

405.4.10

**Northern California
EMERGENCY MEDICAL SERVICES, INC.**

970 EXECUTIVE WAY ■ REDDING, CALIFORNIA 96002 ■ PHONE (530) 221-7900
FAX (530) 221-7544



August 25, 2000

Richard Watson, Director
EMS Authority
1930 9th Street
Sacramento, California 95814-7043

Dear Mr. Watson:

Enclosed is the final report for you and the EMS Commission regarding our Trial Study in Sierra County. The report covers the period of October 1995 to August 2000.

Thank-you for your support during this Trial Study.

If you have any questions please call me.

Sincerely,

Kevin O'Loughlin, MICP
EMS Systems Director

KO:cc
e-mail trial

Enclosure

**NORTHERN CALIFORNIA
EMERGENCY MEDICAL SERVICES AGENCY**



TRIAL STUDY

RURAL EMT EXPANDED SCOPE OF PRACTICE

ALTERNATIVE EMT

FINAL REPORT

NOR-CAL EMS, INC. TRIAL STUDY FINAL REPORT TO EMSA AND EMS COMMISSION

AUGUST 2000

This report covers all responses during the trial study. The period covered is from October 1995 to August 2000.

EMT-1's in Sierra County have been, participating in a trial study for the past three years. The trial study involved the EMT's utilizing intravenous infusion of normal saline, administration of intravenous glucose, Glucagon, nitroglycerin, Albuterol, aspirin, Narcan and subcutaneous epinephrine ("Epi-Pen") for anaphylaxis. Sierra County is one of four counties in the State that does not have prehospital advanced life support services. Volunteers in primarily mountainous terrain provide Field EMS with predominately long transport times. Apart from the skills employed within the study, these EMT's have also been using optional skills of endotracheal intubation and automated defibrillation. Instruction and skills testing was conducted by experienced field MICN's utilizing materials developed by Nor-Cal EMS clinical staff in accordance with California regulations and where appropriate, national paramedic training standards. The following time allotments were observed:

Automated Defibrillation	10 Hours
Use of Magill Forceps/Endotracheal Intubation	14 Hours
Intravenous Fluids/IV Glucose	16 Hours
Subcutaneous Epinephrine ("Epi-Pen")	02 Hours
Combi-Tube	05 Hours

PROVIDER AGENCIES

The following is a list of the agencies that are currently participating in the trail study:

<u>AGENCY</u>	<u># ALT EMTs</u>
Downieville FPD	6
Pike City	1
Sierra Valley Community Hospital Ambulance	3
Sierra City FPD	2



NUMBER OF PATIENTS

During the course of this study 141 ALT ALS cases were reported. Of the 141 cases reviewed during this study six of these involved optional scope procedures and have been included here only to provide a complete picture of the activities of the EMT's involved in this project. Of the remaining 135 cases, all but one were deemed appropriate by the Medical Review Committee. Nine of these 135 patients received an ALS Procedure that was credited with saving the patients life. Twenty of these 135 patients that received ALS procedures made significant improvement and without ALS intervention would probably have deteriorated further.

BENEFICIAL FACTORS

When reviewed by the Medical Advisory Committee, the interventions were generally deemed appropriate. Of the ALS interventions rendered nine were directly accredited for saving the patient's lives, and eighteen were credited with significantly improving the patient's condition.

ADVERSE REACTIONS OR COMPLICATIONS

There were no adverse reactions or complications noted. During the course of this study the Medical Review Committee deemed only one IV infusion unnecessary.

STATISTICAL SUMMARY

Patients who received ALS procedure:

Medical:	72 patients or 51%
Trauma:	64 Patients or 46%
Unknown:	5 Patients or 3%
Male:	88 Patients or 63%
Female:	52 Patients or 36%
Unknown:	1 patient or 1%



Male Patients: 88

Trauma: 42 or 48%

Medical: 44 or 49.5%

Unknown: 2 or 2.5%

Female Patients: 52

Trauma: 21 or 42%

Medical: 28 or 54%

Unknown: 2 or 4%

Unknown Patients: 1

Age Range 8 – 90 years

CONTINUING EDUCATION & COMPETENCY EVALUATION

Continuing medical education is conducted monthly to include case review, testing and skills evaluation. ALT EMTs are required to attend monthly continuing education and successfully pass a comprehensive written and skills recertification examination every two years. All of the ALT EMTs have successfully passed the required testing and have consistently demonstrated proficiency.

PROBLEMS IDENTIFIED

Although not specific to the trial study, general documentation of care was identified as an area for improvement for a few of the individuals in this study. This concern has been addressed and documentation has improved and will be monitored.

RECOMMENDATIONS

1. The ALT EMT program is successful and State regulations should be amended to recognize this level of provider.
2. The ALT EMT program in Sierra County (Nor-Cal EMS Region) should be allowed to continue until the regulations are changed.



3. We should study the effect of authorizing ALT EMTs to perform quarterly skills evaluations, and evaluate the optimal method of delivery of case review and other continuing education.
4. That the ALT EMTs in Sierra County be allowed to change the monthly continuing education requirements to quarterly.

GENERAL CONCLUSIONS

The relative small numbers of runs reported during this trial study gain significance with consideration that Sierra County has a resident population of approximately 3,600 residents. During the course of this study it has been shown how beneficial these additional skills and procedures are to the residents and visitors of Sierra County.

This program has proven to be highly beneficial to providing rapid ALS intervention in an area that was previously void of ALS services at all. The whole premise behind EMS is to provide rapid ALS intervention to those who are seriously injured or ill. The ALT EMT program should be maintained in its current status or increased in scope. Diminishing the program or eliminating it would deprive the citizens and visitors to Sierra County of a vital service. Programs like this are a vital link to providing immediate health care in the rural areas of the state and should be encouraged to expand to other rural regions of California.



SIERRA COUNTY

EMT-I – ALS SKILLS

(Runs # 1 – 141, occurring October 1995 – August 2000)

<i>Trial Study:</i>	<i>Attempts</i>	<i>Successful</i>	<i>Unsuccessful</i>
IV Normal Saline	123	86	35
Epi Pen	7	7	0
50% Glucose	5	5	0
Glucagon	1	1	0
<i>Optional Skills:</i>			
Automatic External Defibrillator	6	2	4 (2) Dead on Scene (2) Non-Shockable Rhythm
Endotracheal Intubation	3	1	2 (2) Dead on Scene
Combi-Tube	0	0	0



QUESTIONS POSED REGARDING REPORT SUBMITTED IN JUNE 1997

1. For the patients who were deemed to have benefited from an ALS procedure (IV, IV Glucose or Sub-Q Epi)...

How did the patient benefit? What was the beneficial effect?

See comments Table 1

Did patient(s) ultimately do better because of intervention?

See comments Table 1

2. For those cases where the ALS procedure was deemed "appropriate"...
Why was it appropriate?

See comments Table 2

3. What was the number of "appropriate" cases?
135

4. What was the number of "inappropriate" cases?
2 (#10 & #16)

Why were they "inappropriate"?

See comments Table 1 and subsequent page

5. Summary of the "unnecessary" case.
See comments Table 1

6. Did use of the ALS procedure(s) prolong scene time?
See comments Table 3

7. Were ALS procedures done correctly?
See comments Table 3

8. Range of response times
Average response time
See Alternative ALS Additional Statistics

9. Range of Scene times
Average scene time
See Alternative ALS Additional Statistics

10. Range of transport times
Average transport time
See Alternative ALS Additional Statistics



TABLE 1

<i>Case</i>	<i>How did patient benefit?</i>	<i>What was beneficial effect?</i>	<i>Pt. do better?</i>
1	No benefit as patient was apneic, pulseless. Was pronounced dead by coroner.	Airway maintained with ET. Cardiac rhythm eval by AED	No
2	No ALT ALS procedure done. AED gave "No Shock" response.	Essentially BLS care. Non-shockable rhythm.	N/A
3	No ALT ALS procedure completed. Patient uncooperative and agitated. (Roll-over MVA without seatbelt).	None, unable to start IV.	N/A
4	Unable to verify improvement of condition by ALT ALS procedure as: 1) no vital signs recorded before IV started. 2) IV flow listed as TKO 3) No vol. of infusion recorded.	Unable to verify beneficial effect. IV was appropriate for trauma patient.	Unable to determ
5	Unable to verify benefit from IV as helicopter on scene 3 minutes after ALT EMT and assumed care immediately. No time for repeat vital signs by ALT EMT.	Unable to verify benefit IV was appropriate	Unable to determ
6	No apparent immediate effect from procedure	No apparent benefit IV appropriate for motorcycle accident victim.	No
7	No apparent beneficial effect from IV fluid.	No apparent effect from ALT ALS procedure. Only 50-ml infusion recorded. Initial bolus would have been acceptable procedure Pt was 86 years.	No
8	Patient more relaxed, alert and oriented. Pulse is increased on second recording, perhaps secondary to stress of starting IV.	Patient apparently functioning better mentally. IV appropriate for trauma patient	Yes. Better perfusion
9	No benefit. Unable to establish IV.	IV would have been appropriate.	No
10	No benefit from ALT ALS IV. Pt had a fall while hunting. One reviewer state "IV not necessary for isolated ankle injury". SEE also report on this individual case.	None. Would be difficult to determine on scene that ankle injury was an "isolated injury" when patient fell or stumbled in rocky terrain.	No post-scene info avail
11	Increase in blood pressure after IV infusion of normal saline in stabbing victim. 2400 ml	Increase in blood pressure 2 IV's started; appropriate procedure	Yes. No hospital info avail
12	IV not established after attempts on large	None. IV would have been	Not from



	individual. Accu-Check not done on non-insulin dependent diabetic. EMT may not have known this as medication list did not mention any meds related to diabetic blood glucose control.	appropriate. Accu-Check level would have been appropriate	ALT ALS procedure
13	No apparent benefit from ALT ALS procedure (IV).	None. IV appropriate for patient assessed to have "Thready pulse".	No
14	Unable to determine as single set of vital signs recorded before transfer to transporting agency. Accu-Check done. IV started for patient with hematemesis and hematuria.	Unable to determine as single set of vital signs. IV could have been at faster rate. No vol. infused recorded prior to transfer.	Unable to determine. No hosp info available.
15	No apparent direct benefit from IV.	None. IV appropriate in-patient with potential cardiac problem.	Unable to determine
16	Patient with back pain consistent with renal calculus. One reviewer stated that IV not much benefit with renal calculus. Pain could also be consistent with AAA or aortic dissection.	None. IV not successful. Accu-Check level appropriate in restless patient.	No. No hosp info avail
17	Insufficient documentation to evaluate for benefit from IV.	None. IV appropriate for trauma patient.	No post scene info avail
18	No change or benefit from IV. IV accidentally discontinued prior to transport.	None. IV appropriate for patient with chest pain.	No
19	No change or benefit from IV. Was given 305 ml then IV accidentally dc'd.	None. IV appropriate in patient with abdominal pain and vomiting.	No
20	No ALT ALS procedure completed. IV attempted unsuccessfully.	None. IV appropriate for patient with potential cardiac problem.	No
21	No ALT ALS procedure done. Patient did benefit from AED	None. IV appropriate not attempted in-patient.	No
22	Unable to determine any benefit. Poor documentation. It appears that an IV was attempted but not sufficiently documented.	None	No
23	No apparent immediate effect from IV. 200 ml recorded as infused at scene.	None. IV appropriate for motorcycle	No. No hosp



		accident victim.	info avail
24	Unable to determine beneficial effect from IV as single set vital signs recorded prior to helicopter transport. One reviewer stated "GCS does not match narrative."	Unable to determine	N/A
25	No apparent immediate effect.	None	No
26	Unable to start IV that was requested by base hospital.	None IV would have been appropriate for mining accident victim.	No
27	No apparent immediate effect from IV. Rate listed as TKO on dehydrated patient. No vol. infused recorded.	None. IV appropriate for patient with elevated temp, nausea, vomiting and diarrhea for 2-3 days.	No
28	No apparent immediate effect from ALT ALS procedure. Vol. infused not recorded. 2 reviewers stated that larger IV catheter should have been used.	None. IV started per protocol for MVA victim with multiple site injuries. IV appropriate.	No
29	Unable to establish IV.	None. IV would have been appropriate for febrile disoriented patient. Should also have done Accu-Check level for confused patient.	No
30	Definite immediate benefit from D50 IV. Did not do glucose level	Marked increase in mentation secondary to D50.	Yes
31	No ALT ALS procedure completed. Unable to start IV. Accu-Check not done for seizing patient.	None. IV would not have been of much help without anti-seizure meds.	No
32	IV not successful for bike accident victim.	None. IV would have been appropriate.	No
33	IV unsuccessful x 2 for trauma patient. Helicopter RN also unsuccessfully x 2 for IV	None. IV would have been appropriate for trauma victim.	No
34	IV unsuccessful x 1 before helicopter arrived.	None. IV would have been appropriate for trauma victim.	None
35	No immediate effect noted from IV started for	None.	No



	rollover MVA victim.	IV appropriate for trauma victim.	
36	Unable to determine, as single set of vital signs on stable snowmobile accident victim. Less than 50 ml infused.	None. IV appropriate for trauma. Had to go in to patient by snowmobile.	None.
37	No immediate effect of ALT ALS noted in-patient with chest pain.	None. IV appropriate for patient with suspected cardiac insult.	None.
38	Unable to determine as only single BP recorded although pulse and respirations were repeated and recorded.	Unable to determine.	N/A
39	No immediate effect of ALT ALS noted.	None. IV started at request of FNP at scene. IV appropriate for patient with seizures.	
40.	No immediate effect noted from IV started for trauma patient.	IV appropriate for trauma.	No
41.	No immediate effect noted from IV started for patient that had a seizure.	IV appropriate for seizure patient.	No
42.	No immediate effect noted from IV started for patient with chest pain.	IV appropriate for patient with chest pain.	No
43.	Immediate benefit to the patient due to the use of the EPI-PEN. Pt. had IV initiated also.	Patient's mental status improved along with decrease in respiratory distress.	Yes
44.	Immediate relief to patient from use of EPI-PEN x2.	Beneficial to patient eased respiratory distress. Should have established an IV	Yes
45.	No benefit. Unable to establish IV	IV would have been appropriate.	No
46.	No apparent beneficial effect from IV fluid.	No apparent benefit from IV, appropriate for diabetic patient. Also did Accu-Check.	No
47.	No apparent beneficial effect from IV fluid.	No apparent benefit from IV, appropriate for patient with chest pain.	No
48.	Immediate improvement from Accu-Check, IV and D50.	Patient's level of consciousness increased.	Yes
49.	No apparent immediate beneficial effect from IV fluid.	IV appropriate for trauma patient with the potential for serious blood loss.	No
50.	No benefit. Unable to establish an IV.	IV would have been appropriate.	No

