immersed in an incident or environment when the last thing on their mind is just how important those two letters and two digits are.

"The technical definition and description is extensive. What the user needs to know is that if they go into a hazardous environment involving volatile chemicals, potentially explosive dust, flammable liquids or gasses, and they're using an IP67-certified Xplore XC6 tablet for instance - a truly ultra-rugged piece of equipment - then it's not going to spark an explosion.



"If they drop it in up to three feet of water for half-an-hour, then it's not going to fail. If it's a sandy or dry dust environment, then that sand and dust will not get inside and corrode it. And the screen will work wet or dry with gloves.

"But, as always, it's all down to the bottom line.

"No big sell here," says Steve. "Understand the true influence and capability of a genuine rugged device, then understand the true total cost of ownership (TCO). It's likely to be less than the TCO of consumer grade devices, but with far better output. Maybe the biggest challenge facing designers of rugged technology right now is helping our end-users understand this fact."

XPLORE
To find out more about Xplore Technologies, please visit their website:
www.xploretech.com/uk/



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From the Africa Desk of Ambulance Today – Emergency Medicine Education in The DRC



By Michael Emmerich

The Africa Quarterly editorial discusses the challenges facing emergency medicine educators in The Democratic Republic of Congo (DRC). The DRC is the second largest country on the African continent with a population of almost 80 million. It is a major crossroad through Africa as it borders nine countries. The DRC continues to experience current political and social instability, as it has over its chequered past; and active fighting is still prevalent in certain regions today. The last two decades of conflict, mainly in the North-Eastern regions, has devastated the civilian population and led to the collapse of the healthcare infrastructure.

Government expenditure on health per capita remains one of the lowest in the world and Emergency Medicine has yet to be established as a specialty in the DRC. While most hospitals have emergency rooms or *salle des urgences*, this designation is more in name than an actual ER room; many have no standardised format, no recognised emergency medical equipment and they are rarely staffed by doctors or nurses with hardly any trained in emergency care. Lack of formal, structured training, lack of (emergency) equipment and fee-for-service for all patients entering the healthcare system are cited as barriers to care. Pre-hospital care is also not an established specialty, with no EMT colleges, ambulances being a rarity and no outside major centres. Where there are ambulances they are at best staffed by a nurse or just a driver with no medical training.

The 39 nationally-recognised medical schools, most of which are in urban areas, are typically underfunded and all medical studies including residency are fully self-funded. There has been a recent proliferation of technical schools (more than 500) which offer varied levels of medical training. These institutes are not regulated, open without official approval and often operate as for-profit enterprises. Few students from any of the schools can spend the required years in clinical rotations due to a lack of participating hospitals. The overall result is an education of doubtful quality. There is currently no dedicated emergency



Transporting a patient in the DRC



A remote site emergency treatment room in DRC

care training integrated into medical or graduate schools.

A comprehensive study was undertaken¹, jointly by the DRC Government and various international role players. Key findings of this 2012 report by USAID and Nursing Education Partnership Initiative (NEPI) noted the barriers to learning were as follows, including inadequate quality of health worker education:

- Lack of budget for maintenance and renovation of the existing infrastructures.
- Limited number of opening hours of libraries, skills labs and other infrastructures to students and teachers.
- Insufficient support of stakeholders including government and development partners regarding funding for construction.
- Insufficient budget for renovation of existing infrastructure.
- Lack of anatomic models in skills labs.
- Insufficient budget for purchasing basic materials and consumables that are necessary for clinical practice without necessarily relying on what is found in clinical training sites.
- Inadequate system supply of books and other learning materials
- Lack of policy and budget for using the internet and computers in schools to encourage students and teachers to access information.

Although the report focuses on nurses and midwives, it must be stated that they serve at the frontline of most medical emergencies in the field and in hospitals and clinics. Therefore, the challenges they face in learning, will impact severely on

their ability to work in an emergency medicine environment; added to the fact that emergency medicine is not part of their recognised curriculum.

I have been travelling and working in The DRC since 1999, across various provinces and regions, primarily teaching at a BLS, ILS and ALS level, (both pre- and in-hospital facilitating) and doing clinical governance and medical project management, so I can attest to the challenges. Short courses such as ACLS, PALS, ITLS, ATLS etc. which form the backbone of annual refresher training for many emergency medicine practitioners is relatively unknown, and only presented in a few regions of The DRC by training providers from other countries.

I am currently working in the Southern DRC teaching and practising emergency medicine with a team of Congolese doctors and nurses. What the statistics, data and educational shortcomings do not reveal is that the Congolese medical professionals I have interacted with have a real hunger for knowledge and a desire to learn about the challenging field of Emergency Medicine. In spite of all the challenges, the thirst for knowledge makes teaching and working in The DRC a genuine reward to the passionate committed EMS educator. Success is measured in baby steps and giant leaps - particularly when we move the classroom into the cramped under-equipped ER room or remote district ambulance.

References:

1. Assessment of Nursing and Midwifery Education and Training Capacity at Seven Training Institutes in the Democratic Republic of Congo (2012)

Access the full report at: http://files.icap.columbia.edu/nepi/files/uploads/DRC_Needs_assessment_2012.pdf

Tell Michael what you think about this article by emailing him at: mikesnexus@gmail.com



Infection Prevention and Control Cleaning in Patient Transport Vehicles

By Adam Murfitt, Specialist Provider of Medical Cleaning and IPC Services, Clear Trace

Any provider of health-related services should have excellent infection prevention and control (IPC) practices culturally ingrained into the workforce. These practices should be underpinned by regular reviews of systems and policies to ensure ongoing compliance. After all, your patient transport vehicles are operating in a range of different situations all with heightened infection risks. Complacency or slack procedures increase the margin of error and then you are one small step away from dealing with serious issues.

Legislative, moral and economic reasons to look again

No one should catch an infection while receiving treatment and services related to health, yet every year across the world hundreds of millions do. According to the World Health Organisation (WHO), when done properly, infection prevention and control can decrease healthcare-associated infections by at least 30% (<http://www.who.int/infection-prevention/en>).

Any organisation related to healthcare should have stringent policies for not just dealing with current infection risks, but also tracking any emerging threats. Infection control is a journey, not a destination. This means that every UK patient transport service needs to constantly review and refine systems and policies to ensure that their vehicles are not just clean, but hygienically clean. This is an era in which regulators, commissioners of services and the public are ever vigilant. If you are

inspected by CQC and found to have not reached microbiological sterility, the backlash can be substantial. This includes the sobering thought that putting your patients at risk of infections is commercially reckless.

In a litigious age, non-compliance for any private patient transport businesses could mean not only fines but also compensation levels that could put you out of business.

Visually clean versus microbiologically clean

Ambulances and non-urgent patient transport services may feel they have a rigorous adherence to keeping vehicles and equipment "spotless" when their main control system is visual cleanliness. It's impossible to be confident of adherence to IPC without applying specialist equipment, chemicals and skills on a regular basis. There are no shortcuts on this topic.

To adhere to best practice, you need six weekly deep cleans, followed by tests to prove their validity. This needs to involve not just simply removing contaminants from surfaces, but also creating a sterile environment on a microbiologic level.

Patient transport clinical governance

Having auditable and reliable infection prevention and control systems does not simply mean having documented procedures. Nor can responsibility lie entirely with whoever is appointed as lead for IPC. Systems need to be orchestrated

effectively by all the management and staff in an ambulance or non-urgent patient transport services. Everyone's roles and responsibilities should be clear and constantly reaffirmed. Each person has a part to play in delivering infection prevention and control as defined by the Health and Social Care Act 2008.

The CQC may look to the board or senior management to take responsibility for non-compliance, but the managers need to ensure that their teams have the understanding, support and confidence to flag up problems, and to activate deep clean procedures as and when appropriate. For example, where does a crew's responsibilities start and finish, and at what point do specialist services need to provide a more auditable and microbiological clean?

Can the crew that is asked to clean vehicles and equipment for constant control of pathogens such as MRSA, Clostridium difficile (C-diff), Norovirus and flu, be effective if they have neither the skills nor the time to get to the sufficient level of sanitation that a deep clean provides?

Mapping areas of responsibility against the standards of cleanliness should include any contracted services – such as ambulance preparation teams. They too need to be thoroughly briefed and supported to ensure infection prevention and control is a streamlined and consistent process.



How to have confidence in your IPC systems and policies

If your organisation is confident that it practices the highest possible standards of infection prevention and control, then simply believing that to be true is not sufficient. Even the most rigorous and well managed IPC for an ambulance or patient transport service must be tested and auditable. For that to take place, the best way to test microbiological cleanliness is usually an ATP swab system.

One of the primary advantages of an ATP swab system is that the results are gathered and stored instantly and digitally. This is trackable and shareable information that could prove vital for a CQC visit.

ATP swabs do have their limitations and there may be times when micro swabs are more effective. The two may be needed in tandem in some situations. However, ATP is the measurement system increasingly used in many industry sectors – from container companies to restaurants to dental surgeries. This is because it provides a real-time, accurate method of monitoring your infection prevention and control performance.



Responsive v scheduled IPC

Most organisations sit on a logistical knife edge, keeping all too few ambulances and non-urgent patient transport vehicles on the road with high demand. The solution for some is to create a working pattern for vehicles that includes regular slots that can facilitate regular deep cleans.

But what if, after exposure to a high-risk situation, your vehicle is used to transport a vulnerable person before the deep clean took place? The solution is to have access to flexible and versatile infection prevention and control services.

One of the mandates of the Care Quality Commission's guidance on IPC is that care must be "timely to maintain people's health, safety and welfare." Getting a balance of planned and reactive deep cleaning is key to that.

Round the clock adherence to IPC regulations

Choosing the right system for IPC adherence should also bring with it lasting benefits for your patient transport vehicle sanitisation. That's because the best outcome means adding substances to surfaces that continue to shield for as long as scientifically possible. It would be interesting to test your vehicle not just immediately after one of its six weekly deep cleans, but also some days later. Not all cleaning chemicals or delivery systems perform with equal efficiency and effectiveness, and not all of them leave behind residues that add continuing IPC potential.

Clearly, there is a lot more to infection prevention and control than what appears on the surface. To get beneath the issue involves not just systems, but the right level of support.

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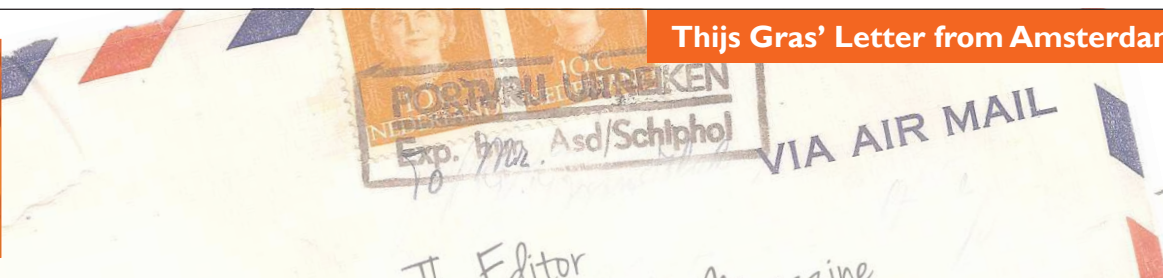
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THE GERMANS

Yes, it is very tempting, but no, I will not mention IT. Last month we had a German nurse riding along for two weeks. He wanted to orientate himself on Dutch prehospital care and the hospital he was working in gave him the opportunity.

He was a nice, care-dedicated person and it turned out to be a very rich and interesting experience for both parties. Though the problems are the same (a heart attack, stroke or broken hip is the same everywhere), the solutions and given care turned out to be quite different, especially in the battlefield – sorry – I mean the prehospital phase. Only in a setting like this, differences come clearly to the surface.

In the Netherlands we work with a team of a specialised nurse and a well-trained driver. The two of them can handle most cases. In case of unstable vital signs a second ambulance crew is called in. For severe traumas or child resuscitation one of the four mobile medical teams gives assistance. In Germany ambulances are staffed with lesser-qualified personnel (with a maximum of three-year training), who can do a lot less compared to the Dutch nurses. For assistance a so-called 'Notarzt' (emergency doctor) can be called in who comes by car or helicopter. Almost any doctor can become a Notarzt so there is a wide quality-range. He or she is necessary for severe pain cases, difficulty breathing, heart attacks, alterations of consciousness, etc.



One of the things that struck our colleague was that our care is patient-orientated and we look at what is suitable, desirable or necessary under the specific circumstances. We stopped in front of a general practitioner's house to pick up someone with chest pain. He was surprised to see us go inside with no case or scope and instructed the patient to walk with us to the

ambulance. There we made a 12-lead ECG, showing no real problems, gave an IV-access and off we went to a non-intervention hospital: efficient in time and resources. Our German colleague became really uneasy when we went up with no equipment to a woman in labour; third floor; first baby, too long in labour; who had to go to the hospital. She came down by herself with the help of the midwife. We put her on the stretcher and drove her to the hospital. He indicated that in Germany an emergency doctor would have been called and that they would have gone upstairs with practically all their portable equipment (scope, case, birth case, oxygen, respirator, etc). He shook his head: "You were right again, Thijs. This is far more efficient."

Next case: a woman suffering from pseudo neurological epileptic syndrome. She had another attack, did not react to pain and could not be left home amidst her family. Though not much was to be expected from the hospital (during my conversation with the A&E staff to see what they had done last time, I learned that they only observed her and discharged her when everything was over), we had to bring her there. I decided not to give her an IV, since there was no use for it. Our German colleague indicated that in this case an emergency doctor would have been called, she would probably receive two IV-accesses and because of her alternated consciousness level, she would have been intubated. I consider this useless medical consumption, exposing the woman to unnecessary, even dangerous iatrogenic risks.

Then we were called to an old man who was nursed at home by his loving family. He suffered from lung cancer and there was not much time left for him. The family had called us because of his difficulty breathing and they did not want him to suffer. When we arrived it was soon clear that the best approach for this man was to leave him at home. We gave him a nebulizer and I decided to insert an IV to give him diuretics since he clearly had water in his lungs. Then



we learned that next-day euthanasia would be performed by their very involved family doctor. Speaking to her we fine-tuned the treatment and she was glad the IV was all ready for tomorrow. The family was glad we left him at home as was the patient himself, in this case the most important person to please. In Germany he would have been brought to the hospital since they look primarily to the medical problem.

The last experience I would like to share is a call to a carwash where a 35-year-old man suffered from a circulatory arrest. In good cooperation with police and fire service, together with a second ambulance crew, we managed to achieve ROSC after six shocks. The man was too reactive to intubate, but with balloon insufflation we were able to re-oxygenate his brain. In the hospital the doctors could already talk with him. Next day we went by to shake his hand and receive his warm thanks and those of his mother and sister who were in the hospital visiting him. This outcome was quite rare in Germany, also because BLS by bystanders and AED's are not so common.

It has been a very interesting experience for both sides. Our German colleague was impressed and I was a little proud of what we have achieved over the years. Amidst a lot of criticism you do not always count your blessings. And did I mention IT? I did once, but I think I will get away with it...

Tell Thijs what you think about this article by emailing him at: tgras@xs4all.nl



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No Christmas for Halifax

By Les Pringle



In Spring this year, I traveled across Canada as part of the Ambulance Today team researching our Summer 'Let's Go Canadian' edition. When I discovered Halifax, Nova Scotia was on the itinerary I was particularly pleased - and not least because of the city's long standing maritime ties with the port of Liverpool, England (by coincidence the home base of Ambulance Today). Additionally, Halifax is host to the highly-regarded 'Museum of the Atlantic' and, as I've always had a keen interest in naval history, I knew I had to make time to pay it a visit. The opportunity presented itself when my colleagues were engrossed in planning the following day's ambulance itinerary. I suppose I should have felt a pang of guilt as I slipped away to the docks and the museum, but I didn't. It was worth it; the museum really is a fascinating place. I wandered happily amongst the various exhibits many of which reinforced the vital importance of the transatlantic link between Nova Scotia and Liverpool over the past couple of hundred years, in peacetime and war. Then, quite unexpectedly, I came across an exhibit that stopped me in my tracks. At first, I couldn't quite believe the story unfolding before me. I suspect you won't either.

By coincidence, the feature report below is coming to you a century after the described event took place. So, I respectfully request that you screw on your 'ambulance head' tightly, particularly in light of the spate of major terrorist attacks which have occurred across Europe in recent years, not to mention the awful Las Vegas massacre a couple of

months ago. In recent months earthquakes have wrought death and destruction in South America and Italy. Terrible as the aftermath of these events are, we have to remind ourselves just how fortunate we 21st-century ambulance folk are. After all, in 2017 we have access to amazing search-and-rescue technology, the most robust mechanical resources, highly-



Halifax's Museum of the Atlantic

skilled clinical workers and volunteers, hi-tech planning protocols and, last but not least, the most sophisticated communications systems there has ever been. Put it all together and we have the ability to coordinate amazing EMS responses to the worst of disasters. With that in mind, read on and perhaps pause a moment to marvel at the fortitude shown by a generation of men and women now lost to history.

On the morning of 6th December 1917, at a quayside not a mile from where the museum now stands, an ammunition ship blew up with such ferocity that it tore Halifax apart claiming two thousand lives and maiming nine thousand. At the time Halifax was regarded as one of the safest harbours in the world stretching far inland and offering protection not only from Atlantic storms but marauding U Boats.



This, coupled with its strategic location on the North Western coast, made Halifax the perfect staging point for trans-Atlantic convoys supplying large quantities of material to war torn Europe. Allied merchant ships and their military escorts had been gathering in the harbour for several days when on that fateful morning the Mont Blanc, a 3,000-ton armed French merchant ship, collided with an on-coming vessel while making her way through the narrows towards her anchorage. Only Mont Blanc's captain and crew knew her hold was packed with a vast quantity of highly explosive munitions – 2,300 tons of wet and dry picric acid (with an explosive power far greater than TNT), 10 tons of gun cotton, 200 tons of TNT and 35 tons of high-octane gasoline. The bulk of this gasoline was stored in drums lashed to the deck. The collision caused some of the drums to rupture and when sparks from the grinding metal showered down on the deck, they ignited. In a matter of minutes the fire became an inferno so intense that the crew had no choice but to abandon ship leaving the vessel drifting towards pier six which in turn was quickly set ablaze. The burning ship was a spectacular sight. Spectators, oblivious of the nature of the cargo many of them children, gathered at a safe distance on the waterfront to watch the drama play out. Others took up position at the windows of the many dock-side buildings. At 9.06 am, it happened; Mont Blanc blew apart in a micro second causing the most powerful man-made explosion in history until the nuclear age.

The shock-wave, travelling at many times the speed of sound, tore upwards, outwards and downwards causing a momentary vacuum and splitting open the harbour floor. Dockland cranes were ripped from their mountings and carried away like so much matchwood. Concrete buildings were torn from their foundations while the wooden structures became a lethal maelstrom of splinters and nails mixed with a million shards of glass. The expelled sea water rushed back in to fill the void creating a tsunami with the energy to lift 11,000-tonne ships like corks and snap their moorings. The wave fanned out from the docks and washed up as high as eighteen metres above the harbour's high-water mark before quickly receding to cause havoc further down the harbour. The ferocity of the blast was such that one of Mont Blanc's guns was found more than three miles (5.5 Km) away while windows were shattered 50 miles away. Then the heavens rained more death and destruction. All that had been blasted into the sky, including 3,000 tonnes of white hot fragmented metal that was once the



The damage done to Tufts Cove school.

Mont Blanc, fell back to earth, one of its boilers landing on the naval college in the city. It was reported that ground tremors caused church bells to sway a hundred miles away. Officers on the bridge of the steam ship Acadian fifteen miles out to sea described seeing a flash brighter than the sun and their sextant readings calculated the resulting smoke plume to have reached fifteen thousand feet (over 3,000 metres).

Workmen gathered on roofs to watch the cluster of boats fighting the fire on Mont Blanc were blown far into the city while those on the wharf, or watching from office and factory windows, were scythed into pieces. More than 1,600 were killed instantly with the death toll quickly rising to 2,000. A significant number of the nine thousand injured suffered mutilation and permanent disablement. At least 50 survivors lost both eyes while 250 lost a single eye with hundreds more left partially sighted as a result of being peppered by a hail of glass. Every building within a 1.6-mile radius (2.6-kilometres), was destroyed or badly damaged (over 12,000 in total). The devastation covered 325 acres of the Richmond area of the city and the docks. On the eastern side of the harbour, the smaller settlement of Dartmouth was severely damaged. The fire chief and his deputy had been killed in the blast and with little water in the mains unchecked fires spread rapidly. Some damaged buildings were consumed before rescuers could extricate the trapped survivors. Those who could be easily dragged clear of the advancing flames survived but many burned to death in plain sight.



One rescuer said afterwards: "My one regret was that I did not have my revolver with me. At least then I could have spared them further pain and suffering."

Fireman, Billy Wells, whose clothes were torn from his body in the explosion, described the scene rescuers faced: "The sight was awful, with people hanging out of windows dead. Some with their heads missing, and some thrown onto the overhead telegraph wires."

Billy was the only member of his eight-man crew to survive. On a human level, the scale of the tragedy is almost beyond comprehension. 200 children and staff perished in an orphanage on Campbell Road, many consumed by flames. A congregation of 400 died together in an Anglican church and 300 met the same fate in a Catholic chapel. Three of the schools in the Richmond district were destroyed just minutes after the morning register was taken. Many fortunate enough to have been well away from the epicentre were not spared the injuries inflicted by flying debris, nails and glass. And things would have been even worse if the surrounding terrain hadn't, in some parts, diverted the shock wave upwards.

So, there we have it; a civil disaster of epic proportions. After years working in the ambulance service I suppose it's not surprising that my thoughts turned to those trying to help the injured and dying. How did they cope without a functioning transport network and when the only form of communication left was the telegraph?

The initial rescue work was carried out by the citizens themselves tearing at the rubble and guiding the injured to the Victoria General Hospital in down-town Halifax.

They did what they could to quell the fires, but the task was beyond them. Lorries, private cars and horse-drawn carts were requisitioned to transport the seriously wounded leaving the dead and dying to their fate. Confusion reigned. One witness described seeing an unattended horse wandering through the rubble dragging a cart piled with corpses. Another, a woman,



told of hiding from a blinded man groping his way out of a shattered building. His hair and scalp had been burned away, his lower jaw was gone and only bloody sockets marked where his eyes had been. He was a wounded animal and she, in her terror, hid from him and carried the scar for the rest of her life. Within half an hour of the explosion rescue parties were put ashore from the various military vessels in the harbour. Ships surgeons and medical orderlies began what was to become a marathon rescue operation shuttling severely injured patients to improvised hospital ships in the harbour. Within hours the down-town hospitals were overwhelmed, the Victoria General using corridors and offices for the serious cases while church halls, cinemas and other public buildings became first-aid and triage centres. The new military hospital, Camp Hill, admitted approximately 1,400 victims on the first day. There were 49 doctors registered in Halifax with the figure rising to eighty-six when military surgeons were included. This small band and their assistants worked heroically for the first 24 hours. But it must be remembered that the people themselves responded magnificently. It was an age when social responsibilities were not as institutionalised as they are today. Self-reliance was a way of life. Medical supplies were soon exhausted and citizens formed the Halifax Relief Commission at around noon the day after the explosion. The committee organised medical relief for both Halifax and Dartmouth while also supplying transportation, food and shelter (the commission would continue until 1976). The first relief train left Truro at around 10am that day carrying medical personnel and supplies, arriving in Halifax by noon and returned to Truro with the wounded and homeless by 3pm. By nightfall, a dozen trains had reached Halifax. All the while the temperature was dropping.

In the early hours of 8th December, a blizzard, described as the worst in decades, swept over the city bringing rescue work to a halt when visibility fell to less than two metres. Gale force winds caused battered

ships in the harbour to drag their anchors and drove sixteen inches (41cm) of snow-fall into deep drifts on land. Telegraph lines that had been hastily repaired following the explosion were again put out of action. Halifax was cut off. Trains en route from other parts of Canada and from the United States simply couldn't get through. Nature had conspired with man to seal the fate of many still alive under collapsed buildings. 36 hours later a new gale swept in. This time it came from the south bringing heavy rain and a rise in temperature resulting in a rapid thaw. Slush and water was knee deep in many streets and then, as if enough wasn't enough, the passing of the storm saw temperatures plunge causing everything to freeze solid. The military units garrisoned in Halifax performed heroically in the days following the disaster. Apart from helping the police maintain law and order, they undertook hazardous rescue work while also supplying food and pitching tents. When the blizzard broke over the city they vacated their barracks and turned them over to the homeless and went under canvas.

It is recorded that the 63rd Halifax Rifles worked as a rescue party all day and then mounted guard all night in Arctic conditions for 72 hours without rest. The stresses and strains placed on the medics were equally arduous. Dr C. Puttner, who was in overall charge of medical strategy suffered a heart-attack early on and became a patient himself while around him conditions were something akin to a battlefield clearing station. Surgeons worked on an endless stream of seriously injured people; amputating shattered limbs, removing eyes and setting broken bones while often sharing instruments with colleagues working alongside. When supplies were exhausted they resorted to stitching incisions with ordinary cotton and thread. The harrowing nature of the work took its toll. In an extreme case, Doctor Shacknove, one of the first on the scene, was so affected that he hanged himself in his room. Temporary mortuaries sprang across the city with the Chebucto Road School in Halifax's west end becoming the central mortuary. A company of the Royal Canadian Engineers repaired and converted the basement to serve as a morgue while classrooms became offices for the Halifax coroner. Trucks and wagons soon arrived with corpses. Coroner Arthur S. Barnstead implemented a procedure numbering and carefully describing the bodies and their clothing; it was based on the system developed by his father, John Henry Barnstead, to identify the Titanic victims in 1912.

The external response to the disaster was fast and generous. Relief trains were



Young boy wounded in the explosion is tended by Nurse Edith Choate

dispatched from Canadian cities but the United States pulled out all the stops. Perhaps the experience gained a few years earlier in the aftermath of the San Francisco earthquake guided their efforts but, for whatever the reason, the supplies and equipment sent by train and ship from the US were not only plentiful but appropriate. Three days after the explosion a train left Boston laden with medical supplies to be followed the next day by another containing the full equipment for a 500-bed hospital. In addition came 25 doctors, 68 nurses and eight orderlies. On the same day a train left New York with 500 cots, 18,000 garments, 10,000 blankets, 20 cases of disinfectants, 60 cases of surgical supplies, abundant food supplies and yet more doctors. Massachusetts, unbidden, not only supplied large quantities of glass and putty, but 25 skilled glaziers to install it. They also gifted ten brand new trucks, gasoline and the drivers to maintain them. The list is long but it should also be mentioned that millions of dollars were donated by governments and cities around the world.

It struck me while researching this tragedy that it was as much about the resilience of the human spirit as anything else. It's a story of neighbour helping neighbour, city helping city; of self-sacrifice, self-reliance, generosity and courage. Certainly, it shows us human nature at its best. Sadly, on the other side of the Atlantic, as World War I raged on, no such thing could be said. 'Man's inhumanity to man' was all too evident amidst the barbarism of the trenches.

So now you've heard the story of the Halifax Explosion do you, like me, wonder if we don't sometimes take all our 21st century EMS resources for granted? I wonder how we would have coped if we found ourselves in the same situation and with exactly the same scant resources at our disposal. But I don't have to ask that question, do I? While reading this you will doubtless have asked it of yourself, I know I did.

Tell Les what you think of this article by emailing him at: lespringle@yahoo.co.uk

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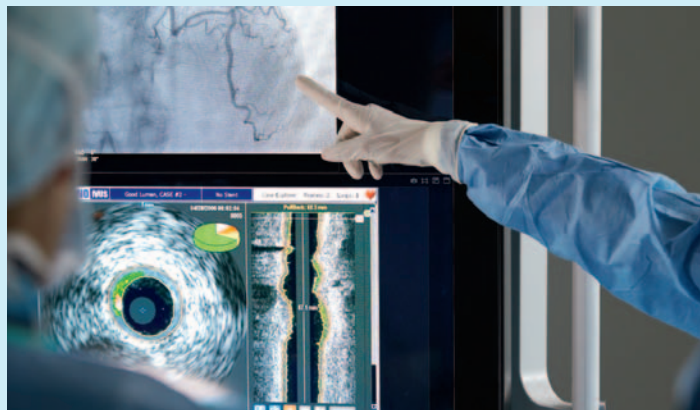
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Carbon Dioxide - It's not just a gas

Part 3: Applications for the non-intubated patient

In this final article in a series of three, Martin Betzer of Falck Denmark explains how end tidal carbon dioxide monitoring might guide you in your clinical assessment of critically ill, non-intubated patients.

Summary

In the previous editions of Ambulance Today, the basic physiological principles of capnography and the application possibilities during resuscitation were discussed. This article will review the usability of capnography in the spontaneously breathing, non-intubated cohort, starting with a summary of the basics.

End tidal carbon dioxide (EtCO₂) monitoring is the measurement of the partial pressure of expired carbon dioxide gas in the end of an exhalation. The CO₂ gas itself emerges as a by-product of cellular metabolism, diffusing into circulation and eliminating through ventilation. Therefore, EtCO₂ sampled through a nasal cannula gives you a visual, continuous and real-time, breath-to-breath insight to your patient's airway, respiratory, circulatory and metabolic state.

The graphic capnogram curve and the numeric EtCO₂ value known as the capnometer gives you the information you need for interpretation. Normal EtCO₂ values lies within 4.0-5.7 kPa or 35-45 mmHg^[1] values that, as this article will show, might reveal way more about your patient than your regular assessment.

In previous articles we have established, that in the intubated patient capnography monitoring is no doubt the gold standard for ventilation monitoring; furthermore we found that during resuscitation you might gain several benefits from capnography. But what about those patients who are not intubated or in cardiac arrest? Read on...

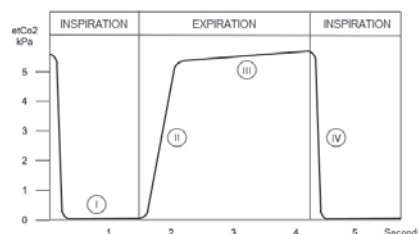


Figure 1: The normal capnogram curve. I: pause/inspiration, II: expiration of dead-space mixed gasses, III: expiration of CO₂, IV: inspiration/pause.

The background

Alongside the emerging use of pre-hospital capnography in later years, its application possibilities in the non-intubated patient have evolved. Clinicians have made their own personal experiences with its use and in some areas capnography is now a standard alongside more common monitoring equipment such as blood pressure and oxygen saturations ^[1 p. 15].


But does capnography for the non-intubated patient make a difference in your clinical decision making process, compared to standard monitoring alone? Do you obtain any need-to-know information that your clinical examination does not reveal? Not necessarily.

In 2015, Falck conducted a systematic review of available literature to reveal when (or if) we should use capnography for the non-intubated patient ^[2]. Our conclusion was, that routine use of capnography should be discouraged, as we found no scientific study that evaluated the benefits in clinical decision-making, when adding capnography

Biography: Martin Betzer



Martin Betzer is a Danish ALS-Paramedic with 12 years of experience working in the ambulance service, paramedic rapid response vehicle, emergency physician vehicle, and as emergency call-center operator. Furthermore, Martin has worked for 6 years as instructor at the Danish ambulance technician education. Martin has a Bachelor of Honour's degree in Prehospital Emergency Care from Coventry University, and begins his studies at the University of Stirling this fall in the Master of Research in Health Research. Martin is currently employed with Falck Emergency in the Zealand Region of Denmark as an Operational Leader and Clinical Supervisor. Further to this, Martin is also a Research Assistant at Falck Research.



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to standard monitoring. In certain circumstances however, capnography might make a difference in your clinical evaluation, which is why it should be used on special indications based on an reflective clinical judgement.

What we also found, was that to use capnography correctly the clinician should be well-educated within respiratory physiology and capnography interpretation. Especially the so-called ventilation/perfusion mismatch (V/Q mismatch) originating from inequalities within ventilation and perfusion might influence readings and further challenge interpretation [3].

The basics of interpretation start with your patient having tidal volumes large and regular enough for the capnograph to make a reading, otherwise the gas sample will be inadequate leading to falsely low and unreliable EtCO₂ levels [1 p.58]. From here, basically the faster and deeper your patient breathes, the lower the EtCO₂ levels, and vice versa. But this is not always the case as to why EtCO₂ levels cannot stand alone, and should be interpreted as a part of a multimodal patient assessment. This also involves capnogram evaluation – the ventilations should be graphically pictured on the monitor; just as you are confirming correct oxygen saturations by looking at the plethysmograph curve, right?

Your patient assessment and your working diagnosis should furthermore be set before evaluating the capnography readings; thus you can use capnography as a means of confirming your working diagnosis and tailoring your treatment. In the following, some scenarios will be discussed where pre-hospital capnography monitoring could make a difference to your everyday patient care. Furthermore, the V/Q phenomenon will be exemplified and hopefully also demystified!

Continuous monitoring

In the pre-hospital environment, a variety of factors might affect our ability to adequately assess and monitor our patients during transport which is why capnography in some cases might have a place as a continuous monitoring form. Commonly, ventilation is evaluated through a combination of clinical parameters such as ventilation frequency, depth, labor and oxygen saturations. Evaluation of these parameters are however subjective and they have been shown to be inadequate even for experienced health care personnel [4]. Used as a means of continuous ventilation monitoring, capnography has been found superior to common clinical and medico-technical monitoring [5].



Think about it: You are treating and transporting a young gentleman who might have drank too much, and currently he is lying on his side on your stretcher; sleeping. A low-risk common pre-hospital case, right? Are you able to evaluate his airway and breathing in this position? The pulse oximeter is showing 99%, but does this mean that he is breathing? Using capnography, you will identify significantly more cases of inadequate ventilation and hypoxia than using standard assessment and monitoring alone [6]. It is commonly said that we should not utilise capnography just to get the ventilation frequency which the capnograph is kind enough to calculate for us. But why not? You are alone back there with your patient, and you have a lot of tasks en route to hospital. Ventilation frequency is known to be the first parameter to change in almost every medical emergency, but to realise that there is a change, you will need to identify it through a trend first! How many of your patients have a ventilatory rate of 14? Using capnography enables you to monitor and document the true trend.

Also, if there is no ventilation at all, an apnea alert is built into the capnograph ensuring your immediate attention compared to the several minutes it would take for the oxygen saturations to drop [7].

Shortness of breath

The normal "box-shaped" capnogram pictured in figure 1 shows the ventilation cycle under normal circumstances. Comparing this with the pathological "shark-

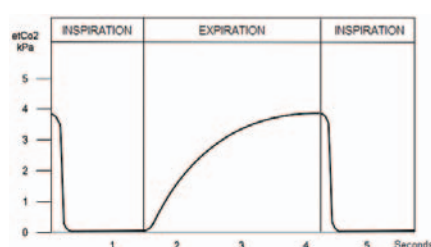


Figure 2: Pathological capnogram curve reflecting prolonged expiration – the "shark-fin".

fin"-like appearance of the capnogram in figure 2, it is obvious that the exhalation phase of the ventilation cycle is prolonged, reflecting bronchospasm such as in anaphylaxis or exacerbation of asthma or chronic obstructive pulmonary disease (COPD) [8].

The more the exhalation phase is sloping, the more severe the bronchospasm is [9]. This also means, that you can use capnography as a means of evaluating the effect of medical treatment, as the capnogram slowly should return to normal.



You are of course never in doubt as to whether your patient has COPD exacerbation or pulmonary edema, but your colleague might be. Tell your colleague that the shape of the capnogram might come in handy in distinguishing between the two. Bronchospasm will be reflected in a "shark-fin" appearance as displayed in figure 2, and pulmonary edema should be reflected as a normal shaped capnogram as in figure 1 [9]. Additionally, severe cases of asthma and COPD tend to have higher EtCO₂ levels than those of pulmonary edema [8]. Ultimately, inclining EtCO₂ levels in asthma or COPD despite aggressive treatment has been described to serve as an accompanying tool in the decision to intubate [10].

When applying capnography to the patient in respiratory distress, you once again should use clinical judgement. Ask yourself: "What do I expect to find, and how will the findings

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change my treatment?”. Picture a 67-year old patient suffering from COPD in a tripod position, wheezing with cyanotic lips and rapid, shallow breathing. This should ring a bell even without capnography. Do yourself and your patient a favor - prepare yourself by evaluating your reasons for applying capnography.

It might make a difference in respiratory distress, and it might serve as the “the full picture” – but before using capnography – ask yourself why! We do not want to waste our patient's time fiddling with useless, rubber-smelling gear.

Low-flow states

As capnography indirectly reflects circulation, it might make sense to use the EtCO₂ levels when assessing patients in hypovolemia and other low-flow-states. Oxygen is carried to the tissue through the circulation and likewise circulation is carrying the waste product CO₂ back to the lungs. If the circulation in some way is compromised, lower amounts of CO₂ is delivered to the lungs – hence you will get a low EtCO₂ reading^[1 p.313]. Furthermore, if your patient is having a pulmonary embolism or is suffering from hypovolemia due to trauma – the ventilations might be rapid on top of that – further decreasing EtCO₂^[1 p.313].

Interpreting your readings in this setting is where clinical experience, reflection capabilities and education is a must – and why capnography interpretation should always be accompanied by a multimodal patient assessment. Low-flow states are a classic example of a V/Q mismatch. There is not enough perfusion (Q) to transport the present amounts of CO₂ to the ventilation (V). In another configuration, there is too much ventilation (V) relative to the present amount of perfusion (Q). Furthermore, this serves as an example of the difference between EtCO₂ and an arterial blood gas analysis – PaCO₂. Both parameters are evaluating CO₂ levels, but the sampling point makes a great difference in the reading^[1 p.313]

Another example of a low-flow state and thereby a V/Q mismatch is septic shock. Here, the body tries to eliminate large amounts of lactate through an increase in ventilation. Simultaneously, there is likely a drop in blood-pressure leading to a decrease in perfusion. Both mechanisms are resulting in low EtCO₂ levels, and thereby a possible benefit for the clinician when assessing and evaluating patients in septic shock. In the future when further studies are available, we might see EtCO₂ levels as a part of early warning scores in sepsis^[11].



The bottom line

Know about respiratory physiology and the V/Q phenomenon to use capnography with a critical approach. The EtCO₂ value itself is not of particular interest. On the other hand changes in trends or extremely low or high patient specific values are^[12]. There are many other application possibilities than those mentioned in this and the earlier articles, the clinical bottom line is however; that if you ensure that you are capable of interpreting the readings and the EtCO₂ level is accompanied by a trustworthy capnogram, capnography can be used to assess sudden changes and trends which might aid you in your clinical assessment.

The summary

We do not want to waste our patients' time. We are able to perform a lot of assessments, monitoring and treatments – but every single one of our actions should be considered useful. This goes for capnography in particular. This article series underpins that the clinician analysing the EtCO₂ data must possess a certain amount of knowledge within respiratory physiology, as well as establishing that capnography should be utilised for monitoring a trend rather than identifying an instant value.

In the literature, there are some indications of possible benefits in clinical decision-making when applying capnography to the spontaneously breathing non-intubated patient. The scientific large-scale study evaluating the impact on clinical decision-making when adding capnography to the non-intubated pre-hospital patient cohort is however yet to be performed, thus a true benefit is not yet fully established.

This sums up the background of this three-article series on capnography - and “treat the patient, not the monitor” remains the recurrent punch-line. Thank you for reading!

Take home box

- Capnography should not be used routinely
- Interpreting capnography calls for knowledge within respiratory physiology
- Capnography in the non-intubated cohort might make a difference in clinical decision-making.

Conversion table

mmHg	kPa	mmHg	kPa
5	0.67	45	6.00
10	1.33	50	6.67
20	2.67	60	8.00
30	4.00	70	9.33
35	4.67	80	10.67
40	5.33	90	12.00

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Help on two wheels: GVK EMRI's First Responder Bike Ambulances

About 1,374 accidents and 400 deaths take place every day on Indian roads, which further translates into 57 accidents and a loss of 17 lives on average every hour in India - the highest rate in the world. An accident occurs every minute while every 4 minutes one person dies from an accident in India. To enable faster provision of first-aid facilities to help enhance the chances of survival for road-traffic accident victims, the concept of the Bike Ambulance was first initiated by the South Indian state of Karnataka in April 2015 through a Public Private Partnership with GVK EMRI.

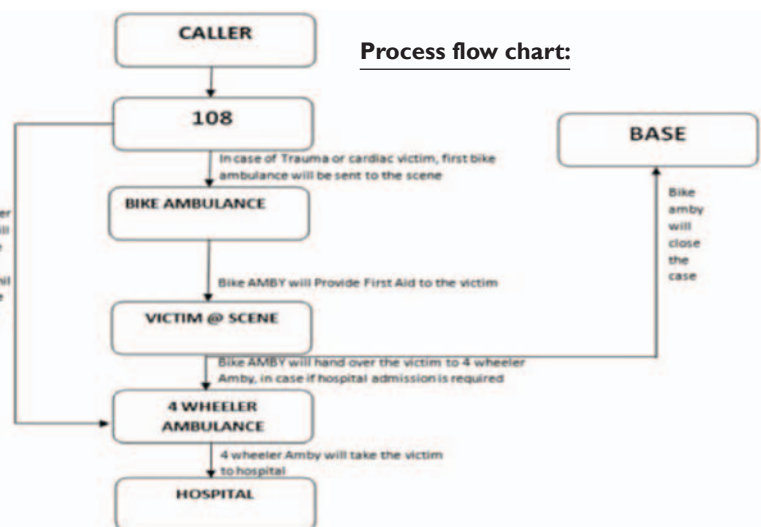
The Tamil Nadu Government followed with the launch of its Bike Ambulances in February 2016. At the time of writing, two more states are planning to initiate their own First Responder Bike Ambulance programmes.

GVK EMRI provides bikes in two states: Karnataka and Tamil Nadu. In Tamil Nadu GVKEMRI operates 71 bike ambulances and in Karnataka state there are 41 ambulances, meaning the total number of ambulances in service is 112. These Bike Ambulances function between 8am and 8pm only. By the end of August 2017 nearly 90,000 emergencies were attended, out of which Chennai city-based Bike Ambulances have

Features and Benefits -

- First Responder Bikes (FRBs) are operated by a trained First Responder Technician trained to provide First Aid
- For city-traffic-congested areas and prompt access to non-motorable locations
- To provide on-scene first-aid services and to stabilize the victims of road traffic accidents (RTAs) until the arrival of the four-wheeler (4W) ambulance.
- Reduces the response time for calls (average of 15 minutes from call to scene)
- First Responder Bikes (FRB) can be deployed to traffic intersections, hot-spots or congested areas where accidents are expected to occur
- Base locations for the FRB are kept dynamic depending on peak/non-peak hours and can be placed closer to the accident spots (hot-spots). Hot-spots are constantly reviewed for base-to-scene distance & timing.
- The FRBs undertake various Road Safety awareness activities
- Features a Public Address System for crowd control.
- Features a rear-mounted Medicine Box containing a portable oxygen cylinders and backpack to easily carry medicines and equipment to multi-storeyed buildings and emergency sites

Process flow chart:



Scene Management:

1. First responder reaches the scene and stabilizes the victim with first-aid till the arrival of four-wheeler ambulance.
2. First responder fills out Patient Care Record (PCR)



3. First responder will communicate to EMT in four-wheeler ambulance regarding the condition of the patient and also guide him/her through the route to the incident location when necessary.
4. Patients will be moved to four-wheeler ambulance soon after its arrival.
5. First Responder will share the Emergency case details with the EMT in the four-wheeler ambulance for further prehospital treatment while in transportation.

References:

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To find out more about GVK EMRI visit their website at: www.emri.in

Emergency Dispatchers Pull No Stops in Assisting Callers

By Audrey Fraizer, Managing Editor
 Journal of Emergency Dispatch,
 International Academies of Emergency Dispatch

Education and assimilation into the emergency dispatch system rooted around the world are focal points of the seven NAVIGATOR conferences sponsored by the International Academies of Emergency Dispatch® (IAED™). But the even bigger draw, the one commanding possibly the uppermost amount of attention, is the Dispatcher of the Year recipient announced in the Opening Sessions of each conference.

"This is the award that exemplifies what Dr. [Jeff] Clawson set out to achieve nearly 40 years ago," said Jerry Overton, IAED President. "This is the emergency dispatcher whose personal actions best illustrates the intent of the IAED process."

The choice is never easy, considering the calibre of nominations submitted to the IAED and the emergency calls the agency sends in as part of the packet. The award, however, is not based on a single call, although it can weigh heavily in the final selection.

After all, this is not an award for the "Call of the Year," said Greg Scott, IAED Operations Research Analyst. "This is about the emergency dispatcher who has achieved excellence in their quality of work and attitude."

The Awards Committee invests considerable effort in choosing the recipients. A call for nominations goes out six months preceding the respective NAVIGATOR, and once closed—at two months prior to the scheduled conference—the packets are distributed to the IAED Awards Committee for Review. Names of the nominees, however, are withheld to prevent partiality.

IAED Board of Certification Chair Pam Stewart said the committee looks at the "totality of the candidate's involvement with their agency," but that's just for starters.

"We look for the emergency dispatcher who exemplifies everything the IAED strives to teach and emulate to the public safety world: that of a compliant, passionate, compassionate, and dedicated professional," Stewart said. "We look for the person that plays a large role in the success of their agency, and the Academy, through their efforts, ability, and commitment."

Their dedication is often cited as inspiring and supporting the performance of others, so it makes sense that each recipient always

points to this major factor during his or her acceptance of the award.

"I couldn't have done it without my partners," said Dispatcher of the Year [US NAVIGATOR 2017] EMD Erin Berry, Loveland Police emergency communications, Loveland, Colorado, USA.

Berry was honored for professional excellence exemplified by her lifesaving efforts during a call that led to the revival of a high school student.

Now, the drum roll, if you will, for the Dispatchers of the Year from the Academy's most recent International NAVIGATORS: EURO (Sept. 12–14, 2017, Torino, Italy), UK (Sept. 18–20, 2017, Cardiff, Wales), and China (Oct. 12–13, Tianjin, China).

EURO NAVIGATOR

Christine Waegli, Manager, Ticino Rescue Center 144, Ticino, Italy, correlates the actions of EMD Fabio Di Vita to that of a warrior:

"Always ready to face any battle and adversity, he never pulls back in front of any conflict," according to the nomination. "He is always ready to fight."



Fabio (Euro)

Di Vita, who has been with the center since 2000, is credited with his precision and command with the medical ProQA® software and his willingness to lead the charge in protocol compliance.

But he's far more than just a common warrior; according to Ticino Rescue Director Sandro Muschietti, affirming Waegli's analogy.

"He has the ability to give maximum weight when it counts, especially in more complex situations," Muschietti states in the nomination. "He has the ability to lead both the group and the caller toward set goals. Behind this armor there is a great person, very sensitive, with the ability to be there at the time of need, to make a difference."

The call submitted with Di Vita's nomination demonstrated his efficiency in using ProQA to help the caller resuscitate her sister-in-law. Di Vita counted compressions, encouraging her throughout the call to continue compressions until the ambulance arrived on scene.

"Push hard. You are doing great. 1...2...3...4...1...2...3...4... Tell me when the fire department arrives, but don't stop until they are right there and take your place. Keep doing it. Good job! 1...2...3...4...1...2...3...4..."

UK NAVIGATOR

Taryne Davey, Yorkshire Ambulance Service (YAS), NHS Trust, Bradford, West Yorkshire, UK, exemplifies the "fantastic EMD" standout qualities in customer service and through the positive influence he has on the YAS communication center:

"He has the ability to lift the mood in the room; this is because he is always willing and happy to help any colleague who may need assistance," said Will Colam-Ainsworth, YAS Locality Manager, who nominated Davey for the award. "This enthusiasm is also matched



Davey (UK) with Pam Stewart

when he takes emergency calls regardless of what the situation is."

One of the two calls submitted demonstrated just how tough emergency dispatch can be and the cool head it takes to assist.

A 24-year-old female in labor was having contractions less than two minutes apart, but it wasn't until Davey provided the Medical Priority Dispatch System™ Pre-Arrival Instructions (PAIs) for Childbirth and Delivery that the baby's head started to present. When the head did present, the caller reported that the cord was wrapped around the baby's neck, and the baby's skin was purple. Upon full delivery, the baby was not breathing. Davey gave instructions to remove the cord from around the neck, and following this, the baby then started to breathe, and the color returned to normal.

"All throughout this call his customer service was to such a high standard, even though it was a distressing call and there where many

things happening at once," the nomination read. "For anyone listening in the room they would have never guessed what kind of job it was."

China NAVIGATOR

EMD HuangYini is resourceful, knowledgeable, and diligent in her approach to the Medical Priority Dispatch System (MPDS®) and its application among all emergency dispatchers at the Ganzhou Medical Emergency Center; Ganzhou, Jiangxi Province, China.

And it shows through two calls submitted as part of her nomination packet: one in which she gave PAIs for CPR and one in which she gave PAIs for Childbirth and Delivery.

Resourcefulness

A caller reported a male down on the ground, and—after dispatching the ambulance—Huang immediately proceeded to PAIs for ProQA. A malfunction, however, did not give Huang pause. She quickly switched to the cardset, asked the caller to verify breathing, and proceeded to give CPR PAIs. The patient was breathing normally by the time paramedics arrived on scene. The man survived.

Knowledge

This time it was a call reporting a woman in labor. Huang soothed the caller, sent the ambulance, and opened ProQA. Using the Childbirth and Delivery PAIs, she guided the caller through entire delivery, from positioning the mother to tying the umbilical cord. The mom and dad were so impressed with their healthy baby upon delivery, Huang had to convince them it was still important to accept transport to the hospital.



Huang (China)

The calls, according to the nomination, demonstrated Huang's ability to "give precise instructions" and to "give comfort" to anxious callers at every point.

Diligence

Huang is the agency "Q," and studies MPDS in depth.

"The two cases reflect the superiority of MPDS in pre-hospital emergency," according to the nomination, "which also demonstrated proficiency and high compliance of our dispatcher in using MPDS."

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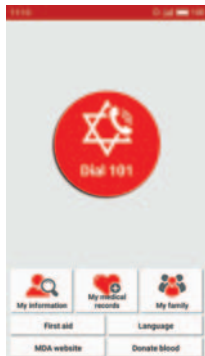


MDA: Leading the way in new technology

Technology and communication in EMS has come a long way since the early days of ambulances merely being patient-transporting vehicles. Today, communication is vital in many directions: between patient and Dispatch Centre; between dispatch and the crews in the field; between the crews and the Emergency Departments; and, more recently, between crews and specific departments such as Cath Labs or Stroke Units.

In Israel, Magen David Adom, the national EMS service, is at the forefront of such advances, leading the way in improving patient experiences and treatment.

Recently, a mobile app called MyMDA was launched. It is available, free of charge, to the general public, and has many valuable functions. Once downloaded, an entire personal and medical history, details such as name, contact details and address, ID number (all citizens have a personal ID number) and medical insurance, as well as medical records and documents such as ECGs can be saved to the app allowing the Dispatch Centre access to information that may prove vital for the crews. Details can be loaded for all members of the immediate family on one phone.



It allows for a quick, one-touch dial to the Dispatch Centre, and if used rather than regular-dialing the 101 number from the phone, automatically locates the caller by GPS, saving vital call-taking time, even when there's no mobile signal.

The app also allows for a direct video link as well as live photos taken from the scene of the call, allowing the call taker to see as well as hear what's happening at the scene, making dispatch decisions easier and more accurate. All call takers in Magen David Adom are trained at least to the level of EMT and all have on-the-road experience.

MDA moved several years ago from paperwork to tablets, and the available features have moved along with the technology. Call information is now sent to the crews via a dedicated, secure app

(different from the one above), and it allows for direct communication between the crew and the hospital. It's a long way from the CASMEET days, where priority information was relayed from the busy crew via an equally busy Dispatch Centre over the radio, leading to miscommunications on many occasions. Often the message that was received by the accepting hospital bore little resemblance to that which the crew transmitted.

Today, the crews are able to dial the relevant Emergency Department directly and speak with the nurse or doctor in charge and relay information in a far more accurate manner than communication by radio allows. The vital signs and ECG can also be transmitted directly via either the tablet or the app, reaching the destination in real time and allowing the crews at the hospital to be better prepared for the arrival of the patient.



CCTV cameras have also been installed in the ambulances allowing a live feed, only once patient permission has been received, to the on-call medical team in the MDA Dispatch Centre. This allows for a doctor (there is at least one on call 24/7), to better assist crews who may need extra permissions to allow them to treat outside of the protocols.

The technology allows for direct communication not only with Emergency Departments, but also with specialised units. Most hospitals nationwide have PPCI

capability and are now able to receive ECGs directly from the monitors on the ambulances. They are linked via the tablet and the app, then sent to the appropriate receiving hospital where a cardiologist receives the information directly to their smartphone, and can assess the ECG and decide if the patient is a candidate for direct access, or whether they should be assessed first elsewhere. In the majority of cases, the decision has already been made by the paramedic on scene, and the transmission is one of courtesy and to advise that the patient is on the way. It allows for the cardiology team to be confident that they aren't on stand by for a potential false alarm, but are preparing for a critical patient before they've even arrived across the threshold, and are thereby able to reduce further the door-to-balloon time and successfully treat more patients.

The same is now also true for certain Stroke Units across the country. In a programme that is currently being rolled out across Israel, crews who diagnose a suspected CVA or stroke can now contact the nearest Stroke Units, send the patient's details, vital signs, basic assessment and suspected diagnosis, allowing the hospital staff to prepare the CT scanner and any relevant staff or equipment for a possible procedure.

Magen David Adom is leading the way in the development of new technology, starting from the call taking process, rapidly identifying the location and condition of the patient, and improving outcomes by allowing faster and more accurate treatment, as well as direct access for patients to the level of care that caters immediately for their needs.

To find out more about MDA:
Email: info@mda.org.il
Facebook:
www.facebook.com/mdaonline

TASC Thanks East Midlands Ambulance Trust for Help in Making New Video

Staff at TASC, The Ambulance Staff Charity, have extended a huge vote of thanks to East Midlands Ambulance Service for help in producing a film that will showcase the charity's vital work.

The new video, which will be available on the TASC website shortly, is aimed at engaging and informing ambulance staff and the general public about what the charity does and how people can support it both now and in the future.

The film, which is being produced by Speak of the Devil TV, features a number of EMAS ambulance staff demonstrating the unique challenges they face in their roles and talking about the need for the continuing care and support that TASC provides, which ranges from psychological and physical rehabilitation services to financial advice or grants.



East Midlands Ambulance Trust staff being filmed for our new video in Nottingham.

The core message of the video, which also includes a number of scenes depicting how difficult and challenging the role of an ambulance worker can be, is: "looking after your own".

So, as well as raising awareness of the varying types of support that TASC offers, the film also calls on ambulance staff to support their colleagues by backing the charity, either through donations or fundraising or by signing up to become a volunteer.

TASC has warmly welcomed the help of East Midlands Ambulance Service in making the film possible, both as a result of the ambulance staff who gave up a large amount of their own free time in Nottingham to be part of the new film, but also the

organisation and input provided by the EMAS communications team to help make it all happen.

Sue Noyes, TASC Chair and former CEO of East Midlands Ambulance Service Trust, added: "I would like to give a warm thanks to all EMAS colleagues for their kind help in making this excellent film. Your support is very much appreciated and I'm looking forward to seeing the final film!"

Richard Henderson, Chief Executive at East Midlands Ambulance Service Trust, said: "As part of our dedication to supporting staff we work closely with TASC. They provide invaluable support for ambulance staff in their moment of need so we

were more than happy to support their charity film. Nine staff from our Hazardous Area Response Team (HART), frontline ambulance crews and control staff took part in the filming and really enjoyed giving their time to support such a worthwhile charity."

Nerina Villa, Creative Director at Speak of the Devil, said: "The video is very much a call to arms to support TASC, but also to portray the ambulance service as very much a family. The ambulance staff who took part were absolutely amazing and helped so much in making it look realistic."

As well as being viewed on the TASC website (www.theasc.org.uk) the film will also be available on social media.

TASC Unveils New Team

Meet the new team at TASC, which has been expanded to raise awareness of the charity as well as enable it to deliver further services and fundraise.

TASC is delighted that three new Trustees have been taken on to join the Board, namely Dinesh Visavadia, Edward Weiss and Nan Tewari.

Mr Visavadia, former Head of Pensions at John Lewis department stores, said: "TASC is a great charity to be involved with. I hope I can help move it forward in supporting as many people as possible as well as targeting more public engagement."

At the same time as the new Trustees, the number of staff based at TASC's head office in Coventry has increased from just two to six thanks to a grant from the Libor Funding initiative announced in last year's Autumn Statement.

TASC identified three main strands in order to secure the funding,

one of which was to achieve a sustainable income from supporters in the ambulance services and their families.

Of the two previous full-time members of staff, Jean Hayes has now become Director of Charity Operations while Angie Crashley takes on the role of Support Services Manager.

In addition, Rebecca Kemmer has now been appointed as Communications Executive, Marianne Curtis as Volunteer Coordinator, Lianne Burton as Business Support Coordinator, and Sam Leach as Admin Support.



The new TASC team: (rear, left to right) Marianne Curtis, Angie Crashley, Jean Hayes, (front, left to right) Rebecca Kemmer, Lianne Burton, Sam Leach.

For general information about TASC, The Ambulance Staff Charity, please visit www.theasc.org.uk or call 0247 7987 922. You can also follow TASC on Facebook at @TASC The Ambulance Staff Charity or via Twitter at @TASCharity

Canadian Paramedics come top in Turkey

The Paramedic Association of Canada along with several Canadian colleagues travelled to Antalya, Turkey for the Paramedik Dernegi (Paramedic Association of Turkey) V. Uluslararası Paradeik Kongresi Ve Ambulans Rallisi (5th International Paramedic Congress & Rally) on 2nd – 5th November 2017. The Paramedic Association of Canada was pleased to join our other international partners in sponsoring this unique event. The Congress was held at a beautiful resort just outside of the historic city of Antalya on the Mediterranean Sea, often referred to as the Turkish Riviera.

Attendees included several hundred Paramedics from across Turkey along with International attendees from Scotland, Iceland, United States, Qatar, Republic of Ireland and Canada. The diverse international delegates allowed for interesting conversations around the paramedic profession and networking between our international partners such as International Paramedic, Irish College of Paramedics, Paramedic Association of Turkey and the Iceland National Union of Firefighters and EMT-Paramedics.

The Congress began with a one-day competition or rally. Several teams from various regions across Turkey participated as well as one from Canada. The team from Canada included J.D. Heffern, Ben Ripley and Gord Perolli from Ontario. A unique mix of four countries entered a team appropriately named "United Nations." Team UN was formed that morning by four individuals who had never met prior to that day. They included Jodi Possia from Canada, Alp Oganalp from Scotland, Njall Palsson from Iceland and Marie Schoppe from the United States.

Teams had to complete one knowledge test and six scenarios that were staged at various locations around the resort, including a scenario in the Mediterranean Sea. Multiple awards were handed out based on individual scenarios. Team United Nations, having never met before, succeeded in winning a few individual scenarios. This is a testament to how similar paramedicine is becoming around the globe as such a diverse group of paramedics can come together and demonstrate delivery of exceptional patient care.

A true celebration was held to award the medals and trophies. This evening event included an abundance of Turkish dance and a suspense-filled room awaiting the announcement of the winners.

The Paramedic Association of Canada is proud to announce that the Grand Prize based on all aspects of the competition was won by the team from Canada! Congratulations to Ben, JD, and Gord for bringing home the trophy!



Team Canada - Ben Ripley, J.D. Heffner and Gord Perolli.

The congress programme included several speakers from Canada. Pierre Poirier, Executive Director from the Paramedic Association of Canada presented on two topics: Developing Paramedic Standards and the Future of Paramedicine in Canada. Additional Canadian speakers included: Michael Nolan presenting Drones in Cardiac Arrest, J. Albert Walker presenting Special Operations in Nova Scotia Paramedic Services, Matthew Leyenaar presenting Community Paramedicine Research and J.D. Heffern presenting Fentanyl Epidemic in Canada. The international programme was truly diverse as delegates had the opportunity to hear from each country in attendance.

Concluding the programme portion of the congress included Pierre Poirier, Executive Director of the Paramedic Association of Canada presenting the PAC flag to Turkish



PAC flag presentation - Pierre Poirier, Executive Director of the Paramedic Association of Canada presenting the PAC flag to Turkish Paramedic Association President, Mr. Gürkan Özel.

Paramedic Association President Mr Gürkan Özel. The flag presentation completed the formal relationship between Paramedik Dernegi and the Paramedic Association of Canada.



The 5th International Paramedic Congress & Rally ended with a formal gala featuring traditional Turkish music and dance along with acknowledgement of all those individuals responsible for organising this International event.

Traveling to Turkey has been a great privilege. This unique opportunity to build relationships Internationally is an important component of the Paramedic Association of Canada's strategic plan. We look forward to building our relationships globally into the future.

The Paramedic Association of Canada hosts a National conference in 2019 in beautiful Winnipeg, Manitoba, Canada.

We look forward to having our new friends and International colleagues join us in Canada in 2019 for Paramedicine Across Canada Expo (PACE), September 19 – 21 in Winnipeg, Manitoba.



Team United Nations - Njall Palsson from Iceland, Jodi Possia from Canada, Marie Schoppe from the United States and Alp Oganalp from Scotland.

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The International Association of EMS Chiefs Annual Leadership Summit moves forward to improve the US National Trauma Care System

This year the IAEMSC 2017 Annual Leadership Summit is continuing its efforts towards the integration of EMS into the 2016 National Academies of Science, Engineering and Medicine (NASEM) report, 'A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury.'

Working with members of the American College of Surgeons and other industry partners and

colleagues, attendees will convene for 3 days discussing report findings and working on strategies related to the 11 recommendations from NASEM.



IAEMSC President Paul Brennan said: "Our goal is to continue to take the great work by the NASEM committee

and work with leaders in EMS, the medical community and federal policymakers to integrate meaningful change.

"It will take EMS leadership and federal policy makers with innovative information-collection systems to push EMS to the forefront of trauma care. We are looking forward to working with the vast group of organizations that support the NASEM report to improve the trauma system in our nation.

"The leadership and members of

IAEMSC would like to wish everyone a safe and happy holiday season, and we hope to see you at our conference in December 2018!"



For more information about IAEMSC and the Annual Leadership Summit, please go to:

www.iaemsc.org

Just Ask - Could it be Sepsis?

"For a condition that takes 44,000 lives every year, it is astonishing how few people know what it is. That's one of the reasons we want to help highlight the dangers of SEPSIS to the public."

These are the words of West Midlands Ambulance Service Chief Executive, Anthony Marsh, at the launch of a new campaign to raise awareness about Sepsis. Each of the 47 new ambulances entering service with WMAS this year will carry information about the condition.

Unveiling the vehicles was Melissa Mead, who has campaigned to raise awareness of the condition after her one-year-old son William tragically died after a range of health providers failed to spot the condition. She was accompanied by Dr Ron Daniels, Chief Executive of the UK Sepsis Trust.

Sepsis, or blood poisoning, is the reaction to an infection in which the body attacks its own organs and tissues. If not spotted and treated quickly, it can rapidly lead to organ failure and death. The numbers are staggering – every year in the

UK, 250,000 people are affected by sepsis; 44,000 people die and 60,000 suffer permanent, life-changing after-effects. It's more common than heart attacks and kills more people than bowel, breast and prostate cancer and road accidents combined!



Last year new guidelines on sepsis were issued to the NHS which were developed by the UK Sepsis Trust in partnership with NHS England, the Department of Health and Public Health England.

West Midlands Ambulance Service is the first Trust to put the messaging on its vehicles. Trust Chief Executive, Anthony Marsh, said: "I am delighted that Melissa and Dr Daniels have come along to help us unveil these posters. Our staff know better than most just how important it is to recognise the condition and to act quickly to help save lives."

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New e-Tool to improve recognition and treatment of infants with bacterial meningitis

At Meningitis Research Foundation's (MRF) 2017 conference in London, the charity has launched a teaching package including a neonatal eTool to better equip doctors and health professionals to rapidly diagnose and treat bacterial meningitis in young infants.

Young infants are at higher risk of life threatening meningitis than any other age group. Newborn babies are particularly susceptible to meningitis

caused by Group B streptococcal (GBS) bacteria, E. coli or Listeria. The early symptoms of meningitis can resemble many other less serious childhood illnesses, but a baby ill with meningitis will usually get worse very quickly.

Experts at St George's University of London, in a study funded by MRF1, found that bacterial meningitis in infants may not be being diagnosed or acted on quickly enough by medical professionals. There was found to be a lack of recognition of

the signs and symptoms by GPs and in hospital; delays in starting antibiotics; choice of antibiotics not following NICE guidelines; and delays in performing lumbar puncture, which is essential for correct diagnosis of bacterial meningitis.

• New eTool for clinicians to improve their assessment and management of young infants who present with possible bacterial meningitis, launched at meningitis conference



• Research has shown that bacterial meningitis in infants may not be being diagnosed or acted on quickly enough by medical professionals

• Young infants are at higher risk of bacterial meningitis than any other age group

100th defib on Western Isles make it one of the best protected communities in the UK

A collaboration between the local authority, Comhairle nan Eilean Siar, and the charity Lucky2bhere has made the Western Isles one of the best protected communities in the UK in terms of life-saving training and equipment per head.

In a proactive local authority-led approach Comhairle nan Eilean Siar, which serves the whole of the Western Isles, has teamed up with Lucky2bhere and automated

external defibrillator (AED) manufacturers Cardiac Science to achieve the feat.

Together they have provided more concentrated access to an AED and comprehensive Emergency Life Support Training (ELS) than anywhere else in the UK.

The Western Isles covers an area from the Butt of Lewis to Barra, serving around 26,000 people. The 100th defib was presented last week to the management of the Cabarfeidh Hotel in Stornoway.



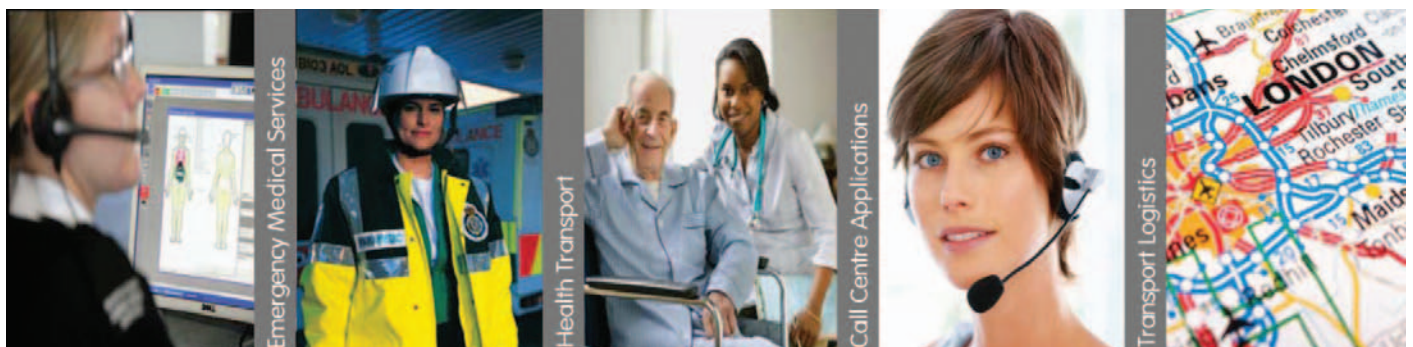
ELS training, including how to operate an AED, is now provided routinely by Lucky2BHere Eilean Siar

volunteers in all 24 secondary and primary schools across the Western Isles as part of the curriculum.

Bernard Chisholm, Director of Education for the Western Isles, helped create the framework for change by making AED provision possible and championing the ELS training. AEDs are now available 24/7 at every school in the Western Isles, both for school and wider community use, all signposted from local roads.



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NEAS: Patient satisfaction on the rise for NHS111 despite calls increase

Satisfaction with the North East's NHS111 service continues to improve – despite an increase of more than 50,000 calls over the last year.

As the region's NHS111 provider, North East Ambulance Service (NEAS) randomly selects around 1,500 NHS111 callers each month to find out about their experience of using the service using a survey called the Friends and Family Test (FFT).

Statistics from the last year show satisfaction levels continue to grow within the NHS111 service, with the latest FFT feedback from September 2017 showing 91.2% of patients would recommend the service to their family and friends.

This is in spite of an increasing number of calls; between July and September 2017, NHS111 call handlers answered 208,674 calls – compared to 158,661 during the same period last year.

During this time, there have been a number of improvements,

particularly from patients who reported feeling reassured by the service, having their problem resolved, and being able to speak to a call handler straight away.

The latest survey results come following a win at the Bright Ideas in Health Awards, held at the Hilton Hotel Newcastle Gateshead on November 15.

NEAS won the Primary and Community Care Category in recognition of its service which allows NHS111 call handlers to book GP appointments directly into a patient's surgery on their behalf.

Before the GP direct booking service was available, patients who were advised to see their GP following the NHS111 assessment were expected to make an appointment themselves. As well as the inconvenience and delay to the patient, this carried the risk of a patient not being able to get an appointment and subsequently calling NHS111 again or attending an urgent care centre or an A&E department.

Innovative new research animation explains why we need to look beyond response times

Ambulances should not only be measured on how quickly they respond to calls, but the quality of care given to all patients, research from the University of Sheffield has highlighted.

An innovative animation produced by researchers and patients highlights the problem with time targets and suggests new ways to assess what makes a good ambulance service.

Janette Turner, Director of Health Services Research at the University of Sheffield's Centre for Urgent and Emergency Care Research, said: "For many years the main measure used to assess how good an ambulance service is has been how quickly an ambulance gets to a patient."

"Given that fewer than 10 per cent of ambulance calls are for life threatening and time critical problems, it is important that we find better ways to measure how well they are performing that are relevant for everyone who uses the 999 ambulance service."

The innovative PHOEBE project – which stands for Pre Hospital Outcomes Evidence Based

Evaluation – is working with a range of experts including: researchers, paramedics, NHS

managers, policy makers, as well as patients and members of the public to identify which aspects of ambulance service care they feel are most important.

Andy Irving, Research Associate at the University of Sheffield and lead for patient and public involvement within the PHOEBE project, said: "Nowadays people call 999 for many different reasons and health problems."

"In recognition of this ambulances in England have been changing the way they work. However, many people still hold a fairly traditional view of the ambulance service simply transporting patients to hospital."

See the animation at:
www.youtube.com/watch?v=g2saLhBv9-U

For more information about PHOEBE please visit:
www.sheffield.ac.uk/phoebe



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IAA announces new directors

The IAA is pleased to announce the appointment of new Directors.

Alan Carter, Director of Service Development at G4S Healthcare Service, re-joins the Board. Alan has vast experience of contracting ambulance services, having previously been Head of Commissioning Patient Transport Services at Mid Surrey Primary Care Trust.

Andy King, owner and Operations Director for Hearts First Ambulance, having previously worked for several years in London Ambulance Service NHS Trust. Andy brings experience

of specialist repatriation of patients in the UK and across Europe.

Ed Potter, Managing Director of Arriva Specialist Mobility and leads on Arriva Patient Transport Solutions. Ed previously worked for London Ambulance Service NHS Trust, latterly as Assistant Director of Operations and Head of the Trusts fleet and logistics department.

Henry Bilinski, Henry is the Chief Executive Office for Healthcare and Transport Services (HATS) and has worked in the transport and logistics sector for over 30 years, joining the HATS group in 2008.

Jamie Smith, the Finance and Operations Director for North West Private Ambulance Liaison Services and has joined the Board as an Associate Director, part of the Associations succession planning. He was part of the small team which founded the company in 2012, having worked in an emergency care role within the NHS for 7 years.

"The appointment of these new Directors will provide new energy and expertise as the Association enters a new phase of its work on behalf of Member companies," commented Alan Howson, Executive

Chairman. "We're starting two major pieces of work soon: developing best practice guidance for Member companies in preparing for and managing CQC inspections and lobbying for a national PTS framework, which will be Co-Chaired by an IAA Director."



Arriva Transport Solutions' new report to make the industry 'more effective'

A NON-EMERGENCY transport provider has helped to produce a report that looks into making the industry 'more effective'.

Arriva Transport Solutions (ATSL), which has contracts to provide non-emergency patient transport in the South West and the Midlands, has teamed up with the Community Transport Association (CTA) to produce the report.

The report looks at the provision of non-emergency patient transport

(NEPT) and considers how innovations in NEPT could improve the quality and reliability of services. In producing this report, both CTA and ATSL interviewed a range of stakeholders across the health service, third sector, and private sector.

This report highlights the actions needed by commissioners, transport providers, and our communities, to improve patient transport provision and finds that there are six key areas that need to be

considered further to bring about improvements in Non-Emergency Patient Transport.

These are: creating an Environment of Innovations, Commissioning Practices, Patient Involvement in Service Design, Contribution from Stakeholders, Greater Involvement of Community Transport, and Collecting Data.

Ed Potter, Managing Director of Arriva Specialist Mobility added: "There is a compelling case not only for a greater role for community

transport in the provision of high quality specialist transport to healthcare, but also for a radical change in the commissioning environment so that this potential can be unlocked."



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Samsung Wins Home Office Contract to Supply Upgrade Emergency Services Network

Samsung Electronics announced today that the company has been awarded a contract for the supply of smartphones and related accessories by the Home Office for use on the emergency services network (ESN), which will see a new communications network rolled out to all police, fire, ambulance and other public safety users across the UK.

The LTE smartphones which will be supplied by Samsung were

developed through extensive R&D to provide the most suitable solution for the challenges which currently affect communication within the emergency services.



Fully optimised for the emergency environment, it will have a rugged design, be water resistant and both hardware and software features that will support emergency services functionality and critical voice services.

The new network will replace the current Airwave system which is mainly limited to voice radio. ESN will provide mobile broadband data services based on LTE, allowing a huge range of additional capabilities for frontline staff such as live-streaming video, crime applications

SAMSUNG

and location services. As Airwave is phased out in stages over the next few years, the Home Office and Cabinet Office expect substantial savings to the taxpayer.

The Emergency Services Mobile Communications Programme (ESMCP) will deliver the new network and devices.

For the latest Samsung news, please visit the Samsung UK Newsroom: <https://news.samsung.com/uk/>

Guernsey Ambulance Service's Chief Officer Retires

Jon Beausire has retired from Guernsey's St John Ambulance & Rescue Service following a 31-year career with the organisation, leading it as Chief Officer for the last 10 years.

Jon Beausire said: "I feel very privileged and proud to have led the Guernsey Service over the last 10 years. I have seen the care that we provide to the people of the islands improve significantly. Our responses to life saving calls has become quicker and more critically ill and injured patients are receiving

better medical treatment enabling them to be stabilised before they are transferred to hospital. Our professional staff are now able to diagnose and treat a wider range of medical conditions, working with the rest of the health service in Guernsey to ensure that patients receive the best possible care for their needs".

Mr Beausire became Guernsey's first registered paramedic in 1992 and has previously been the first clinician in Guernsey to undertake the nationally recognised courses

including Ambulance Aid and the UK ambulance response driving course.

During his career he served on various UK bodies including the National Ambulance Training Officers Group, Risk and Safety Group and the Ambulance Service Association's Civil Emergencies Committee, serving as secretary and acting chairman. Mr Beausire was a founder member and chair of the Offshore Islands Association, sharing best practice in the Crown Dependencies of Guernsey, Jersey and the Isle of Man, the Isle of Wight and Gibraltar.



Jon Beausire

Photo courtesy Chris George, Guernsey.

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Code Blue SV's End of Year Message

As 2017 draws to an end, it's time to take stock on what Code blue SV has achieved this year and look forward to next year. 2017 has been another great year for us; we have continued to supply both existing and newfound customers with some truly exemplary emergency medical vehicles. We have reinforced our position as the 'go-to' company for bespoke, state of the art vehicle conversions.

Highlights include delivering vehicles which support the vital work being

carried out by ECMO transport teams and recently being chosen to supply a prestigious University with a Paramedic Sciences simulation vehicle; this one of a kind conversion will truly be a game changer in the way Paramedic students are taught.



Looking forward, 2018 will see Code Blue SV continue to build on our achievements, working hard to reach out to customers that have yet to see the huge benefits in choosing us as a supply partner; and bringing more exciting ideas and technology to the market. Due to the increase in our medical equipment sales, we will be launching our new company called 'Critical1.' Critical1 will manage all medical equipment sales, and give our customers access to amazing medical equipment at fantastic prices. Finally, to all in the uniformed services that are working over this



festive period, thank you and stay safe!

Chris Manfield

Managing Director

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to be developed and improved upon increasing the amount of interaction and engagement experienced by trainees.

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The i-gel O₂ has been designed to facilitate ventilation as part of standard resuscitation protocols, such as those designated by the European Resuscitation Council (ERC) and the

American Heart Association (AHA). However, the i-gel O₂ incorporates a supplementary oxygen port, so it can also be used for the delivery of passive oxygenation as part of an appropriate CardioCerebral Resuscitation (CCR) protocol.



The i-gel O₂ gets its name from the innovative soft, gel-like material from

which it is made. It is the innovative application of this material that has enabled the development of a unique non-inflatable cuff. This means there is no need for cuff deflation prior to insertion and no cuff inflation after placement to secure a seal, shortening and simplifying the preparation and insertion procedure.

The i-gel O₂ is incredibly easy to use. Insertion is rapid and can normally be achieved in less than 5 seconds.

The pack includes a specially designed airway support strap for securing the i-gel O₂ in position. This makes it ideal for use where adhesive tape is unsuitable.



The i-gel O₂ Resus Pack – everything you need to prepare, insert and secure the i-gel O₂.

For further information, please contact Intersurgical at:

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Uniform Express buys Ambutek and adds to their industry-leading product range

During November 2017 Uniform Express Ltd bought the stock, website and trading name of Ambutek. This purchase solidifies Uniform Express's position as one of the major suppliers of Ambulance uniform to the private sector in the UK.

This has given Uniform Express a readily available stock of the dark green uniform preferred by some trusts, as well as a lighter weight bottle green shirt. Hopefully these

additions to our well established existing range will provide more choice for companies looking at the possibility of having to provide different uniforms for different contracts or customers. We have also placed significant further orders to give a level of continuity to this new range. To order these products please visit our web-shop at uniformexpress.co.uk, click 'shop' and then 'ambulancewear'.

In time we will be consolidating the product range; we will continue to



run both colours, bottle green and dark green, but there will be one hybrid style and size range. These specifications will be identified from

feedback from customers over the coming months.

This is an exciting time for Uniform Express in the ambulance sector as the recent launch of a softshell Jacket and bomber jacket at very competitive prices has proven popular with both PTS and Event/ Frontline staff.

To see Uniform Express's full product range please visit their online shop at: www.uniformexpress.co.uk

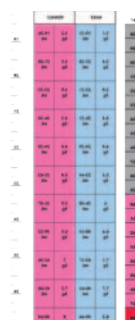
VoluTape: Solving the Ventilator Setting Problem for Critical Patients

Every critical care and trauma patient is time-sensitive, meaning a few moments can make the difference between a good outcome and a poor one. One of the most glaring examples are patients who require mechanical ventilation. To appropriately determine the initial settings on a ventilator, an accurate height measurement is necessary - most providers are not very good at estimating this, which can result in a patient having inaccurate ventilator settings.



age-old problem in the spring of 2016. He started working on a quick, simple, accurate ideal body weight

Burt Cox, a member of the LIFE STAR Critical Care Transport Team at Hartford Healthcare, Massachusetts, USA, had a 'eureka moment' when mulling over this problem and realised that there was a simple solution to this



therapists, and transport and critical care providers. In addition to the measuring side, there is a comprehensive reference side

(IBW) measuring tape for critical care. After months of hard work, and multiple revisions, VoluTape was born.

VoluTape provides a simple, quick, accurate heel-to-crown measurement for paramedics, respiratory

covering topics like: mechanical ventilation modes and settings, oxygen tank factors, and basic lab, hemodynamic, and acidbase values.

Burt explains: "I take great pride in VoluTape, and it is my sincere hope that this tool will help increase both safety and standardization for all mechanically ventilated critical care patients."

To find out more, please visit: Volutape.com

Email: wardwellcox@volutape.com

Tel: 001 (413) 687-9152

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