

NOTES ON EMERGENCY MEDICAL SERVICE (EMS)

EMS DELIVERY IN THE UNITED STATES

Prior to 1974, 68% of the ambulance service in the United States was provided by funeral homes. Emergency medical care was influenced by the advances in emergency medical care being provided by the US military in Vietnam. The US Department of Transportation did a major study on pre-hospital emergency medical care in 1975 and found that injured soldiers in Vietnam had a ten times greater chance of surviving trauma on the battlefield than residents in the United States had on our highways. The landmark report was the start of federal funding for pre-hospital emergency medical care.

In the late 70s, several major cities including Seattle, Miami, Los Angeles, and Pittsburg began fire based pre-hospital care systems. Firefighters were cross-trained as paramedics. The assumption was since the fire departments already had the infrastructure (fire stations, emergency response vehicles, dispatch centers, and ability to respond quickly to fires) they were the logical choice to provide EMS.

In areas where fire departments were resistant to providing EMS, hospital services, volunteer rescue squads and private ambulance services filled the gap. Some areas provide a mix of services including fire based first response with private ambulance transport services, Fire based EMT-B care followed by hospital based or private ambulance paramedics.

An EMS system is based upon a carefully planned sequence of events. The system is optimally designed to provide a rapid response of a medically trained bystander, a central dispatch point with medically trained dispatchers to provide emergency care instructions, and a first response agency capable of providing sufficient trained staff to manage the incident.

Transport provides revenue for whatever agency provides the service.

EMS TODAY

There are three basic ways used in the United States today to provide Emergency Medical Service. They are:

1. The Fire Department provides Advanced Life Support (ALS) with paramedics, and then transports the patient.
2. The Fire Department provides ALS with paramedics, and a private ambulance service transports the patient.
3. The Fire Department provides only an emergency medical technician (EMT), and the private ambulance service both provides ALS and transports the patient.

You also see mixtures, for example where sometimes the FD transports and sometimes a private ambulance service transports, often depending on availability of the transport resource.

The first method, #1 above, is used in Las Vegas, in Manhattan Beach California, and in many locations around the country. The second method, #2 above, is from the classic “Emergency” television program from the 1980s, and is used by many large municipalities and counties: LA County Fire does it this way and also does transports themselves, and so does Torrance, California. The third method, which is technically called “tiered response”, is only used in seven or eight places in the country, including Reno-Sparks.

LEVELS OF EMS CARE

There are three levels of care:

- Emergency Medical Technician-Paramedic (EMT-P),
- Emergency Medical Technician- Intermediate (EMT-I), and
- Emergency Medical Technician-Basic (EMT-B).

The EMT-B course is 168 hours and certifies the provider in basic life support which includes splinting, bandaging. The EMT-Basic can take an additional 140 hours of training to achieve the EMT-Intermediate level, and is then capable of starting IVs, administering a limited number of medications, and providing a higher level of airway care. The

EMT-Paramedic provides advanced life support. The training averages 2,000 additional hours (about one full-time year of training), and requires prior experience as an EMT-B and/or EMT-I. ALS care involves administration of approximately 34 medications, trauma training, and advanced airway management. The paramedic can use drugs and other techniques at the direction of the emergency room physician that cannot be used by an EMT of either type. Situations like cardiac arrest require a paramedic to have any hope of saving the patient’s life.

POSSIBLE EMS COMBINATIONS

FIRE DEPARTMENT ALS AND TRANSPORT

The concept behind having the fire department provide ALS is simply that the fire stations are distributed throughout the community, and are better physically placed to provide a quick response. In areas like LA County, you often see a fire paramedic squad (two men in a truck) responding along with a fire engine. For example, LA County Fire Station 106 in Palos Verdes dispatches a squad and an engine company to medical emergencies. In other areas, like Sierra FPD in Washoe County or smaller fire stations in LA County, the paramedic and his equipment are part of the engine company response. For many emergencies, a forced entry is required, and therefore the fire engine (which has trained staff and equipment for this) is sent anyway.

Fire departments have tended to use paramedics, and thus provide ALS, because it is often difficult for a dispatcher to determine, when talking to the party who called 911, whether the emergency is a serious life threatening one, or something minor that could be treated by an EMT.

The decision to use fire department transport has come as the tax base has decreased. Transport brings additional revenue. Another reason fire department transport has increased is there are areas without competitive private ambulance companies. Finally, often a private ambulance company is overloaded, and there are no ambulances available; rather than wait for a long time with the patient (thus taking an engine company out of service), the fire department transports. This frees up the fire crew to respond to another emergency long before they would be available otherwise.

This arrangement provides additional income for the fire department, and excellent patient care.

FIRE DEPARTMENT ALS AND PRIVATE AMBULANCE TRANSPORT

In this arrangement, everything is the same as fire department transport, but a private ambulance company always transports and collects income for the transport service.

The incremental cost, in Washoe County in 2010, of providing an ALS paramedic rather than an EMT on the fire engine is about \$15,000 per station (\$5000 per shift, 3 shifts). So this is the most expensive of the three options, because the fire department incurs the additional cost of the paramedic without collecting any additional revenue.

The downside of this, apart from the direction of revenue to a private company, is that if the private ambulance is delayed, an entire engine company is out of service and unable to respond to other emergencies. However, excellent patient care is provided.

TIERED RESPONSE

In this arrangement, the fire engine only carries a single EMT, and the responding private ambulance service provides a two-person crew, usually one paramedic and one EMT. Some local government officials like this arrangement, because their perception is that it is “free” (as one Washoe County commissioner recently told us), since the fire department does not incur the cost of a paramedic.

The primary patient objection to tiered response is that the arrival of the right resource is often delayed, and this has caused deaths and serious injuries because of a lack of ALS; in some parts of Washoe County, the dispatch center will send an ALS-equipped engine company to a medical emergency in another fire district solely because the ALS-equipped engine company will arrive well before the private ambulance. And if the private ambulance happens to arrive before the fire crew, they cannot make a forced entry.

Financially, this is intermediate between fire department ALS and transport (the most financially favorable to the local fire district) and fire department ALS with private transport (the most costly option to the local fire district).

WASHOE COUNTY EMS

Washoe County has a mixed EMS response profile. Incline Village (North Lake Tahoe FPD) provides ALS paramedics, and also transports patients. Sierra FPD, along the western edge of the valley, provides ALS paramedics, and must rely on a private ambulance company (REMSA) for transport. Residents of Incline Village and Sierra FPD have demanded the paramedics, and pay extra for that service. The Cities of Reno and Sparks, and the Truckee Meadows FPD (operated by Reno Fire) have a tiered system that relies on the private ambulance company for both paramedic services and transport.

GOVERNANCE

REMSA is evaluated and controlled by Washoe County Department of Health. In an appearance on February 23rd 2010 at a County Commission meeting, Dr. Mary Anderson, the head of the health district vigorously defended her regulation of REMSA, describing it as a perfectly-operated system. She also refused to provide performance data. In an appearance at a meeting called by County Commissioner Breternitz, the CEO of REMSA, Patrick Smith, also refused to provide performance data, claiming (somewhat unbelievably) that it was proprietary.

REMSA's franchise requires it to respond to "all life threatening emergencies" within 8 minutes, 90% of the time, in an area that is roughly the pre-annexation city limits of the City of Reno. Most of Sparks is in the 20 minute zone, and all the western hills (Sierra FPD) are in the "Best Efforts" zone. The franchise also permits REMSA to claim traffic or weather delays, and in those situations they are absolved from the response time requirement. REMSA is also allowed to determine which calls are "life threatening emergencies", and the response criteria apply only to those calls. The Health Department claims to audit this limited subset of calls (central area, no traffic, road construction or weather delays, and the determination of a life threatening emergency by REMSA dispatch), and states verbally that REMSA meets "all requirements".

Incline Fire reports to a Board of Fire Commissioners in Incline Village. The Chief of the North Lake Tahoe FPD posts performance data on his web site, and has a policy to explain any response times in excess of six minutes or other performance issues to his board and the public, along with corrective actions.

Truckee Meadows Fire and the City of Reno Fire report to the City of Reno manager. They do not post performance data, and in a recently completed yearlong study of the County fire services, the consultants could not obtain that response time or other performance data for Truckee Meadows FPD either. The Board of County Commissioners is nominally in charge of Truckee Meadows FPD. There is also an appointed Board, the Joint Fire Advisory Board consisting of two Reno City Councilmen, and two Washoe County Commissioners, which has nominal authority over the Truckee Meadows FPD; this was created by the agreement that allowed Reno Fire to operate Truckee Meadows FPD. In fact the City does pretty much whatever they want, and either hides data from the County or ignores County input. An example was the selection of the new fire chief for both Reno Fire and Truckee Meadows FPD, which was done by the Reno City Manager alone.

Sierra Fire reports to the Board of County Commissioners sitting as the Sierra FPD fire board.

DISPATCH

In Washoe County except Incline Village and except for the Nevada Highway Patrol, 911 calls are routed to what is called E-COMM, near the Sheriff's office off Parr Boulevard north of the City of Reno. E-COMM is run by the City of Reno, and 911 answering and dispatch (both fire/EMS and public safety) for Washoe County is provided under a contract. What happens next depends on the nature of the call, and the location of the caller.

EMS CALLS

A citizen calling 911 to report a medical emergency and request help is first interrogated by the E-COMM dispatcher. The call is then transferred to the REMSA dispatch center. The REMSA dispatcher interrogates the caller again to try to determine whether the emergency is life threatening, dispatches the appropriate REMSA resource, and then makes a determination whether or not to dispatch a fire company. If the *private ambulance company* decides a fire company is necessary, the call is transferred back to E-COMM with a request to dispatch fire.

EMS calls in Sierra FPD result in E-COMM immediately dispatching Sierra Fire with paramedics, before the call is transferred to the private ambulance company. Sierra Fire has insisted on this.

In Incline Village, the Washoe County Sheriff runs the dispatch center. For EMS, the closest North Lake Tahoe Fire District crew is dispatched, with paramedics and a rescue unit that can transport. REMSA does not operate in Incline Village, although occasionally North Lake Tahoe will request a helicopter transport from REMSA.

REMSA RESPONSE

REMSA uses a non-fixed location staging system called System Status Management (SSM), which was invented by Jack Stout; REMSA works with a local disciple of Stout, a consulting firm called Washko Associates, in Sparks. And the audits REMSA is willing to discuss are done by such a consulting firm.

SSM uses a computer routine based on a recent historical database to predict how many ambulance crews are required on a particular day and hour, and where they should be stationed for best service. So frequently you may observe a REMSA ambulance sitting in a shopping center parking lot or at a gas station—that's where the computer told them to wait for a call. REMSA has no facilities apart from a garage and dispatch center at 450 Edison Way, near the boundary between Reno and Sparks.

REMSA also operates a helicopter evacuation fleet of three helicopters. This article does not apply to that operation.

The reasons that REMSA has to have its own dispatch center are two-fold: First, the locations of the ambulances vary, and the ambulance dispatch moves them around in response to the SSM computer instructions. Second, REMSA does not always send the closest available unit; their system allows the dispatcher to consider his/her assessment of the patient obtained during the 911 call. If the dispatcher thinks a patient has had a cardiac arrest, for example, he/she could dispatch

the closest unit even if it is already in route to another emergency, leaving the other patient to wait until another ambulance can be found.

Advantages claimed for SSM are slightly quicker response time and a lower cost from maximizing use of personnel and equipment and from not having fixed locations to maintain.

ISSUES

TRANSPARENCY

The failure to provide performance data is a large issue with the community. REMSA claims, and their web site states, that they get to all “life threatening emergencies” in eight minutes or less, but the experience of the community and the fire professionals is distinctly different. Not to provide this data, audited by an independent outside party, is irresponsible and self serving. The Health District has shown serious bias, and so any audit they would do should be dismissed. Likewise, having a consultant who is a proponent of the SSM system or a relative of its inventor do the audit is unacceptable. Although it is a private company, in the present situation REMSA performs duties that in other localities governments perform. For them to fail to provide data on performance is unacceptable.

The same criticisms apply to the Reno Fire operation of Truckee Meadows FPD. Failure to be clear and open should be a major reason to re-evaluate the interlocal agreement that allows Reno to operate Truckee Meadows. And if you look in the phone book or on the web, there is not even a reference to Truckee Meadows. Instead, the listing says “see Reno Fire”.

It is important that citizens trust their government. Hiding and manipulating data, bullying people at public meetings, issuing statements critical of potential competing services from the fire departments, and the like has convinced citizens that neither the staff operating Truckee Meadows fire nor REMSA can be trusted.

Likewise, telling citizens that their personal experiences are not valid adds to distrust. It is true that in an emergency people may not fully understand what is going on around them, but to combine telling them their perceptions are not true, and refusing to give any performance data at all, leads to the reputation that REMSA has presently.

DISPATCH

The dispatch system was heavily criticized in the Diamante fire consultancy report. The concatenated interrogations by E-COMM and then REMSA were cited as a source of delay in dispatch. Allowing REMSA to determine whether a fire rescue response is required raises the same issue—are you sending the right resource as quickly as possible. Requiring as a duty that the REMSA dispatcher determine in a brief interrogation whether the situation is serious enough to send the closest resource violates the policy stated by several Commissioners, including Commissioner Weber, who believes that the closest resource should be sent immediately to an emergency.

Finally, to make a decision about the nature of the emergency (that is, either life threatening or not) is difficult to do when talking to the person who called 911 since this person is likely to be distraught.

Incline Village has a more traditional type of dispatch system, with the dispatchers trained to do all dispatch (including, for the record, animal control). Operated by the Sheriff, this system has proven very effective, and it eliminates the dual hand-offs and repeated delaying interviews that the City-REMSA system has embedded in its design.

RESPONSE TIMES OUTSIDE CITY CENTER

The private ambulance company is required to provide an eight minute response only in the central part of the City of Reno. The national standard for EMS requires an eight minute response, and many emergency room physicians argue for six minutes, in situations like cardiac arrest.

Outside that central area, REMSA's response is longer than eight minutes. For example, in a Joint Fire Advisory Board hearing in the summer of 2009, REMSA's chief operating officer James Gubbels, angrily responding to criticism of his firm's performance, stated that REMSA's response to Arrowcreek is 11.5 minutes.

Thus, outside the City center, REMSA really is an ambulance service company, not a functioning component of tiered response, because they cannot arrive in time to save lives. The consultant report contains a response time map that was obtained from the Health District and is represented as the contractual requirement for REMSA response. This map shows that much of the County, including areas with dense developments (encouraged by the County planners) and fire stations, are in the "best efforts" response time zone, which is noted to be longer than 20 minutes.

Perhaps it is time to consider limiting the role of private ambulance companies to transport, putting advanced life support and rescue back with the fire services.