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.

	Total Patients – 35	*Total Patients - 14*
Categories of Patients	**Aug 03 – Feb 05**	**Feb 05 – Aug 06**
Medical Trauma	13 patients (37%) 22 patients (63%)	8 patients (57%) 6 patients (43%)
BLS ALS	17 patients (49%) 18 patients (51%)	6 patients (43%) 8 patients (57%)

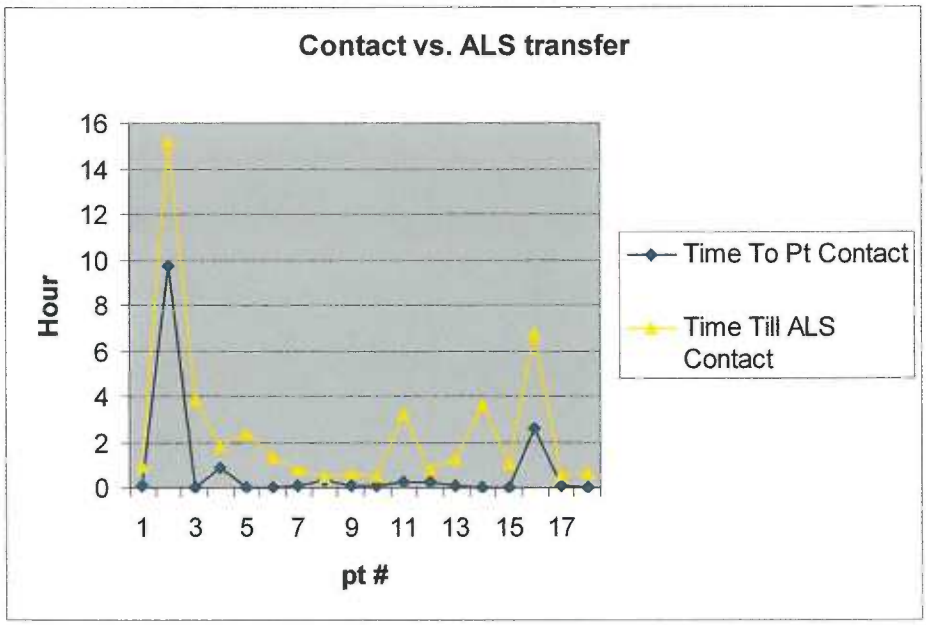
Table 1

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

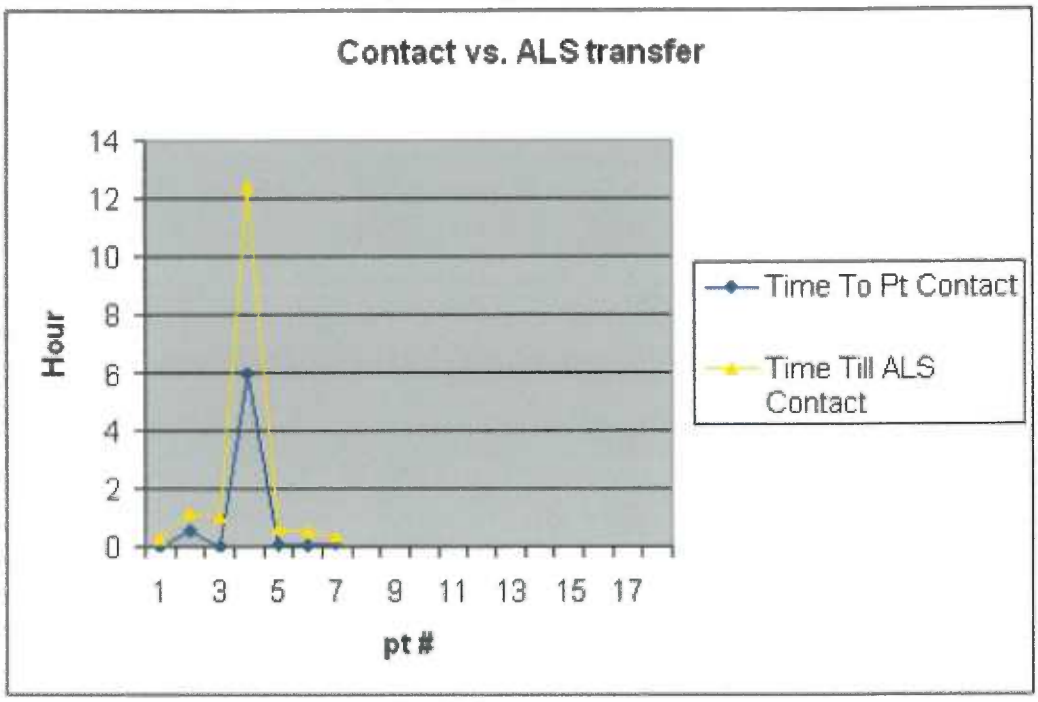
Table 2

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	
• Allergic Reaction/Anaphylaxis • Altered Mental Status • Cardiopulmonary Arrest • Chest Pain (suspected cardiac origin)	• 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 diasters 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):

☐ Hypothension / 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:

CLEARANCE OF SPINE / TRANSPORT WITHOUT IMMOBILIZATION:

Completed by:

Time: _____

☐ Mechanism positive for immobilization ☐ Mechanism negative (immobilization not indicated) ☐ Mechanism uncertain (Complete assessment)

	Yes	No	
Patient is reliable	☐	☐	
Is there suspicion of ingestion or use of alcohol or drugs		☐	☐
Is there a language or communications barrier		☐	☐
Is the patient < 4 years of age	☐	☐	
Does the patient have an abnormal mental status	☐	☐	
Does the patient have distracting injuries	☐	☐	
Does the patient have spine pain / tenderness		☐	☐
Is the motor exam abnormal	☐	☐	
Is the sensory exam abnormal	☐	☐	

Condition after treatment:

FINGERSTICK BLOOD SUGAR DETERMINATION: Completed by:

Time: Result:

Initial Assessment:
☐ Altered Mental Status
☐ Syncope / dizziness
☐ Pale / cool / diaphoretic
☐ Physical exhaustion
☐ Other observations:

Treatment: ☐ None ☐ D/50

If administered: Repeat Fingerstick Value: Time:

Post procedure observations:

DETERMINATION OF DEATH: Completed by: Time:

☐ Patient pulseless and apneic and:

INDICATIONS: ☐ Decomposition ☐ Obvious Rigor Mortis ☐ Obvious lividity ☐ Wearing approved DNR Band ☐ Decapitation
☐ Incineration of head or torso ☐ Massive crush / penetrating injury with evisceration or total destruction of heart, lung and / or brain
☐ Gross dismemberment ☐ Blunt trauma

☐ Cardiac arrest persists continuously for over 20 minutes of sustained chest compressions, assisted ventilations, and AED shows asystole or agonal in 2 leads
☐ Cardiac arrest persists continuously for over 30 minutes with sustained basic and advanced EMT interventions and:
☐ the patients rhythm continues to show a nonperfusing rthythm AND
☐ the availability of ALS personnel is over 30 minutes

Comments:

MEDICATION ADMINISTRATION:

Time	Medication	Dose / Rte	Administered by	Indications

Comments / Effect of Medication:

EMT #1: EMT #2:

Name of receiving ALS: Agency:

☐ Vascular access intact upon transfer to ALS (medic / ED) If not, why: ☐ Infiltrated ☐ Clotted

Appendix B

INLAND COUNTIES EMERGENCY MEDICAL AGENCY
WEST VALLEY SEARCH AND RESCUE

EMT-I ADVANCED SCOPE OF PRACTICE
TREATMENT PROTOCOLS

TRIAL STUDY
EMT-I ADVANCED SCOPE OF PRACTICE
INLAND COUNTIES EMERGENCY MEDICAL AGENCY
WEST VALLEY SEARCH AND RESCUE

TREATMENT PROTOCOLS

I. EMT-I's using the advanced scope of practice will be utilizing standing order protocols. Due to the nature of the response areas (mountainous terrain, etc) and the rescue situation, radio or telephone communications will be impractical if not impossible.

II. EMT-I's using the advanced scope of practice will document on the patient care report form any treatment initiated on standing orders and will complete the Advanced Skill Documentation Form.

III. Definitions:
Pediatric patient = any patient 8 years of age or younger, or the appearance of.

IV. Pediatric weights will be determined by use of the Broselow Tape.

ALLERGIC REACTION/ANAPHYLAXIS

CRITERIA

Apparent allergic reaction with wheezing, threatened airway, hypotension or shock.

PROTOCOL

1. Personal Protective Equipment.
2. Institute and/or maintain BLS procedures.
3. Epinephrine (1:1,000) 0.3 mg SQ. Use caution for patients over age 40, and/or heart disease, hypertension.
4. May repeat Epinephrine (1:1,000) 0.3 mg SQ in 5 minutes if condition worsens or in 15 minutes if condition does not improve.
5. Albuterol 5.0 mg via hand-held nebulizer for wheezing. May repeat albuterol nebulizer treatments as needed.
6. Establish peripheral intravenous access. If patient's systolic blood pressure < 90mm Hg, then give a bolus of 500 cc normal saline. May repeat the fluid bolus as needed to sustain a BP of >90 mm Hg systolic. Monitor lung sounds and decrease flow rate as needed.

PEDIATRIC DOSE (use Broselow Tape)

1. Epinephrine (1:1,000) 0.01 mg/kg SQ (maximum of 0.3 mg).
2. Albuterol 2.5 mg via hand-held nebulizer or blow-by mask nebulizer.

ALTERED MENTAL STATUS

CRITERIA

Unresponsive (comatose), slow to respond (obtunded), responds with unintelligible sounds, inappropriate words, confusion and/or agitation.

PROTOCOL

1. Personal Protective Equipment
2. Institute and/or maintain BLS procedures.
3. Obtain blood by fingerstick and analyze blood sample via glucose stick.

FOR SUSPECTED HYPOGLYCEMIA

1. Establish peripheral intravenous access.
2. Dextrose 50% 25 gm IV if blood sugar < 80 or unobtainable (if patient presents with altered mental status and unable to swallow).
3. Glucagon 1 mg IM if blood sugar < 80 or unobtainable and peripheral intravenous access cannot be established.
4. If patient has blood sugar < 80 but is alert and can swallow, give oral glucose 15 gm in gel solution (prepackaged, single dose).

FOR SUSPECTED NARCOTIC OVERDOSE

1. Naloxone (Narcan) 2 mg IM in patients with depressed respirations (<12/min), pinpoint pupils and/or circumstantial evidence of drug use.
2. May repeat as needed.

PEDIATRIC DOSE

1. Dextrose 0.5 – 1.0 gm/kg IV
2. Glucagon 0.5 mg IM < 1 year of age
   Glucagon 1.0 mg IM > 1 year of age
3. Naloxone 0.1 mg/kg IM (maximum of 2 mg). May repeat as needed.

CARDIOPULMONARY ARREST (NON-TRAUMATIC)

CRITERIA

Confirmed unconscious, non-breathing and pulseless.

PROTOCOL

1. Personal Protective Equipment
2. Refer to Determination of Death on Scene policy – if appropriate.
3. Institute and/or maintain BLS procedures.
4. Apply AED and perform defibrillation as indicated.
5. Establish and maintain airway patency with basic airway adjuncts as per protocol.
6. Insert esophageal-tracheal airway device.
7. Establish peripheral intravenous access.

CHEST PAIN (SUSPECTED CARDIAC ORIGIN)

CRITERIA

Typical symptoms of cardiac pain: "pressure" or "squeezing" pain, with or without radiation to arms or jaw. Patient may or may not have associated signs and symptoms of shortness of breath, nausea/vomiting, diaphoresis, or dizziness.

PROTOCOL

1. Personal Protective Equipment
2. Institute and/or maintain BLS protocols.
3. Establish peripheral intravenous access.
4. Nitroglycerine 0.4 mg tablets sublingual or metered dose oral spray for pain. May repeat every 5 minutes as long as blood pressure remains >90 mm Hg systolic.
5. Two chewable, non-enteric coated, baby aspirin (81 mg each tab X 2 tabs = 162 mg total dose).

DEHYDRATION

CRITERIA

Typical symptoms of dehydration: thirst, dry mucous membranes, poor skin turgor, sunken eyes and/or history of prolonged environmental exposure without sufficient intake of fluids.

PROTOCOL

1. Personal Protective Equipment
2. Institute and/or maintain BLS procedures.
3. Establish peripheral intravenous access.
4. If patient's systolic BP < 90 mm Hg, then give bolus of 500 cc normal saline. May repeat the fluid bolus as needed to sustain a BP of >90 mm Hg systolic. Monitor lung sounds and decrease flow rate as needed.
5. If patient's systolic BP > 90 mm Hg, then give bolus of 250 cc of normal saline. May repeat the fluid bolus as needed for continued clinical appearance of dehydration. Monitor lung sounds and decrease flow rate as needed.

PEDIATRIC DOSE (use Broselow Tape)

In pediatric patient, give 20 cc/kg fluid bolus for change in central/peripheral pulses, limb temperature transition, altered level of consciousness and/or systolic BP < 80 mm Hg. May repeat fluid bolus as needed.

NEAR DROWNING / DROWNING

CRITERIA

Obvious

PROTOCOL

1. Personal Protective Equipment
2. Institute and/or maintain BLS procedures, with spinal immobilization if appropriate.
3. If full arrest, begin CPR per protocol. If respiratory arrest with pulse, begin ventilation.
4. Establish and maintain airway patency with basic airway adjuncts per protocol.
5. Insert esophageal-tracheal airway device with inline spinal immobilization.
6. Establish peripheral intravenous access.
7. If patient has spontaneous respiration and is conscious:
   Albuterol 5.0 mg via nebulizer for wheezing.

PEDIATRIC DOSE

Albuterol 2.5 mg via hand-held nebulizer or blow-by mask nebulizer

RESPIRATORY DISTRESS

CRITERIA

Shortness of breath or difficulty breathing

PROTOCOL

1. Personal Protective Equipment
2. Institute and/or maintain BLS procedures.

UNCONSCIOUS WITH APNEA / INEFFECTIVE RESPIRATIONS

1. Personal Protective Equipment
2. Institute and/or maintain BLS procedures.
3. If unconscious, insert esophageal-tracheal airway device.
4. Establish peripheral intravenous access.

RESPIRATORY DISTRESS SUSPECTED CARDIAC (CHF) ETIOLOGY

1. Personal Protective Equipment
2. Institute and/or maintain BLS procedures.
3. Establish peripheral intravenous access.
4. Nitroglycerin 0.4 mg tablets sublingual or metered dose oral spray for relief every 5 minutes as long as BP remains > 90 mm Hg systolic.

RESPIRATORY DISTRESS WITH BRONCHOSPASM (SUSPECT ASTHMA, COPD, TOXIC SUBSTANCE [SMOKE, GAS] INHALATION

1. Personal Protective Equipment.
2. Institute and/or maintain BLS procedures.
3. Albuterol 5.0 mg via hand-held nebulizer. May continue treatment for distress as needed.
4. If the respiratory status deteriorates, then consider epinephrine (1:1,000) 0.3 mg SQ if patient
   < 40 years old.
5. Establish peripheral intravenous access.

PEDIATRIC DOSE (use Broselow Tape)

1. Albuterol 2.5 mg via blow-by mask nebulizer or hand-held nebulizer. May continue nebulizer treatment for severe distress as needed.
2. Epinephrine (1:1,000) 0.01 mg/kg SQ (maximum of 0.3 mg) if the child is unable to cooperate with inhaled albuterol nebulizer treatment or child's respiratory status deteriorates.

TRAUMA

CRITERIA

Patient who has sustained any physical trauma.

PROTOCOL

1. Personal Protective Equipment
2. Institute and/or maintain BLS procedures.
3. Establish peripheral intravenous access.
4. If patient's systolic BP < 90 mm Hg, then give a bolus of 500 cc of normal saline. May repeat the fluid bolus as needed to sustain a BP of >90 mm Hg systolic. Monitor lung sounds and decrease flow rate as needed.

PEDIATRIC DOSE (use Broselow Tape)

In pediatric patient, give 20 cc/kg fluid bolus for systolic BP < 80 mm Hg. May repeat fluid bolus as needed.

ESOPHAGEAL-TRACHEAL AIRWAY DEVICE (COMBITUBE / COMBITUBE SA)

PRIORITIES:

1. ABC'S
2. Monitor changes in cardiac status.
3. Periodic reassessment of airway.

FIELD ASSESSMENT/TREATMENT INDICATORS:

1. Non-responsive and apneic
2. Cardiac arrest (including traumatic full arrest)
3. Agonal or failing respirations, no gag reflex and non-responsive
4. When prolonged ventilation is required and adequate ventilation cannot otherwise be achieved.
5. Use Combitube for patients 16 years of age and older and at least 5 feet tall.
6. Use Combitube SA (small adult) for patients 16 years of age and older and who are between
   4 feet and 5 feet 6 inches.

ADDITIONAL CONSIDERATIONS:

1. Use when BVM management is not adequate or effective.
2. The ETAD should not be removed unless there is a malfunction.

CONTRAINDICATIONS:

1. Known ingestion of caustic substances
2. Suspect foreign body airway obstruction
3. Patients with known esophageal disease (cancer, varices, surgery, etc.)
4. NOT to be used in pediatric patients who appear to be less than 16 years of age

RELATIVE CONTRAINDICATIONS:

1. This method of intubation is to be used cautiously on patients with severe facial trauma or with obvious or suspected cervical spine injury.
2. Intubation may be initially contraindicated on patients that are known diabetics or heroin overdose cases prior to administration of dextrose or naloxone.

PROCEDURE:

1. Pre-oxygenate patient prior to insertion, then lubricate distal end of device with water-soluble lubricant.
2. Attach right angle emesis deflector to lumen #2.
3. Perform tongue/jaw lift and gently insert device in mid-line until teeth are between the double black rings.

4. Inflate pharyngeal cuff (#1) with 100 cc's of air (85cc for SA) and remove syringe.
5. Inflate distal cuff (#2) with 15 cc's of air (12cc for SA) and remove syringe.
6. Attach bag valve device to lumen #1 (esophageal) and ventilate. Verify placement by:
   a. Rise and fall of the chest
   b. Bilateral breath sounds
   c. Absent epigastric sounds.
   d. Colormetric end-tidal CO2 detector

   If the above criteria are met, you may continue to ventilate through lumen #1. If breath sounds are absent and epigastric sounds are present, remove bag valve and ventilate through lumen #2 (tracheal). Additional tube placement verification may be done with pulse oximetry. If unable to confirm placement with absent breath sounds from either lumen, reposition tube slightly and try again. If still unsuccessful, remove ETAD and continue to use a bag valve mask with either an OPA or NPA.
7. ETAD placement may be attempted two times.
8. If resistance is met when advancing the tube, then the attempt should be discontinued.

DOCUMENTATION:

1. The Advanced Skills Documentation Form will be initiated by the EMT-I providing the advanced skill. The form must be signed by the ALS provider accepting responsibility for continued care of the patient. The form will be reviewed by the medical director/QI coordinator for any necessary follow-up. The form will be then forwarded to ICEMA and the EMS Medical Director.
2. In the event the receiving clinician discovers the device was improperly placed, an Incident Report must be filed and forwarded to ICEMA within forty-eight (48) hours by the medical director/QI coordinator.

DETERMINATION OF BLOOD GLUCOSE VIA FINGERSTICK

PRIORITIES:

1. ABC's
2. Monitor changes in mental status
3. Periodic reassessment of airway

FIELD ASSESSMENT/TREATMENT INDICATORS:

1. Cardiac or Respiratory arrest (including traumatic full arrest)
2. Altered level of consciousness for any reason (medical or trauma)

ADDITIONAL CONSIDERATIONS:

If possible, should be performed prior to advanced airway procedures in the patient with altered level of consciousness that have an intact airway.

CONTRAINDICATIONS:

None

PROCEDURE:

1. Select and cleanse tip of finger with antiseptic wipe.
2. Perform fingerstick with approved lancet device. NOTE: Avoid the middle of the finger pad for the stick to prevent unnecessary discomfort.
3. Transfer sufficient quantity of blood to monitoring strip.
4. Wait 1 minute then wipe blood off strip with cotton wipe.
5. Wait an additional minute and read value, comparing the strip visually to the indicators on the bottle.
6. Document the value on the patient care report form.
7. Continue with appropriate care according to protocol.

DOCUMENTATION:

The Advanced Skills Documentation Form will be initiated by the EMT-I providing the advanced skill. The form must be signed by the ALS provider accepting responsibility for continued care of the patient. The form will be reviewed by the medical director/QI coordinator for any necessary follow-up. The form will be then forwarded to ICEMA and the EMS Medical Director.

PERIPHERAL INTRAVENOUS ACCESS

PRIORITIES:

1. ABC's
2. Determine degree of physiological distress.
3. Treat shock with resuscitation.

FIELD ASSESSMENT/TREATMENT INDICATORS:

All patients experiencing:
1. Hypotension
2. Symptomatology related to inadequate tissue perfusion
3. Multi-system trauma
4. Non-traumatic victim of shock
5. Dehydration

PROCEDURE:

1. Select catheter and prepare for insertion.
2. Identify an appropriate vein for cannulation.
3. Prep site.
4. Stabilize vein while piercing skin, adjusting angle of insertion and entering the vein.
5. Aspirate or watch for flashback of blood.
6. Advance cannula and needle to ensure cannulation.
7. Advance catheter while stabilizing needle.
8. Tamponade over tip of catheter to obstruct blood flow and release constricting band.
9. Withdraw needle.
10. If saline lock, attach plug and flush with 3 cc of normal saline.
11. If IV, attach intravenous tubing.
12. Open IV flow and assure patency.
13. Secure catheter and apply dressing to IV site.
14. Secure IV tubing.
15. Adjust IV flow to TKO or to appropriate rate per treatment protocol.
16. Continually recheck puncture site and manage as needed.
17. Establish an additional IV or saline lock if clinically indicated.

DOCUMENTATION:

1. The Advanced Skills Documentation Form will be initiated by the EMT-I providing the advanced skill. The form must be signed by the ALS provider accepting responsibility for continued care of the patient. The form will be reviewed by the medical director/QI coordinator for any necessary follow-up. The form will be then forwarded to ICEMA and the EMS Medical Director.

2. In the event the receiving clinician discovers the device is improperly placed, an Incident Report must be filed and forwarded to ICEMA within forty-eight (48) hours by the medical director/QI coordinator.

DETERMINATION OF DEATH

Frequently Search and Rescue EMS personnel are dispatched to a scene where the victim(s) may appear to be deceased. There may be situations where the EMS personnel are called upon to determine death on scene. The prehospital care personnel may determine death on scene if any of the following conditions are present along with pulselessness and apnea:

CONDITIONS:

1. Decomposition.
2. Obvious signs of rigor mortis such as rigidity or stiffening of muscular tissues and joints in the body which occurs anytime after death and usually appears in the head, face and neck muscles first.
3. Obvious signs of venous pooling in dependent body parts, lividity such as mottled bluish-tinged discoloration of the skin, often accompanied by cold extremities.
   NOTE: Coldness of the extremities should be evaluated based upon environmental exposures, altitude and aging, and should not be utilized to presume death without other signs of death present.
4. Patient wearing an approved DNR band.
5. Decapitation.
6. Incineration of the torso and/or head.
7. Massive crush injury and/or penetrating injury with evisceration or total destruction of the heart, lung and/or brain.
8. Gross dismemberment of the trunk.
9. Blunt Trauma.

If death is determined, according to the above stated criteria, basic life support or advanced life support should not be initiated or continued. The EMT-I with advanced skills is authorized to discontinue CPR initiated at the scene if the patient falls into the category of obvious death. It is at this point the County Coroner must be notified along with the appropriate law enforcement agency.
In any other situation where there may be doubt as to the clinical findings of the patient, BLS/CPR must be initiated.

CLINICAL FINDINGS:

If the patient does not meet the above criteria for obvious death, then death may be determined on scene if:

1. Cardiac arrest persists continuously for over 20 minutes of sustained chest compressions, assisted ventilations and AED application, and the patient's ECG shows an agonal rhythm or asystole in two (2) different leads.
2. Cardiac arrest persists continuously for over 30 minutes with sustained basic and advanced EMT interventions, then all treatment may be stopped if:

a. The patient's ECG continues to show a non-perfusing rhythm and
b. The availability of ALS personnel is over 30 minutes.

DOCUMENTATION:

1. The EMT-I with advanced skills shall describe the patient's condition on the patient care report, clearly stating the circumstances under which resuscitative efforts were terminated.
2. All terminated resuscitation efforts must have an ECG attached to the patient care report.
3. The Advanced Skills Documentation Form must be filled out by the EMT-I performing the advanced skill.

PRECAUTIONS:

1. Most victims of electrocution, lightning and drowning should have resuscitative efforts begun and transported to the appropriate Hospital/Trauma Center.
2. Hypothermic patients should be treated per the hypothermia protocol.

CLEARANCE OF SPINE

1. Determine whether mechanism of injury is positive, negative or uncertain.
   a. If positive mechanism, do full spinal immobilization.
   b. If negative mechanism, spinal immobilization is not indicated.
   c. If uncertain mechanism, must complete assessment of clinical criteria for spinal injury.
2. Assessment of spinal injury – Answer "yes" or "no" to each clinical criteria:
   a. Is patient reliable (calm, cooperative, awake, fully alert, oriented)?
   b. Is there suspicion of ingestion or use of alcohol or drugs?
   c. Is there a language or communications barrier?
   d. Is the patient < 4 years of age?
   e. Does the patient have an abnormal mental status?
   f. Does the patient have any distracting injuries?
   g. Does the patient have spine pain? Spine tenderness?
   h. Is the motor exam abnormal?
   i. Is the sensory exam abnormal?
3. If the patient is reliable (2a is answered "yes") and all other assessments (2b-i) have been answered "no", the spine may be cleared and the patient transported without spinal immobilization.

DOCUMENTATION:

The Advanced Skills Documentation Form will be initiated by the EMT-I providing the advanced skill. The form must be signed by the ALS provider accepting responsibility for continued care of the patient. The form will be reviewed by the medical director/QI coordinator for any necessary follow-up. The form will be then forwarded to ICEMA and the EMS Medical Director.

Appendix C

INLAND COUNTIES EMERGENCY MEDICAL AGENCY
WEST VALLEY SEARCH AND RESCUE

EMT-I ADVANCED SCOPE OF PRACTICE
TRIAL STUDY CALLS

West Valley SAR EMT-I Advanced Scope Calls							
Record #	**Age**	**Sex**	**Chief Complaint**	**Treatment Protocol**	**Procedures/Medications**	**Patient Outcome**	**Pt. Turned Over to:**
1	34	F	Head trauma, ALOC	Trauma, ALOC	IV Access/fluids, Glucometer	Improved GCS 14 to 15 after treatment	AMR
2	29	F	Near-syncope while hiking in snow	ALOC	Glucometer	Improved with rest and observation	Self
3	2	F	Febrile Seizure, ALOC	ALOC	IV Access, Glucometer	Improved GCS 10 to 15	AMR
4	65	M	Lost hiker x 2 days, thirsty, dehydrated	Dehydration	IV Access/fluids, Glucometer	Improved P-124 to P-100 after IV fluids	AMR
5	50	F	Heat illness, severe muscle cramps in SAR member	Dehydration	IV Access/fluids	Improved clinically after IV fluids, VSS	Sheriff's Air Rescue
6	62	M	Lost hiker x 2 days, dehydrated	Dehydration	IV Access/fluids	Improved P-100 to P-88 after IV fluids	AMR
7	26	F	XC runner, near-syncope	Dehydration	IV Access/fluids, Glucometer	Improved SBP-90's to SBP-100's after IV fluids	AMR
8	54	F	Hiker with dizziness, near-syncope	ALOC	Glucometer	Improved with rest, po fluids and observation	Self

**Of special interest, patient #4 was a 65 year old male, a lost hiker x 2 days, who was found by the West Valley Search and Rescue team at about midnight. He received initial IV fluids in the wilderness backcountry by the EMT-I with advanced skills and had improvement of his vital signs. After approximately 3 hour extraction, the patient was handed off to the paramedic ambulance and transported to the emergency department for further evaluation. The patient required hospitalization for 4 days for treatment of an elevated CPK level > 11,000 and received continuous IV fluids for prevention of kidney damage.