

INLAND COUNTIES EMERGENCY MEDICAL AGENCY

515 N Arrowhead Avenue
San Bernardino CA 92415-0060
Telephone (909) 388-5823
(Fax) 909 388-5825



August 28, 2006

Cesar Aristeiguieta, M.D., Director
Emergency Medical Services Authority
1930 9th Street, Suite 100
Sacramento, CA 95814

Dear Dr. Aristeiguieta:

SUBJECT: West Valley Search and Rescue EMT-I Advanced Scope of Practice Trial Study - 36 Month Report

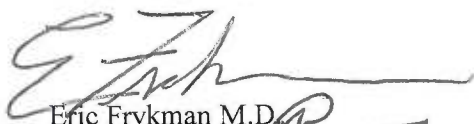
Attached you will find a copy of the 36-Month Report on the West Valley Search and Rescue EMT-I Advanced Scope of Practice Trial Study.

The report will present an overview of the operation and the results, as well as our recommendations for the West Valley Search and Rescue EMT-I Advanced Scope of Practice Trial Study. Since 2003, the call volume for search and rescue in San Bernardino County has significantly decreased due to natural disasters causing closure of much of the team's response areas. The report will show that although only a small number of patients received Advanced Scope interventions during the trial study period, some patients did receive a significant benefit. The report will also show that due to the dedication of West Valley Search and Rescue EMT-I's with Advanced Skills and strong regional support for the project, the Advanced Scope program continues to be successful.

After thoroughly reviewing the results of the advanced scope project, we recommend that the West Valley Search and Rescue EMT-I Advanced Scope of Practice Trial Study be continued until the EMT-II regulations become effective.

If you have any questions, please do not hesitate to call Sarah Momsen R.N., ICEMA EMS Nurse Specialist, at 909.388.5823 or Debbie D. Bervel M.D., Medical Director of the San Bernardino County Sheriff West Valley Search and Rescue Team, at 909.388.5823.

Very truly yours,



Eric Frykman M.D.
ICEMA Interim Medical Director

Attachment
EF/sm

**INLAND COUNTIES EMERGENCY MEDICAL AGENCY
WEST VALLEY SEARCH AND RESCUE**

**EMT-I ADVANCED SCOPE OF PRACTICE
TRIAL STUDY**

ICEMA



36 MONTH REPORT

August 2006

INTRODUCTION

This document contains the second 18 month report on the EMT-I Advanced Scope of Practice Trial Study for the San Bernardino County Sheriff's West Valley Search and Rescue Team, which is within the ICEMA region.

The initial trial study began in August of 2003 with a focus on pre-hospital treatment in the remote and wilderness areas of San Bernardino County. In the years prior to the trial study, the County of San Bernardino was experiencing nearly 300 calls per year for Search and Rescue (SAR) operations within its 21,000 sq miles.

In October 2003, wild fires swept through the recreational areas that produced a major portion of the rescue calls. This was followed by flooding and mountain run-off that forced the county and the U.S. Forest Service to close these areas for general public use. Although other areas of the county remained open, these closures were primarily located in the response area for the trial study group.

These closures have lasted for nearly 3 years and are expected to continue for approximately 2 more years. This has resulted in a significant reduction of call volume countywide. This reduction is clearly reflected in the number of patient contacts for the participants of the trial study.

Since the beginning of the trial study in August 2003, a total of 49 patient contacts were made with 29 of these actually receiving advanced skills. Calls were received by the trial study group from the following sources:

- 911 cell phone calls from lost persons
- Calls for assistance for overdue hikers/campers, etc.
- Request for assistance by a local fire department in an isolated mountain community that does not have paramedic service in its response area.
- Standbys at high risk activities sponsored or attended by county personnel

The majority of call outs are for lost and injured individuals in remote areas. However, the rural fire service's request for assistance, and standby at events to provide medical care, had additional valuable results. An influx of 2,000 – 3,000 people per weekend day in normally low use areas overwhelmed the existing resources for medical assistance. It was felt that the EMT-Is involved in the trial study could benefit from the exposure to the medical care opportunities and help to maintain skill proficiency. A mutual benefit was realized by having these personnel lend logistical assistance as well as a physical presence for a more immediate patient care response.

An additional noted benefit was the ability to render care to SAR personnel who became injured while performing technical rescues in the remote areas. Timely responses with EMT-Is with advanced skills, who are trained to work in the high angle and alpine environment, have opened a new standard for care to the SAR worker.

Overall, while the actual patient contacts are lower than projected or expected numbers, this report will illustrate how the use of this Advanced Scope of Practice option for this study group has affected the outcomes of the patients encountered in a positive and beneficial way.

MODIFICATION OF ORIGINAL TRIAL STUDY

At the conclusion of the first 18 month trial study period, the following procedures/medications were removed from the trial study as these items are now contained within the optional skills for the EMT-I.

- Determination of blood glucose levels via glucometer
- Albuterol via nebulizer
- Aspirin
- Epinephrine
- Glucagon
- Naloxone
- Nitroglycerine

The current trial study includes the following procedures/medications.

- Intravenous access without the presence of a paramedic
- Dextrose 50%

At the conclusion of the presentation of the first 18 month trial study, the committee recommended a change in the criteria for establishment of intravenous access and the indications for the determination of blood glucose levels.

In response to the committee's recommendations, the criteria were changed to reflect a more selective utilization for initiating intravenous access and determining of blood glucose levels.

PROVIDER AGENCIES

Of the original 15 individuals participating in this study, twelve (80%) remain and are certified EMT-Is with West Valley Search and Rescue.

MEDICAL CONTROL/QUALITY ASSURANCE

Medical control during the trial study has been maintained through several methods. On-line prospective medical control has been provided by means of direct communication with the receiving paramedic unit. On going medical control has been maintained by the EMT-I Advanced Scope of Practice Treatment Protocols. Oversight is maintained by the Inland Counties Emergency Medical Agency (ICEMA) Medical Director, ICEMA Regional QI Committee, Medical Advisory Committee, Trial Study Medical Committee, Receiving

Hospital, and the ICEMA clerical and medical staff. All calls involving the use of advanced scope protocols, procedures and/or medications have been reviewed by these agencies/personnel.

Each call, in which an advanced scope procedure and/or medication were utilized, was reviewed using the Advanced EMT-I Skill Documentation Form as a guide (see Appendix A).

As part of continuing education, the Trial Study Medical Committee conducted run reviews for each advanced scope of practice call. On a quarterly basis, skill and review sessions were conducted for all Trial Study Personnel.

CONTINUING EDUCATION

Arrowhead Regional Medical Center, Rancho Cucamonga Fire Department, and the Trial Study Medical Committee, including the medical director and QI coordinator, have provided continuing education during the course of the trial study. To maintain certification, the EMT-Is with Advanced Skills were required to participate in continuing education. Arrowhead Regional Medical Center and Rancho Cucamonga Fire Department provided initial clinical/field training and have continued to provide skill and training sessions as needed. The Trial Study Committee initially provided monthly training sessions including skills, lectures, and run review sessions. Monthly demonstration of skills was reduced to quarterly demonstration of skills after the initial six (6) months based on program evaluation.

The EMT-Is with Advanced Skills that are participating in the trial study are required to complete 24 hours of continuing education on advanced skills every 2 years, as well as attend 6 run reviews per year. All personnel participating in the study have met or exceeded the requirements for continuing education.

NUMBER OF PATIENTS

During the course of this study, twenty-six (26) patient contacts requiring advanced skills were reported. The ICEMA Medical Director and the Trial Study Committee deemed all 26 cases received appropriate care and positive outcomes were noted. Seven (7) patients were search and rescue (SAR) personnel who benefited from advanced medical care in the remote wilderness environment.

STATISTICAL SUMMARY

Table 1 is a summary of all patients seen by WVSAR during the total 36 months of the study.

Categories of Patients	Total Patients – 35	
	Aug 03 – Feb 05	Feb 05 – Aug 06
Medical	13 patients (37%)	8 patients (57%)
Trauma	22 patients (63%)	6 patients (43%)
BLS	17 patients (49%)	6 patients (43%)
ALS	18 patients (51%)	8 patients (57%)

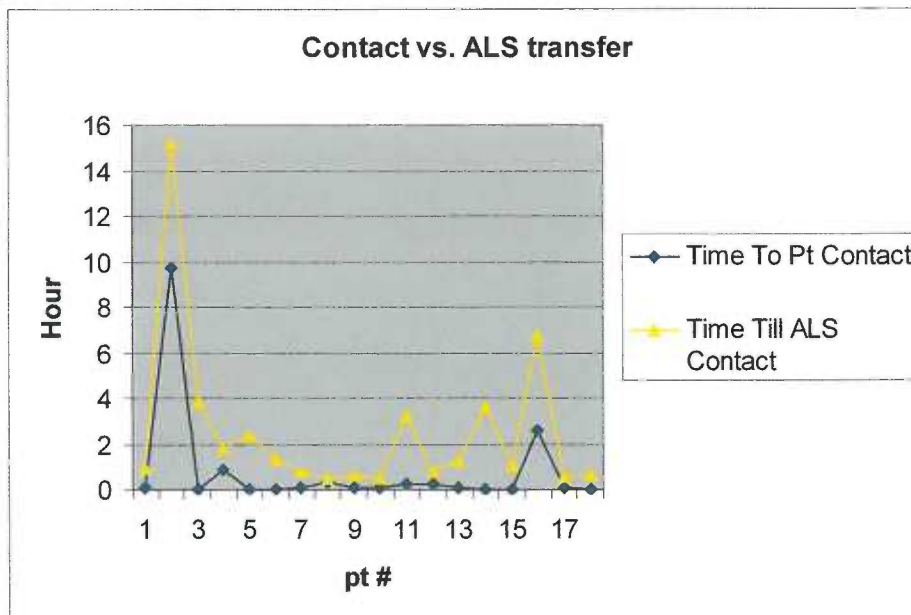
Table 1

Table 2 is a summary of the 26 patients that received ALS care during the study.

Patients who received ALS procedures – Total of 26		
August 03 – Feb 05 (18 patients)		
Medical:	11 patients (61%)	3 SAR personnel (27%)
Trauma:	7 patients (39%)	3 SAR personnel (43%)
Feb 05 – Aug 06 (8 patients)		
Medical:	7 patients (87.5%)	1 SAR person (14%)
Trauma:	1 patient (12.5%)	0 SAR personnel

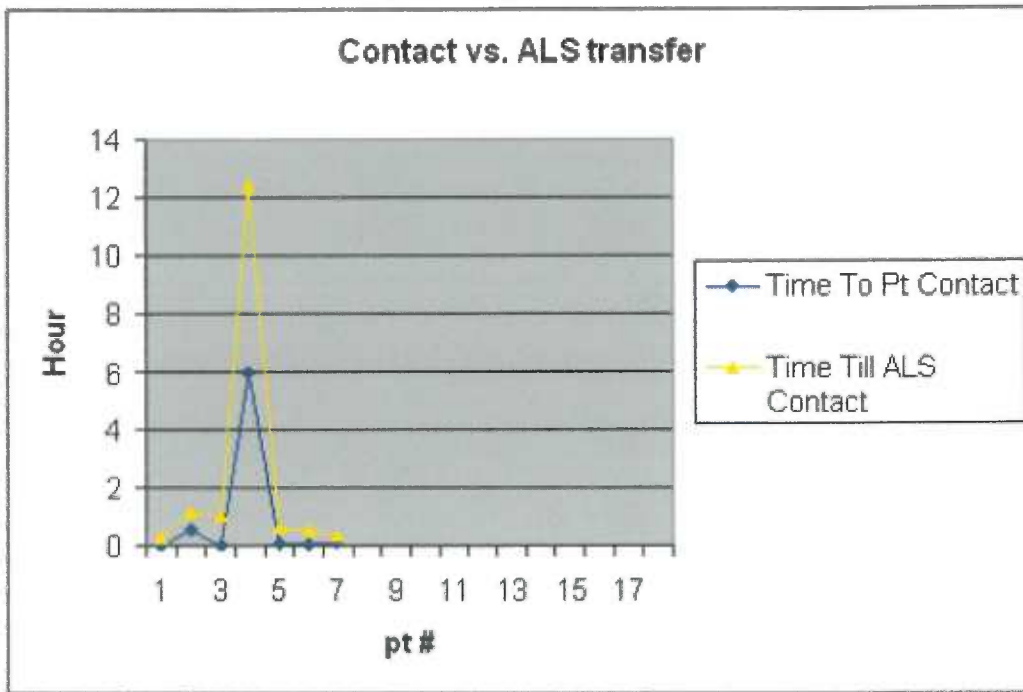
Table 2

Graph 1 is a summary of response times for EMT-I with Advanced Skills and for ALS paramedics to arrive. August 03 - February 05



Graph 1

Graph 2 is a summary of response times for EMT-I with Advanced Skills and for ALS paramedics to arrive. February 05 - August 06



Graph 2

TRIAL STUDY ADVANCED SCOPE OF PRACTICE

The EMT-I's with advanced skills involved in this trial study were authorized to use the expanded scope procedure and medication listed below.

1. IV of normal saline
2. Dextrose 50%

The Trial Study allowed for advanced scope procedures and/or medications to be used in the clinical conditions that fell within the treatment protocols listed in Table 3. Appendix B is a copy of the EMT-I Advanced Skills Protocols.

Advanced Scope Protocols	
<ul style="list-style-type: none"> • Allergic Reaction/Anaphylaxis • Altered Mental Status • Cardiopulmonary Arrest • Chest Pain (suspected cardiac origin) 	<ul style="list-style-type: none"> • Dehydration • Near Drowning/Drowning • Respiratory Distress • Trauma

Table 3

Table 4 shows the breakdown of the Advanced Scope Treatment Protocols utilized during the trial study period. Appendix C contains a list of each patient contact.

Treatment Protocols Used		
Protocol	Number of Times Used	
	Aug 03 – Feb 05	Feb 05 – Aug 06
Allergic Reaction/Anaphylaxis	0	0
Altered Mental Status	4	4
Cardiopulmonary Arrest	0	0
Chest Pain (suspected cardiac origin)	0	0
Dehydration	7	4
Near Drowning/Drowning	0	0
Respiratory Distress	0	0
Trauma	7	1
TOTALS:	18	9*

Table 4

*Sum does not total to 8 secondary to use of both Trauma and ALOC protocols on one of the patients.

Table 5 shows a breakdown of the EMT Advanced Skills/Medications that were used in the second 18 months of this study as compared to the initial 18 months.

EMT Advanced Skills/Medications								
Skill/Medication	Attempts		Admin/Successful		Unsuccessful		Complications	
	Aug 03 - Feb 05	Feb 05 - Aug 06	Aug 03 - Feb 05	Feb 05 - Aug 06	Aug 03 - Feb 05	Feb 05 - Aug 03	Aug 03 - Feb 05	Feb 05 - Aug 06
Dextrose 50%	n/a	n/a	n/a	n/a	n/a	n/a	None	None
IV access	21*	10	17*	5	1	1	None	None
IV fluids - NS	n/a	n/a	7	3	0	0	None	None
Blood Glucose**	8	5	6	5	2	0	cold temp	None

Table 5

*Of the 24 patients on whom IV access was attempted, 22 patients (91.64%) had successful establishment of IV access prior to handoff to ALS personnel.

**Blood Glucose determination is included here because it is a pre-requisite prior to evaluating the need for D50 administration.

BENEFICIAL FACTORS

When reviewed by the ICEMA Medical Director and the Trial Study Committee, the ALS interventions were deemed appropriate and beneficial.

PROBLEMS IDENTIFIED

During the initial 18 month trial study, a technical problem was identified with use of the glucometer to assess for blood glucose in the cold environment. Based on recommendations of the committee, this issue was brought to the attention of the EMT-Is with advanced skills as a quality assurance concern. In the subsequent 18 months of the trial study, no further problems were identified.

ADVERSE REACTIONS OR COMPLICATIONS

There were no adverse reactions or complications noted.

GENERAL CONCLUSIONS

The call volume for search and rescue in San Bernardino County since 2003 has been significantly less due to natural disasters causing closure of much of the team's response areas. The study has shown that although only a small number of patients received Advanced Scope interventions during the trial study period, some patients did receive a significant benefit.

The advanced skill used most often, and also proved to be the most beneficial, was the procedure of IV access. Approximately 88% of the trial study patients received IV access and the EMT-I with advanced skills was successful in establishing an IV in 92% of these patients. Of these patients, 43% received IV fluid rehydration and subsequently had clinical improvement. Without this Advanced Scope intervention, the patients' condition may have deteriorated further.

In the search and rescue environment, hikers, lost victims, and rescue members often suffer from dehydration, heat illness or acute mountain sickness. The importance of IV fluid rehydration is paramount in the remote wilderness when help may be hours or days away.

This program has proven to be highly beneficial by providing ALS intervention in areas that was previously void of ALS services. The study has shown the benefits these additional skills and procedures are to the residents, visitors, and Search and Rescue personnel of San Bernardino County.

The EMT-I Advanced Scope of Practice program should be maintained in its current status. Diminishing the program or eliminating it would deprive the people of San Bernardino County of a vital service. The San Bernardino County Sheriff's Department is anticipating expanding this program to its remaining 26 search and rescue teams.

RECOMMENDATIONS

That the Commission authorizes the continuation of the current trial study for an additional 18 months or until the new EMT-II regulations become effective

Appendix A

**INLAND COUNTIES EMERGENCY MEDICAL AGENCY
WEST VALLEY SEARCH AND RESCUE**

ADVANCED EMT-I SKILL DOCUMENTATION FORM

**SAN BERNARDINO COUNTY SHERIFF – WEST VALLEY SEARCH AND RESCUE
ADVANCED EMT – 1 SKILL DOCUMENTATION FORM – ON LINE VERSION**

Date: **ICEMA Run #:**

COMBITUBE: Completed by: Time:

Successful: Yes No No. of attempts: Size tube: Tube placed with black lines between teeth
Indications: Cardiac Arrest (including trauma) Agonal or failing Respirations Non-responsive and apneic
 Prolonged ventilation is required and adequate ventilation cannot otherwise be achieved

Placement checked by: Bilat. breath sounds absent gastric sounds mist in tube pulse ox reading: %

Tube secured by: tape twill Commercial Tube Holder: Brand:

Placement rechecked after securing in litter by means of:

after transfer to ALS (medic / ED) by means of:

If unsuccessful was it due to: unable to pass tube Trismus Other:

If unsuccessful, airway managed by: BVM Other:

Response to treatment:

VASCULAR ACCESS: Completed by: Time:

IV NS Saline lock
Indications for fluid bolus(es):
 Hypotension / Tachycardia: Initial BP: / initial pulse:

Symptomatology related to inadequate tissue perfusion
 skin dry skin hot altered mental status

Multi-system trauma
 Non-traumatic victims of shock
 anaphylaxis cardiac / respiratory CPR altered mental status

Dehydration
 sensation of thirst dry mucous membranes poor skin turgor sunken eyes history of prolonged environmental

Location: Hand Forearm Antecubital Other:

right left Gauge needle: No. of attempts: Total amount of fluid infused:

Successful: yes: blood return no due to: unable to get blood return unable to thread catheter Infiltrated

Response to initial fluid bolus: Time of assessment:

Response to repeat fluid bolus #1: Time of assessment:

Response to repeat fluid bolus #2: Time of assessment:

Other: