EMS Response Newsletter

CRESA Emergency Medical Services Program

Summer 2009

Clark County EMS District #2 Quarterly Newsletter

Volume 3, Issue 3

Inside this issue:

I'll Take Saving a Life Over a Tummy Tuck Any Day

By Doug Smith-Lee

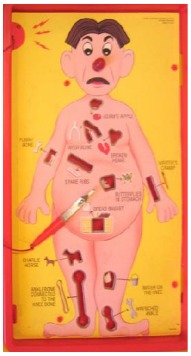
Say hello to SimMan®, the new patient simulation training manikin making his debut at stations near you this fall.

This sophisticated training manikin will be available for all Clark County EMS providers to practice critical skills and enhance decision making and teamwork. Currently, trainers from various County EMS agencies are going through a two-day workshop to learn how to use SimMan.

SimMan was purchased using fines collected from AMR when ambulances are late to calls.

How it began

In 1965, I began my medical simulation training by connect patient Sam's knee bone to his ankle bone with a rubber band for $200. And I'd get $1000 for removing a bread slice from Sam's stomach or "bread basket."



$1000 was probably the going rate for a tummy tuck back in 1965. I figured if I could successfully operate on this red-nosed man without lighting him up and making him buzz, I'd make a pretty good surgeon someday. As Milton Bradley produced "Operation" to test kids' hand and eye coordination, Asmund S. Laerdal, a Norwegian manufacturer of soft plastic dolls was working with physicians on a CPR manikin. Interest in such a manikin was based on research at the time showing that mouth-to-mouth and external chest compressions could save lives.

Asmund believed if a manikin was life-sized and extremely realistic in appearance, students would be better motivated to learn this lifesaving procedure. To further reinforce this reality, Asmund fashioned the face of his new resuscitation training manikin on the face of a young girl whose body was found in Paris' River Seine in the 1890s. The girl's identity was unknown and a death mask had been made, as was customary. Moved by the girl's tragic death, Asmund modeled the manikin's face after the young girl's death mask. This CPR manikin, the first of its kind, became known as "Resusci Anne."

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The Wonderful World of Data

By Elizabeth Vergano

Two years ago, Air Force Lieutenant Colonel Stephen Hoogasian inspired me by the sophisticated use of an eXtensible Markup Language (XML) schema called Cursor On Target (COT). Developed by MITRE Corporation, the presentation demonstrated the practice of integrating the location and tracking of civilian and military assets. I was excited by how application developers brilliantly used the existing Google Earth platform to create an information rich geographic display that people working in emergency response environments could really get their brain around.

Simply put, COT is the projection of a small discreet piece of data containing three pieces of information: a Thing, a Time and a Location onto a map. For example, in the demonstration given by LTC Hoogasian, the Thing was a Civil Air Patrol aircraft. The Time was the present. And the Location was their current in-flight X-Y coordinate (longitude and latitude) which was then displayed on Google Earth. By right clicking on the aircraft, LTC Hoogasian demonstrated tasking the aircraft with taking an aerial photograph of the next location he clicked on.

Figure 1

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" . . . displaying units in relation to calls, even in a historical fashion, could allow analysis of not just the efficiency of the system, but impact by traffic, weather, and other events "

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Once the aircraft reached the designated location and took the photo, the photo could then be retrieved by clicking the Google Earth icon again, launching a link to the photo.

I was keen to make this technology useful for EMS. Other platforms already offer tools to see where concentrations of calls occur or track the routes and speeds of ambulances, but this tool also had the capacity to display live calls and to drill down to the 9-1-1 dispatcher's notes and, later, the electronic Patient Care Report (ePCR).

Detailed call analysis

The first COT inspired application arose from the need to analyze the routes ambulances took on the way to calls in order to approve response time exemption requests (*See Figure 1*). This first project allowed me to display a unit route in its entirety from the inception of a call to arrival at scene or even after transport to the hospital.

As I refined the application, I used a new time-line technology in Google Earth to "play" the ambulance's response showing how fast it traveled and when it transitioned from Code 1 to Code 3 response. Combining this animated display with the existing "Live Earth" ability to zoom in to a street level view, we get a picture similar to what the driver saw at the time of the response (*See Figure 2*). Is the private drive marked? Is the house obscured from the street? Are there impediments such as gates that are only visible from the street view? I was completely delighted with the convenience of being able to analyze a route from my arm chair with a remarkable amount of detail and clarity.

Figure 2

EMS call types and outcomes

After the ambulance routing application was completed, I moved on to static distribution displays of data, such as cardiac arrests that had occurred during a given period of time. For example, red hearts marked the specific location of heart arrests that did not have Return of Spontaneous Circulation (ROSC). Green hearts indicated those patients that had ROSC as documented by AMR's chart review process. Clicking on the heart takes the user to the electronic Patient Care Report data, complete with history and treatments (*See Figure 3*). Seeing the geographic display made me wonder what other possibilities existed to uncover hidden trends (i.e., locations of serious accidents and ways to mitigate the locations' risks).

Figure 3

Live CAD display and data just a click away

Another proof concept I developed came to me during LTC Hoogasian's presentation. I was reminded of a live Google Earth view of Seattle 911. Once I acquired the tools and information needed to create a similar design, I was able to display CRESA's live CAD data within an hour. Blue cars represented law calls, red fire engines were fire responses and white ambulances were EMS calls.

Seeing this display live, I watched calls close and disappear from the screen while new calls appeared. By expanding the time frame, I saw problem traffic areas and clusters of EMS calls around large retirement and care facilities. I also created 'post-it note'-like displays for information, with icons reflecting call types: small red alarms for fire alarms, blue alarms for police, little orange pylons for traffic hazards, etc. These linked to unit history views and call remarks in a browser window below the map.

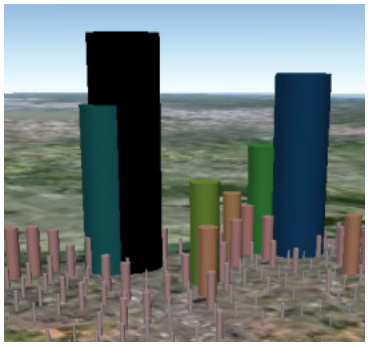

Figure 4

Call density

My most recent proof concept was to display call volume and density using shape and color. I used a simple free software converter that automatically created colorful and dynamic shapes from the raw data fed to it from a spread sheet or data base. It was as simple as "cut and paste."

Within hours, I created and projected graph after graph upon the Google Earth planet. After experimenting with various data grouping methods — both geographically and categorically — interesting and appealing charts eventually began to emerge. The graphs reflected the rate and location of EMS calls (*See Figure 4*), the distribution and density of cardiac arrests, and more.

Data security

Of course, with all this data and technology comes great responsibility. It's not surprising that LTC Hoogasian had to log into a secure serve before he was able to track airborne aircraft. As we make EMS results avail-

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"Providing Quality with Less"

by Dave Fuller

I recently had the opportunity to meet with a number of ambulance providers from throughout the country. One thing we all share are the concerns related to the economy and the projected impact that the 2010 Medicare cuts are going to have on our local operations.

All across the Country EMS systems are facing significant cut-backs in their funding, whether related to Medicare cuts, the growing uninsured, or decreased tax revenues, the reality is that most systems are going to have less money to operate next year and into the foreseeable future.

Most systems, just like here in Clark County, are looking at how we operate to ensure they are as efficient as possible. Most are reevaluating the services they provide to ensure they are in line with their "Core" mission. Many are looking at their dispatch triage system to determine if every caller actually needs an immediate response from the EMS system, or if their needs can be better met by connecting them with an alternative resource.

Clark County is in the process of switching to a new Computer Aided Dispatch (CAD) program. This new CAD has many features and capabilities that will allow for better utilization of resources and an enhanced ability to better match the caller's needs with the required resources. In order for a project like this to be successful, it requires all of the EMS providers in the system to work together and be willing to openly discuss their agency specific needs and desired outcomes.

This is one area that Clark County has a significant advantage. It has been a longstanding practice and goal of the leadership of the Clark County EMS/Fire providers to meet and work together to address issues and projects that impact the system as a whole. In Clark County we have monthly committees that meet and work at the chief officer level, operational level and the clinical level to work through tough issues. This level of cooperation seems to be a rare commodity and one we should be proud of. In Clark

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"It's very clear that as we move into the future, we all will need to continue to work together at ensuring our EMS system is designed in a fashion that is both financially sustainable as well meets the needs of the community we serve."

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Since I never could extract the slice of bread out of Sam's bread basket without toasting him, I switched career paths from surgeon to paramedic. After all, TV's "Emergency" was way more exciting than "Marcus Welby MD." So in 1981, I was introduced to Resusci Anne during my paramedic training. And, thanks to a lot of practice on this CPR manikin, my first cardiac arrest call went just as I had trained for it.

You've come a long way Anne

Now some 40 years after the introduction of Resusci Anne, a new era of simulation training manikins are being used to train emergency medical professionals. Simulation training manikins are virtual patients with interactive software that responds to the clinical interventions provided. Some of the features of SimMan include:

- Spontaneous breathing with lung sounds, pulse, blood pressure and heart sounds;
- Simulated speaking (from the instructor's microphone to the manikin's speaker);
- Sites to start intravenous lines and an anatomically accurate airway to simulate difficult airway management scenarios;
- An extensive EKG library to practice a wide range of Advanced Cardiac Life Support (ACLS) scenarios; and
- Video debriefing that synchronizes the event log to the patient monitor (with the option of on-scene video)

More than just bells & whistles

Research shows that simulation training (practicing treatment in the same way it occurs in a real emergency) directly applies the learning process and is more effective than traditional education methods.[1] It stands to reason that since a patient's condition changes over time depending on the quality and speed of treatment, so should the simulation in practice. Studies also show that simulation training is greatly valuable in helping people working together as a team. Improvements were found in three areas of performance: 1) systematic approach to the problem; 2) clear leadership; and 3) division of tasks between team members.[2]

I am excited to see how the new SimMan training tool will help our highly trained, dedicated EMTs and paramedics provide even better service to our community.

SimMan may not have a tricky bread slice waiting for removal from his "bread basket," but he may have a wad of bread stuck in his trachea causing an obstruction for the paramedics to deal with. And since this guy can speak, I'm sure he'd say, "I'll take my life being saved over getting a tummy tuck any day!"

Asmund Laerdal using Resusci Anne as a simulated drowning victim in the early 1960s

End Notes

[1] Kaufman D.M. *Applying education theory in practice.* British Medical Journal. 2003; 326:213-6

[2] Weller J, Robinson B, Larsen P, Caldwell C. *Simulation-based training to improve acute care skills in medical undergraduates.* Journal of the New Zealand Medical Association. 2004; 117:1204-1119

Clark County EMS District #2
Quarterly Newsletter

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"Quality prehospital care at the most reasonable cost"

Clark Regional Emergency Services Agency's (CRESA's) EMS Program was established in 1992 under an Interlocal cooperation agreement with EMS District #2 and Clark County to provide ambulance services contract administration, uniform EMS regulation, 9-1-1 Emergency Medical Dispatch, and funding for public illness/injury prevention and first responder support.

For more information on CRESA's EMS Program and the EMS Response Newsletter , please contact:

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http://www.cresa911.org

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able to broader and more public audiences, we will secure and "dis"-identify sensitive and protected information.

Like any sensitive report, it will be available only via secure login. We can also drop the last one or two digits of the X-Y coordinate and obfuscate the exact location of the event. Confidential data can be further dis-identified by having the icon or report shape disappear at a certain elevation when a user descends in Google Earth for a closer look. We can also group data to dis-identify individual calls, allowing viewers to get the big picture without sacrificing privacy.

Your feedback is welcomed
I look forward to input and feedback from the EMS community and beyond. We now have numerous possibilities in how we can reveal data to enhance emergency operations and ensure our 911 and EMS system is both effective and efficient.

Close Up: Liana Walta, EMT-P
By Doug Boyce

Liana Walta began employment with AMR, as an EMT-IV technician, in October of 2004. Since that time, Liana has been a tremendous asset to our patients, as well as her coworkers. Liana is a model employee in the eyes of her supervisors and continually receives praise from her peers.

Liana has recently become a lead paramedic in Clark County and now has the full responsibility of patient care on her ambulance. Over the past year she taken in many experiences and has used them to improve her patient care. Liana prides herself for being a Clark County paramedic. She believes that the patient care protocols that she works under, give the opportunity to help patients receive the highest level of care in the country.

Liana is an active member or the AMR disaster response team and was deployed for over a month in 2008 for hurricanes Ike and Gustav. Not only does Liana love to shine in her own community, she also volunteers her experience and expertise overseas in outreach medical programs. She has gone to both Indonesia and Romania to help persons in need.

Liana is known for her laughter and having a good time. She enjoys traveling, playing soccer, and is an avid runner. Liana's sister is Lisa Walta, is a ten year veteran paramedic here at Clark County AMR, and Liana boasts that her sister has inspired her to become a great EMS provider. Liana, from your team here at AMR, thank you for all of your hard work and dedication

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County the impact of the 2010 Medicare cuts on the ambulance portion of the EMS system is expected to be more then $430,000 a year. This means that Medicare will pay that much less for the same level of service we are currently providing. The total impact on the Fire and Police agencies from decreased tax revenues and increased unemployment rates has yet to be fully determined, but it is anticipated to be significant. It's very clear that as we move into the future, we all will need to continue to work together at ensuring our EMS system is designed in a fashion that is both financially sustainable as well meets the needs of the community we serve.