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:

AGENCY	# ALT EMTs
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)

Trial Study:	***Attempts***	***Successful***	***Unsuccessful***
IV Normal Saline	123	86	35
Epi Pen	7	7	0
50% Glucose	5	5	0
Glucagon	1	1	0
Optional Skills:			
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

Case	*How did patient benefit?*	*What was beneficial effect?*	*Pt. do better?*
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 determ
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

51.	No apparent immediate beneficial effect from IV fluid.	IV appropriate for trauma patient with the potential for serious blood loss.	No
52.	No benefit. Unable to establish an IV.	IV would have been appropriate.	No
53.	Immediate benefit to the patient due to the use of the EPI-PEN.	Patient's mental status improved along with decrease in respiratory distress. IV should have been established.	Yes
54.	No apparent beneficial effect from IV fluid.	No apparent benefit from IV, appropriate for patient with chest pain.	No
55.	Improvement from Accu-Check, IV and D50	Patient's level of consciousness increased.	Yes
56.	Immediate benefit to the patient due to the use of the EPI-PEN. Unable to establish an IV.	Patient's mental status improved along with decrease in respiratory distress. IV should have been established.	Yes
57.	Attempt to intubate unsuccessful. Patient also placed on AED and defibrillated. No IV attempted due to short ETA to clinic in town.	No benefit to patient. Patient was pronounced upon arrival to clinic.	No
58.	Attempt to intubate unsuccessful. Patient also placed on AED and defibrillated.	No benefit to patient. Patient was pronounced on scene by sheriff.	No
59.	No apparent immediate beneficial effect from IV fluid.	IV appropriate for trauma patient with the potential for serious blood loss.	No
60.	No apparent immediate beneficial effect from IV fluid.	IV appropriate for a major trauma patient with the potential for serious blood loss and ALOC.	No
61.	No apparent immediate beneficial effect from IV fluid, and Accu-Check.	No apparent benefit from IV, appropriate for diabetic patient.	No
62.	No benefit. Unable to start IV.	IV would have been appropriate for trauma patient.	No
63.	No apparent beneficial effect from IV fluid.	IV appropriate for a seizure patient.	No
64.	No apparent beneficial effect from IV fluid	IV appropriate for trauma patient.	No
65.	No apparent beneficial effect from IV fluid	IV appropriate for a patient that had a syncopal episode.	No
66.	No apparent immediate beneficial effect from IV fluid.	IV appropriate for trauma patient with the potential for	No

		serious blood loss.	
67.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
68.	No apparent immediate beneficial effect from IV fluid.	IV appropriate for trauma patient with the potential for serious blood loss.	No
69.	No benefit. Unable to start IV.	IV would have been appropriate for trauma patient.	No
70.	No apparent immediate beneficial effect from IV fluid.	IV appropriate for a major trauma patient with the potential for serious blood loss and ALOC.	No
71.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
72.	No benefit. Unable to start IV.	IV would have been appropriate for trauma patient.	No
73.	No benefit. Unable to start IV.	IV would have been appropriate for trauma patient.	No
74.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
75.	No benefit. Unable to start IV.	IV would have been appropriate for trauma patient.	No
76.	No apparent beneficial effect from IV fluid.	IV appropriate for patient for respiratory distress patient.	No
77.	Immediate improvement from NTG.	Patient's level of chest pain decreased. IV started by FNP.	Yes
78.	No apparent beneficial effect from IV fluid.	IV appropriate for patient.	No
79.	No benefit. Unable to start IV.	IV would have been appropriate. Should have made a 2nd attempt at IV.	No
80.	Initial improvement form NTG. Patient arrested, then AED applied and Patient shocked into sinus rhythm.	Benefit to Pt. was initial decrease in chest pain. Then the patient being shocked and increase in LOC. IV would have been appropriate.	Yes
81.	Immediate improvement from NTG. No apparent beneficial effect from IV fluid.	Patient's level of chest pain decreased. IV appropriate for patient for with chest pain	Yes
82.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with a head injury.	No

83.	Immediate improvement from Albuterol	Patient's level of respiratory distress decreased.	Yes
84.	Immediate improvement from Albuterol	Patient's level of respiratory distress decreased.	Yes
85.	No apparent beneficial effect from IV fluid.	IV appropriate for patient.	No
86.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with a head injury.	No
87.	No apparent beneficial effect from IV fluid or Accu-Check.	IV appropriate for patient with a decreased LOC.	No
88.	No apparent beneficial effect from IV fluid.	IV appropriate for patient.	No
89.	No apparent beneficial effect from IV fluid.	IV appropriate for patient.	No
90.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with diabetes.	No
91.	Accu-Check, IV attempted by unsuccessful.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in this patient.	No
92.	Immediate improvement from Accu-Check, IV and D50	Patient's level of consciousness increased.	Yes
93.	No benefit. Unable to start IV.	IV would have been appropriate. Should have made a 2nd attempt at IV.	No
94.	No apparent beneficial effect from IV fluid or Narcan. Accu-Check performed.	IV and Narcan appropriate for patient with ALOC.	No
95.	No apparent beneficial effect from IV fluid. Accu-Check performed.	IV appropriate for patient with ALOC.	No
96.	Improvement from NTG. No apparent beneficial effect from IV fluid.	Patient's level of chest pain decreased. IV appropriate for patient for with chest pain	Yes
97.	Immediate benefit from the use of the EPI-PEN for allergic reaction.	Patient's mental status improved along with decrease in respiratory distress. IV should have been established.	Yes
98.	No apparent beneficial effect from IV fluid or aspirin. Accu-Check performed.	Appropriate treatment for patient with chest pain.	No
99.	Immediate benefit from the use of the EPI-PEN for allergic reaction.	Patient's mental status improved along with decrease	Yes

		in respiratory distress. IV should have been established	
100.	Immediate benefit from the use of the EPI-PEN for allergic reaction.	Patient's mental status improved along with decrease in respiratory distress. IV should have been established.	Yes
101.	No apparent beneficial effect from IV fluid. Accu-Check performed.	IV appropriate for patient with ALOC. Accu-Check good thought.	No
102.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with ALOC. Should have done Accu-Check	No
103.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with CVA.	No
104.	No apparent beneficial effect from IV fluid or aspirin.	Appropriate treatment for patient with chest pain.	No
105.	No benefit. Unable to start IV.	IV would have been appropriate. Should have made a 2nd attempt at IV.	No
106.	No benefit. Unable to start IV.	IV would have been appropriate.	No
107.	Improvement from NTG. No apparent beneficial effect from IV fluid.	Patient's level of chest pain decreased. IV appropriate for patient for with chest pain	Yes
108.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
109.	Immediate improvement from Albuterol	Patient's level of respiratory distress decreased.	Yes
110.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with decreased LOC. Should have done Accu-Check.	No
111.	No apparent beneficial effect from IV fluid.	IV appropriate.	No
112.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with Diabetes.	No
113.	Improvement from Accu-Check, Glucagon and IV.	Patient's level of consciousness increased.	Yes
114.	Improvement from NTG. No apparent beneficial effect from IV fluid.	Patient's level of chest pain decreased. IV appropriate for patient for with chest pain.	Yes
115.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt.	No

		with ALOC. Should have attempted an IV in a patient with Diabetes.	
116.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with Diabetes.	No
117.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with Diabetes. Other treatments on scene done by FNP.	No
118.	No benefit. Unable to start IV. Aspirin administered	IV would have been appropriate. Not enough time to make second attempt at IV.	No
119.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with Diabetes.	No
120.	Immediate improvement from Albuterol	Patient's level of respiratory distress decreased.	Yes
121.	Accu-Check, no IV attempted.	Accu-check appropriate in Pt. with ALOC. Should have attempted an IV in a patient with Diabetes.	No
122.	No apparent beneficial effect from IV fluid. Accu-Check performed.	IV appropriate for patient with ALOC.	No
123.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
124.	No apparent beneficial effect from IV fluid.	IV appropriate for patient.	No
125.	Improvement from NTG. No apparent beneficial effect from IV fluid.	Patient's level of chest pain decreased. IV appropriate for patient for with chest pain.	Yes
126.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with a GI bleed.	No
127.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
128.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
129.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No

130.	Improvement from Accu-Check, IV and D50.	Patient's level of consciousness increased.	Yes
131.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
132.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
133.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with shortness of breath.	No
134.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with shortness of breath.	No
135.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
136.	Improvement from IV.	Patient's level of consciousness increased.	Yes
137.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with shortness of breath.	No
138.	Improvement from IV.	Increase in blood pressure and LOC after IV therapy was begun.	Yes
139.	No apparent beneficial effect from IV fluid.	IV appropriate for patient with dehydration and GI bleed.	No
140.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No
141.	No apparent beneficial effect from IV fluid.	IV appropriate for trauma patient.	No

REPORT ON CASES #10 AND 16, WHICH WERE EVALUATED AS "INAPPROPRIATE PROCEDURE".

CASE #10: This case concerned a 30 year old man who was hunting in mountainous terrain when he slipped or stumbled and injured his ankle. There was an attempt to start an IV. A reviewer commented that an IV was not indicated for an isolated ankle fracture. One could argue that there could easily have been internal injuries sustained during the tumble or fall and that an IV could be considered appropriate for a trauma patient, although not a motor vehicle accident trauma victim. Judging whether an IV was "inappropriate" in this case would depend largely upon how much knowledge the EMT had about the accident at the time of evaluation at the scene of the incident. Certainly no harm was done in attempting to start an IV; the attempt was not successful.

CASE #16: The case concerned a patient complaining of back and flank pain and urinating blood. There were 2 attempts to start an IV in a very restless patient. Comment was made that IV would not be of much help with a renal calculus. However, the same symptoms could be consistent with an AAA or aortic dissection. It would appear that with limited diagnostic ability at the scene, the better course would be to start an IV that might not be of help with a renal calculus but could provide a fluid source should the blood pressure deteriorate from an AAA or aortic dissection. These are difficult diagnosis to make in the Emergency Department, much more so in the field situation for an ALT EMT.

TABLE 2

For those, ALS procedures deemed appropriate (135 cases), why was it appropriate?

Case #	*ALS Procedure*	*Why Appropriate?*
1	ET	Patient no resp, B/P, pulse. CPR efforts appropriate.
4	IV (u)	Possible shock followed protocol.
5	IV	Trauma patient who may have had additional injuries.
6	IV	High possibility of internal injuries.
7	IV	Nausea, decreased LOC, C/O cold.
8	IV	IV indicated given patient condition of possible head injury and per standing orders.
9	IV	ER MD orders based on standing procedures.
11	IV	Trauma decreased LOC, blood loss.
12	IV(u)	Appropriate to attempt, patient unresponsive then unable to stand, walk, or speak and patient history.
13	IV	Patient condition indicated.
14	IV	Recent surgeries, C/O abd pain, urinating, vomiting blood.
15	IV	Chest pain, history CVA.
17	IV	Fall, LOC.
18	IV	C/O dyspnea, chest pain dizziness, hx lung cancer.
19	IV	Patient C/O abd cramping, dyspnea, vomiting.
20	IV (u)	Very fast pulse, chest pain.
23	IV	GCS<10, head injury.
24	IV	Trauma, decreased LOC, pt injury indicated.
25	IV (u)	Dizzy, then fell, numbness right side.
26	IV (u)	Base hospital orders, obvious dislocation with no pedal pulse.
27	IV	Fluid replacement.
28	IV	Per protocol, trauma (MVA).
29	IV(u)	Patient 79 y/o, disoriented, temp 104, unable to walk, stand. Speech garbled possible CVA.
30	IV	GCS 10, diabetic.
31	IV (u)	Patient awake, then unresponsive, fruity breath, recent surgery (rod in back).
32	IV (u)	Trauma, unconscious unknown period of time.
33	IV (u)	MVA, spinal shock, decreased LOC.
34	IV (u)	MVA, >2 hrs until found.
35	IV (u)	Trauma, MVA rollover.
36	IV	Snowmobile accident, possible dislocated hip.

37	IV	C/O chest pain, "7" on scale of 1-10.
38	IV	Motorcycle accident, L-spine injury.
39	IV	Patient c/o chest pain, weakness, LOC 5 min.
40.	IV	Fall victim, per Trauma Protocol.
41.	IV	Patient had a full body seizure
42.	IV	Per Trauma Protocol
43.	IV, EPI-PEN	Allergic reaction.
44.	IV, EPI-PEN	Allergic reaction.
45.	IV (u)	Per Trauma Protocol.
46.	IV (u)	Patient suffered a syncopal episode.
47.	IV	Chest Pain.
48.	IV, Accu-Check,	Known Diabetic Patient with ALOC.
49.	IV	Per Trauma Protocol.
50.	IV (u)	Fall Victim, per Trauma Protocol.
51.	IV	Fall Victim, per Trauma Protocol
52.	IV	Known Diabetic, with ALOC.
53.	EPI-PEN	Allergic Reaction.
54.	IV	Chest pain.
55.	IV, Accu-Check, D50	Known Diabetic with ALOC.
56.	IV (u), EPI-PEN	Severe allergic reaction.
57.	ET (u), AED	Full arrest.
58.	ET (u), AED	Full arrest.
59.	IV	Penetrating trauma, per Trauma Protocol.
60.	IV	Multiple fractures, per Trauma Protocol.
61.	IV (u), Accu-Check	Known Diabetic, with ALOC.
62.	IV (u)	Fall victim, per Trauma Protocol.
63.	IV	Seizure patient.
64.	IV	Per Trauma Protocol.
65.	IV	Chest pain patient.
66.	IV	Fall Victim, per Trauma Protocol.
67.	IV	Per Trauma Protocol.
68.	IV	Per Trauma Protocol.
69.	IV	Per Trauma Protocol.
70.	IV	Trauma patient who had a seizure and ALOC.
71.	IV	Motorcycle accident, per Trauma Protocol.
72.	IV	Motorcycle accident, per Trauma Protocol.
73.	IV	Fall victim, per Trauma Protocol.
74.	IV	Possible septic shock, unable to obtain BP.
75.	IV (u)	Patient with ALOC.
76.	IV	Patient with respiratory distress.
77.	NTG	Patient with chest pain.
78.	IV	Trauma patient, from rafting trip.

79.	IV (u)	Motorcycle accident, per Trauma Protocol.
80.	IV (u), NTG, AED	Initial chest pain, then full arrest.
81.	IV, NTG	Patient with chest pain.
82.	Accu-Check	Patient with ALOC.
83.	Albuterol	Patient with respiratory distress.
84.	Albuterol	Patient with respiratory distress.
85.	IV	Patient with CVA symptoms.
86.	Accu-Check	Fall victim.
87.	IV, Accu-Check	Patient that had a full body seizure and ALOC.
88.	IV	Fall victim, per Trauma Protocol.
89.	IV	Assault victim, per Trauma Protocol.
90.	Accu-Check	Patient with ALOC.
91.	IV (u), Accu-Check	Seizure patient.
92.	IV, Accu-Check, D50	Known Diabetic patient with ALOC.
93.	IV (u)	Vehicle accident, per Trauma Protocol.
94.	IV, Accu-Check, Narcan	Patient with ALOC.
95.	IV, Accu-Check	Patient with ALOC.
96.	IV, NTG	Patient with chest pain.
97.	EPI-PEN	Allergic reaction.
98.	IV, Aspirin, Accu-Check	Patient with chest pain and ALOC.
99.	EPI-PEN	Allergic Reaction.
100.	EPI-PEN	Allergic Reaction.
101.	IV, Accu-Check	Trauma patient with ALOC.
102.	IV	Patient with ALOC.
103.	IV	Patient with ALOC.
104.	IV	Chest pain patient.
105.	IV (u)	Patient with signs and symptoms of a CVA.
106.	IV (u)	Patient with decreased BP and ALOC.
107.	IV	Chest pain patient.
108.	IV, Accu-Check	Motorcycle accident, per Trauma Protocol.
109.	Albuterol	Patient with respiratory distress.
110.	IV	Patient with ALOC.
111.	IV	Chest pain patient.
112.	Accu-Check	Unconscious patient.
113.	Accu-Check, Glucagon, IV	Known Diabetic patient with ALOC.
114.	IV, NTG	Chest pain patient.
115.	Accu-Check	Patient with ALOC.
116.	Accu-Check	Patient with ALOC.
117.	Accu-Check	Patient with ALOC.
118.	IV (u), Aspirin	Chest pain patient.
119.	Accu-Check	Patient with ALOC.

120.	Albuterol	Patient with respiratory distress.
121.	Accu-Check	Patient with ALOC.
122.	Accu-Check, IV	Patient with ALOC.
123.	IV	Motorcycle accident, per Trauma Protocol.
124.	IV	Patient with chest pain.
125.	IV, NTG	Patient with chest pain.
126.	IV	Patient with GI bleed.
127.	IV	Attempt suicide, per Trauma Protocol.
128.	IV	Motorcycle accident, per Trauma Protocol.
129.	IV	Vehicle accident, patient with ALOC, per Trauma Protocol.
130.	Accu-Check, IV, D50	Known Diabetic patient with ALOC.
131.	IV	Fall victim, per Trauma Protocol.
132.	IV	Fall victim, per Trauma Protocol.
133.	IV	Patient with shortness of breath.
134.	IV	Patient with shortness of breath.
135.	IV	Head injury patient, per Trauma Protocol.
136.	Accu-Check, IV	Known Diabetic patient with ALOC.
137.	IV	Patient with shortness of breath.
138.	IV	Patient with GI bleed with decreased BP
139.	IV	Patient with dehydration, GI bleed and decreased BP.
140.	IV	Head injury patient, per Trauma Protocol.
141.	IV	Chest trauma, per Trauma Protocol.

TABLE 3

Did the ALS procedure prolong scene time? ***Were ALS procedures done correctly?***

Case #	*ALS Procedure*	*Done Correctly?*	*Prolong Scene Time?*
1	ET	Yes	No
3	IV	Pt combative, unable to start	No
4	IV	Yes	No
5	IV	Yes	No
6	IV	Yes	No
7	IV	Yes	No
8	IV	Yes, but felt larger bore may have been useful given trauma blunt injury	No
9	IV	Yes, properly attempted.	No
10	IV	Yes, but not necessary	No, started enroute
11	IV	Yes	No
12	IV	Yes	No
13	IV	Yes	No
14	IV	Yes	No
15	IV	Yes	No
16	IV	Unable to start, bent catheter	No
17	IV	Yes	No
18	IV	Yes	No
19	IV	Yes	No
22	IV	Unable to determine, poor documentation	No
23	IV	Yes	No
24	IV	Yes	No
25	IV	Yes	No
26	IV	Yes, but unable to start, poor veins	No
27	IV	Yes	No
28	IV	Yes	No
29	IV	Yes, but unable to start	No
30	IV	Yes	No
31	IV	Yes, but unable to start	No
32	IV	Yes, but unable to start	No
33	IV	Yes, but unable to start	No

34.	IV	Yes, but unable to start	No
35	IV	Yes	No
36	IV	Yes	No
37	IV	Yes	No
38	IV	Yes	No
39	IV	Yes	No
40.	IV	Yes	No
41.	IV	Yes	No
42.	IV	Yes	No
43.	IV, EPI-PEN	Yes	No
44.	EPI-PEN X2	Yes	No
45.	IV	No, unable to due to interference from patients relatives.	No
46.	IV	Yes	No
47.	IV	Yes	No
48.	IV, Accu-Check, D50	Yes	No
49.	IV	Yes	No
50.	IV	Yes, but unable to start IV.	No
51.	IV	Yes	No
52.	IV	Yes	No
53.	EPI-PEN	Yes	No
54.	IV	Yes	No
55.	IV, Accu-Check, D50	Yes	No
56.	IV, EPI-PEN	Yes, but unable to start IV. Use of EPI-PEN successful	No
57.	ET, AED	ET unsuccessful	No
58.	ET, AED	ET unsuccessful	No
59.	IV	Yes	No
60.	IV	Yes	No
61.	IV, Accu-Check	Yes	No
62.	IV	Yes	No
63.	IV	Yes	No
64.	IV	Yes	No
65.	IV	Yes	No
66.	IV	Yes	No
67.	IV	Yes	No
68.	IV	Yes	No

69.	IV	Yes, but unable to start IV.	No
70.	IV	Yes	No
71.	IV	Yes	No
72.	IV	Yes, but unable to start IV.	No
73.	IV	Yes, but unable to start IV.	No
74.	IV	Yes	No
75.	IV	Yes, but unable to start IV.	No
76.	IV	Yes	No
77.	NTG	Yes	No
78.	IV	Yes	No
79.	IV	Yes, but unable to start IV.	No
80.	IV, NTG, AED	Yes, but unable to start IV, NTG and AED done correctly	No
81.	IV, NTG	Yes	No
82.	Accu-Check	Yes	No
83.	Albuterol	Yes	No
84.	Albuterol	Yes	No
85.	IV	Yes	No
86.	Accu-Check	Yes	No
87.	IV, Accu-Check	Yes	No
88.	IV	Yes	No
89.	IV	Yes	No
90.	Accu-Check	Yes	No
91.	IV, Accu-Check	Yes, but unable to start IV.	No
92.	IV, Accu-Check, D50	Yes	No
93.	IV	Yes, but unable to start IV.	No
94.	IV, Accu-Check, Narcan	Yes	No
95.	IV, Accu-Check	Yes	No
96.	IV, NTG	Yes	No
97.	EPI-PEN	Yes	No
98.	IV, Aspirin, Accu-Check	Yes	No
99.	EPI-PEN	Yes	No
100.	EPI-PEN	Yes	No
101.	IV, Accu-Check	Yes	No
102.	IV	Yes	No
103.	IV	Yes	No
104.	IV	Yes	No

105.	IV	Yes, but unable to start IV.	No
106.	IV	Yes, but unable to start IV.	No
107.	IV	Yes	No
108.	IV, Accu-Check	Yes	No
109.	Albuterol	Yes	No
110.	IV	Yes	No
111.	IV	Yes	No
112.	Accu-Check	Yes	No
113.	Accu-Check, Glucagon, IV	Yes	No
114.	IV, NTG	Yes	No
115.	Accu-Check	Yes	No
116.	Accu-Check	Yes	No
117.	Accu-Check	Yes	No
118.	IV, Aspirin	Yes	No
119.	Accu-Check	Yes	No
120.	Albuterol	Yes	No
121.	Accu-Check	Yes	No
122.	IV, Accu-Check	Yes	No
123.	IV	Yes	No
124.	IV	Yes	No
125.	IV, NTG	Yes	No
126.	IV	Yes	No
127.	IV	Yes	No
128.	IV	Yes	No
129.	IV	Yes	No
130.	Accu-Check, IV, D50	Yes	No
131.	IV	Yes	No
132.	IV	Yes	No
133.	IV	Yes	No
134.	IV	Yes	No
135.	IV	Yes	No
136.	Accu-Check IV	Yes	No
137.	IV	Yes	No
138.	IV	Yes	No
139.	IV	Yes	No
140.	IV	Yes	No
141.	IV X2	Yes	No

Alternative ALS
Additional Statistics
Final Report
Runs #1 - 141

There are 141 cases in this study. Most of the 141 cases have documented times. The following figures are based upon the number of reports that had documented times for response, scene, and transport. The raw data represents the average for all times documented; the weighted data represents the average after omitting the lowest and highest times documented.

RESPONSE TIMES

Of 133 cases documented for response times:

Raw Data:
Range = 0 - 64 minutes
Average = 16.3 minutes

Weighted Data:
Range = 1 - 54 minutes
Average = 16.1 minutes

SCENE TIMES

Of 131 cases documented for scene times:

Raw Data:
Range = 2 - 133 minutes
Average = 24.6 minutes

Weighted Data:
Range = 3 - 118 minutes
Average = 23.9 minutes

Of the 131 cases documented on scene times, these are broken down into two subcategorizes.

CATEGORY I

There were 92 cases were the patient was transported in 29 minutes or less.

Raw Data:
Range: = 0 - 29 minutes
Average = 13.3 minutes

Weighted Data:
Range = 2 - 28 minutes
Average = 13.2 minutes

CATEGORY II

There were 39 cases that had extended on scene times due to transport problems or rescue issues (see attachment).

Raw Data:
Range: = 30 - 133 minutes
Average = 51.4 minutes

Weighted Data:
Range = 30 - 118 minutes
Average = 49.8 minutes

TRANSPORT TIMES

Of 107 cases documented for transport times:

Raw Data:
Range = 1 - 131 minutes
Average = 35.2 minutes

Weighted Data:
Range = 1 - 113 minutes
Average = 34.6 minutes

ON SCENE TIME OVER 30 MINUTES

CASE #	TIME ON SCENE	REASON FOR DELAY
12	34 minutes	On scene time was delayed due to having difficulty with removing patient from the house. ALT EMT skills performed while in route to hospital.
19	33 minutes	On scene time delayed, awaiting for ambulance
20	66 minutes	On scene time prolonged, due to responders had to hike into patient and then help patient out of wooded area.
21	30 minutes	On scene time delayed, awaiting for ambulance
23	79 minutes	On scene time delayed, due to waiting for air ambulance, ALT EMT skills performed prior to the arrival of air ambulance.
24	51 minutes	Delayed on scene, waiting for ambulance. ALT EMT skills performed prior to the arrival of ambulance.
27	35 minutes	Delay on scene, awaiting ambulance. ALT EMT skills performed prior to arrival of ambulance.
28	118 minutes	Delay on scene was due to rescue problem. Patient was in a vehicle that was over the side, and needed extrication plus being brought back up to the road.
29	88 minutes	Delay on scene, awaiting ambulance, ALT EMT Skills done prior to arrival of ambulance. Actual time on scene with patient was 45 minutes. Fire department crew did not go available until 88 minutes after being on scene.
32	36 minutes	Delay on scene, awaiting ambulance, ALT EMT skills done prior to arrival of ambulance.
34	49 minutes	On scene time delayed, while awaiting air ambulance. ALT EMT skills done prior to arrival of air ambulance.
35	51 minutes	On scene time delayed, awaiting air ambulance. ALT EMT skills done prior to arrival of air ambulance.
36	57 minutes	On scene time delayed, due to patient had to be taken by sled out of wooded area, and then taken to air ambulance. ALT EMT skills performed prior to arrival of air ambulance.
47	72 minutes	No delay on scene time, ambulance was off scene in 22 minutes. Appears fire department crew did not go available until 50 minutes after ambulance left the scene.
48	35 minutes	Delayed on scene, awaiting ambulance. ALT EMT skills done prior to arrival of ambulance.
50	98 minutes	Delayed on scene time due to patient was involved in a climbing accident, and had to be lowered in a stokes basket.
54	33 minutes	On scene time delayed, awaiting ambulance. ALT EMT skills done prior to arrival of ambulance

CASE #	TIME ON SCENE	REASON FOR DELAY
60	100 minutes	On scene time delayed, due to prolonged extrication and air ambulance crew reassessed patient on scene before transporting the patient to the air ambulance. ALT EMT skills done while extrication in progress.
62	31 minutes	Delayed on scene by law enforcement. Patient was in custody, crew had to get handcuffs removed, to be able to place patient in spinal precautions.
63	43 minutes	On scene time delayed, awaiting ambulance. ALT EMT skills done prior to arrival of ambulance.
64	68 minutes	On scene time delayed due to, patient was a trauma patient who was ETOH and combative. Crew had to wait for additional personnel and Sheriff to help control patient.
65	49 minutes	Delayed on scene, awaiting ambulance, ALT EMT skills done prior to arrival of ambulance.
70	77 minutes	On scene time delayed, awaiting air ambulance. ALT EMT skill done prior to arrival of air ambulance.
74	32 minutes	On scene time delayed, awaiting arrival of air ambulance. ALT EMT skills done prior to arrival or air ambulance.
78	36 minutes	On scene time delayed due to patient was on a raft and the ambulance was waiting for the patient to be brought ashore.
86	30 minutes	On scene time delayed due to patient being processed out from the jail.
90	52 minutes	On scene time delayed due to, the patient was removed from scene and taken to another location by on-looker's. Once crew actual found patient on scene time was 8 minutes.
94	45 minutes	On scene time was delayed due to, patient was at clinic and was being treated by FNP, while awaiting helicopter.
99	33 minutes	On scene time delayed due to, patient had to be carried out of a wooded area.
111	38 minutes	On scene time delayed due to, patients reluctance to be transported to the hospital.
115	30 minutes	On scene time delayed due to, patients reluctance to be transported to the hospital.
121	30 minutes	On scene time delayed due to, awaiting ambulance. ALT EMT skills performed prior to ambulance arrival.
125	46 minutes	On scene time delayed due to, patient was located at the clinic and the patient was being treated by the FNP. Additionally the FNP was making transfer arrangements.

Alternative ALS Final Report - All Runs
October 1995 – June 2000

Run #	Age	Gender	Skill (s) Performed - Successful/ Unsuccessful	Outcome	Trauma?	Comments
1	60	Male	1) ET (s) 2) AED	No change-Pt. DOA	Yes	1) Skill appropriate. No comment whether IV attempted. 2) No documentation of breath sounds or verification of tube placement. 3) 15 minutes after arrest chance of resuscitation is 0.
2	69	Male	1) AED (u) 2) Accu-Check	No change	No	1) Does Not appear that IV attempted, Accu-Check not attempted, monitor strip would tend to indicate that Pt. did not survive, insufficient documentation to fully evaluate situation. 2) Notes illegible, but appears Pt.. was flat line after arrest 3) No IV established, need clean writing, can't fully evaluate
3	35	Male	IV x2 (u)	No change	Yes	No comments
4	83	Male	IV (s)	Undetermined	Yes	1) EMT stated condition improved. Unable to substantiate as no vital

						signs documented any place on chart. 2) No ALS 02 documented, difficult to read report, patient condition worsened, placed on 02 per nc @ 2L/min, and then 15 min later, placed on high flow non-rebreather. 3) Unable to determine if ALS procedure appropriate, possible hip fx with bleeding into joint could produce hypotension, and only TKO rate given. Big problem that no vital signs documented, unable to determine patient condition as result of procedure. 4) TKO rate for IV seems inappropriate when Pt. described as pale, cool, diaphoretic and possible femur fx, no vital signs documented. 5) No repeat vitals, improved since no infusion of substantial volume, documented.
5	37	Male	IV (s)	No change	Yes	IV appropriate for trauma patient who may have additional internal injuries.
6	36	Male	IV x2 (s)	No change	Yes	1) IV appropriate for motorcycle rider

						who could well have internal injuries. 2) Unable to assess severity of injury from documentation. Essentially no description of patients complaint(s) or injuries.
7	86	Female	IV (s)	Improved	Yes	1) Pt. improved, doubt that IV had much effect with 50 ml, provided med Life line. 2) Discrepancy between PCR and ALT ALS study form re: size of gauge used for IV (18 or 20?) what are standards for administering a bolus?, with a BP of 90/P, might have given 250 cc NS. 3) IV volume probably appropriate, although fluid bolus given BP 90/P with dizziness also acceptable. 4) IV appropriate
8	44	Male	IV (s)	No change	Yes	1) IV appropriate, 800 ml. Proper documentation. No change in BP, pulse increased, resp decreased. Pt. more relaxed and alert. 2) Pulse increased. It is unclear if this was before or after 700-ml infusion. IV volume of 700-ml. Appropriate

						to keep TKO with possible head injury, good vitals. 3) IV procedure appropriate although larger bore IV could have been used given trauma (blunt chest injury).
9	26	Male	IV x2 (u)	No change	Yes	IV appropriate, proper documentation
10	30	Male	IV (u)	No change	Yes	1) Probably does Not need IV if Pt. has isolated injury of left ankle, apparently, IV was never really in vein. Apparently, no fluid infused. 2) Removed boot after loading into ambulance, circulation not assessed timely; ankle fx reduced in rig, motor and feeling assessment?, Splint was applied without checking circulation; contradiction of documentation narrative vs. page 2. 3) No IV needed 4) An attempt at an IV for possible pain meds. 5) IV inappropriate.
11	44	Female	IV x2 (s)	Improved	Yes	1) IV appropriate, proper documentation, 2400 ml appropriate for est. 600 ml blood

						loss in Pt. whom was initially disoriented. Note that FNP and MD on scene. 2) IV procedure done by ALT EMT, should use non-rebreather mask for o2, not 8L/nc, should document breath sounds and respiratory effort and heart tones continuously.
12	79	Male	IV x2 (u) Accu-Check	No change	Yes	1) IV appropriate, proper documentation, IV unsuccessful, blood sugar level not checked. 2) IV appropriate, I would also consider an Accu-Check in diabetic, had previously been on micronase, and could have confused old med with new. 3) Attempts at IV appropriate, proper documentation, Pt. confused. Accu-Check should have been done. 4) IV attempts appropriate. Pt. is known diabetic, Accu-Check should have been done. IV should have been retried in route to the hospital.

13	64	Female	IV(s)	No change	No	IV appropriate, proper documentation.
14	78	Male	IV (s)	No change	No	IV appropriate, proper documentation, only one set of vital signs taken.
15	67	Male	IV ((s)	No change	Yes	IV appropriate, proper documentation, volume not recorded.
16	N/A	Male	IV (u) Accu-Check	No change	Unknown	IV not appropriate, unable to read enough of history. Most likely renal calc and IV would not be of much help. Accu-Check OK in restless Pt.
17	76	Male	IV (s)	No change	Yes	1) IV appropriate, proper documentation, total volume infused unknown, unable to determine from chart. 2) IV appropriate, proper documentation, vital signs consistently not completely recorded #cc's not documented. 3) TKO IV, volume infused not indicated.
18	55	Male	IV (s)	No change	No	1) Unable to read chart sufficiently to determine if IV appropriate, apparently IV was discontinued prior to transport. 2) IV appropriate intervention, proper documentation, IV d'cd

						accidentally, essential to tape well. 3) 02, IV appropriate, documentation weak.
19	Unknown	Female	IV (u) first successful, accidentally terminated, x 2 attempts unsuccessful	No change	Unknown	IV appropriate, proper documentation
20	45	Female	IV (u)	No change	No	1) IV appropriate, needed for tachycardia, procedure properly documented.
21	70	Male	AED (defib x4)	Improve	Yes	1) ALS procedure appropriate and properly documented, appears to have responded but ECG of 15:14:31 appears that Pt. did not survive. 2) Appropriateness of AED questionable as chief complaint not identified, hx pneumonia, EKG copied, narrative stopped at 1509, Pt. condition Not explained afterward 3) Cardiac arrest, needed access, not properly documented, patient not given fluids or cardiac meds

						4) 02 and defib appear appropriate, no IV started.
22	N/A	N/A	IV (unknown if successful, not documented)	Unknown	Unknown	1) Unable to read report well enough to make determination of appropriateness of IV, no narrative, General Comment: No age of Pt., little or no documentation of physical examination. 2) Poor documentation, no narrative on run. 3) IV attempted uncertain outcome of attempt, poor documentation.
23	32	Male	IV (s)	No change	Yes	1) No date documented on run report face sheet, no respiration's documented, BP in wrong column 2) Trauma not documented on face sheet, no respiratory rate documented, appropriate to start IV. 3) Face sheet of report done vaguely, narrative helpful to explain, IV/02/ and spinal immob documented.
24	N/A	Male	IV (s)	No change	Yes	1) IV appropriate and properly documented, No second set of vitals given, GCS 15 if confused 2) Prolonged scene time, apparently awaiting arrival of helicopter.

						Given long scene time, additional Vs should have been recorded.
25	51	Male	IV (s) Accu-Check	No change	No	1) IV appropriate and procedure properly documented. Total volume infused not documented (TKO) 2) Amount infused not documented 3) IV and Care Flight appropriate (BS not documented, not placed on monitor, would recommend both, TKO rate, not stated cc's infused.
26	40	Male	IV (u)	No change	Yes	Unable to start IV.
27	77	Female	IV (s)	No change	No	1) IV appropriate with proper documentation. Total volume not documented stated TKO". If Pt. determined to be dehydrated, rate should not be TKO as dehydrated Pt. is fluid deficient. 2) Total volume not documented, time of arrival at destination not documented, and probably could have used some volume. 22 gauge catheter probably inadequate, might have been necessitated by patient condition

						3) I think IV access was indicated given history, n/v and fever. Larger bore IV and rate > TKO would be indicated given circumstances.
28	53	Male	IV (s)	No change	Yes	IV appropriate, proper documentation, total volume infused not documented, stated "TKO"
29	79	Male	IV (u)	No change	No	1) IV appropriate, should also have checked glucose level. 2) Accu check with decreased LOC, excellent to start 02.
30	20	Male	IV (s) Accu-Check	Improved	Yes	1) IV appropriate, good documentation, unable to determine from chart volume infused. Was stated as 100 ml/hr, had been given 50 ml D50. 2) Much better documentation 3) IV appropriate considering decreased LOC with diabetes, of all runs reviewed best care.
31	N/A	Male	IV (u) Accu-Check	No change	No	1) Accu-Check also would have been good. 2) Accu-Check would have been appropriate procedure.
32	25	Female	IV (u)	No change	Yes	No comments.

33	30	Male	IV (u)	No change	Yes	Unable to start I, Helicopter crew also reported to be unsuccessful in attempt to start IV, record too old to be of much benefit from education standpoint, good presentation of spinal shock, low BP, slow pulse.
34	65	Male	IV (u)	No change	Yes	IV appropriate, good documentation.
35	37	Female	IV (u)	No change	Yes	IV appropriate, good documentation.
36	48	Female	IV (s)	NA	No	IV appropriate, good documentation.
37	72	Female	IV (s)	No change	No	IV appropriate, good documentation.
38	N/A	Male	IV (u)	No change	Yes	IV appropriate, good documentation.
39	47	Male	IV (s)	No change	No	IV appropriate. ALT EMT report form believed Pt. condition improved, doubt that 500 ml. NS responsible for the improvement.
40	58	Male	IV x 1 (s)	No change	Yes	Good documentation.
41	N/A	Female	IV x 1 (s)	Pt. improved, but not due to IV.	No	1) In addition, may words to say so little in chief complaint. 2) Pt. had known seizure history; EMT-I could not and did not have

						to use a medication.
42	72	Male	IV x1 (s)	No change	Yes	1) Lifeline for possible cardiac patient. 2) Transported by Care Flight Helicopter, Reno. 3) Difficult to read chief complaint/exam. 4) Difficult to read report
43	50	Female	IV x 3 (s) Epi Pen	Unable to determine from record. Mental status appeared to improve	No	1) Allergic reaction, possible insect. 2) Unable to determine from documentation; from narrative. Mental status appeared to improve. 3) TKO acceptable in view of normal BP/P. 4) Maybe give fluids in allergic reaction.
44	45	Female	EPI x 2	Improved	No	1) Acute allergic reaction to insect sting. IV infusion would have been appropriate. 2) Good run. After EPI, might have given breathing treatment, more fluids.
45	90	Female	IV (u)	No change	Yes	1) IV was not successful secondary to "interference by patient's relative. 2) Elderly patient does not need IV access. Interesting pupil exam. Did have n/o trauma, but prior

						CVA & catgaract surgery. 3) May have tried to have patient family leave scene, or explain need for IV and attempt again.
46	50	Female	IV x2 (u)	N/A	No	1) Pt. initially had norm BP/P/R, fully oriented. Lifeline nice to have but not mandatory. 2) May have checked Accu-Check.
47	51	Male	IV x1 (s)	No change	No	1) IV appropriate. Chest pain patient with potential cardiac insult/arrest. 2) Appropriate IV for Pt. with CP. 3) Definitely needed IV. Within scope to administer NTG? 4) Nitroglycerin should have been used if available.
48	16	Male	IV x1(S) Accu-Check D50	Pt. improved.	No	1) ALS Procedures appropriate. Known diabetic with altered level of consciousness. 2) Responsive within 4-5 minutes of receiving D50. 3) Pt. improved with D50. 4) ALS procedures appropriate. Pt. improved with D50.
49	36	Female	IV x 2 (s)	No change	Yes	1) Potential for serious blood loss. 2) Well documented run report. Condition of Pt. warranted IV

						access with possibility of hemorrhage. 3) IV needed for ability to replace volume. 4) Appropriate, significant blood loss.
50	13	Male	IV x2 (u)	No change	Yes	1) IV not completed. 2) Good idea to start 18 gauge in the field – Not 20 – use AC if not successful per FA. 3) Needed IV established.
51	31	Male	IV x2 (s)	No change	Yes	1) Fall Pt., possible internal hemorrhage. 2) 100 ml. Appropriate in view of normal BP/P. 3) Good documentation throughout report. Pt. trauma, warranted IV access. 4) Trauma Pt. does need IV. 5) IV appropriate for the trauma.
52	83	Female	IV x 3 (u)	No change in field. Pt. improved after IV start by nurse at clinic	Yes	1) Unable to access IV per EMT after 3 tries, good to have tried 3 times. 2) Not able to get blood sugar. IV started by nurse practitioner. 3) Diabetic with altered L.O.C. Probably mandates further blood Accu-Check.

53	27	Male	EPI-PEN	Pt. improved	No	1) Procedure appropriate. Could have mentioned sub-q and site of injection. 2) Breathing treatment with Benadryl may have also helped. Decreased wheezing, would have documented O2 sat. 3) An IV would have been appropriate.
54	85	Male	IV x1 (s)	No change	No	1) IV appropriate for potential cardiac arrest. 2) IV appropriate, patient having chest pain. 3) Low O2 sat, improved after oxygen. 4) IV appropriate for respiratory distress and chest pain. Improved with O2.
55	37	Male	IV x 1 (s) Accu-Check D50	Pt. improved	No	1) ALS procedure appropriate, known diabetic with altered L.O.C. Became oriented in short interval. 2) Printing would have been much easier to read. 3) Needs to improve charting (handwriting). Difficult to read. 4) Narrative hard to read on my copy.

						5) ALS procedure appropriate-suspected hypoglycemia. 6) Improved with D50. 7) Appropriate treatment, Accu check. BS could have been obtained to document lowered BS.
56	45	Male	IV x 4 (u) EPI-PEN	Pt. improved	No	1) Epi Pen primary treatment for severe allergic reaction. 2) Pt. condition improved as result of procedure.
57	74	Female	ET Attempt (u) Auto Defib	Dead on scene	Unknown	1) Intubation attempt on asytolic patient. 2) Pt. essentially dead on scene. 3) IV not attempted on short transport. Difficult getting patient out from behind bed.
58	78	Male	ET Attempt (u) Auto Defib	Pt. dead on scene	Unknown	No comments.
59	43	Male	IV (s)	No change	Yes	1) IV appropriate in view of potential 2 unit blood loss.
60	53	Male	IV x1 (s)	No change	Yes	1) IV appropriate; Pt. with 2 extreme fractures, altered LOC. Properly documented. Total volume not documented. 2) Appropriate IV for Pt. with

						fractures, 3) Trauma, ETOH. Procedure properly documented, unable to discern total volume from report. 4) ALS procedure appropriate for this patient. No BP documented, even with uncooperative patient BP should have been obtained in over 90 minutes. 5) ALS procedure appropriate for major trauma Pt. with prolonged extrication time (35 min). Procedure properly documented. Pt.. condition may have improved, no documented BP, appears to have had good care. No volume noted. 6) ALS procedure appropriate for trauma, femur fx, altered LOC. Total volume, TKO. With pulse described as "weak" and femur fracture, would question TKO rate. 7) ALS procedure appropriate, properly documented. Femur fx R. leg; compound fx L. leg. Total volume infused Not documented.
61	24	Female	IV x 1 (U)	No change.	No	1) Accu-Check check appropriate in

			Accu-Check			anxious patient. Accu-Check procedure apparently not completed. Procedure properly documented. 2) ALS procedure appropriate. Volume infusion may have helped patient with abdominal pain. Procedure properly documented. 3) ALS procedure properly documented. Procedure not properly documented, "arrive destination" given as 18:11, IV start time given as 18:18. This discrepancy may relate to change in vehicles. 4) ALS procedure appropriate, with alcohol and low food, would give crystalloid bolus. Unsuccessful IV attempt, so no fluid given. 5) ALS procedure appropriate, properly documented. Unsuccessful IV attempt. 6) ALS procedure appropriate, properly documented. Pt. became increasingly anxious, no second attempt at IV.

62	44	Male	IV x 2 (u)	No change	Yes	1) ALS procedure attempted appropriate. Trauma patient, could have been internal injuries. Procedure properly documented. Hematoma formation from IV start, unsuccessful attempts. 2) ALS procedure appropriate and properly documented. 3) ALS procedure attempted appropriate, no mention of pupil size with trauma patient? 4) ALS procedure appropriate, properly documented. 5) ALS procedure appropriate, properly documented. Infiltrated no volume. Because of Hematoma, the patient's condition did worsen, though would not expect a material effect on outcome. 6) ALS procedure appropriate, properly documented, trauma patient.
63	33	Male	IV x2 (s)	No change	No	1) ALS procedure probably not indicated if seizure history was chronic and was known fact to EMTs. Properly documented.

						Total volume infused not documented. 2) ALS procedure appropriate. Properly documented. Total volume infused not documented. TKO rate. 3) ALS procedure appropriate. Properly documented. Needed IV for this patient in case of repeat seizure activity. Total volume not documented. Good documentation of vital signs. 4) ALS procedure appropriate, properly documented. Total volume infused not indicated. 5) ALS procedure appropriate, properly documented. Seizure could recur, need IV access for meds. TKO rate. 6) ALS procedure appropriate, properly documented.
64	31	Female	IV x 1(s)	No change	Yes	1) ALS procedure appropriate. Initial history indicative of trauma, further history would indicate IV would not have been needed. Procedure properly documented. No volume

						indicated. 2) ALS procedure appropriate, tachycardia and diaphoresis. Properly documented. Pulse went down though possibly due to other measures since rate only 100/hr. Total volume infused, 100cc/hr x 10 min. 3) ALS procedure not appropriate. I do not think the IV was needed unless there was evidence of other trauma than 3" loc. Procedure properly documented. Total volume infused not stated, 100/hr. 4) ALS procedure appropriate. Appropriate to put into c-spine and treat, as trauma until know otherwise. Procedure properly documented. Total volume infused not documented. 5) ALS procedure appropriate and properly documented. Total volume infused not indicated. 6) ALS procedure appropriate, properly documented, history of injury unclear with multiple reasons

						given for bleeding.
65	57	Male	IV x 1 (s)	No change	No	1) ALS procedure appropriate, properly documented. Total volume infused Not documented. 2) ALS procedure appropriate, properly documented. Total volume infused Not documented. (100/hr) 3) ALS procedure appropriate with syncope. Properly documented. Total volume infused not documented. 4) ALS procedure appropriate, properly documented. Unclear what caused syncope of the patient. Total volume infused not documented. 5) ALS procedure appropriate, properly documented. Total volume infused, 100cc/hr x 20 min. =33 cc. 6) ALS procedure appropriate, properly documented. Total volume infused not stated.
66	41	Male	IV (s)	No change	Yes	1) ALS procedure appropriate. Trauma patient could have internal

						injuries from fall. Properly documented. No change in Pt. condition is appropriate for trauma patient with 19-min. transport from scene. Total volume infused, 20 ml. 2) ALS procedure appropriate, properly documented. 20-cc total volume infused. 3) ALS procedure appropriate and properly documented. 20-cc total volume infused. 4) ALS procedure appropriate and properly documented. 20 ml total volume infused. 5) ALS procedure appropriate and properly documented. EMS documented normal extremities, and narrative clearly states not normal. 20-ml total volume infused. Although not trauma triage criteria, was trauma patient. 6) ALS procedure appropriate, properly documented, trauma Pt. Total volume infused 20 cc.
67	50	Male	IV (s)	No change	Yes	1) IV appropriate for trauma patient,

						who might have internal injuries. 2) Skill appropriate, patient clearly needed IV.
68	23	Male	IV (s)	No change.	Yes	1) IV needed on trauma, patient that might have internal injuries. 2) Should have used 16 or 18-ga catheter. 3) Appropriate treatment. 4) Needed better documentation of drops per minutes.
69	43	Male	IV x 2 (u)	No change	Yes	Appropriate treatment, unable to start IV in field, IV started by RN at Clinic.
70	30	Male	IV (s)	No change	Yes	1) ALS Procedure appropriate but Should have taken BP. 2) Multi System trauma patient needed ALS stabilization. 3) IV appropriate, no volume infused noted. 4) Trauma patient with decreased level of consciousness and seizures. IV appropriate, but size of catheter not documented.
71	56	Male	IV(s)	No change	Yes	1) Appropriate treatment for trauma patient 2) IV appropriate for trauma patient who might have internal injuries.

72	55	Female	IV x2 (u)	No change	Yes	IV appropriate for trauma patient, however, unsuccessful.
73	38	Male	IV (u)	No change	Yes	IV needed for head injury patent.
74	65	Female	IV (s)	No change	No	1) Good job in getting IV into patient that was shut down. 2) Difficult to tell if patient improved, due to no vitals signs.
75	81	Female	IV x2 (u)	No change	No	1) Appropriate treatment. 2) Should have stated size of IV cath.
76.	39	Male	IV (s)	No change	No	No comments.
77.	78	Female	NTG	Pt.. improved	No	1) IV started by clinic staff. 2) Use of NTG appropriate.
78.	37	Male	IV (s)	No change	Yes	Appropriate care patients condition improved due to Oxygen and warming.
79.	22	Female	IV x1 (u)	No change	Yes	Should have made another attempt to start IV.
80.	55	Female	IV x1 (u) NTG AED @ 200J	Pt. improved	No	1) Should have made another attempt to start IV. Rating on initial chest pain.
81.	58	Male	IV (s) NTG	Pt. improved	No	Patient pain decreased with NTG.
82.	36	Female	Accu-Check	No change	Yes	Trauma patient should have had an IV started.
83.	35	Female	Albuterol	Pt. improved	No	Appropriate treatment.

84.	76	Male	Albuterol	Pt. improved	No	Should have documented a second set of lung sounds.
85.	63	Male	IV (s)	No change	No	Should have done an Accu-Check.
86.	28	Male	Accu-Check	No change	Yes	Trauma patient should have had an IV started.
87.	46	Male	IV (s) Accu-Check	No change	No	Appropriate treatment.
88.	40	Male	IV (s)	No change	Yes	Appropriate treatment.
89.	19	Male	IV (s)	No change	Yes	Appropriate treatment.
90.	58	Male	Accu-Check	No change	No	Appropriate treatment.
91.	12	Male	IV x1 (u) Accu-Check	No change	No	Second attempt at IV should have been made, Accu-Check appropriate for this patient.
92.	32	Male	IV (s) Accu-Check D50	No change	No	Appropriate treatment ALOC patient.
93.	54	Female	IV x1 (u)	No change	Yes	No Comment.
94.	20	Female	IV (s) Accu-Check Narcan	No change	No	Appropriate treatment for ALOC patient.
95.	17	Female	IV (s)	No change	No	Appropriate treatment for ALOC

			Accu-Check			patient.
96.	77	Male	IV (s) NTG	Pt. improved	No	Appropriate treatment for chest pain.
97.	68	Female	EPI-PEN	No change	Yes	Treatment for anaphylaxis appropriate.
98.	84	Male	IV (s) Aspirin Accu-Check	Pt. improved	No	Appropriate Treatment for patient with chest pain and ALOC.
99.	45	Female	EPI-PEN	Pt. improved	Yes	IV would have been appropriate, in case of hypotension.
100.	41	Male	EPI-PEN	Pt. improved	Yes	Treatment appropriate for possible anaphylactic reaction.
101.	47	Female	IV (s) Accu-Check	No change	Yes	1) Treatment appropriate for a trauma patient. 2) Accu-Check good thought in Pt. C/O feeling sleepy.
102.	81	Male	IV (s)	No change	No	1) Should have done Accu-Check. 2) Treatment appropriate for possible CVA.
103.	88	Male	IV (s)	No change	No	1) Treatment appropriate for possible CVA. 2) Should have increased Oxygen. 3) Should have done Accu-Check.
104.	66	Male	IV (s)	No change	No	Treatment appropriate for possible chest pain.

105.	81	Male	IV (u)	No change	No	No comments.
106.	80	Female	IV x2 (u)	No change	No	No comments.
107.	59	Male	IV (s) NTG x2 Aspirin	Pt. improved	No	1) Treatment appropriate for possible chest pain. 2) NTG appropriate for relief of chest pain.
108.	70	Female	IV (s) Accu-Check	No change	Yes	Treatment appropriate for victim of a MVA.
109.	59	Female	Albuterol	Pt. improved	No	1) Treatment appropriate for respiratory distress victim. 2) Pt. Improved after breathing treatment.
110.	62	Male	IV x2 (s)	No change	No	1) Should have done Accu-Check. 2) IV appropriate for a patient with slightly decreased LOC.
111.	75	Male	IV (s)	No change	No	IV appropriate.
112.	87	Male	Accu-Check	No change	No	1) IV should have been started. 2) Accu-Check good in Pt. with ALOC.
113.	68	Female	Accu-Check Glucagon IV (s)	Pt. improved	No	1) Glucagon appropriate treatment. 2) IV Appropriate.

114.	60	Male	IV (s) NTG	Pt. improved	No	Treatment appropriate for chest pain.
115.	80	Female	Accu-Check	No change	No	1. Treatment appropriate for ALOC. 2. Blood sugar monitoring appropriate, but would have given additional glucose, since patients LOC did not increase.
116.	80	Female	Accu-Check	No change	No	Treatment appropriate for ALOC.
117.	69	Male	Accu-Check	No change	No	Treatment appropriate for ALOC. All other treatment on scene done by FNP.
118.	85	Female	IV x1 (u) Aspirin	No change	No	Short transport time, not enough time to attempt a 2nd IV.
119.	36	Female	Accu-Check	No change	No	Treatment appropriate for ALOC.
120.	8	Male	Albuterol	Pt. improved	No	No comments.
121.	80	Female	Accu-Check	No change	Yes	Treatment appropriate for diabetic patient.
122.	19	Male	Accu-Check IV (s)	No change	No	Accu-Check and IV appropriate for ALOC.
123.	68	Male	IV (s)	No change	Yes	1. Treatment appropriate for a trauma patient. 2. Good Documentation.
124.	81	Female	IV (s)	No change	No	No comments.

125.	72	Female	IV (s) NTG	Pt. improved	No	Treatment appropriate for Pt. with chest pain.
126.	74	Female	IV (s)	No change	No	Treatment appropriate for Pt. with GI Bleed.
127.	52	Female	IV (s)	No change	Yes	IV appropriate for trauma patient.
128.	46	Male	IV (s)	No change	Yes	IV appropriate for trauma patient.
129.	19	Male	IV (s)	No change	Yes	IV appropriate for trauma patient.
130.	80	Male	Accu-Check IV (s) D50	Pt. improved	No	1) Treatment appropriate for diabetic patient. 2) Base Hospital ordered D50 prior to Glucagon.
131.	74	Female	IV (s)	No change	Yes	No Comments
132.	30	Male	IV (s)	No change	Yes	IV appropriate for trauma patient.
133.	68	Female	IV (s)	No change	No	IV appropriate for trauma patient.
134.	79	Male	IV (s)	No change	No	IV appropriate for patient with shortness of breath.
135.	32	Male	IV (s)	No change	Yes	IV appropriate for trauma patient.
136.	76	Female	Accu-Check IV (s)	No change	No	IV and Accu-Check appropriate for patient with decreased LOC. Unable to

						determine if patient improved from IV.
137.	79	Male	IV (s)	No change	No	IV appropriate for patient with shortness of breath.
138.	81	Male	IV (s)	Pt. improved	No	IV appropriate for patient with GI Bleed.
139.	88	Female	IV (s)	No change	No	IV appropriate for patient with dehydration and possible GI Bleed.
140.	37	Female	IV (s)	No change	Yes	No comments.
141.	35	Female	IV (s) x2	No Change	Yes	No comments.

PATIENT SUMMARY

The following is a summary of cases where the ALT EMT program proved to be instrumental in saving or improving the patient's condition.

Case # 8: Patient was a 44-year-old male, who was the unrestrained driver of a vehicle, traveling at an unknown speed, when his vehicle went off the road and rolled over an unknown amount of times down an 80-foot embankment. Upon arrival ALT EMT's found patient with multiple injuries, unconscious and unresponsive, patients initial Glasgow Coma scale was across the bottom or a 3. After the IV of normal saline was established the patients blood pressure increased along with hisLOC, upon arrival to the hospital the patients LOC eye opening was to verbal, verbal response was confused and motor response was obedient. Patient's initial Glasgow Coma Scale score was a 10 after ALT EMT intervention the final score was a 14, patient's verbal was still confused. Benefit to patient was an increase in perfusion and an increase in hisLOC.

Case # 11: Patient was a 44-year-old female, who had multiple stab wounds to her upper torso and neck region. Upon arrival of the ALT EMT's found the patient who had lost approximately 600 cc of blood and was still bleeding. Patient's initial blood pressure was 98/64. Bleeding was immediately controlled and one IV of normal saline was started to run wide open. After fluid administration by ALT EMT's patient's blood pressure began to increase and signs of more profound tissue perfusion was visible. Patient's blood pressure increased to 126/70. Patient's mental status did not increase due to the fact the patient had consumed a substantial amount of beer just prior to the incident. Patient's initial and final Glasgow Coma Score did not change. The initial score was 11. Benefit to patient was the increase in her blood pressure and tissue perfusion.

Case # 21: Patient was a 70-year-old male, who was found pulseless and apneic by ALT EMT's. Patient had unknown down time. Patient was ventilated by BVM and placed on AED. Patient was initially shocked three times. After the third shock, patient had spontaneous respirations and a pulse. After several minutes the patient became pulseless and apneic. Patient was shocked again. Patient regained pulses and respirations. Upon patient being transferred to ambulance, patients LOC was eye opening to spontaneous, verbal responses were oriented, and motor responses were obedient. Patients initial Glasgow Coma Scale was a 3 after ALT EMT intervention the final score was a 15. After intervention patient's vital signs were within normal limits. Benefit to the patient was lethal cardiac rhythm converted to one that is more conducive with normal cardiac and bodily functions.

Case # 30: Patient was 20-year-old male, a known diabetic, who was unconscious and unresponsive. Per patient's family patient had not eaten all day and had not taken his medications as prescribed. Patient had an IV of normal saline started and given 25 grams of 50% Dextrose. After the administration of the Dextrose the patient'sLOC increased, patient's eye opening was spontaneous, verbal response was oriented, and motor response was obedient. Patient's initial Glasgow Coma Scale was a 3, after ALT EMT intervention patient's final score was a 15. Patient's vital signs were within normal limits. Benefit to patient was having the patient's glucose level raised, which in turn increased the patient'sLOC, and possibly prevented any permanent brain damage.

Case # 43: Patient was a 63-year-old female who was stung by an unknown type insect. Upon arrival of ALT EMT personnel, patient presented with a decreasedLOC, difficulty breathing, swollen tongue and slurred speech. Patients eye opening was to speech, verbal response were confused and motor responses were purposeful. Patient was given 0.3mg of epinephrine via the "Epi-Pen". After an undocumented amount of time the patient was fully alert and oriented and distress level had subsided. After ALT EMT intervention patients eye opening was spontaneous, verbal responses were oriented, and motor responses were obedient. Patient's initial Glasgow Coma Scale was a 12, after treatment patients score increased to a 15. Patients vital signs were within normal limits. Overall benefit to patient was the increase in herLOC, respiratory distress subsided, and all other related signs and symptoms to an allergic reaction were alleviated.

Case # 44: Patient was a 45-year-old female who was stung by a Wasp. Patient began to have immediate allergic reaction. Patient's husband attempted to transport her to the clinic, but patient became worse in route. Patient's husband pulled off the road and called for help. Upon arrival of ALT EMT's patient's breathing was shallow and barely discernible and patient was unconscious. Patient's was ventilated to assist with respirations and administered 0.3mg of epinephrine via an "Epi-Pen". Patient's respiratory status improved and had an increase inLOC. After the 1st "Epi-Pen" the patients LOC was eye opening to verbal, verbal responses were incomprehensible, and motor responses were purposeful. Patient still had difficulty breathing with inspiratory and expiratory wheezes, hives and a decreased blood pressure which was 94/66. Patient was administered a second dose of 0.3mg of epinephrine via the "Epi-Pen". Patient also had an IV of Normal Saline established. In route the patient's respiratory distress subsided and all other signs and symptoms of an allergic reaction had subsided. The patient's LOC increased to eye opening spontaneous, verbal response was oriented, and motor response was obedient. Patient's initial Glasgow Coma Scale was a 3 after ALT EMT intervention the patient's final score was a 15. Patient's blood pressure increased to 110/72. Benefit to the patient was the administration of the "Epi-Pen" probably saved the patient's life.

Case # 48: Was a 16-year-old male, who was known, diabetic. Patient was found sitting in a vehicle, unconscious and unresponsive. Patient's initial LOC was eye opening to

pain, verbal response was incomprehensible, and motor response was withdrawal. ALT EMT established an IV of Normal Saline and obtained a blood sample. The patient's initial blood sugar was 20mg/dl. The patient was given 25 Gm of 50% Dextrose. Within four (4) minutes the patient became fully alert and oriented, his LOC increased to eye opening was spontaneous, verbal responses were oriented, and motor responses were obedient. Patient's initial Glasgow Coma Score was an 8, after ALT EMT intervention patient's score increased to a 15. Patient's vital signs were within normal limits. Benefit to patient was an increase in his level of conscious and the timely administration of the Dextrose prevented the possibility of any permanent brain damage.

Case # 53: Patient was a 27-year-old male who had approximately 20 stings from Yellow Jackets on his upper torso and arms. Upon arrival of ALT EMT personnel, the patient complained of difficulty breathing, urticaria, swelling to the upper torso, arms and neck, patient had inspiratory and expiratory wheezes. Patient was placed on oxygen and administered 0.3mg of epinephrine via the "Epi-Pen". Patient's respiratory distress level subsided and the signs and symptoms of an allergic reaction also started to subside. Patient's vital signs were within normal limits. Patient's initial Glasgow Coma Score and final score were 15. Benefit to the patient was that his respiratory distress level was eliminated and was able to breathe freely.

Case # 55: Patient was a 37-year-old male, who was known diabetic. Upon arrival of ALT EMT personnel patient was found unconscious and unresponsive. Patient's initial LOC was, eye opening was none, verbal was none, and motor response was purposeful. An IV of Normal Saline was established and the patient was administered 25Gm of 50% Dextrose. After several minutes the patients LOC increased to eye opening spontaneous, verbal response was oriented, and motor response was obedient. Patient's initial Glasgow Coma Scale was a 7, after ALT EMT intervention, patient's score increased to 15. Patient's vital signs were within normal limits. Benefit to the patient was the Dextrose increased his level of conscious and decreased the risk of any permanent brain damage from this incident.

Case # 56: Patient was a 45-year-old male who was stung by a bee. Upon arrival ALT EMT personnel were told that patient had been administered 0.3mg of epinephrine via the "Epi-Pen" by his wife. Per the patients wife the patient had minimal improvement. The patient was found with difficulty breathing, decreasedLOC, and other related signs and symptoms and allergic reaction. Patient's initial LOC was eye opening was spontaneous, verbal responses were oriented and motor responses were purposeful. Patient was given a second injection of 0.3mg of epinephrine via the "Epi-Pen". After several minutes the patient became fully alert and oriented. Patient's LOC was eye opening was spontaneous, verbal response was oriented, and motor response was obedient. The patient's initial Glasgow Coma Scale was a 14 after ALT EMT intervention it was a 15. Patient's vital signs were within normal limits. The patient's respiratory distress had

subsided and his other related signs and symptoms to an allergic reaction were also subsiding. Benefit to the patient was the administration of the epinephrine eased the patient's difficulty in breathing and increased his level of conscious; use of the "Epi-Pen" probably saved his life.

Case # 74: Patient was a 65-year-old female who was complaining of feeling weak and dizzy for the past few days, patient stated she was running a fever and had been vomiting also for the past few days. Patient was unable to keep any fluids or food down, and also complained of some very mild respiratory distress and abdominal pain.
ALT EMT personnel had trouble obtaining and initial blood pressure, after several attempts a blood pressure of 52/P was obtained. ALT EMT personnel established an IV of Normal Saline and did a 500cc fluid challenge. After the fluid challenge the patient's blood pressure increased to 80/43. At that point the patient care was transferred to Reno Care Flight for transport. The patient had become dehydrated and in need of fluids. Patient's Glasgow Coma Score was 15 upon arrival and transfer to the air ambulance. Benefit to the patient was, once the IV fluids were administered the patient's blood pressure increased along with the other signs of proper tissue perfusion.

Case # 77: Patient was a 77 year old female who complained of chest pain. Patient could not rate the pain on a scale of 1 – 10, but stated that her pain was severe. Upon arrival of ALT EMTs, they found FNP treating the patient and had initiated an IV. ALT EMT administered (1) nitroglycerin. Pt had mild relief from the nitroglycerin. While in route to the hospital patient was given a 2nd nitroglycerin and the chest pain had subsided. Patient's vital signs remained within normal limits during the transport to the hospital.

Case # 80: Patient was a 55 year old male that complained of chest pain that was a 6/10. ALT EMT administered (1) nitroglycerin and was in the process of attempting to start and IV when the patient clutched his chest and became pulseless and apneic. The AED was applied and the patient was shocked at 200 J. The patient converted and within 10 minutes was alert and oriented. FNP Arrived on scene and went with ALT EMT on transport to hospital. FNP started IV in route.

Case # 81: Patient was a 58 year old male. Patient complained of mid-sternal chest pain that was a 8/10. Upon arrival of the ALT EMTs, patient's chest pain had remained unchanged from the oxygen therapy that had been administered by the fire department. The ALT EMT established and IV and administered (1) nitroglycerin. The patient had some relief from the nitroglycerin and his pain decreased to a 4/10. Patient was taken to the clinic were he treatment was continued by the FNP. Patient's vital signs remained within normal limits during the transport to the clinic.

Case # 83: Patient was a 35 year old female. Patient had been upset and had been drinking when she began to experience shortness of breath. Upon arrival of ALT EMTs, they found the patient in moderate respiratory distress. Patient had wheezing in all lung fields. Patient was given a breathing treatment of Albuterol. Patient's respiratory distress subsided after 10 minutes. Patient's vital signs remained within normal limits during the transport to the clinic.

Case # 84: Patient was a 76 year old male who was experiencing shortness of breath. Upon arrival of the ALT EMTs patient stated he was in moderate distress for approximately 1 hour. ALT EMTs administered a breathing treatment with Albuterol. Patient's respiratory status improved and patients distress level decreased to mild. Patient was transported to the clinic for further evaluation. Patient's vital signs remained within normal limits during the transport to the clinic.

Case # 96: Patient was a 77 year old male that complained of chest pain. Patient rated his pain a 5/10. Upon arrival of ALT EMTs patient stated, that he had been having chest pain with associated shortness of breath. ALT EMTs established an IV and administered (1) nitroglycerin. After nitroglycerin and oxygen therapy, the patient's pain subsided along with the shortness of breath. Patient was transported to the hospital pain free and vital signs remained within normal limits.

Case # 98: Patient was a 84 year old male, who was experiencing chest pains and had a slightly altered LOC. Upon arrival of ALT EMTs, patient was unable to rate his pain, but appeared in moderate distress. ALT EMTs established and IV and placed the patient on oxygen. After several minutes patient was fully alert and oriented. Patient stated his pain had decreased to a 2/10. Patient was given four aspirin per protocol and transported to the hospital. Patient remained unchanged in route to the hospital.

Case # 99: Patient was a 45 year old female who had been stung by a bee. Upon arrival of ALT EMTs, patient complained of severe respiratory distress with wheezes in all lung fields. ALT EMTs administered epinephrine via the EPI-PEN. Within a few minutes patients' respiratory distress eased and patient was able to speak in full sentences. Patient still had mild respiratory distress, when patient care was turned over to Flight Care.

Case # 100: Patient was a 41 year old male that was stung by a bee while riding his bike. Patient complained of moderate respiratory distress upon arrival of ALT EMTs. ALT EMTs administered epinephrine via the EPI-PEN. Within several minutes, the patient's respiratory distress began to ease and upon arrival at the clinic, the patient's respiratory distress had subsided.

Case # 107: Patient was a 59 year old male who was complaining of chest pain. The patient rated the pain at 9/10. Upon arrival of the ALT EMT, the patient appeared in severe distress. The patient had no relief from the oxygen that was administered by the fire department. ALT EMTs started an IV and administered (1) nitroglycerin and aspirin. Patient pain decreased to a 4/10. In route to the hospital, the patient was given and additional nitroglycerin and his pain completely subsided. The patient reminded pain free, for the remainder of the transport to the hospital.

Case # 109: Patient was a 59 year old female who complained of severe shortness of breath. Upon arrival of ALT EMTs, they found the patient in severe respiratory distress with audible wheezes. A breathing treatment was administered with Albuterol. Patient was transported to the hospital. Patient's level of distress decreased to mild while in route to the hospital. No further treatment was ordered by the base hospital. Patient remained unchanged upon arrival.

Case # 113: Patient was a 68 year old female who was a known diabetic with and altered LOC. Upon arrival of ALT EMTs, they found the patient unconscious and unresponsive. ALT EMT performed an Accu-Check. Patient has a blood sugar of 24. ALT EMT administered 1 mg of Glucagon and began to transport. After 10 minutes patient had not responded to Glucagon, and ALT EMT established and IV. While in the process of finishing the IV patient LOC increased and another Accu-Check was performed. Patients updated blood sugar was 112. Upon arrival at the hospital, patient was fully alert and oriented.

Case #114: Patient was a 60 year old male, who complained of severe chest pain. Upon arrival of ALT EMTs, patient complained of severe mid-sternal chest pain that he could not rate. ALT EMTs established an IV and administered (1) nitroglycerin. Patient's pain decreased to mild per the patient. Patient was transported to the hospital remained unchanged upon arrival.

Case # 120: Patient was an 8 year old male who was suffering from a severe asthma attack and had a decreased LOC. Upon arrival of ALT EMTs found patient in severe respiratory distress. Patient had used his own inhaler with no relief. Patient was loaded into ambulance and a breathing treatment of Albuterol was administered. While in route to the clinic in town, patient's LOC increased and respiratory distress eased. Patient care was transferred to FNP at clinic while awaiting helicopter.

Case # 125: Patient was a 72 year old female who complained of chest pain. Upon arrival of ALT EMTs, patient pain was a 7/10. ALT EMTs established an IV and

administered (1) nitroglycerin. After nitroglycerin and oxygen therapy the patient's pain subsided. Patient remained pain free in route to the hospital.

Case # 130: Patient was a 80 year old male who was a known diabetic. Upon arrival of ALT EMTs patient had a decreasedLOC. ALT EMTs performed an Accu-Check, but it would not register. ALT EMTs contacted base hospital and base hospital ordered an IV and dextrose (D50). PatientLOC increased quickly. In route to the hospital patient remained fully alert and oriented.

Case #138: Patient was a 81 year old male who had a decreasedLOC. Upon arrival of ALT EMTs, patient family stated that he had been in and out of consciousness for the past twenty minutes. Patient had a history of a bleeding ulcer. Patients initial blood pressure was 70/40. ALT EMTs established two IV's and began a fluid challenge. Patient was transported to a landing zone to be transported by helicopter. Upon arrival of the helicopter patient's blood pressure was 106/53 and was alert, but confused. Patient care transferred to flight crew without further change.