

February 9, 2010

TO: Michael Threlkeld, Fire Chief

FROM: John Binaski, Battalion Chief – Paramedic Coordinator

RE: 2009 Annual Report on Paramedic Program.

The goal of this report is to determine if providing Advanced Life Support Paramedics via the City of Tulare Fire Department is within the costs presented to the city council in both presentations and if the program is effective in changing patient outcomes and survivability.

The fire department had 3,282 emergency medical (EMS) calls for service in 2009 (3,033 initially treated by TFD and 249 by Life Star) during the period of January 1, 2009 to January 1, 2010. Out of the total calls for medical aids, Life Star Ambulance Service arrived on scene prior to the fire department 169 times. Emergency medical calls still account for the majority of calls for service that the fire department responds to. During this period, the department responded to a total of 5,165 calls for service, of which EMS accounted for 63.54% of the department's total calls for service.

The fire department's first on scene arrival percentage is 90.79%, which is a decrease from the previous year of 94.27%. This was calculated using the departments Zoll/Sunpro Fire Reporting Software and with the two additional codes showing ambulance on scene prior to fires arrival. Life Star ambulance currently has a response time goal of reaching critically ill or injured patients in less than 10 minutes 90% of the time. The fire department is currently capable of meeting the CCEMSA 7 minute response time goal 99.9% of the time. It is cost prohibitive to ever think that a private company could meet this goal because of the cost associated with providing this high level of service. The fire department is only capable of meeting this response time goal because of the need to be on scene rapidly for fire suppression and because we are stationed at three fire stations geographically located throughout the city.

The City of Tulare Fire Department went forward with the concept of engine based paramedics after reviewing extensive research into the effectiveness of Advanced Life Support being administered by paramedics. These studies are all independent research completed on this subject and are mainly funded by state Emergency Medical Authorities. None of this research was conducted by fire departments, but now there appears to be more research in this area that shows support for engine based paramedics.

Numerous studies have shown that the use of ALS level care contributes to the survival of victims of cardiac arrest, particularly when ventricular fibrillation is the primary presenting cardiac rhythm. Basic Life Support services are only effective if backed up by rapid implementation of advanced life support measures. The main key to survival of cardiac arrest is early CPR and early ALS interventions. This is why response times are such a key indicator of the type of service the EMS community is capable of providing.

A study completed by the State of South Carolina found significant differences in survival rates for victims of myocardial infarction (heart attack) with hypotension. It showed a decrease in mortality rate from 69% for BLS to 10% for ALS being introduced by paramedics. A study completed by the State of Pennsylvania on congestive heart patients, indicated that pre-hospital medications improve survival in congestive heart patients, especially the critical ill patients. More than one combination of medications seems effective and early treatment is associated with improved survival. The only individuals that are capable of providing this medication are paramedics. Again, the study indicated the earlier these medications are administered, the better chance for survival.

A study completed by the State of North Carolina found significant increases in survival rates of patients involved in trauma when early ALS interventions are established. The survival rate for BLS care was 27% versus the survival rate of 73% when ALS level care was provided. Even more recent literature reveals that ALS interventions significantly improve patient trauma scores and outcome. Lastly, there is evidence from an all ALS system indicating that more than 10% of the cases thought to be BLS actually required ALS care in order to manage unexpected patient needs. An all ALS system would be more capable of responding to the needs of such patients without delay.

Listed below you will find a spreadsheets showing the call volume for each of the fire departments three fire stations and the breakdown of these EMS calls into three categories. These categories are BLS, ALS 1 and ALS 2. These categories are used for Medicare billing and show the required medical attention that was needed for each patient. The following is the definitions for each type of call;

Basic Life Support (BLS) Definition: Emergency medical services performed by an EMT or an EMT-P, BLS services *may* include: assessment and support of airway, breathing, oxygenation and circulation; prevention of disability; and first aid.

Advanced Life Support, Level 1 (ALS1) Definition: Use of this level of service requires that an ALS assessment by ALS personnel (EMT-Intermediate or Paramedic) *and* the provision of at least one ALS intervention.

Advanced Life Support, Level 2 (ALS2) Definition: Emergency medical services that involve *either* (i) the administration of *at least three* medications by intravenous push/bolus or by continuous infusion excluding crystalloid, hypotonic, isotonic and hypertonic solutions; *or* (ii) the provision of *at least one* of the following

procedures: manual defib/cardioversion; endotracheal intubation; central venous line; cardiac pacing; chest decompression; surgical airway; or intraosseous line.

In 2009 the Tulare Fire Department provided emergency medical aid to 3,282 patients. Out of the 3,282 patients, 2,145 required BLS treatments such as; oxygen, vitals, and basic first aid. 1,137 patients required ALS interventions and out of the 1,137 patient 406 were considered critically ill by EMS standards. Approximately 34.64% of all patient contacts require some form of ALS therapy and this is why the fire department got involved in providing this higher level of service.

In 2009, the Tulare Fire Department provided ALS interventions from initial patient contact until arrival at the emergency room to a total of 1,137 critically ill patients. These patients are the ones that require additional sets of hands and more advanced life saving techniques in order to increase their survivability. 406 of these patients received ALS 2 care. This is why it is important to have more than one paramedic at scene if possible.

These critically ill patients are the ones classified in the ALS 2 section. They received IV's, medications, or *at least one* of the following procedures: manual defib/cardioversion; endotracheal intubation; central venous line; cardiac pacing; chest decompression; surgical airway; or intraosseous line. This shows the importance of the service we are providing to not only these 406 very critical patients that really required ALS 2, but to all of the 3,282 patients.

2009	BLS	ALS I	ALS II	
January	185	53	26	
February	170	53	31	
March	188	68	52	
April	190	91	35	
May	166	82	60	
June	171	60	31	
July	187	73	29	
August	149	68	21	
September	194	49	19	
October	197	47	38	
November	152	67	19	
December	196	26	45	
Total	2,145	731	406	3,282