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The following U.S. patents may apply to portions of the MPDS or software depicted in this periodical: 5,857,966; 6,010,451; 6,053,864; 6,076,065; 6,078,894; 6,106,459; 6,607,481; 7,106,835; 7,428,301; 7,645,234; 8,066,638; 8,103523; 8,294,570; 8,335,298; 8,488,748; 8,494,868; 8,712,020; 8,971,501; 9,319,859; 9,516,166. The PPDS is protected by U.S. patent 9,516,166. The PPDS is protected by U.S. patent 8,396,191; 8,670,526; 8,873,719. The FPDS is protected by U.S. patent 8,417,533. Other U.S. and foreign patents pending. Protocol-related terminology in this text is additionally copyrighted within each of the IAED's discipline-specific protocols. Original MPDS, FPDS, and PPDS copyrights established in September 1979, August 2000, and August 2001, respectively. Subsequent editions and supporting material copyrighted as issued. Portions of this periodical come from material previously copyrighted beginning in 1979 through the present.
Art is a software instructor and IAED-certified EMD-Q® instructor for Priority Dispatch Corp.” He has been a fire and EMS dispatcher for 20 years and is a former air medical dispatcher. He currently works at Union County Regional Communications in Westfield, New Jersey (USA).

Heidi started in late 1993 in police dispatch and meandered down the career path of calltaking, backup fire dispatch, statistician, SARA TITLE III assistant, supervisor, and finally shift manager for the Harford County Department of Emergency Services in Maryland (USA). What an adventure!

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or St. Cloud (Florida, USA) Police Chief Peter Gauntlett, you can say there was no end in sight at first sight. Drones. How could he look away?

“I was excited about the prospects,” Gauntlett said. “A tremendous tool for public safety and very valuable in a growing area like St. Cloud’s.”

St. Cloud’s population hasn’t stopped climbing during the past five decades, seeing a whopping 36% increase between 2010 and 2017 (37,840–51,282) and, during that same period, adding about 1.75 square miles of mostly vacant unincorporated county land.1 A 57% increase in job growth is anticipated over the next 10 years as the city annexes contiguous land zoned for development.

Reasonable year-round temperatures, zero sales tax, better than average housing and job markets, and proximity to Walt Disney World account for a good part of the growth. St. Cloud residents also enjoy a substantially lower violent and property crime rate compared to the U.S. average. Keeping crime statistics down is, of course, bread and butter to law enforcement, but not the only indicator of successful policing. Changing times increase police expectations for their agencies and, also, the public’s expectations on police.

This is one place where drones fit so well into the total picture. St. Cloud has 12 drones on its force and seven (current number) operators who are Federal Aviation Administration (FAA) certified. The fleet responds to police, fire, and medical situations, day or night. They aid in crime prevention, natural hazard and manmade damage assessment (wildfires, hurricanes, and HAZMAT scenes, for example), traffic homicide investigations, suspect apprehension, and search and rescue. Plans include drone release from the communication center.

The possibilities are endless, Gauntlett said. “Drones are the tip of the iceberg in public safety potential.”

Read more about how agencies are incorporating drones in this issue of the Journal.
Dear Adele,

Thanks for this question. While I could probably overexplain the detail of the Academies’ structure that would go on and on, and bore you by administrivia, let me simply provide an updated Org Chart (see Figure 1) and make a few statements regarding the IAED’s greatly expanded scientific process and the extent of the Academies’ range and impact.

Doc,

I think I know a lot about what the Academy does by the regular output of new protocol versions, update guides, the various training curricula, CDEs, and QA standards. Even some completely new protocols like the PAIs for “Stop the Bleed” tourniquet application that I was “secretly” told about recently are apparently coming out soon.

What I don’t know as clearly is what the overall structure is of the actual organization that has done this for most of my career. Is there some kind of a chart or list of councils or groups that do all this stuff? By the way, do others appreciate this like we do?

Kind of an Academy fan ... Adele (full name and agency withheld)
Current facts: There are currently a total of 3,719 different discipline users: MPDS® (2,711), FPDS® (615), PPDS® (373), and ECNS™ (20). These are distributed through 53 countries and are translated into 25 languages and major dialects. The MPDS is used in over 80% of the United States’ 200 largest cities. This creates a very large user group with a call database of millions of calls that are now provided to the Academy’s Academics, Research, and Communications Division—which now has a total of 16 research experts: Ph.D.s, bioinformaticists, dispatch scientists, research technical writers, and research study managers, that have, as of now, published 108 scientific articles and studies with 30 in the chute (see Chart 1).

There is a specific feature of the Academies’ evolution process that actually supercharges the output process of all these protocols and standards—and that is the Academies’ Unified Protocol Theory and Process. Initially this idea, as you might imagine, was not so popular but was bolstered by the founding group’s strong and ongoing belief that there must be a single protocol that can be improved and evolved by an expanding scientific process that is then shared to all—rather than having myriad individual “protocols” (if that is actually what they are) that are controlled by local comm. center managers and, maybe or maybe not, a lone medical director. As I am not a process or evolution shrinking violet, I call this goofy process “an Academy of One.” Conversely, the Academies’ Unified Protocol process then means that each comm. center and medical director doesn’t have to essentially trip over the same problem or, worse, dead body before they think about “fixing” their homegrown protocol and program—and everything related to it that that then entails—all on their own.

Academy protocol research is now done on thousands and even millions of calls gleaned from 200 Accredited Centers of Excellence with extremely high protocol and process compliance—essentially accurate and believable output and resulting data.

Nobody, no single center, medical director, fire chief, or police chief can remotely replicate this continuous process and perpetual quality improvement machine—not when their “process” is based on “what if’s” and anecdotal singular experiences, that while maybe significant, surely aren’t shared with neighboring PSAPS, regions, provinces, states, and countries worldwide. The Academy does this—really! If it didn’t, I’d choose to be back in the ER caring for folks that my public safety friends will keep on bringing in like clockwork—but mainly only one at a time. The Academies’ Unified Protocol Theory works for me and 3,719 centers—as I hope it does for you and yours.

Best regards, always … Doc

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**RESEARCH TEAM PUBLISHED STUDIES**

*Overall Studies: N = 138*

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*Published Studies by Discipline*

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(Chart 1)
STOP AND SMELL THE TEA
What’s your defense mechanism?

Art Braunschweiger

In a previous column, I wrote what I imagined would be the perfect advertisement for an emergency dispatcher. If you saw yourself and your co-workers in that ad, there’s a reason: Most emergency dispatchers share what psychologists call a “Type A Behavior Pattern.” If you’re Type A, you’re likely to be competitive and goal-driven. You push yourself hard and are a superb multitasker. Anything less than perfection in your work is unacceptable. You’re also hypercritical, intolerant of the failings of others, and quick to display anger. Fortunately, when several Type A emergency dispatchers are in the same room, despite occasional conflicts they usually work well together because they tend to live up to each other’s standards.

But figuratively, it’s a double-edged sword. The very traits that make us highly successful can also work against us. Typically, we refuse to accept failure in ourselves and refuse to quit. Those are admirable traits when a major incident causes the call load to surge, but when we do get a chance to take a break, we don’t. Three days before I wrote this, I watched a fellow emergency dispatcher experience a mini-meltdown from stress. Yet when it slowed down and I suggested she step away and take a break, she wouldn’t.

Some dispatchers thrive on stress, up to a point. Some stress is good. If a busy day challenges or motivates you it can be physically and mentally beneficial. But once it stops being fun, the stress goes from good to bad. That’s when a break is needed. Type A emergency dispatchers, listen up: Drop the I-don’t-need-a-break mindset. When you can, get up and get away from your position. Even better, if you’re allowed, go outside. And not for a cigarette, either. (Do you really want to inhale all those cancer-causing chemicals?) If it’s warm out, soak up some sun and enjoy life outside for a few minutes. As the expression goes: Stop and smell the roses.

And smelling the roses isn’t just an expression. Your brain reacts to certain smells. Specifically, they trigger reactions within the limbic system, the area of the brain involved with instinct, mood, and emotions. Some people take advantage of this through essential oils, the highly concentrated chemical compounds distilled or pressed from the seeds, bark, roots, flowers, and other parts of certain plants. Not to be confused with perfumes, just a few drops of these highly aromatic compounds are enough when applied to the skin and the resultant aroma is inhaled deeply. Some, like rosemary, combat mental exhaustion. Others can trigger stress reduction and feelings of relaxation and well-being. (Ylang-ylang is reputed to be especially effective for stress-induced anger. What could be better?)

Plant-based remedies are thousands of years old, yet still not fully understood. And if you’re skeptical, consider the classic cup of black tea. A 2009 University College London study found clear stress-reducing benefits from the drink beloved by so many dispatchers. (It’s not the caffeine, so coffee drinkers shouldn’t feel smug.)

There are many other ways to reduce stress in and after the moment. They can be as advanced as progressive muscle relaxation or as simple as squeezing a stress ball. Find an effective and healthy practice that works for you, and then actually practice it. Stop talking about how stressful the job is, and do something about it. Don’t just say “I should.” Your body will thank you. So will your co-workers!
THE FAN HATES ME
Fight against your bad luck
Heidi DiGennaro

Walk into any dispatch center and ask, “Who’s the black cloud?” Everyone knows who the black cloud is—they know that when that person is working it’s going to be a wild ride, and that person is either proud or reluctant to claim the title.

For those not familiar with a black cloud, this is the poor soul chosen through no fault of their own to be the recipient of a proverbial “poop hits the fan” almost every time they work. For some reason, black clouds invite trouble. Black clouds have the printer run out of toner just by looking at it, the radio quits on them, the computer crashes, they attract the oddballs and one-off situations, and they are most likely to have drama on a simple alarm call. Put two black clouds together and you have a giant cluster of a day. Three black clouds and it’s time to put in a leave slip and go home.

I am a black cloud. The Fan hates me so much it loves to smack me often. Sometimes it will find things that would never happen or should never happen to use to splatter me. This isn’t my ego talking or me boasting; this is fact. Ask any of my co-workers. The first time I was EVER in charge the CAD crashed in the first hour. I called our CAD administrator; she said “Oh Sh-! I’ll be right there.” It was Christmas Eve. That was my introduction to being in charge.

When I was promoted to supervisor, I once had an entire week of absolute madness. In February. It was so bad that members of the administration named me the Queen of Death and Destruction, a name I have earned and maintained many times over. I would love to be dethroned, yet I am the Queen and the Drama Mama, chaperone to Madness, Mayhem, and Drama. When I train on the bad stuff, it happens within a week. I trained on severe weather operations ... and we had severe weather. I trained on aircraft emergencies ... and we had one. I trained on train incidents ... and we had one. The Fan hates me.

Why should you care if I am a black cloud? Because I found a way to fight The Fan and the black cloud by using training to create my umbrella to minimize Fan spray. If you are the black cloud or work with a black cloud, train yourself. You know when the mess comes, it’s going to punch you in the face, circle back around, and slap you again. Knowing what to do will make it easier to get through when The Fan splatters. Instead of it being a river of mud trying to drown you, knowledge of policy, procedure, and protocol can make it a trickle easily stepped over. What’s the protocol for Active Assailant? Learn it before it happens. What are the Rules and Axioms for train derailments? It pays to study it in advance.

Training can be done individually or with others. Talk through what you would do if something big happens. Think it through yourself. Read over plans, policies, and protocols. Make a game out of it. Sometimes creating a word search or having someone make a crossword can force you to learn. Create multiple-choice quizzes. Put a candy prize for whoever guesses the most answers or buy yourself that forbidden treat if you can answer a quiz successfully. Co-workers can make hard puzzles for you because we like to see you work hard at it, and it’s distracting during long midnight hours to make them up.

Black clouds will always exist in a dispatch center. The Fan will always give someone a good splatter because it’s the nature of our work. The question is how well can you train yourself to fight the splatter and come out (mostly) clean? One thing to keep in mind is you can be the worst black cloud—or in my case the Queen—and people will say, “So-and-so’s a black cloud, but they know their stuff.” That’s a huge compliment because it means your co-workers respect your abilities to handle the bad stuff. If you have any questions on training methods, contact me at hadigennaro@harfordpublicsafety.org.
**PRIORITIZE PLEASE**

Control hemorrhage or open airway in unconscious and bleeding patient?

**Brett Patterson**

**Brett:**

I have discussed this with several of my colleagues and would like to get some clarification.

I recently took a phone call for a 12-week pregnant female with a confirmed miscarriage (by the doctor, two days prior), which was stated in Case Entry. At the beginning of the call the patient was awake and breathing.

After going through Key Questions, I went to the Miscarriage < 6-month DLS Link. I asked the G1 question, “Is the afterbirth out yet?” and the caller responded, “She is unconscious now.” I then asked, “Is she breathing?” and he replied, “Yes.”

I was unsure if I should reroute to the Case Exit Protocol and give airway instructions or focus on the hemorrhage by giving fundal massage instructions.

**To me both are equally important, but in this case, what is the most appropriate PAI to give next (airway instructions or fundal massage)? And what is the best way to get there in ProQA® (from the G1 panel)?**

**Elizabeth Collins**

Emergency Communications Officer
North Communications Center
Alberta Health Services, Canada

**Hi Elizabeth:**

Excellent question and difficult decision.

Our Protocol tells us that “The airway of an unconscious patient must be constantly maintained” and, yet, in this case, we suspect that bleeding may be the cause of the unconsciousness. This is not unlike the cardiac arrest patient with severe hemorrhage. While CPR is obviously indicated, it is likely ineffective until bleeding is controlled. We recently rewrote the related Axiom to stress that both are important, but that when only one rescuer is available, CPR should be primary: “In cases of traumatic arrest associated with SERIOUS Hemorrhage, direct pressure on external wounds by a second rescuer, while CPR is initiated by a primary rescuer, may increase patient survival.”

I think in your case, however, because the patient is breathing, we should go ahead and stay on the MISCARRIAGE Pathway and do fundal massage.

If cardiac arrest is suspected, however, I would use the Sudden Arrest reset or Target Tool and get to CPR.

Unfortunately, we can’t be two places at once in the software so, if a second rescuer shows up, we should be able...
to provide simple airway instructions while we proceed with the scripted fundal massage instructions, keeping in mind that the Sudden Arrest reset or fundal massage instructions, keeping while we proceed with the scripted to provide simple airway instructions the Protocol.

So while the answer to your question is not based on an orderly rationale, I’m sure you can appreciate the consequences of such a dramatic change midstream.

Thanks for asking ... Brett

Hello Brett,

I hope you do not mind that I am emailing you directly with this question, but I wanted to find out exactly where the problem was so I would know how to address it. Thanks in advance!

Comp Desc: 2 patients with heat exposure, possible dehydration. One is in and out of consciousness, and the other is having a “pseudo seizure” that is possibly anxiety.

CT selects Protocol 20: Heat/Cold Exposure and is Fast-Track through Case Entry when she enters two patients. So far so good.

One patient DOES have chest pain 20-D-2 “Multiple victims (with priority symptoms).”

They are NOT completely alert—reconfigures to D-1 “Not alert.”

This is the problem I am having. Should it do this? There are still multiple patients with priority symptoms. I tried (in a later test call) selecting D-2 at the dispatch screen after answering “No” to completely alert, but after every subsequent question (“no” heart rx, “normal” skin temp, “yes” color change), it directs me back to the dispatch screen where it has again reconfigured to D-1.

So, I have to manually select D-2 several times in order to get that final dispatch code. I have a few questions:

- Why does the call reconfigure to D-1 when D-2 addresses multiple victims as well as priority symptoms?
- Once we have manually selected D-2, why does it keep going back to D-1? There is nothing in those last few questions that should cause that.
- Is this a logic issue that can be addressed that way or should I maybe be submitting a PFC to add a “Multiple patient” suffix for this protocol?

Darleen C. Pannell, ENP
Administrative Associate
Department of Emergency Services
Lynchburg, Virginia, USA

Hi Darleen:

I tend to agree that multiple patients, when priority symptoms are present, should probably trump the Not Alert code. I had a look at some other protocols where multiple victims are an option and the coding priority varies. For instance, on Protocol 8: Carbon Monoxide/Inhalation/Hazmat/ CBRN, the Not alert code takes priority over multiple patients whereas multiple patients trumps Not alert on Protocol 7. I will look into the logic concerning this.

However, in the meantime, did you know that you can set the cursor priority in the Admin.exe Utility of ProQA? I set the cursor priority to multiple patients for your Protocol 20 example. The result is a 20-D-2H code.

Just a note to follow up:

While we try to place the Determinant Descriptor codes in an acuity hierarchy, there is always some local variance concerning this order. And, as we add codes to the list, we tend to add to the bottom of the list to avoid shuffling the codes, which obviously creates a lot more work for agencies as response plans in CAD need to be changed. As a result, not all protocols have the same hierarchy among codes, and variance depends on the Chief Complaint and, also, the additions and deletions of various codes. It is therefore recommended that the cursor priorities in a given code set be re-evaluated when upgrading to ensure local assignments are as desired.

In looking at this example, however, most seem to agree that multiple patients with priority symptoms trumps a single not alert finding, so an order change is likely, although not before a major version upgrade as to avoid extra CAD work for agencies. In the meantime, cursor priority deals with the issue locally.

Thanks for the great question.

Brett
LITHUANIAN GOLD
European center’s work pays off

Becca Barrus

Lithuanian amber—also called “Lithuanian gold”—is the product of a long process beginning 50 million years ago. Drops of tree sap were carried by rivers into the Baltic Sea, where they settled to the bottom and, over time, turned into precious honey-colored stones valued by ancient Romans and modern artists alike.1

Speaking of being long lasting (and speaking of speaking), Lithuanian is one of the oldest living languages in the world. It has features of Proto-Indo-European grammar and structure, making it the closest living language to Sanskrit, an ancient Indian language that’s been around for 3,500 years. There are approximately 2.8 million native Lithuanian speakers in Lithuania and about 200,000 more abroad.2

The process of becoming an Accredited Center of Excellence wasn’t quite as long for Kaunas Medical Emergency Service Station (Kaunas, Lithuania) as the process of making amber or becoming one of the world’s oldest spoken languages, but the results are no less impressive. The center began using the Medical Priority Dispatch System™ (MPDS®) in October 2011 and achieved ACE in 2016, making it the only ACE in Lithuania and throughout Eastern Europe.

“We are constantly improving, and we want our work to be as high in quality as possible, so we decided to seek to become ACE and we succeeded,” said Donatas Paliulionis, ACE Administrator for Kaunas Medical Emergency Service Station.

The main challenge the center faced, Paliulionis said, was to reach and then maintain the quality requirements set forth by the International Academies of Emergency Dispatch™ (IAED™). But once Kaunas emergency dispatchers and administrators had their eyes on the gold, they didn’t let it out of their sight for a second. Continuous feedback was a huge component in achieving their goal, and they installed a dispatcher motivation system to inspire the emergency dispatchers to be the best they could be.

Long story short, it worked. But the work doesn’t stop there.

“With ACE, it was possible to establish an Emergency Communication Nurse System™ (ECNS™) center,” Paliulionis said, meaning that only

Jurate Kaminskaite, calltaker and dispatcher force commander
Medical ACEs are considered for ECNS implementation. “Next we want to become an ECNS accredited center.”

Kaunas is Lithuania’s second largest city—only Vilnius, the capital to the east of Kaunas near the border the country shares with Belarus, has a larger population. Kaunas Medical Emergency Service Station serves over 900,000 people over an area of about 26,000 square kilometers (16,155 square miles), encompassing the city of Kaunas and the surrounding cities. The Kaunas center fields roughly 204,000 medical calls a year and dispatches for 15 separate agencies within their jurisdiction.

The days at the Kaunas center are split into 12-hour shifts—a day shift and a night shift—and seven calltakers, two dispatchers, and two ECNS dispatchers are present during each shift. There is also a dispatch medical doctor on call 24 hours a day who advises the ambulances if they have questions and contacts hospital admissions departments as needed.

Like the rest of Europe, emergency callers can dial 112 and reach a Lithuanian emergency dispatcher. (Calls made by Russian-speaking Lithuanians are also taken by Kaunas emergency dispatchers.) They can also call 033 if they know for certain that their emergency is medical in nature. According to Paliulionis, the kinds of calls the center gets most often are about cardiovascular disorders, trauma and physical injuries, and syncope (fainting). Protocol 26 makes up about 30% of the calls they dispatch to EMS agencies.

In addition to dispatch-specific training, emergency dispatchers are encouraged to volunteer to be part of an EMS team so they can see firsthand the effects of injuries or illnesses they may have only ever heard over the phone.

One of the most recent developments the Kaunas center has experienced is the implementation of an AED Alert System, which is an app that went live in 2019 that alerts users—called “aid suppliers”—to nearby patients who need CPR. Aid suppliers let the app know their location at any time, ready to help patients up to 750 meters (1 mile) away. Some aid suppliers are sent directly to the patient and begin administering CPR, and some are sent to bring the nearest AED to the event. In the short time the app has been online, members of the community who are aid suppliers have been proven to start CPR before EMS arrives and use AEDs more frequently, increasing the survival of the patient.

Another special feature that Kaunas Medical Emergency Service Station utilizes is a Silent Call service, which is available for people with hearing disabilities. In the event of an accident or emergency, patients type 033 into their phone and receive a text telling them that EMS staff will arrive as soon as possible. The person’s mobile phone number is linked to his or her residence, so the service is currently only available if the accident takes place in the home. There are about 400 registered users of the Silent Call service in Lithuania, more than half of whom reside in Kaunas and the surrounding area.

Like every dispatch center across the world, not everything can go smoothly all the time and sometimes crises occur in the center in addition to on the other end of the telephone line. “Emotionally extreme calls are everyday routine for our dispatchers, so stress level is really high sometimes,” Paliulionis said. “That’s why we have had a psychologist in our center for several years.”

Staff have the opportunity to interact with the center-dedicated psychologist when they are overwhelmed by negative emotions after a hard call. Sometimes it takes the form of an individual conversation and sometimes complex cases are discussed as a group.

“We care about the psychological well-being of our team,” Paliulionis said, “so we try to find the difficulties they face at work every day, react to them here and now, and solve all problems as quickly as possible.”

This kind of mindset is grown out of the center’s idea that the successful relationship between emergency dispatchers and administrative staff is important. Good communication is vital to communal growth and improvement.

It’s clear that, like amber and the Lithuanian language, Kaunas Medical Emergency Service Station is here to stay and will only get better with age. Šaunuoliai! ●

Sources:
TOMORROW IS NEVER A DAY AWAY
Charles County prepares for the future today

Audrey Fraizer

Tomorrow is not a word you often hear at Charles County 911/Fire & EMS Public Safety Communications Center (PSCC), La Plata, Maryland (USA), at least in the context of procrastination. And that’s an understatement.

The PSCC is all over “tomorrow” in the sense of being ahead of the curve, looking into future possibilities, and planning an emergency communications system to accommodate its burgeoning population and keep pace with what appears to be a very busy place to live.

The county’s June calendar listed at least three public events daily—concerts, farmers markets, planetarium sky shows, civic meetings, and programs held to complement state and national observances. National EMS for Children Day on June 26, for example, provided evaluation and repair of the sick or injured stuffed animals in Charles County to highlight the availability of specialized emergency care for children.

This special day, set aside in the interest of promoting community awareness, reflects the dedication of emergency response and emergency communication staff to serving the community in all settings. Charles County’s 9-1-1 and Public Safety Communications Chief Tony Rose wants his communication staff ready for anything, and when the going gets tough, he and his administrators are in for the repairs.

“I want my staff to be like a Swiss Army knife, prepared for anything,” said Rose, who started his Charles County public safety career in emergency dispatch more than 40 years ago. “No matter the situation, there’s something everyone can bring to the table.”

Rose is like the knife’s main spearpoint blade. He points staff in the direction of the future. He is chair of the 9-1-1 Directors Committee at the Metropolitan Washington Council of Government (COG), which brings 911 leaders together to share best practices and, overall, plan the tomorrows of NG911 (things like regional interoperability and disaster pre-planning). He is also a governor appointee to the Commission to Advance NG911 Across Maryland.

As chief, Rose oversaw the center’s recent $4.6 million technology refresh and, in a nutshell, relishes anything that presents a challenge.

“We thrive on challenges,” said Antonella “Toni” M. Volpe, Support Service Captain. “We say, ‘We could be the first,’ and Chief Rose is right there.”

The false alarm reduction program established by ordinance in 1998 is a prime example. At that time, Charles County police, fire, and emergency medical services were responding to more than 8,000 false alarms each year and, in doing so, wasting an estimated 4,000 emergency personnel hours and many thousands of dollars annually. The program—a predecessor to the national False Alarm Reduction Unit (FARU)—requires annual registration of business and residential alarm systems.
and imposes fines against repeat false alarm offenders.

The program is a success. Over the past 10 years (the current long-term data), Volpe said the false alarm rate (number of false alarms per alarm user) has decreased by 41%.

Charles County has an area of 643 square miles and is surrounded on three sides by water. The communication center provides the county’s EMS and fire dispatch and dispatch for the sheriff’s office. The 40 emergency dispatchers handle an annual volume of 72,000 calls to 911 plus administrative calls, animal control, air evacuation, and, on occasion, emergency response assistance to neighboring jurisdictions. They provide backup for the U.S. Coast Guard and answer a fair share of shipping calls.

The center they’ve occupied since 2004 underwent a $4.6 million “refresh” completed in March 2019 to accommodate technical requirements of the NG911 platform (e.g., new computer systems, phone systems, and wiring), and compatible furniture and fixtures. Space was reconfigured to increase dispatcher positions (from 12 to 18). They are replacing the legacy 911 call delivery network with an Emergency Services IP Network (ESInet) and Next Generation 9-1-1 Core Services and are involved in a three-year process to improve interoperability with neighboring response partners in Maryland and the region.

Charles County Public Safety Communications Radio System Manager Jeffrey Clements is a member of the county’s broadband task force, which works with the state’s Rural Internet, Broadband, Wire and Cellular Service Task Force. The task force focuses on underserved areas that lack a population to attract competitive rates for broadband connections. He is also Vice President of the Mid-Atlantic Chapter of the Motorola Trunked User Group (MTUG), which allows Motorola users to hear about upcoming products and updates and voice their concerns and issues to Motorola.

A refreshed center; NG911; and police, medical, and fire protocol updates serve as a constant impetus to Volpe’s training objectives. She started the program from scratch six years ago and considers it a work in progress to meet expectations identified in the center’s revitalized performance standards.

Basic training takes nine months to a year, depending on experience, to achieve EMD/EFD/EPD and ETC certifications and proficiency at operating the radio system, the CAD, and the phone system. Drills and scenarios introduce what 911 calls trainees can expect on the floor. Promotion depends on successfully completing mandatory training, certifications, acquiring radio dispatch skills, and completing the Emergency Number Professional program.

Sometimes, Volpe might question whether the training is too complex for their center’s benefit.

“They [our employees] are definitely wanted by other jurisdictions,” said Volpe, who is in her second career, having spent 30 years prior in police communications. “We definitely set them up for success.”

A poignant reminder of their public safety commitment is shown in a video of Rose telling the story of Jacki, his teenage daughter who died in a car accident 20 years ago (1999). The nearly 10-minute film provides insight into the tragic consequences of one hasty behind-the-wheel decision to both high school students and emergency dispatchers. Rose learned of the accident that occurred in a county neighboring Charles while working in dispatch.

Rose said it wasn’t easy talking about the accident but, he said, the “tragic story that seldom gets told” gave Jacki the chance to remind teens that a sudden, rash decision can imperil their lives and rob the world of their potential.

Volpe includes that video in the center’s emergency communications academy to personalize the 911 experience, reminding trainees that they need to treat all callers with the same respect and empathy that they would use for family or friends.

“It is a profound lesson in humanity,” Rose said.

The accident is also a cautionary note to the capabilities of NG911. While Charles County looks forward to what future communications holds, they are also preparing to address the associated stress and anxiety real-time videos, texts, and other IP-compatible technology might cause an emergency 911 staff accustomed to answering calls and dispatching response in a nonvisual environment.

Assistant Chief of Public Safety Communications Christopher Roberts explained that an enhanced Critical Incident Stress Management (CISM) course geared toward 911 specialists would assist with helping them cope with images/videos that are imminent with text-to-911. The program’s conversation is in its early stages, in anticipation of what the “new landscape” will bring.

“I want my staff to be like a Swiss Army knife, prepared for anything.”

“...The profession as a whole wears a person down directly,” said Roberts, a volunteer firefighter for 15 years and in emergency dispatch for the past seven years. “We don’t know what they’re going to be exposed to or know directly what will happen.”

And just like everything else for Charles County 911 communications, it’s a tomorrow they’re preparing for.

*Editor’s Note: The video of Chief Rose is available at ccvfireems.org/apps/public/news/newsView.cfm?News_ID=378
Drones limited only by imagination

Audrey Fraizer
Unmanned aerial vehicles (UAVs or drones) are no longer flights of fantasy. They are the eyes and ears of science. They reveal hidden ancient artwork. They perform incredible feats under the direction of drone pilots navigating wherever their curiosity guides them.

The list is limited only by imagination, even as it applies to emergency services, and don’t expect drones to go away anytime soon.

“Drones are not a trend,” said Ivan Whitaker, Director, Comprehensive Client Implementations, Priority Dispatch Corp.™ (PDC™). “Initially, drones will take the lead in safety issues. They complement the technology to get more information for responder protection and, for the patient, save time critical to life and safety.”

Their future is limited only by imagination, as public services (police and fire/EMS responders and communications) embrace the technology, both in concept (the possibilities) and reality. According to the Center of the Study of the Drone database:

- At least 910 state and local police, sheriff, fire and EMS, and public safety agencies have acquired drones in recent years.
• Between 2009 and 2015, at least 148 agencies appeared to have started a drone program. In 2016, 258 agencies appeared to have started a drone program—more than all the prior years combined—and in 2017, 334 agencies appeared to have started a drone program. In 2017, the total number of agencies with drones increased by 82 percent. As of this writing, 120 agencies appear to have acquired drones in 2018.

Drones can be sent in to access dangerous law enforcement situations—such as an active shooter incident—thereby reducing risk to responders. They can document evidence at an accident scene during rush hour, relay thermal images of hot spots, locate people lost in difficult terrain, and measure, transmit, and store data to update topographic maps.

Drones will be a component of the IAED™ medical, fire, and police protocols and integrated as part of response configuration, Whitaker said. The process is in the earliest planning stages with consideration weighing heavily on factors prevalent to drone use in general.

“Drones will be pivotal in the way they shape communication and complement the goals of faster, safer, and more efficient information gathering,” Whitaker said. “We can deploy these. We can save lives. It’s something we’re getting ready for in the framework of thinking differently about feet on the ground response.”

But don’t start worrying about job security, Whitaker added.

Drones won’t replace individuals in EMS, he said. Rather, they will make the job safer for responders and, perhaps, more satisfying through the introduction of new tasks in communication.

Here are a few examples of current drone technology:

Beginning in 2020, an emergency dispatcher will send an ambulance while providing the caller with instructions on how to use the AED delivered by a drone. In March 2018, the drone company Flirtey received Federal Aviation Administration (FAA) approval of drone delivery flights beyond visual line of sight (BVLOS) in the Reno-Sparks-Carson City area in Nevada (USA).

Drones for search and rescue purposes in Scandinavia were implemented in June 2017 at Tylösand Surf Livesaving Club to locate swimmers in distress and help them through drone delivery of self-inflatable buoys.2

At Brewster Ambulance, Weymouth, Massachusetts (USA), initial plans for drones were their application in search and rescue, followed by HAZMAT, fires, and a handful of EMS functions.

“That turned into 15 to 30 flights within months,” said Chris DiBona, Brewster Ambulance Service, Director of Clinical Quality and Certified Drone Pilot. “We were doing bridge and pier inspections, overwatch for white sharks in beach areas, and roof inspections for snow weight. The applications now are limitless. You can use it realistically in any application you want to use it for. For a fair, at an event, for public relations, or to take images of our new building being constructed.”3

Remote mapping

A person could walk for miles in rural North Central Texas (USA) and see nothing but prairie grass, cotton and wheat crops, and the occasional longhorn cattle or a lone armadillo beneath the wide expanse of blue cloudless skies.

A lot of the rural region is the “home on the range” scenario with, nowadays, a drone or two off in the horizon. While some may never see the day an Amazon drone flies overhead, whisking packages to remote customers, there are certainly others heralding drones for services outside commercial or recreational ventures.

Take the North Central Texas Emergency Communications District (NCT9-1-1) for example. The 43 PSAPs in the 9,000-square-mile, 13-county telecommunications district provides service to roughly 1.7 million people without any sign of numbers abating any time soon.

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Polk County Sheriff’s Office has a fleet of 29 UAVs.
The Dallas-Fort Worth metroplex is densely populated, with a suburbia sprawling to accommodate the largest average growth rate of any state. Demographers say Dallas-Fort Worth will grow by 4.5 million more people in the next 20 years; Collin County is expected to double in population in the next 20. But back to where the buffaloes still occasionally roam.

Outside the megalopolis, long stretches of uninterrupted farmland on flat plains, rolling hills, and grasslands dominate the terrain. The plains are “Where the West Begins”—Fort Worth’s famous slogan—and where future growth will most likely affect at the fringes. Population growth is spreading into sparsely inhabited plains with the current and predicted rate posing more than a few challenges to NCT9-1-1, with GIS data collection for better call location accuracy among the chief initiatives.

That’s where their interest in drones started. The process traditionally in place for addressing new subdivisions in rural regions is time-consuming and outdated, explained Amelia Mueller, NCT9-1-1 Communication Director. Addressing coordinators manually drive roads with GPS devices to map road centerlines, site address points, and other GIS data layers, or they use hand-drawn plats from the county appraisal office. The smaller the community, the less often the geographic data is updated.

“Accurate GIS data is the foundation of NG911’s commitment to better call location accuracy,” Mueller said. “But with these methods it can take weeks or months before accurate data is available for telecommunicators.”

In unaddressed regions, the issue is compounded by a PSAP map showing an emergency call for an empty field and not the housing community under development. Without street markers and other geographical data, response time increases and, through no fault of EMS, jeopardizes the people seeking police, fire, or EMS assistance.

The NCT9-1-1 GIS team decided that there had to be a better way, Mueller said, and on Oct. 5, 2018, they performed the first pilot flight of their new UAS program to determine if drone technology could be more efficient in collecting GIS data. The team—led by GIS Manager Roger Mann and 911 GIS Supervisor David Dean—contacted the addressing coordinator in Johnson County, a 740-square-mile rural county in the NCT9-1-1 region, asking about a suitable test subdivision under construction.

Mann and Dean did the legwork before arriving on scene. They navigated complex legalities of UAS flight restrictions and FAA compliance and regulations. Next came what proved to be the hardest part in the long run. They needed written permission from landowners and developers to fly a drone over the 60-acre subdivision selected. It was a tedious process, but after tracking them down and securing their signatures, they purchased an Inspire 2 drone UAS, which is known for its mapping capabilities, and commenced to fly it.

The drone captured the defined imagery in a little over four hours, including the time it took for equipment dismantling, both Mann and Dean explained. The data was uploaded to a lab specializing in drone surveillance, and within 48 hours, it was available to the Johnson County address coordination team and Johnson County PSAP.

“What a huge difference,” Dean said. “Hours compared to the weeks it takes using manual methods.”

But timesaving wasn’t the only factor. The data collected by the UAS also proved to be superior, allowing for better imagery and more accurate dispatch maps. The second stage was applying the same drone technology in other counties in the NCT9-1-1 region. They visited county administrators and engineers for rules and regulations governing permission requirements to fly drones in manned air space. People they approached were intrigued by the possibilities.
“Everyone could see how it would make life much easier for us,” Mann said. “They were willing to assist in a matter of public safety; the problem was getting them to act on it.”

The overriding hurdle was the consent signatures. The NCT9-1-1 GIS team wanted a process standardized across counties to permit drone mapping and a process that would save the footwork of individually contacting the landowners and developers involved.

They proposed a bill in the Texas House of Representatives that would allow images to be captured by government entities “for the purpose of the provision of 9-1-1 service” (Tex. H.B. 3164, 86d Leg. R.S. (2019)). The bill was rolled into a package of five distinct drone proposals, which ultimately doomed its approval. The NCT9-1-1 GIS team is submitting the proposal again next term with the hope that the legislature considers it separately from the commercial drone ventures.

“It’s not on hold,” Dean said. “We’re all about call routing to enhance our ability to increase the accuracy and speed of 911 calls and getting the information into our databases. The obstacles take a lot of tenacity to overcome, and we’re trying different ways to approach them.”

Twenty-nine and counting

It has been almost two years since the Polk County Sheriff’s Office, Winter Haven, Florida (USA), rolled out the Aerial Response Team (ART) and their fleet of 29 UAVs. Not for a second has Sheriff Grady Judd looked back with anything but pride.

“Polk County is always on the cutting edge of technology, and this is a remarkable addition,” Judd said. “The Aerial Response Team enhances our ability to keep our community and our deputies safe. It’s great customer service.”

Customer service, in this case, means going the extra step to find a child reported missing, dropping a life preserver to someone struggling to stay afloat, directing K-9 units in apprehending criminal suspects, and leading a lost hiker to the right trail.

There are so many uses, Judd said, that they’re still coming up with ways to complement the work of the Polk County Sheriff’s Office’s five patrol districts. And the future holds even more promise, depending on the industry’s increasing technology and the latitude state government grants to the air space.

Florida drone law restricts law enforcement’s drone use to emergencies (specifically to a terrorist threat or “swift action” to prevent loss of life or to search for a missing person) and requires warrants for all other types of deployment. State law also prohibits the use of a drone to capture an image of privately owned property or the owner, tenant, or occupant of such property without consent if a reasonable expectation of privacy exists. Exceptions to the latter fall under the “swift action” clause, such as hostage situations or escalating domestic disputes.

The emergency role has led to celebrated search and rescue operations and apprehensions of criminal suspects, with the common denominator centered on the drone’s ability to “see” into dense or otherwise obstructed areas that are next to impossible to view through the naked eye. Drones have led stranded hikers out of swamps, pursued domestic violence suspects fleeing into the woods, and kept close watch during a tense standoff between police and a kidnapping suspect.

Each of the sheriff’s office’s five districts and their FAA certified drone pilots navigate drones launched from a specially designed ART vehicle. Deployment is an emergency dispatch response configuration much the same way as a K-9 unit, squad car, or, in large-scale incidents, mobile command vehicles. Nine of the drones are reserved for operations unique to public service but not specifically a law enforcement emergency. Polk County fire departments can request drone assistance to assess building and wildland fires, and narcotics detectives can seek a warrant for illegal drug surveillance. Medical use has so far been confined to assessing active traffic accidents for injuries and fatalities, although Judd
anticipates significant medical applications as the technology develops.

The many drone applications did not develop overnight. The sheriff’s office experimented with several drone models, studied national and state drone policy and regulations, trained and FAA certified ART team members (there are now 20 and many more standing in line to apply), and conducted an extensive community relations campaign. Judd did not want the public surprised when glancing up into the flight path of a law enforcement drone.

“That could have ended the project right there,” Judd said. “We operate in total transparency and emphasized how the technology will benefit the community. We needed citizen buy-in, and with that we’ve been able to avoid many of the complications you hear about.”

The future might not have flocks of public service drones in the airspace; however, Judd is keen on enhancing current operations, given factors such as less restrictive regulations, although he does support and understand privacy considerations.

“Wherever the science and technology go, the county will be there,” he said.

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### Polk County Sheriff’s Office

Statistics January 2019–May 2019

- ART has flown 363 missions—of those, 223 missions were drones-only, no helicopters.
- ART has a total of 250 flight hours—of those, 117 hours were drones-only, no helicopters.
- The missions have resulted in 13 suspect arrests and one successful search and rescue mission.
- ART has saved the agency $58,500 so far this year comparing fuel costs and man hours—meaning the flying of drones compared to using a helicopter instead.

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### Before takeoff

Before investing in flight, study the regulations and keep abreast of government policies.

Pilot-operators must obtain a remote pilot certificate (FAA’s sUAS Rule, Part 107). First-time pilots must pass an aeronautical knowledge test and register with the FAA.

UAV operations often overlap within controlled airspace, which is shared with manned aircraft. Approvals to fly in controlled airspace generally take up to 90 days, although the FAA’s Low Altitude Authorization and Notification Capability provides a traffic management service to secure authorizations near real time.

Government agencies who plan to build substantial UAS programs can apply for a jurisdictional Certificate of Authorization (COA) that relaxes flight restrictions and garners short-term approvals for emergencies.

An FAA Notice of Public Rule Making released in February proposes expanded sUAS capabilities, including flying over crowds of people and nocturnal flight. It could take a year or longer to finalize those rules after they are proposed, meaning widespread flights over crowds probably won’t be permitted until 2020 or later.

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### Sources

DIFFICULT TO STOMACH
From belly aches to aortic aneurysms, what’s emergent?

Becca Barrus

Unless you lead an extremely charmed life, you have probably experienced food poisoning at some point. Often, people mistake mild cases of food poisoning as a case of the stomach flu. In its most extreme form, it can be life threatening, but generally, it is not. After several hours of severe stomach cramps, dizziness, nausea, vomiting, and diarrhea, it can feel like your life is at its horrible and untimely end. There’s no specific medical treatment for most types of food poisoning—in most cases, advice is to keep well hydrated and let it run its course (so to speak). In addition to the common complaint of food poisoning, there are myriad other possible pathologies associated with abdominal pain.

As a patient, it can be difficult to know when one’s abdominal pain warrants a 911 call or trip to the ER. Consider the following medical scenario: A 67-year-old patient’s wife calls 911 due to her husband’s complaint of a tearing pain deep in his abdomen. She reports that his color does not look good, and he appears to be struggling. An ambulance is dispatched. When the ambulance arrives, the patient is found to have clammy, dusky skin and is no longer conscious. Despite the efforts of paramedics and the receiving emergency department physician and staff, the patient deteriorates, goes into cardiac arrest, and is unable to be resuscitated.

The cause of death is determined to be one of the most emergent medical conditions known: a rupture in the patient’s aorta from an abdominal aortic aneurysm (sometimes called a Triple A).

Most emergency calls about abdominal pain won’t have such a drastic ending. For the most part, abdominal pain is unpleasant but not lethal. As an EMD, however, you will likely field more than a few calls involving some kind of abdominal pain. Abdominal pain is one of the most common (non-traumatic) symptoms found in emergency room patients, and abdominal pain calls are the most common calls sent from dispatch centers using the Emergency Communication Nurse System™ (ECNS™) to be managed by a nurse for further, secondary, medical triage.

So how can you sort the serious from the not-so-serious calls in the dispatch center? Protocol 1: Abdominal Pain/Problems in the Medical Priority Dispatch System™ (MPDS®) is here to help.

Ab-solutely agonizing

One of the most important things to remember when taking a call involving...
abdominal pain is Axiom 2 on Protocol 1: “Severity of pain is not related to the seriousness of the problem.” A patient can be stuck in the fetal position on the floor due to severe pain, but that doesn’t necessarily mean the medical problem causing the pain will warrant a DELTA response. There’s a reason none of the Key Questions in the protocol asks patients to rate their pain on a scale from one to ten.

Your abdomen houses a good chunk of your body’s organs, like the stomach, the colon, the liver, the intestines, the gallbladder, the appendix, the esophagus, and the reproductive organs. In other words, there are lots of probable causes for abdominal pain, and when a caller says “my stomach hurts” it’s your job to quickly assess whether that pain is life threatening or not based on other symptoms. As Gigi Marshall, RN and ECNS Program Administrator, said, the very first thing you need to do is rule out red flag symptoms that could indicate an emergent condition.

One of those red flags is the patient’s alertness, which is determined by Key Question 1. This does not just mean that the patient is conscious—it also means that he or she is responding appropriately to external stimuli. If a patient is awake but acting unusual, that means that he or she has an altered level of consciousness. A decreased level of consciousness (such as Not alert) in a patient indicates that there could be a problem with either circulation or tissue oxygenation and, as you know, the circulation of oxygenated blood is crucial to human life.

“A change in the level of consciousness from baseline is one of the earliest and most sensitive signs of insufficient tissue oxygenation,” Marshall said.

If a patient is reported as “Not alert,” that will warrant a 1-D-1 Determinant Code.

In addition to an insufficient oxygen level, decreased blood flow is also a priority symptom in patients with abdominal pain. Determinant Code 1-D-2 “Ashen or gray color reported ≥ 50” does not have a corresponding Key Question. Unlike in Protocol 6: Breathing Problems, you won’t ask if the patient’s skin is changing color; you should only pick 1-D-2 if the caller volunteers the fact that the patient’s skin is ashen or gray (if they are 50 years and older).

What does ashen—which can also be described as pale or gray—skin indicate? Conrad Fivaz, M.D. and Clinical Director of Priority Solutions™, said that it is generally a result of shock due to blood loss or a low circulating volume.

You see, when a body is low on blood, the remaining blood in circulation is shunted to the most vital organs, like the heart, the brain, and the lungs, away from the nonvital organs, like the stomach or the skin. The reason skin looks pink and “alive” is because of the flow of oxygen-rich blood. So if someone’s skin looks gray, it means that they have lost enough blood volume that what’s left is being sent away from the skin. Blood loss is not the only reason skin can become ashen or gray, but it is a common one.

Age: It’s not just a number

The patient’s age is important in Protocol 1, as opposed to Protocol 26: Sick Person (Specific Diagnosis) or Protocol 30: Traumatic Injuries (Specific) where none of the Determinant Codes mention the patient’s age. Abdominal pain in women 12 and older—the age at which women could potentially bear a child—could be due to an ectopic pregnancy. Ectopic pregnancy literally means a pregnancy outside of the usual place (the uterus). Rarely, a fertilized egg may implant in the abdomen. The most common location for an ectopic pregnancy, however, is in the fallopian tubes. And since pregnancies are designed to take place inside the uterus, things can get dangerous very fast with an ectopic pregnancy due to the eventual rupture of the fallopian tube and consequent internal bleeding. Ectopic pregnancies are not extremely common, but they are dangerous and must be ruled out before other diagnoses can be considered.

If the patient, male or female, is over 50, Key Question 2 has you ask if he or she has been diagnosed with an aortic aneurysm and, if the answer is no, to
when part of the aorta’s wall becomes abnormally large or balloons outward. One can have an aortic aneurysm and not have any symptoms. Fivaz says that an aortic aneurysm can be caught when a doctor is performing an ultrasound, CT scan, or MRI to check something else out. As long as it’s under a certain diameter, there’s typically no surgical intervention. The course of action is to regularly monitor the size of the aneurysm with the doctor informing the patient about which symptoms to look out for if it dissects, ruptures, or tears.

If, after you ask Key Question 2a, the patient describes the pain as “tearing” or “ripping” in the back, flank, or abdomen, you should triage the call as a “SUSPECTED aortic aneurysm” (Determinant Code 1-C-1). Like an ectopic pregnancy, aortic aneurysms aren’t the most common cause of abdominal pain in this age demographic (50 and older), but it is the most emergent and must be ruled out as quickly and efficiently as possible.

and this is why age and gender ranges are considered.

“Epigastric pain is also likely to be indigestion, especially in that age range,” Fivaz said, “but we’d rather err on the side of caution and overtriage instead of undertriage.” Any seasoned emergency department physician, nurse, or paramedic has treated patients who have gone into cardiac arrest after treating their symptoms with antacids.

Determinant Code 1-A-2 “Testicle or groin pain (male)” was added to MPDS v13, despite seeming, at first glance, not to fit in with its abdominal compatriots. However, Fivaz said it is not uncommon for a time critical condition like testicular torsion, which is when the testicle turns on its own axis and cuts off blood supply, to present with lower abdominal/groin pain. In most situations, it is not a result of a traumatic injury and happens spontaneously. Keep in mind that the pain may have been present for a while before the patient calls, and that it’s a matter of hours, not minutes, when irreversible damage can occur. In severe cases, where the blood supply has been cut off for a number of hours, the testicle might not be salvageable.

Does testicular torsion qualify as emergent? Yes!

“Anything that could compromise life, limb, or function is emergent,” said Marshall, and since testicular torsion could result in a preventable loss of testicle, it counts.

Take it away

What’s important to remember in an abdominal pain call? First, level of alertness. If patients aren’t getting sufficient oxygen or blood flow, they’re in trouble. Second, age. Age is a big factor in potential ectopic pregnancies, aortic aneurysms, and/or heart attacks. And third, even though ALPHA-level codes aren’t DELTAs, they can still be emergent.

You never know if a patient’s abdominal pain is benign or lethal, so treat every case with caution to ensure the patient gets the best possible care.

Not quite abdominal

What’s the deal with having two Determinant Codes specifically for abdominal pain above the navel (one for males 35 and older and one for females 45 and older)? According to Marshall, the blurring of the area distinguishing between abdominal pain and chest pain is addressed in the protocol because atypical symptoms of a heart attack—more commonly in females—might present in the abdomen but above the navel (also called “epigastric pain”). Heart attacks are much more common in women 45 and older and in men 35 and older than they are in younger people,
1. Abdominal pain calls are the most common calls sent from dispatch centers to nurses using ECNS.
   a. true
   b. false

2. Axiom 2 on Protocol 1 states:
   a. “Alert patients with abdominal pain and a confirmed diagnosis of aortic aneurysm should be coded as 1-C-2.”
   b. “Pain described as at the level of the navel should be considered below the navel.”
   c. “Severity of pain is not related to the seriousness of the problem.”
   d. “Ectopic pregnancies often present before the patient knows she is pregnant.”

3. Which Key Question helps you determine the patient’s alertness?
   a. Key Question 1
   b. Key Question 2
   c. Key Question 3
   d. Key Question 4

4. Level of consciousness is one of the earliest and most sensitive signs of what?
   a. aortic aneurysm that is stable and being monitored
   b. testicular torsion that has gone on for over an hour
   c. ectopic pregnancy in the fallopian tube
   d. lack of sufficient oxygen being delivered to the tissues

5. If a caller spontaneously tells you that her mother, who is 65, looks ashen in addition to having abdominal pain, which Determinant Code would you choose?
   a. 1-D-1
   b. 1-D-2
   c. 1-C-1
   d. 1-C-2

6. At what age is abdominal pain in a female considered an ectopic pregnancy until proven otherwise?
   a. 12
   b. 16
   c. 19
   d. 21

7. An ectopic pregnancy can only take place inside the fallopian tubes.
   a. true
   b. false

8. After the age of 50, a person of any gender is more likely to develop what in their aorta?
   a. ballooning
   b. blocks
   c. clots
   d. murmurs

9. How is the pain of an aortic aneurysm beginning to rupture most likely to be described?
   a. “aching” or “tender”
   b. “burning” or “hot”
   c. “stabbing” or “sharp”
   d. “ripping” or “tearing”

10. Determinant Code 1-A-2 “Testicle or groin pain (male)” was added to Protocol 1: Abdominal Pain/Problems in which version of the MPDS?
    a. Version 12
    b. Version 12.2
    c. Version 13
    d. Version 13.2

To be considered for CDE credit, this answer sheet must be received no later than 10/31/20. A passing score is worth 1.0 CDE unit toward fulfillment of the Academy’s CDE requirements. Please mark your responses on the answer sheet located at right and mail it in with your processing fee to receive credit. Please retain your CDE letter for future reference.
Hikers get injured and lost, although not always in that order or during the same adventure, and weekly digests compiled from calls to central dispatch serving New York state’s Adirondack Park proves that the occasional misstep is part of the great outdoors.

On July 13, 2019, at 10:30 a.m., Greene County 911 (Cairo, New York, USA) transferred a call to New York State Department of Environmental Conservation (DEC) Central Dispatch from a hiker who suffered an unstable left ankle injury while walking on the rocks in the middle pool of Kaaterskill Falls. Two assistant forest rangers provided patient care and splinted the injured ankle. The hiker was placed in a litter equipped with a rescue wheel, carried out to the trailhead to an awaiting ambulance, and transported to a local hospital for additional care.¹

On June 24, 2019, at 2:42 p.m., Franklin County 911 (Malone, New York) transferred a call to DEC’s Ray Brook Dispatch from two hikers who had lost their way down from Saint Regis Mountain. Coordinates obtained from their cellphone placed the pair at 2,500 feet in elevation, just south of the trail in a drainage area on the west side of the peak. Forest rangers responded to begin search efforts, intercepted the couple, and found them ill-prepared for the hike (minimal gear and water and no compass). A forest ranger gave the hikers his water and walked them to the trailhead.²

New York State DEC forest rangers are extensively trained in backcountry search and rescue within New York state, including the six-million-acre Adirondack Park in northern New York state. Relying on skills in advanced first aid, land navigation, and rope rescue, they organize and conduct search and rescue operations to find people reported lost or missing, and downed civilian aircraft in often wild and remote areas.

Though several outlying communication centers forward calls to DEC dispatch, limited radio transmission in mountainous areas has led to the planned construction of an estimated $350,000 tower, funded by privately-raised donations, to provide faster response and enhanced safety for search and rescue (SAR) crews.

SAR crews are equipped to fit the terrain or mix of terrain they cover, including ground, air and sea, mountain, cave, and urban. The crews are as diverse as the countries from which they originate. For example:

• In the United States, SAR responsibilities exist at the national, state, and local level. SAR standards are developed primarily by the American Society for Testing and Materials (ASTM) International and the National Fire Protection Association (NFPA) and

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GO TAKE A HIKE

New protocols keep in step with great outdoors

Audrey Fraizer
used by SAR operations to develop training that meets or exceeds these standards. In Utah, for example, SAR is organized by county. Each county sheriff’s office is charged with all SAR operations. County resources and team size vary from 6-60 members.

- In Canada, SAR is a shared responsibility among federal, provincial/territorial, and municipal organizations, as well as air, ground, and maritime volunteer SAR organizations; the Search and Rescue Volunteer Association of Canada (SARVAC) represents the 13 provincial and territorial volunteer Ground SAR Associations in Canada.
- In Australia, the Joint Rescue Coordination Centre (JRCC) coordinates maritime, aviation, and beacon-related incidents that fall within the Australian SAR region (the Australian continent and large areas of the Indian, Pacific, and Southern Oceans, and the Australian Antarctic territories).

Search and rescue protocol

To assist in the decision-making required in the preparation and response readiness for search and rescue operations beginning at the emergency dispatch level, the International Academies of Emergency Dispatch (IAED) developed two new protocols for Fire Priority Dispatch System® version 7.0 directed at SAR operations. These new protocols are Protocol 78: Backcountry Rescue and Protocol 79: Lost Person. New Protocol C covers instructions to aid the caller in a backcountry hazard.

Both protocols were developed to better enable Emergency Fire Dispatchers in the handling of search and rescue efforts, including help in determining any specialized teams or equipment that may be required. In each, the level of outdoor experience is queried along with knowledge of injuries among the people involved. A key objective is minimizing any related threat to responders by an EFD’s ability to gather pertinent information, either from a first- or third-party caller.

The final Key Question in both protocols asks for the “level of outdoor/backcountry experience.”

The protocols do not identify the type of equipment or the procedure necessary. As in all protocol, the tasks of developing plans and procedures that classify hazards, identifying the types of resources specific to response, and formulating and implementing a corresponding plan is up to local jurisdiction. Like all Chief Complaints, the new protocols have two editable agency-defined Case Exit Instructions (CEIs) added to them.

Two editable CEIs added to each Chief Complaint Protocol allow agencies to add local contact information or agency-specific information that will help dispatchers.

Despite similarities in reasons for creating them, there are notable differences between the protocols.

Protocol 78: Backcountry Rescue

Protocol 78 addresses callers trapped in an avalanche, crevasse, cave/abandoned mine, high angle terrain, or any inaccessible area (in general). Answers to the protocol’s Key Questions provide more precise information for emergency crews regarding the location, weather situation, and type of equipment needed. In addition, the protocol features several new definitions, and these include two Special Definitions, several suffixes, two editable CEIs, and two Description Essentials sections.

The protocol addresses single or multiple people trapped in the type of situation described. The five associated suffixes identify associated hazards and the number of people involved to help clarify the type of specialized team and equipment necessary for optimal search and rescue, for both the people trapped and SAR responders: H=Rising Water, W=INCLEMENT WEATHER, M=Multiple sick/injured persons, B=Both INCLEMENT WEATHER and Multiple people involved, or C=Both Rising water and Multiple sick/injured persons.

Two new Chief Complaint Selection Rules further clarify the use of Protocol 78:

- Chief Complaint Selection Rule 16: “If a landslide/mudslide occurs in a rural or other environment that is difficult to navigate or access in a timely manner (due to remoteness, mountainous terrain, high altitude, steepness,等.), use Protocol 78.”
- Chief Complaint Selection Rule 17: “If a HIGH ANGLE rescue incident occurs in a rural or other environment that is difficult to navigate or access in a timely manner (due to remoteness, mountainous terrain, high altitude, snow, ice, steepness, etc.), use Protocol 78.”

Chief Complaint Selection Rules provide the dispatcher with set circumstances for when certain protocols ought to be used.

Protocol 79: Lost Person

Protocol 79 focuses on gathering as much information as possible about a lost person and where he or she might be located. Three suffixes identify W=INCLEMENT WEATHER, M=Multiple people involved, or B=Both INCLEMENT WEATHER and Multiple people involved. This new protocol was created to better handle these types of calls from first- and third-party callers and, again, helps determine any specialized teams or equipment that may be required to affect the response.

A person reported as lost is assigned a CHARLIE-level Determinant Code (79-C-1). This could be a first-party caller who is lost or a third-party caller reporting a person who is presumed lost. Key Questions focus on the individual—destination, intended route, description of the individual and clothing, and any known medical conditions that might exacerbate the situation.

Protocol C: Backcountry Hazards

The new Protocol C includes instructions for AVALANCHE rescue, HIGH ANGLE TERRAIN or INACCESSIBLE AREA rescue situations, and instructions for how to survive in the backcountry. For example, instructions are included on how to use beacons and an avalanche probe when locating a person trapped in an avalanche and, when located, directions for digging out the person.
Protocol and SAR field methods

The three protocols (78, 79, and C) mesh with standard search and rescue techniques.

Inaccessible areas (Protocol 78) require specialized equipment, depending on the situation, and can deploy helicopters, climbing teams, and rescue dogs. Avalanche and crevasse SAR can be extremely complicated, and training is deemed mandatory for mountaineers and backcountry snow skiers.

For example, Yosemite National Park Search and Rescue (YOSAR) uses search dog teams, “YODOGS,” as part of the Yosemite’s SAR emergency service. According to the YOSAR website: The Park has used this specialized canine resource since 1999 when it was recognized that there was a need for a group of experienced canine search dog handlers that had strong backcountry search skills, knowledge of the Park, and who were able to operate in the Park’s remote environment with minimal support for several days. Backcountry canine search dog teams can typically search large areas and are able to operate in most weather conditions with minimal support. The dog teams are sometimes transported via helicopter into remote areas and are used to being rappelled or belayed with their handlers into or out of otherwise inaccessible areas.

Avalanches can occur on any slope steeper than 30 degrees and most often occur on slopes of 35 to 50 degrees. Chances of survival depend on length of snow burial and the victim’s core temperature (barring fatalities from impact injuries). Getting trapped by an avalanche can result in hypoxia, hypercapnia, and hypothermia. Rapid extrication is paramount. Unconscious victims without spontaneous respiration require transport with continuous CPR to a specialized hospital for extracorporeal re-warming. Within Europe and North America between 1994 and 2003, the median annual mortality from snow avalanches was 141.9

Protocol 79, Key Question 3 for third-party callers, asks “Where was the person last seen?” If unknown, “Do you know where s/he started from?” The question is directly related to Point Last Seen (PLS) SAR field search methods. PLS is the point on the map where the person was last spotted by a witness with a positive identification. It might be a designated trailhead, campground, boat dock, parking lot, or cliffside bivouac. If SAR knows for certain the lost person was seen two hours ago, it provides a place to begin the search. Starting at that point, SAR can estimate how fast the person is traveling and, in theory, end up with a circle with the PLS in the center and the radius of the area in which the person might be found.

Protocol 79, Key Questions 4 and 5 involving the person’s intended destination and intended route, respectively, assist in determining the Last Known Position (LKP). For example, if the person is hiking a trail and searchers have a good unique shoe print, a tracker can often find the same print along the trail, at a stream bed, or near an extinguished campfire and know beyond a shadow of a doubt that the person left the clue. Since the LKP is more recent than the PLS, SAR basically has a new starting point for the search. Knowing just these two points allows SAR to determine general direction of travel and approximate speed of travel.

ProQA only changes in FPDS

A special selection and sorting feature called the Sub-Chief Complaint (Sub-CC) Selection Tree provides a more direct way of entering the information determined through Case Entry interrogation when selecting and determining the Chief Complaint (CC) and eliminates the problem of selecting CCs with multiple items listed (compound titles).

The new Smart DLS Link feature highlights the pertinent DLS Links on the PDI/DLS screen based on the known facts and answer choices selected in each case.

The new Smart AIs selects relevant additional information, definitions, and lists associated with a specific Key Question, and they appear highlighted in pink at the top of the AI screen while that KQ is displayed in ProQA.

Sources

7. See note 3.
YOU MUST BE FIRE CERTIFIED TO TAKE THIS QUIZ

Answers to this quiz are found in the article “Go Take A Hike,” which starts on page 28. Take this quiz for 1.0 CDE unit.

1. Which of the following organizations coordinates maritime, aviation, and beacon-related SAR incidents in Australia?
   a. Emergency Response Team Search and Rescue (ERT-SAR)
   b. Special Tasks and Rescue Group (STAR)
   c. Joint Rescue Coordination Centre (JRCC)
   d. National Association for Search and Rescue (NASAR)

2. Protocols 78 and 79 are looking to collect what type of information in the final Key Question:
   a. existing medical conditions
   b. clothing description
   c. last known location
   d. level of outdoor/backcountry experience

3. Editable CEIs added to Chief Complaint Protocol allow agencies to:
   a. flag whether the agency is responsible for the specific area in question.
   b. add local information or agency-specific information that will help dispatchers.
   c. recommend the type of search approach most advisable for the situation.
   d. automatically send an alert to the appropriate SAR crew(s).

4. Protocol 78 addresses callers trapped in:
   a. sinking vehicle, floodwaters
   b. wildfire, forest fire
   c. an avalanche, high angle terrain, or an inaccessible area

5. Where is the following found in the FPDS? “If a landslide/mudslide occurs in a rural or other environment that is difficult to navigate or access in a timely manner (due to remoteness, mountainous terrain, high altitude, steepness, etc.), use Protocol 78.”
   a. Protocol specific Axiom
   b. Chief Complaint Selection Rules
   c. Protocol specific Rule

6. If a HIGH ANGLE rescue incident occurs in an environment that is difficult to navigate (e.g., rural) or access in a timely manner, use:

7. Protocol 79 has three suffixes, and the suffix “W” applies to:
   a. weather
   b. people involved.
   c. weather and people involved.
   d. all the above

8. Disregarding injuries and type of terrain, a person reported as lost is assigned a(n):
   a. ECHO-level descriptor.
   b. DELTA-level descriptor.
   c. CHARLIE-level descriptor.
   d. BRAVO-level descriptor.

9. Avalanches most often occur on slopes:
   a. of 10 to 15 degrees.
   b. of 20 to 30 degrees.
   c. of 35 to 50 degrees.
   d. wherever snow is present.

10. LKP and PLS allow SAR crews to determine:
    a. general direction of travel and approximate speed of travel.
    b. possible injuries of individual(s) involved.
    c. weather conditions.
    d. type of terrain in search area.

To be considered for CDE credit, this answer sheet must be received no later than 10/31/20. A passing score is worth 1.0 CDE unit toward fulfillment of the Academy’s CDE requirements. Please mark your responses on the answer sheet located at right and mail it in with your processing fee to receive credit. Please retain your CDE letter for future reference.
EMS Agenda 2050, the vision for EMS in America 30 years into the future, has “People Centered” as its overarching framework. This means that EMS system design and leadership will be focused on patients, their families, and the people who provide care both in the communication center and in the field. Jack Stout, a man several decades ahead of his time, designed and implemented EMS systems that were solidly focused on the needs of patients. His 1980s High Performance EMS System concept was revolutionary in that it made clinical leadership, scheduling, staffing, dispatching, equipping, and financing of the system focused on the needs of the patient.

Jack recognized and designed his systems around the fact that dispatch staff are the critical first part of any EMS system. They are professionals and actually manage the system so it can most effectively take care of its patients and providers. Jack was, and still is, a huge fan of Dr. Jeff Clawson and his Medical Priority Dispatch System™ (MPDS), and considered it an essential part of any high performing EMS system. He taught that “EMS is Protocol Driven,” stating that calltakers use MPDS Protocols to question and help callers, that paramedics have operational and clinical protocols for taking care of themselves and patients on scene, and dispatchers (or System Status Controllers as he called them) have System Status Management (SSM) as the protocol for managing the system’s resources in between calls.

SSM is best known as a system for minimizing response times for true emergencies vs. lower acuity calls by using historical data to predict when and where these calls are most likely to occur and redirecting ambulances to “post” in those areas based on time of day and day of the week. SSM and Jack both got an undeserved reputation for focusing on productivity and response times at the expense of field providers and geographic coverage. An important companion article to this one is “How Much is Too Much,” published nine months later in JEMS (February 1984). Since the early 1980s, Jack has taught that:

“Quality SSM is striking a balance between the concern for:
- Adequate coverage of high volume areas and peak load periods;
- Adequate coverage of low volume areas and off-peak periods;
- Employee health, safety skills, maintenance, and job satisfaction; and,
- Economic efficiency and the system’s financial stability.”

Jack’s articles and other work were compiled by his son, Todd Stout (President, FirstWatch), and Jonathan Washko, and made available at www.JackStout.com.
System Status Management

The Strategy of Ambulance Placement

System status management refers to the formal or informal systems, protocols, and procedures which determine where the remaining ambulances will be when the next call comes in. Whether elaborate or simple, written or remembered, every system has such a plan — the question is, does it make sense and does it work?

Author Jack Stout is a regular contributor to JEMS and will have a monthly column beginning in the June issue. He has long been involved in designing and implementing EMS systems, most notably the public utility model concept. With his company, The Fourth Party, he has been involved in the establishment of sophisticated ambulance systems in Little Rock, Arkansas; Tulsa, Oklahoma; Kansas City, Missouri; and most recently, Fort Wayne, Indiana.

Some of the most earth-shaking concepts seem merely interesting when they first emerge into view. Some go nearly unnoticed. The force and impact of the idea may change our lives without our ever knowing that it was that idea that did it.

The well-known Eisenberg studies certainly caught our attention, but did you know that those studies are subtly but powerfully impacting the very structure of the entire ambulance industry? Legally imposed response time standards are no longer arbitrary or entirely subjective, and the courts are upholding ordinances with stringent response time requirements based, in part, upon the Eisenberg studies. The right of private ambulance companies, or public agencies for that matter, to deliver life-threatening response times has been seriously weakened. The life expectations of low-performance ambulance organizations, and even entire classes of ambulance systems, have been dramatically shortened by the new knowledge. Almost unnoticed, the forces have been set in motion.

In the February 1983 issue of Medical Care, Dr. C. Gene Cayten and others upped the ante even further with the publication of a research project summary entitled, “Clinical Algorithms for Prehospital Cardiac Care.” This well-written article describing a truly fine piece of research is, perhaps with less fanfare than the Eisenberg studies, another blockbuster. Whether an EMS system should go to the trouble of developing and documenting detailed step-by-step procedures for patient care versus relying more heavily upon paramedics and medical control physicians to “invent” algorithms on the spot used to be a matter of “professional preference.” While the debate is bound to go on, Cayten’s evidence is powerful and on the side of planned and documented clinical procedure.

As our infant industry matures, we are learning that some ways are better than others, and that everything isn’t a matter of opinion. Eisenberg showed us that, for certain patient conditions, both fast BLS and slow ALS are deadly. Dr. Cayten and his colleagues have now shown us that well-documented clinical algorithms not only help paramedics retain their technical skills, but actually can be traced with statistical significance to changes in patient outcome.

Gradually, very gradually, we are learning what some have suspected all along. We are learning that life-saving system performance is hard to come by. Not even money can necessarily buy it. Smart people with good intentions and expensive equipment are not enough. Our business is more like pro-football, gorilla warfare, or (closer to home for this writer) — heavy weather sailing — all depend upon first recognizing that a variety of events are going to happen very quickly, your responses to those events must be perfectly selected and executed, and that you can’t possibly predict what’s really going to happen. Then with painstaking

by Jack L. Stout

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diligence, you try to predict everything that could happen anyway, and you figure out what you would do if it did happen, and you write it down and you think it through and prepare yourself and you practice, practice, practice. When things do start happening, you hope most of what you do goes according to plan; leaving you and your crew free to concentrate your intelligence and creativity upon a limited and more manageable set of unforeseen circumstances.

The concept common to all of these activities is the goal of reducing as much as possible, the need to invent protocols and procedures on the spot. Think it through before it happens. Plan the response while the pressure is off, while the advice of others is available, while mistakes can be made and corrected in the hypothetical — not in a ditch under a car in a foot of water covered with a shiny film of gasoline.

And practice. Cayten noticed that the number of paramedics treating the patient influenced patient outcome, and had to adjust the analysis to account for this and other variables. But having lots of paramedics at the scene doesn’t automatically help the patient. You can’t out-number a attack of ventricular fibrillation. Paramedics make a better team because they all know what’s going on, what’s next, and how to help. But how many two-tiered systems have even written down, much less practiced, team task descriptions and protocols so that BLS crews know how to really join the team when assisting an ALS crew?

High Performance in Dispatch

The term “dispatcher” is used in the commercial trucking industry, the taxi cab industry, and defines the job of the 18-year-old clerk who sends out the Xerox repair man, the plumber, or the exterminator crew. And back when “as soon as we can, ma’am” was soon enough ... the same era when “in the best of hands” and “all that could be done was done” was the measure of good medical care ... dispatchers dispatched ambulances, too.

But just as we are learning that highly ordered and practiced action in the field makes for better management of patient care, we are also beginning to learn that the management of the entire system can be dramatically improved by similar refinements in the control center.

I remember a conversation I once had with an experienced dispatcher in a large urban system. I was watching the operation of the dispatch center late one night when I heard the dispatcher say to a telephone caller, “What is your telephone number?” Later I asked that dispatcher if the caller was phoning from the caller’s own home. The answer was, “no.” The dispatcher had asked, literally, for the caller’s own phone number. What the dispatcher wanted to know was the callback number. I suggested that if you want to know what number the caller is calling from, then you should say the words, “What number are you calling from?” No other words are as good.

There still exist throughout the country major ambulance service systems, some even ALS, where the conversation between the “dispatcher” and the caller is more like a chat than anything else. Each dispatcher has his or her own approach to the conversation — a far cry from the orderly and reliable telephone protocols (i.e. information gathering algorithms) of Dr. Jeff Clawson’s Salt Lake City Fire Department operation (see Dr. Clawson’s article, “Medical Priority Dispatch — It Works!” February 1983 jems).

Sloppy and extemporaneous telephone protocol makes for misunderstanding, faulty information, and missing information; yet the system’s entire initial response is based upon that information.

In some of our better managed EMS systems, medically trained dispatchers employ clinically sound and thoroughly thought out telephone protocols to gather information and to advise the caller with prearrival instructions, and in multi-tiered response systems, these same protocols extend to guide the selection of ambulances and first-responder units. All essential, but what about the management of the system itself — the systems whose configuration when the phone rings can often make the critical difference? What about the management of system status?

“System status management refers to the formal or informal systems, protocols, and procedures which determine where the remaining ambulances will be when the call comes in.” Whether formal or informal, elaborate or simple, written or remembered, every system has a “system status management plan.” The only question is, does your system status management plan make sense and does it work?

Effective Unit Hour Utilization

Think of it this way. Every ambulance system can afford to place only a limited number of ambulances on the street. Because ambulance demand patterns usually follow a weekly cycle, I like to think in terms of “unit hours per week.” A “unit hour” is simply a fully equipped and manned ambulance on the street for one hour. A dispatcher trying to match supply with demand must utilize the available “unit hours” in the best way he or she can to squeeze the highest response time performance possible out of the unit hours available.

At the most basic level, there are two extreme forms of unit hour deployment. At one end of the extreme, the system could run the average number of unit hours available per week all the time, i.e.
the same number of ambulances on
the streets 24 hours a day, seven
days a week. At the other extreme,
but not much more foolish, you could put all
the unit hours on the street at the
same time for one hour, if you
owned that many ambulances.
Since all of the calls don’t come in
during one hour a week, it would
obviously be stupid to use up all of
your precious unit hours during one
60-minute period each week. But at
the same time, demand for ambu-
 lance service fluctuates wildly by
time of day and day of week, so it
wouldn’t be much more intelligent to
run the same number of units all the
time. Somewhere in between is a
solution that makes sense. The De-
mand Analysis Report for Kansas
City (page 30, from the American
Ambulance Abstract Service —
AAAS) illustrates the normal and
usual patterns of fluctuation, by
time-of-day, and day-of-week, for
life-threatening emergency calls,
non-life-threatening emergency calls,
and non-emergency calls for all the
Thursdays for four months ending
December 1982 in Kansas City,
Missouri. Look it over and think
about how you might spend unit
hours on Thursdays in Kansas City.
Taking surplus unit hours off the
street when they aren’t needed, and
adding these unit hours during times
of overload or wild fluctuation
makes sense. But the question of
where to put these ambulances
remains. If you assume that the
geographic pattern of demand is
fairly constant, or completely
random, chances you will be
wrong, and from some patient’s
perspective, dead wrong.
Every ambulance system has
strategy for placing its ambulances,
ranging from the Pollyanna
approach of giving every ambulance
a permanent “home base” and
leaving it there except when dispat-
ched, all the way to automated
deployment systems which utilize
different deployment plans for each
hour of the day and each day of the
week, complete with mini-deploy-
ment plans within each hour depend-
ing upon the number of ambulances
then left available in the system.
Maps “A” and “B” show the
location of all emergency requests in
the City of Tulsa over a period of
several weeks. The difference is that
Map “A” shows the geographic
emergency demand pattern for the
time between 9:00 a.m. and 10:00
a.m. Thursdays while Map “B”
shows the geographic demand pat-
terns just one hour later on the same
day of the week. (This is not a
computer model, but rather an actual
plot of real emergencies experienced
by real patients.)
If you see a “G” on the maps, it
means a life-threatening emergency
where the system responded in eight
minutes or less. If you see a “N” (i.e.
bad), it means a life-threatening
emergency with a response time over
eight minutes. An “O” means a non-
life-threatening emergency with a
response time under ten minutes,
while a “P” (i.e. poor) refers to a
non-threatenng emergency with a
response time over ten minutes.
(Other maps use different response
time tolerances for different
purposes.)
Notice that during Hour 10 on
Thursdays, activity concentrates
heavily along the west end of Skelly
Drive, with scattered activity in the
southeaster part of the city, while
almost nothing happens up north
during Hour 10 on Thursdays.
Now compare that with what goes
on during hour 11. Not much hap-
pening on Skelly Drive, but you’d
better be ready to head north. You
can’t cover the north, however, at
the expense of the near south.
Maps “A” and “B” show how
different things look in the same
city, on the same day, just two hours
apart. Now let’s look at the same
hour (i.e. Hour 11, 10 a.m. to 11
a.m.) during Fridays. Map “C”
shows the plan that worked for Hour
10 on Thursdays will be absolutely
wrong for Hour 10 on Friday. Hour 10
on Friday is not only tougher
geographically, but Tulsa’s Demand
Analysis Report (not shown) also
tells us that this geographically scat-
tered demand will fluctuate in
volume as well. Hour 10 on Friday is
expensive to cover, revenues are
mediocre, and you can expect to
move the crews around more than
usual to keep things covered.
A more sophisticated system status
plan is simply a plan for dealing with
different demand patterns by basing
the around-the-clock deployment of

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unit hours, and the geographic deployment of remaining units available upon the historical, geographical and time-of-day fluctuations in demand patterns. Of course, for some hours in some areas there almost is no pattern to be found. The "O's," the "B's," the "P's" and "G's" scatter all over everywhere, and demand volumes hit everywhere except on the average. But this is a type of pattern itself, the toughest of all to deal with, and so we are forced to get out the checkbook, spread out our units, and when the last unit is all we've got, park it near a freeway exchange where it can't get to any location very fast, but can cover the whole city with some reliability.

When I go through this process, I get my latest AAS Maps and Demand Analyses, along with several other useful reports and sit down with the most experienced dispatchers and street people I can find. I show them the maps and the demand analyses for one hour of the day, one day of the week, and ask them the following question: "Knowing the frequency and fluctuation of demand for this hour, and seeing the maps of historical demand and response time performance, if you only had one ambulance left in the system, where would you like it to be located?"

This, as it turns out, is an amazing question. The "system status committee" may often argue and struggle for some time to come up with an answer. They pick a spot and then someone notices that, at that time of day, the ambulance would be upstream of the hotspot, and in rush hour traffic. Someone else notices that another location would be downstream from traffic relative to a potential hotspot, but would have a helluva time reaching the occasional call on the other side of the city. But notice carefully: if it takes that much analysis and discussion to make the decision when the pressure is off, when all the data is available, and when the most experienced people in town are making the decision, how on earth does anyone think a single dispatcher, under pressure, with no time and limited information, and with six calls in progress is going to do any better?

When we are done figuring out where one ambulance should be, if it's the only ambulance left and it's 4:30 in the afternoon on a Friday, then I ask what should be done if you had two ambulances left. Then three, then four, and so on.

Then we figure out, at each level of remaining capability, which ambulance posts have the lowest priority, and should therefore be used for dispatching non-emergency calls. This effort helps to preserve the best possible remaining coverage while minimizing post-to-post moves.

While we are at it, we recheck the demand fluctuation for that hour, and ask ourselves what level of vehicle coverage is so low that non-emergency dispatches should be suspended until another unit comes back into service. Finally, we "make a wish" as to how many ambulances we think would be necessary for safe and effective coverage during that hour of the day, that day of the week — i.e. how many "unit hours" shall we "spend" on this one of 168 hours of the week?

When this is done, we move on to the next hour, and 167 "plans" later, we have a pretty good idea of what the best and most experienced dispatchers and street people in the system think should be done. We find some hours where the volume of demand fluctuates so wildly, and where the geographic distribution takes on no pattern at all, and during these hours we know coverage will be expensive and difficult; we will have to make up for the losses somewhere else.

But we also find other hours where demand volume is highly predictable and where geographic patterning is relatively concentrated. During these hours, coverage is easier to achieve and if the system is heavily dependent upon fee-for-service revenues, the "profits" made during that hour will help cover the "losses" incurred in other hours.

If the whole thing sounds difficult, boring, frustrating, and sometimes seemingly not worth the effort, you are beginning to understand. High performance is hard to come by unless money and "unit hours" are no object, and even with a blank check on unit hours, real high performance may still elude a system. In any case, when we are done with the process, everything is written down and displayed in a flipchart or entered into a small computer programmed (i.e. Mlcad or Minicad) as a system status management aid, and the result is the beginning of a "system status plan."

When complete, this plan serves dispatchers as a sort of algorithm for
Blast from the Past

On-line management of system deployment, just like a clinical algorithm guides a field paramedic. It minimizes seat-of-the-pants redeployment, and benefits from the experiences of many instead of a few. Perhaps best of all, its effectiveness can be measured and evaluated, and the plan continuously improved and fine-tuned. As long as every dispatcher does his or her own thing, there is no "plan" to evaluate — only dispatchers.

Every System Has a Plan, However Silly It May Be

Before we first began our work in Kansas City, the plan then in use, though not exactly written down anywhere, went something like this:

There will be 14 ambulances on the street, 24 hours a day, 7 days a week, for a total of 2352 unit hours of coverage a week. Every ambulance crew shall be on a 24/48 hour shift, and shall show up for work at a permanently assigned ambulance post, and shall relieve the crew on duty either on time or whenever that crew returns to its post. There shall be no rules governing suspension of non-emergency transfer work or out-of-town dispatches. If there are 13 calls in progress and only 1 ambulance left in the system, even though the emergency load may be about to peak, it’s okay to send the last ambulance out of town or to dispatch it to a non-emergency transfer call. Furthermore, if the only ambulances left in the system are stationed at the most remote and least active posts, while all the other ambulance crews in the system are working their tails off, it won’t be necessary to relocate any of the remaining ambulances, especially if it is late at night and the outlying crews are asleep. Finally, whenever any ambulance completes a run, its crew shall return to its permanently assigned post, regardless of whatever else may be going on in the system at the same time. (If a dispatcher would like to experiment from time-to-time by relocating ambulances during a shift, no rules would prevent such experimentation, no policies would guide such experimentation, and if the crews got mad because of the inconvenience, or if the fuel bill were to rise noticeably, lord only knows what might happen.)

The multimillion dollar ambulance company that used that plan is now out of business. But the "plan" is not all that uncommon. It is easy to see why systems using system status plans like Kansas City’s now discarded plan usually don’t write them down. This plan and variations on its theme, had been in use in Kansas City for years, even in the presence of a million-dollar plus federal grant to centralize dispatching of the old multiple provider system.

Most systems use formal or informal plans that lie somewhere in between the old Kansas City model and the most sophisticated models around. Unfortunately, most are far closer to the old Kansas City model than to the higher performance end of the spectrum.

Deployment Isn’t Everything

Our first experience with really sophisticated system status management was the result of being squeezed between a stringent city-imposed response time requirement and a several hundred thousand dollar increase in union wages. Revenues were fixed, costs were going up, and response time performance had to be maintained. We had no choice except to squeeze more performance out of fewer unit hours per week.

Our second experience with system status management occurred when we were asked to help a system equalize an otherwise good response time record throughout various neighborhoods of the city. An effective and primarily black consumer group demanded an investigation of that system’s response time performance in the poorer neighborhoods of the community. We were initially called in to perform that investigation, and the data showed that while the black community was receiving comparatively good response time performance, it could be better. But surprisingly, there was a remote and wealthy neighborhood experiencing chronic response time performance problems. It seemed to us that response time performance could be better equalized throughout all areas of the city using some of the deployment and management techniques we had recently developed elsewhere.

We went through the whole process with dispatchers and field people just as discussed above, and after some reshuffling of crews, posts, and shifts, a new system status plan was installed. The result was an improvement in overall response time, and even greater improvement in equality of performance throughout the city. (That system had focused its attention, partly by the ordinance, upon average response time performance — a practice which we now know results in more life-threatening response times for patients at the dangerous end of the distribution curve, and also promotes geographic inequity in response time performance.)

Everyone was generally pleased with the initial results, and after a few months of operating with the...
new system, fine tuning began. Using more AAAS maps and reports, we began to identify problem times of day and neighborhoods which needed extra attention. We started by locating areas and times of day where we apparently had surplus production capacity. (AAAS "solution maps" highlight geographic areas and times/days where response times are unusually fast and where the eight-minute maximum is virtually never exceeded. The purpose is to locate surplus unit hours which can be reassigned either geographically or by time of day to cover peaks and overload conditions.)

As we proceeded with this fine-tuning process, we ran into some really stubborn performance problems that didn’t seem to be solved by any amount of ambulance coverage. Looking more closely at the records of these specific runs, we began to learn that the problem wasn’t always a lack of ambulances, or even a lack of nearby ambulances.

With the help of our little MICAD computer aid, we were able to recreate a record of the status of the system at the time any given call came in. That is, we can produce a report which tells us, for example, that when the problem call came in at 12:35 a.m., there were seven ambulances in the system, one with mechanical problems, two on emergency calls, one on a non-emergency call, and the remaining three ambulances were available for dispatch — one at Post 12, one at Post 13, and one en route from County Hospital to Post 3. With that kind of information available to us, we could then take a look at the dispatcher’s vehicle selection, the conformance of the system with the original plan, and when we really were short of ambulances when a call came in, we could begin to find out why.

Sometimes the problem was simply a lack of sufficient ambulances to achieve coverage, or the placement of remaining ambulances in the wrong locations. But not always. We began to identify a whole list of factors which impact response time performance, some of which cost money to deal with, but most of which do not.

If money is no object and you have a response time performance problem in some neighborhood or during some time of day/day of week, you can simply buy another ambulance, hire another crew, and add another “unit hour” at the right time and place. Sometimes that will solve your problem, and sometimes it won’t.

Ambulance system response time performance is not "good" or "bad," in general. If you are having response time problems, they are almost always occurring at some times of the day/day of week but not at others, and problems often repeat themselves in fairly predictable geographic patterns. These patterns are obscured by the fact that where the response time problem is occurring will change depending upon when it is happening. Since only a handful of systems have a way of combining and displaying this information for analysis, and since most systems rely heavily upon "averages," few of us have learned to see response time problems in a diagnostically useful way.

If I have a response time problem, and have no prospect of increasing system costs to solve that problem,
then I must exhaust every possibility for solving the problem before I resort to simply adding equipment and crews, or even to going through the hassle of revising schedules and shift assignments. I must first pinpoint the time and location of the problem, and then proceed to diagnose the causes. Only then can I devise a solution. The process I use relies extensively upon statistical information from the AAAS reporting service, and I follow a step-by-step path that is too lengthy to be detailed here. However, several of the most productive steps can be described as follows:

1. Define the problem specifically. I must know exactly when and where the response time problem is occurring before I can begin to diagnose it. Is there a pattern? Was the dispatcher out of ambulances when the call came in? Were the available ambulances too far away? If so, why? Where were all the other ambulances at the time, and what were they doing?

2. Blast from the past. Did the problem occur because the system status plan is faulty or because the plan wasn’t being followed?

4. Dispatcher error? Was the nearest ambulance dispatched? Were the routing instructions accurate? Is the crew or dispatcher unfamiliar with that neighborhood? (One AAAS report analyzes response time performance by dispatcher or district or neighborhood, to detect performance problems which may be the result of a given dispatcher’s lack of familiarity with a specific neighborhood. For example, white dispatchers may sometimes spend less time in black neighborhoods than in other parts of the city, and therefore may be less familiar with primarily black neighborhoods. If that is the problem, no amount of extra ambulances will solve it.)

5. Are unit hours being wasted? Are there plenty of ambulances on duty that hour, given the number of calls received, but for some reason availability is lacking? Figure 1 shows a sample “Hospital Drop Time” report from the AAAS service designed to detect hospitals whose methods of receiving patients excessively delays ambulance crews. As a result of this particular report, a “uniform hospital drop policy” may be developed and adopted by all hospitals, reducing unnecessary out-of-service time to the tune of thousands of dollars in lost unit hours per year.

Figure 2 analyzes “Hospital Drop Time” too, but this time by senior paramedic. There is no “right” time at the scene, and there is no “right” hospital drop time at either. Every call is different. But when you are looking at 40 or 50 runs per med, and one med averages twice as long at the hospital as everyone else in the company, it’s worth a conversation. Most medics in our systems are used to these reports, and posting alone seems to do the trick. But believe me, the first time we ran these reports, the numbers were all over the place. If you think all hospitals are about the same in hospital drop times, think again. In one city, we found a hospital that averaged triple delays in drop times, no matter who the medics were. This added up to over $150,000 per year in lost unit hours due to that hospital’s methods of accepting patients. Other reports detect bad habits which hurt system performance. I call one such report the “paramedic honey locator” report, since it can detect a paramedic who is normally fast in hospital turnaround time, but who routinely takes longer at a particular hospital that is normally fast for everyone else. I presume the presence of a “honey.”

6. Equipment failure? Are we plagued by equipment failures? How long does it take to get a unit back in service? How often does one ambulance assist another because the former’s cardiac monitor won’t work, etc.?

7. Demand pattern change? Has
the demand pattern began to change for this location and time of day/day of week? Was there a seasonal fluctuation that we can prepare for? was there a special event that we failed to account for?

8. Traffic flow problem? Were we upstream when we should have been downstream?

9. Out-of-chute time? One standard AAS report routinely displays average times from unit alert to en route status, organized by senior paramedic name and number. For life-threatening calls, this time should be under 30 seconds on the average, and never over one minute. Less frequently utilized post locations can be made up, no matter what you do. In one case, we found what should have been obvious to everyone — an ambulance post location where the crew quarters were on the second floor and at the other end of the hall from where the ambulance was parked. With brilliance, we moved the crew quarters and solved the problem. Sometimes our work isn’t very sophisticated.

10. Dangerous non-emergency cutoff level? Is the problem repeatedly happening when several non-emergency transfer runs are in progress? Could the problem be fixed by simply raising the non-emergency cutoff point to a safer level?

11. Change post locations? Could we solve the problem simply by moving an existing ambulance from a less frequently utilized post location into the problem area? This is the simplest move, since it requires no reshuffling of shift schedules. However, care must be taken since you may simply relocate the response time problem to the other side of town. The AAS “solution maps” help make this decision by locating neighborhoods where problems rarely occur and where response times are extra rapid. We will deliberately adjust the system to eliminate emergency response times over eight minutes, even if doing so results in a slight increase in either overall average response times or slightly decreased coverage in an apparently overserved neighborhood.

When first starting out, the past plan of deployment is normally so poorly documented, poorly conceived, poorly followed, or all three, that it makes no sense to use the past system as a basis for refinement. Most of the time, you can do better by simply abandoning the past structure in favor of an initial system status plan developed by your most experienced dispatch and field personnel, utilizing the process discussed earlier in this article, together with the essential displays of demand pattern history.

Every time we have tossed out an old deployment plan and replaced it with a new system status plan designed that way, the improvement has been instantaneous and dramatic. Kansas City, for example, (a 100 percent paramedic system providing both emergency and non-emergency service) has managed consistent improvements in response time performance, both citywide and by the city’s mandated councilmunic districts, while shrinking unit hour coverage from 2352 unit hours per week down to the level currently reported at 1600 hours per week. For financial reasons, the system had to drastically cut both unit hours or wages, due to a declining city subsidy and a badly needed commercially financed $2-1/2 million total equipment replacement. In that city, late runs cost the operator $10 per minute in payment deductions, and chronic late runs would cost the entire contract. Under such circumstances, performance is almost inevitable, or at least mandatory. (Jay Fitch, manager of Medevac’s Kansas City operations, believes that 1600 unit hours is about rockbottom for that city, and future fine tuning will focus upon stabilizing coverage, seasonal fluctuations, and reduced post-to-post movement.)

Implementation of the first sophisticated system status plan (SSP) usually requires a major reshuffling of everything from ambulance post locations to shift schedules, compensation plans, crew change methods, inventory control, and just about everything else that is sacred in any established ambulance service. It is traumatic.

Furthermore, during the earlier stages of the plan, there will be quite a few seemingly unnecessary post-to-post vehicle movements, mostly occurring in the middle of the night when a 24-hour crew is trying to sleep. The tendency will be for dispatchers to delay a post-to-post move if another crew is merely ready to clear from a hospital; to the extent that the delays are frequent, the SSP isn’t being tested at all. The result might be that you finish a difficult two or three months of initial experience only to find out that, whatever else you may have done, you have not actually implemented the SSP, and you can’t be sure whether the problems you are still having are the result of the SSP or the result of not following the SSP. If you don’t follow the SSP, you can’t fine tune it.

Fine tuning your system status plan is, I think, fun. In the first round of planning, everything was based on the expert judgment and prediction of the most experienced people available, with benefit of detailed demand maps and demand analyses. The second time around, adjustments to the plan can be based upon the initial plan’s actual results.

During fine tuning, you can shift some posts around, shift some unit hours around, and take numerous steps to simultaneously reduce unnecessary post-to-post movement while squeezing out any remaining performance problems. In your system, you will need about three months of data for fine tuning cycle, which means that you must stick with the current plan as closely as possible. Of course, the initial plan should be watched very closely during the first few weeks to detect any obvious glaring flaws which may need midcourse correction. (In this case, it is good to “stay the course,” but not at all costs. The important thing is that, if a midcourse change is necessary, it should take the form of a change in the plan — not an authorized departure from the plan. That way, subsequent data can be used to assess the effectiveness of the revised plan — not the old plan that was abandoned.)

With enough time and experience, and enough quarterly fine tuning efforts, the plan will begin to take on seasonal variations, and will account for special events such as Fourth of July, Christmas, New Year’s, and Rolling Stones concerts. After a year or so of development and fine tuning, you will have squeezed, poked and prodded about all of the performance you can get out of your system, at least in terms of response time performance per unit hour. From then on, small semi-annual adjustments should do the trick, and probably without fanfare or too much gnashing of teeth. The reality of instituting sophisticated system status management is
Analysis Report

Most people have never seen an analysis like this, and some surprises are usually in store. On Kansas City's reports, Priority I calls are "life-threatening emergencies"; Priority II calls are "non-life-threatening emergencies"; and Priorities III and IV are two kinds of non-emergency transfer.

"Total average" means the rounded-off average calls per hour during that hour on several months of Thursdays. To calculate the "high average," we pick one Thursday out of each month having the highest number of calls that hour, and then average those together.

"High average" is basically a normal high volume — you won't get it all the time, but you will get it about once a month.

"Low average" is like "high average," except we pick out the second-lowest day of each month and average those. "Low average" is sort of a normal fluctuation too.

The "maximum" and "minimum" columns simply list the most and least calls we have had during a specific hour of all the Thursdays.

To help understand how to read this report, let's look at hour 12 (11 a.m. to noon on Thursdays). They've been averaging 1% life-threatening emergencies, 2% non-life-threatening emergencies, and only one non-emergency call during that hour.

Looking at "averages" this hour seems pretty easy to deal with. And in terms of fee-for-service revenues, things look pretty steady during that hour. But look again. Once a month the life-threatening emergencies will double, and so will the non-life-threatening emergencies. These fluctuations will be pretty common and if they begin to occur at the same time, you're in trouble.

Let's look further. Hour 12 isn't too rough as far as non-emergency transfers go, and non-emergency work is pretty steady. Furthermore, non-emergency demand both earlier and later in the day usually goes higher, so you should have some extra unit hours available if your system, like Kansas City's, is an ALS system. In general, Hour 12 is going to be a problem, but some hours are much worse. One more thing: those "total averages" will tell you pretty reliably, absolutely involve extensive off-line simulations. Our system status manager certification test covers Salt Lake City-type telephone protocols, medical vocabulary, and a compressed 200-run system simulation covering every conceivable complication. Certification requires zero-defect performance.

We have had to completely overhaul labor contracts, shift schedules, compensation programs, and bonus plans, and we adapted a shift process from the way TWA bids flights for flight attendants.

We use eight-hour shifts, 10-hour shifts, 12-hour shifts, 24/48, and hybrids. In one city there was nearly during Hour 11, you will be lucky.

Keep in mind that Thursdays don't look much like Mondays. Sundays don't look like Saturdays, and so forth. Every community has its own patterns, both geographically and around-the-clock. —Locke Tait

DEMAND ANALYSIS REPORT

FOR DAY 4 — THURSDAY

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a strike due to the loss of some 24/48 shifts, while in another labor got mad because some eight-hour shifts were being lost to 24/48. In another case, crews had actually purchased homes near their permanently assigned posts. We eliminated permanent post assignments.

But the ultimate purpose of sophisticated system status management is very simple: we want our ambulance crews and equipment to be located where and when they are needed as often as humanly possible. What’s the alternative? Being somewhere else.

Failure Guaranteed Four Ways
If system status management is such hot stuff, where has it been all this time? The uncomfortable but grownup answer is that organizations learn to do what makes money or what it takes to survive. You can count on one hand all the cities that fine their ambulance providers for poor response time performance. Government operations almost never compete for survival, and there’s always the average response time to hide behind.

System status management, done properly, takes a whole lot of work, requires constant attention, may strain labor relations, and is really easy to screw up. No wonder no one developed it until they had to.

There are probably hundreds of ways to prove that system status management won’t work in any city. But there are four ways that are guaranteed to fail:
1. Try buying part of it. An organization will make system status management work when its financial stability and very existence depend upon it. Under any other conditions, system status management is just too much trouble. If your city wants good system status management, turn over your dispatching and field operations to a qualified operator, hold that operator financially accountable for every late run, forget average response times and focus upon maximums, and be ready to bury the operator for chronic performance failure. Then forget about system status management, and you will get it.

As I always say in pre-bid conferences when asked by private ambulance operators how my client city wants the dispatching done, no one cares how many ambulances you put on the street, how you dispatch them, or what you do with the money we pay you. When the phone rings, we want a qualified paramedic talking to the caller, we want a full-blown paramedic ambulance on the scene within eight minutes 90 percent of the time, we want superb equipment and performance, and no one cares how you do it. If you can put a guru on a hill who can get two ambulances to handle thirty thousand calls a year, go to it. But screw up a little and it’s ten bucks a minute. Screw up a lot, and you’re out of business.
2. Separate dispatching from operations. The absolute key to system status management is the operation of the dispatch center and the quality of dispatch personnel. The company that does the dispatching and the company that runs the...
ambulances have got to be the same company, and it's that company that must be responsible for developing, revising, and implementing the system status plan. It's just too complicated to work any other way. If you think it isn't that complicated, then you clearly don't understand, and you will probably never know what went wrong.

3. **Try it with employees who care little about their patients and less about their company.** People get used to the old ways. Low performance is less work than high performance. I know for a fact there are ambulance personnel who have deliberately delayed an emergency response for the sole purpose of "proving" that the new plan won't work and that more unit hours are needed. These people are, perhaps without realizing it, dedicated to their own company's failure. And they will jeopardize their own patient to make a point.

These are the same people who, rather than helping to work out the bugs, wag their fingers at dispatcher error, who make anonymous calls to reporters in hopes of making their company and its effort to improve performance look foolish, and who were recently caught driving 35 mph, red lights and siren on an open road and light traffic, on the way to an emergency. If you have such people in your company, you have a choice: get rid of them or cater to them. So long as they are on your payroll, they have the power to prove you wrong. I have seen them do it.

4. **Try computer simulation.** I do not recommend or support the use of computer simulation models to determine ambulance coverage patterns and post locations. Such models rely too heavily upon theoretical travel times to optimize distribution. Our experience has convinced us that a committee of experienced dispatchers and street people can outperform a computer simulation every time if they are provided with the demand pattern statistics, demand maps, and other informational tools which, when combined with human judgment and experience, take into consideration traffic flow patterns, complex street names/numbering systems, familiarity with area, and a hundred other factors that go far beyond the scope of practical computer simulation.

**Conclusion**

When thinking about system status management, keep in mind that regardless of how you staff and deploy your ambulances, you are using a system status plan. System status management isn't "good" or "bad" — it is inevitable. Your plan may be simple and stupid, complex and stupid, simple, yet effective, or possibly even complex and even more effective.

There are many good reasons for sticking with a more simplified approach to system status management. Only the best managed organizations with the most dedicated personnel should even attempt to use the most complex and sophisticated models. But almost every system can benefit from thinking things through with the maps and the demand analyses and the other reports, even if the result is an elegant simple but more effective approach to deployment.
MD Ashley Yockey was the first in the chain of survival coincidences that ultimately saved the life of a grandmother in town visiting the grandkids.

Or you can call them miracles.

Diana Nickel was putting away the leftover birthday cake and ice cream on Nov. 8, 2018, while her husband, Paul, was shuffling their grandchildren Molly and Kate off to bed with a promise of a good night story. It’s then that Paul heard a loud crash coming from the kitchen. He rushed into the room. Diana was face up on the floor. Her eyes were glassy, and she did not answer when he called her name.

Paul called 911, and Yockey picked up at the Johnson County Emergency Management and Communications Center, Olathe, Kansas (USA). Paul explained what happened. Yockey was providing CPR instructions to Paul when their six-year-old granddaughter, Molly, peeked in to see—as she later described—her grandmother on the floor, and her grandfather pounding on her chest.

Paul called 911, and Yockey picked up at the Johnson County Emergency Management and Communications Center, Olathe, Kansas (USA). Paul explained what happened. Yockey was providing CPR instructions to Paul when their six-year-old granddaughter, Molly, peeked in to see—as she later described—her grandmother on the floor, and her grandfather pounding on her chest.

Paul had his older grandchild, Kate, follow the PDIs Yockey told him over the phone. Kate unlocked and opened the front door.

Paul listened to Yockey on speakerphone, and together they counted compressions, 1-2-3-4, in time to the ProQA® compression counter.

Dr. Ryan Jacobsen, Johnson County EMS Medical Director, arrived first. The portable alarm system he generally turns off at home had been left on, and the alarm alerted him to the medical emergency. He jumped in his EMS-equipped vehicle, drove the few blocks through a storm, and chose the house based on the slit of light coming through the front door from the kitchen.

Dr. Jacobsen had brought along a portable AED. He told Paul to go into the next room. He didn’t want Paul to watch while he administered the shocks.

Police and paramedics were next to arrive, finding the home by the light tunneling through the evening darkness and blizzard. Paramedics placed Diana on a gurney and hooked her up to an automated CPR machine. Forty minutes of CPR and seven shocks with the AED and nothing. Diana remained unresponsive. A firefighter came for Paul. He kissed his wife goodbye.

“We didn’t know if she was going to survive,” he said.

Dr. Jacobsen decided on a final attempt—double sequential defibrillation. He placed an AED on her chest, and he positioned a second AED on her back. He called it the “Last Hail Mary.” If this didn’t start her heart, nothing would.

Diana rallied. She walked out of the hospital in four days and spent the next nine days at a cardiac rehabilitation center. She is among the 1% to come through without neurological damage after having experienced sudden cardiac arrest with prolonged attempted resuscitation.

The Nickels made it a point to thank Yockey and Dr. Jacobsen at the communication center, bringing flowers and cookies decorated with the numbers 1-2-3-4 in honor of the compressions count for CPR.

Yockey, an emergency dispatcher going on her fourth year, said the meeting was emotional for all of them and, at the same time, reassuring.

“This is why we do what we do,” she said. “We help people on what very well could be their worst day ever.”

There are parts of the story that Diana and Paul can laugh about, such as Molly telling those who asked about the evening: “Papa murdered Nana, and the police came to investigate.” Diana repeatedly said, “He’s the man” while in the hospital, in and out of consciousness, when asked about Paul’s assistance.

Diana praises the coordinated efforts of response and looks to her spiritual beliefs. “It’s a very good feeling to be part of a miracle,” she said.

The Nickels are now giving back, as they said. They push for AEDs in schools, churches, and public buildings. They donated several AEDs to Paul’s alma mater—University of Arkansas, Fayetteville (Arkansas, USA).

“We don’t know why Diana was given a second chance,” Paul said. “But we have a story to tell. We are on a mission to help save others.”

Diana Nickel, EMD Ashley Yockey, and Paul Nickel
SILVER LINING
Looking to the positive turns tragedy into hope
Audrey Fraizer

Silver lining. The metaphor of the hopeful side of a bad situation. It doesn’t dismiss what has happened or change things, but in a positive sense, the silver lining helps carry people through the darkest clouds of a given experience.

At least, that’s the way an emergency response technician and two dispatchers describe a call that would keep most from seeing even the smallest gain despite a tragic loss.

The 911 call came in to the Colorado Springs Police/Fire Department Communications Center (Colorado Springs, Colorado, USA) at about 4:30 p.m. on Aug. 15, 2018. A 12-year-old said he had pulled three children—all under the age of 7—from a swimming pool at an apartment complex. He was a neighbor and didn’t say how long they had been submerged but that he had already started CPR to revive at least one of them.

Emergency Response Technician Dana Heckman got their ages, sent an ECHO response, connected the call to the fire/EMS and police dispatchers (Alison Davis and Alyssa Kaufman, respectively), and then initiated PAIs to clear their airways. Others arrived at the scene. The PAIs Heckman provided to the neighbor were shouted to others arriving on the scene. They turned the children’s heads, as instructed, to get the water out before resuming CPR.

Heckman doesn’t remember hearing anything besides the boy’s voice repeating her instructions to others who jumped in to assist. If there was commotion at the pool, Heckman didn’t hear it. She was focused on the emergency.

“I knew help was on its way and did what we spend so much time training to do,” she said.

Davis dispatched medical response within 10 seconds of the call, while Kaufman alerted police (due to ages of the children involved). By the time the medics arrived (within four minutes), one child was responding; the other two were not.

Heckman disconnected. Davis and Kaufman coordinated response on scene.

Late afternoon is a busy time of day, and Heckman said she went on to the next call. While she could have taken a break to relieve tension related to the incident, she did not. Neither did the two dispatchers despite their indirect presence to the tragedy still unfolding at the swimming pool.

Their job is hard every day and emergencies such as this are doubly tough on everyone, particularly the responders she dispatches, Kaufman said.

“You can hear it in the officers’ voices,” she said. “You paint a picture of the expressions on their face. It’s not easy for anyone.”

Center Director Renee Henshaw said there’s a line separating those who stay from those who decide the profession is not for them. Compassion isn’t the sole factor. Anyone considering emergency dispatch as a profession does so to help people. And it’s not a matter of escaping the reality of a crisis or pretending that no matter what happens, you’re not bothered by it.

Heckman said it’s the “silver lining” she looks for. She focuses on the positive and that can mean listening as response arrives and knowing the coordinated effort the team puts forth.

“You can hear it,” she said. “I heard police and fire coming together to give the best care they could to these kids.”

The same goes for Davis and Kaufman. What’s the point of dwelling on what you can’t change when you’ve done everything possible to restore some sort of balance? They take the “good of it,” Kaufman said. “Seeing that side makes what we do most meaningful.”

Henshaw said it’s a mindset about the way they choose to perceive their work.

“They’re not going to get a pat on the back for all they do,” Henshaw said. “There’s not a lot of praise from people outside the center. Their reward is intrinsic, and that’s part of what makes them so super.”

Heckman was selected as Telecommunicator of the Fourth Quarter 2018 from Colorado Springs Public Safety Communication Center and nominated for the IAED™ Dispatcher of the Year award.
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MARK YOUR CALENDARS
Restart a Heart campaign arrives

Audrey Fraizer

Oct. 16 may be your lucky day because it’s the day in Salt Lake City (Utah, USA)—and around the world—set aside to teach as many laypersons as possible about CPR and how to use an AED.

The day celebrates “Restart a Heart Day,” which, in 2018, became an international affair picked up from an amazingly successful run in the U.K. where the whole thing started in 2014. During those four short years, the paramedic behind the project—Jason Carlyon—smashed his 100,000 pie-in-the-sky milestone, charting a record 105,000 secondary school children in Yorkshire, U.K., trained in CPR by Yorkshire Ambulance Service (YAS) ambulance staff and volunteers.

Carlyon is the YAS Clinical Development Manager and National Restart a Heart Project Manager for the Resuscitation Council UK (RCUK), which now sponsors the event on a global basis.

The International Academies of Emergency Dispatch® (IAED™), the American Heart Association (AHA)—Utah and Las Vegas, and University of Utah Health picked up the call for Utah. On Wednesday, Oct. 16, 2019, the three nonprofit organizations are sponsoring the inaugural Restart a Heart event. The two-hour come rain or shine outdoor venue will feature expert guidance in CPR and put the knowledge of saving a life in the hands of the public.

What sparked the collaboration? The AHA has long recognized the importance of Dispatcher-Directed CPR in reducing disability and death caused by out-of-hospital cardiac arrest (OHCA), while the IAED and Priority Dispatch Corp.” (PDC™) have long been instrumental in the science and technology of saving lives through protocol and standard practices. The AHA, IAED, and PDC combined forces in their commitment to double survival from OHCA by the year 2028 through research-based protocol, resuscitation education, and quality improvement programs to deliver high-quality CPR.

University of Utah Health provides leading-edge medicine for a referral area that encompasses 10% of the U.S., including Idaho, Wyoming, Montana, and much of Nevada, and conducts extensive research into cardiac recovery and the causes of heart failure. It often partners with the AHA—Utah and Las Vegas in support of teaching hands-on CPR.

Carlyon’s original goal was a personal mandate for CPR training in the U.K. school curriculum to increase the reach of the vital lifesaver. Global bystander CPR rates vary between 5% and 80%; research shows that CPR, especially if performed immediately, can double or triple a cardiac arrest victim’s chance of survival.²

The project’s success led to partnerships with the British Heart Foundation, British Red Cross, St John Ambulance, and the Greater Manchester Fire and Rescue Services. All U.K. ambulance trusts take part, and participation has gone outside the classroom in its appeal to a broader audience.

Restart a Heart went global in 2018 with oversight by the International Liaison Committee on Resuscitation (ILCOR) and support from resuscitation councils covering the U.S., Canada, South Africa, Asia, Australia, New Zealand, and Europe.

Carlyon never imagined Restart a Heart gaining worldwide attention, let alone the numbers of those trained in CPR (in 2018) reaching an estimated 650,000 people worldwide. He achieved his initial goal—adding CPR to the school curriculum—in legislation mandating CPR and other first aid training in the U.K. national curriculum, beginning in 2020. Even better are the “people” benefits, such as the resuscitation of a 15-year-old student who collapsed during a PE class at Fulford School in York six months after the Restart a Heart project was introduced.

“We knew training would be of benefit, but we never expected the benefit going to one of the students,” Carlyon said.

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