



EL DORADO
COUNTY
EMS AGENCY

August

2016

***QUALITY
IMPROVEMENT
PLAN***





Table of Contents

Structure and Organizational Description 1
Mission..... 2
Organizational Chart 2
EMS System Goals 3
Data Collection and Reporting..... 3
Data Indicators 5
Evaluation of Indicators 8
Action to Improve10
Training and Education.....11
Annual Update12

Structure and Organizational Description

The El Dorado County Emergency Medical Services Agency (EDC EMS Agency) serves as the designated Local Emergency Medical Services Agency (LEMSA) in accordance with the guidelines established in Health and Safety Code 2.5 Chapter 4, Article 1, § 1797.200. et al. The EDC EMS Agency is comprised of an EMS Administrator, EMS Medical Director, QI Coordinator, Health Program Specialist, and an Administrative Technician. The EDC EMS Agency serves a combined resident population of approximately 184,452¹ (estimated 2015).

California Health & Safety Code Division 2.5, section 1797.204 states *“The Local EMS Agency shall plan, implement and evaluate an emergency medical services system, in accordance with the provisions of this part, consisting of an organized pattern of readiness and response services based on public and private agreements and operational procedures.”*

Under the direction of EMS Administrator and Medical Director, the EDC EMS Agency plans, implements and continually evaluates the EMS system, which includes the following specific responsibilities:

- A. Serving as an advocate for patients and resolving consumer complaints.
- B. Collaborating with other health officials to ensure a unified, coordinated approach in the delivery of health care.
- C. Carrying out California regulations relative to EMS systems.
- D. Certifying, accrediting and authorizing EMS field personnel.
- E. Authorizing and approving local EMS training programs.
- F. Developing/approving medical treatment protocols and policies for local EMS service agencies (dispatchers, EMRs, EMTs, AEMTs, paramedics, and MICNs).
- G. Establishing and maintaining local EMS communication systems.
- H. In collaboration with public health, developing local medical and health disaster plans and coordinating medical and health response to disasters.
- I. Designating base/modified base/receiving hospitals and specialty care centers.
- J. Determining ambulance patient destinations.
- K. Coordinating activities and communications between EMS system participants so that care appears seamless to the patient.

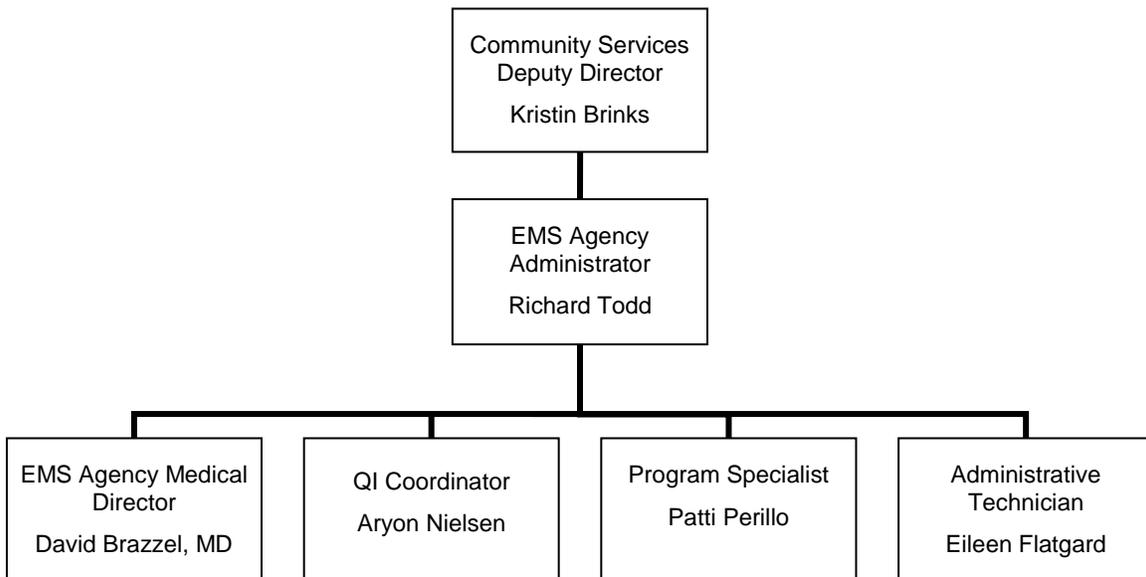
¹ United States Census: <http://www.census.gov/quickfacts/table/PST045215/06017>

- L. Providing oversight for EMS quality improvement and quality improvement activities.
- M. Coordinating community education programs related to injury prevention, CPR, public access defibrillation, etc.
- N. Collecting, analyzing and reporting on EMS data and providing that data to the California EMS Authority for statewide system evaluation.
- O. Establish contracts with service contractors.
- P. Providing technical assistance to the California EMS Authority.
- Q. Mediating conflicts between various EMS stakeholders.
- R. Providing information to public officials.
- S. Advocating for sufficient and stable funding for emergency medical services.

Mission

The mission of the El Dorado Emergency Medical Services (EMS) Agency is to ensure that the EMS system delivers the highest possible quality of prehospital emergency medical care to victims of illness and injury in the County of El Dorado.

Organizational Chart



EMS System Goals

The principal goal of the EDC EMS system is to reduce death or disability from injuries and illnesses through the provision of high quality patient care. The following methods are utilized to accomplish this goal:

- A. Developing and maintaining effective methods of EMS system evaluation focusing on improvement efforts to identify root causes of problems, intervening to reduce or eliminate these causes, and taking steps to correct the process(s) as necessary.
- B. Creating a system that is oriented to searching for opportunities to continually improve, educate and resolve issues prospectively rather than retrospectively.
- C. Creating a system that meets the specific educational needs of EMS system participants/caregivers before the needs become apparent in patient care issues.
- D. Recognizing excellence in performance and delivery of patient care.
- E. Facilitating improved communications between EMS system participants by holding/promoting educational reviews, encouraging participation in peer review audits, and establishing methods for objective feedback.
- F. Educating EMS system participant management/leadership personnel regarding the importance of commitment and dedication to the quality improvement process.
- G. Developing/encouraging EMS system participant management/leadership practices that create an acceptance and belief in the quality improvement process.
- H. Developing/encouraging EMS system participant management/leadership personnel who demonstrate their dedication to the value of continuous quality improvement by providing high quality training and educational resources, as well as encouragement and support to personnel.
- I. Empowering EMS system participant peer team leaders who are dedicated and capable of motivating personnel to participate in the quality improvement process.
- J. Demonstrating the importance of setting and obtaining goals for increasingly higher standards of patient care.
- K. Encouraging EMS system participant personnel to assist in developing higher standards of patient care through a sense of pride, accountability, and self-improvement.

Data Collection and Reporting

Currently, the EDC EMS Agency is utilizing a manual process for collecting and reporting EMS system data. Data is shared internally and/or externally as appropriate to ensure EMS

system transparency and necessary quality improvement. These various data collection and reporting information include the following:

- A. Lay rescuer AED programs submit AED placement and usage notifications to the EDC EMS Agency.
- B. At this time, all eleven Advanced Life Support (ALS) service agencies are utilizing a manual (paper) Prehospital Care Report (PCR). During 2016, it is anticipated that all of the ALS service agencies will transition to a new, comprehensive and robust ePCR System before the end of the year. All service agencies will be required to submit all patient documentation in an electronic format. Once the new E-PCR system has been implemented, NEMESIS compliant data will be submitted directly into the State EMSA data repository, Image Trend, on a scheduled, real-time basis.
- C. EMT/public safety AED Service Providers submit written or electronic patient care reports to the EDC EMS Agency within seven days of AED patient use. AED Service Providers also submit an annual report to the EDC EMS Agency which includes program update information and routine skills/certification and verification documentation.
- D. Designated trauma centers input trauma patient data into the EDC EMS Agency contracted trauma data registry (Lancet Technology Trauma One). Both designated trauma centers have Trauma One installed at their sites and submit data on quarterly basis to the NTDB and the California EMS Authority. Additionally, both Trauma Centers provide Trauma Committee reports during the monthly Continuous Quality Improvement Committee (CQIC) meetings and Trauma Program updates at the monthly Medical Advisory Committee (MAC) meetings. EDC EMS Agency trauma data is routinely submitted to the California EMS Authority trauma data depository.
- E. Designated STEMI receiving centers collect STEMI patient data utilizing their internal data systems. Individual STEMI patient data is submitted to the EDC EMS Agency within 10 days of initial patient treatment. STEMI receiving centers also submit a National Cardiovascular Data Registry (NCDR) Executive Summary Report for their facility on a quarterly basis. Additionally, STEMI receiving centers submit the following information to the EDC EMS Agency on an annual basis:
 1. Number of El Dorado County patients transferred and treated at their facility with Primary PCI intervention.
 2. Individual Interventional Cardiologist primary and total PCI Intervention volume.
- F. Emergency ground ambulance service agencies submit a monthly report to the EDC EMS Agency that contains the following minimum information:
 1. Computer Aided Dispatch (CAD) response time compliance data for all established exclusive and non-exclusive contracted ALS transport services.

2. Summary of call review conducted by each ALS service agency CQI representative located in the county.
 3. Summary of employee issues/investigations, customer service complaints, clinical complaints/issues and resolutions.
 4. Summary of quality improvement and training/education activities.
- G. Prehospital service agencies report medical equipment and critical ground ambulance vehicle failures to the EDC EMS Agency within 24 hours of occurrence.
- H. The local Disaster Control Facilities (DCF) for El Dorado County (Marshall Medical Center & Barton Memorial Hospital) provide updates during the monthly Medical Advisory Committee (MAC) meeting on any MCI's or full scale exercises.
- I. Relevant employers report certified/licensed personnel issues, investigations and outcomes/discipline to the EDC EMS Agency within regulatory required timeframes.

Data Indicators

Listed below are the types of data indicators that are routinely collected and reported by the EDC EMS Agency:

- A. Personnel:
1. Number of First Responder Technician (FRT) and EMT certifications and re-certifications.
 2. Number of paramedic accreditations and re-accreditations.
 3. Number of MICN authorizations and re-authorizations.
 4. Number and type of EMT/public safety AED and EMT optional skills approved programs and personnel.
 5. Number and type of EMT investigations and certification actions.
 6. Number and type of paramedic investigations and licensure action referrals to the California EMS Authority.
 7. Number and type of approved EMS training programs.
 8. Number of EDC EMS Agency CE classes held and CE certificates issued.
- B. Equipment and Supplies:
1. Number and results of prehospital service agency unit inspections.
 2. Number and type of actual or anticipated equipment/supply shortages.

3. Management and usage statistics of controlled substances.
 4. Medical equipment and supplies usage statistics.
 5. Number and type of medical equipment failures.
- C. Documentation:
1. Number of lay rescuer AED usage reports and data.
 2. Number of EMT/public safety AED usage reports and data.
 3. Service agency compliance with documentation standards (timely completion of documentation, appropriate documentation left at the receiving hospital, etc.).
 4. Number and type of incident reports and notifications submitted.
 5. EDC EMS Agency and service agency routine audits of patient care documentation.
 6. Number of prehospital 12 Lead transmissions and unsuccessful transmission reasons.
 7. Specialty care center (STEMI, stroke, trauma) data submission compliance.
- D. Clinical Care and Patient Outcome:
1. Routine multi-disciplinary and subject matter expert assistance/input in the development/review/updating of EMS system policies and treatment protocols.
 2. Development, review/updating and reporting of system-wide clinical indicators.
 3. Prehospital service agency approved pilot project training and usage statistics.
 4. Submission of annual core measures data to the California EMS Authority.
 5. Publishing of local EMS system data (annual public reports, etc.).
 6. Service agency compliance with EDC EMS Agency policies and protocols.
 7. Number, type and outcome of service agency clinical concerns/investigations.
 8. Review and approval of EMS system participant quality improvement plans.
- E. Skills Maintenance/Competency:
1. FRT and EMT personnel compliance with re-certification skills competency verification requirements.
 2. AED and EMT optional skills service agency compliance with skills competency verification requirements.

3. ALS service agency compliance with annual infrequent skills competency verification and annual didactic training requirements.
- F. Transportation/Facilities:
1. Monthly ambulance transport service agency response time compliance.
 2. Inspections of service agency vehicles and facilities.
 3. EDC EMS Agency staff agency ride-alongs and site-visits.
 4. Ground ambulance maintenance/mileage/age required replacement tracking.
 5. Number, type and cause of critical vehicle failures.
 6. Monitor Air Ambulance contract compliance.
- G. Public Education and Prevention:
1. Lay rescuer AED placements and usage.
 2. EDC EMS Agency coordination and participation in public education and prevention activities.
 3. Service agencies notifications related to public education and prevention.
- H. Risk Management:
1. Routine policy and treatment protocol reviews to ensure consistency with current medical literature and guidelines.
 2. Number and type of EMS service agency/personnel investigations and outcomes.
 3. Service agency compliance with EDC EMS Agency policies and treatment protocols.
 4. Appropriate EMS resource utilization audits.
 5. Review and approval of Emergency Medical Dispatch and/or Priority Dispatch programs.
 6. Service agency compliance with biomedical equipment and vehicle maintenance requirements.
- I. Other
1. Promote EMS Week activities.

Evaluation of Indicators

EMS system indicators are selected and updated utilizing a collaborative teamwork approach with input from EDC EMS staff and other system stakeholders. Indicators are based on anticipated or identified system needs/issues and regulatory requirements.

EDC EMS Agency staff work collaboratively to identify, collect, review and report data indicators based on job requirements/responsibilities. The collection and reporting frequency of individual data indicators is based on the type of the data and system needs.

Indicators are presented both internally and externally to the appropriate EDC EMS Agency committees on a regularly scheduled basis. Individual indicators are produced and presented on an as needed, weekly, monthly, quarterly, tri-annual, bi-annual, or annual basis.

Indicator data is presented in multiple different formats based upon the type of indicator, purpose and target audience. Specific examples include charts, flowcharts, graphs, maps, spreadsheets, reports, etc.

The EDC EMS Agency utilizes several collaborative committees (MAC, CQI, PAC and NRTCC) to evaluate indicators and assist in addressing the quality improvement needs, goals and responsibilities of the EMS Agency and EMS system participants. The title, meeting frequency and statement of purpose for each of these multi-disciplinary committees are described below:

A. Medical Advisory Committee (MAC)

1. Meeting Frequency: Monthly
2. Statement of Purpose:
 - Represent the position of hospitals and service agencies on prehospital care and emergency medical services issues.
 - Promote communication and coordination among all interested parties for effective response to determine the needs of prehospital care.
 - Promote county-wide standardization of prehospital care policies, procedures and protocols.
 - Recommend policies, procedures, protocols, positions, and philosophy of prehospital care and standards of care to the El Dorado County Emergency Medical Services (EDC EMS) Agency.

B. Continuous Quality Improvement Committee (CQIC)

1. Meeting Frequency: Monthly

2. Statement of Purpose:

- To promote county-wide standardization of prehospital continuous quality improvement.
- To monitor, evaluate and report on the quality of prehospital training, care and transportation, including compliance with laws, regulations, policies and procedures and recommend revisions and/or corrective action and recognition as necessary.
- To make recommendations specific to EMS service agencies, hospitals, and EDC EMS Agency data collection and dissemination.

C. Paramedic Advisory Committee:

1. Meeting Frequency: Annually (monthly for a period of six months)

2. Statement of Purpose:

- Promote county-wide standardization of prehospital policies, procedures, protocol, equipment and infrequently used skills.
- Monitor, evaluate and report on the quality of prehospital training, care and transportation, including compliance with laws, regulations, policies and procedures as well as recommended revisions and/or corrective action as necessary.
- To make recommendations specific to the EMS service agency, hospital and EDC EMS Agency data collection and dissemination.

D. North Regional Trauma Coordinating Committee (NRTCC):

1. Meeting Frequency: Tri-annual (every four months)

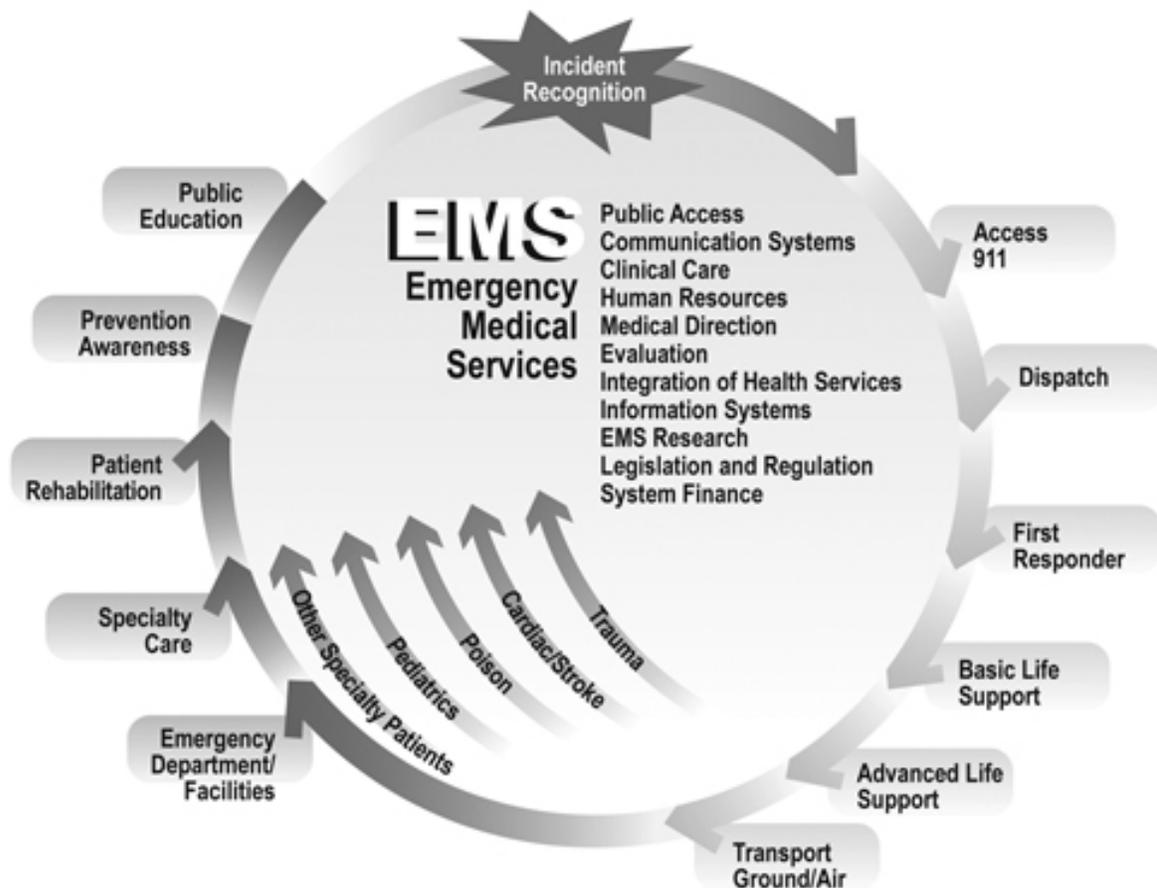
2. Statement of Purpose:

- This committee is a collection of Northern California (Region 1) EMS Agencies and other Trauma system service agencies established by the EMS Authority as the primary avenue for trauma system quality improvement for Region 1 (North).
- Promote region-wide standardization of trauma care.
- Monitor, evaluate and report on quality of trauma care in relation to prehospital/hospital training and care, including compliance with laws, regulations, policies and procedures as well as recommended revisions and/or corrective action as necessary.

- Review potential problem trauma cases and system issues.
- Monitor the process and outcome of trauma patient care in Region 1.
- Make recommendations for educational activities and/or policy revisions based upon quality review activities to the appropriate EMS Agencies within the region.

Action to Improve

The EDC EMS Agency utilizes a standard Plan, Do, Study, Act approach to quality improvement that involves all appropriate system participants based on the nature and details of the individual incident or identified system issue.



The EDC EMS Agency regularly communicates quality improvement related activities utilizing the following methods:

- A. Agency staff coordinate and/or participate in multiple different meetings (EDC EMS Agency meetings, RDMHS meetings, California EMS Authority meetings, California/Nevada border state mutual aid meetings, California LEMSA Quality Improvement Coordinator meetings, Northern California Quality Improvement Coordinator meetings, County Board of Supervisors meetings, LEMSA Medical Advisory Committee (MAC) meetings, EDC Paramedic Advisory Committee (PAC) meetings, EDC Continuous Quality Improvement Committee (CQIC), County Hospital Preparedness (HPP) meetings, County Fire Chiefs meetings, JPA meetings, etc.).
- B. Meetings and interactions with individual EMS system service agencies.
- C. EDC EMS Agency meeting minutes, Paramedic Alerts, CQI Learning Points, and the EMS Agency website.
- D. Regularly produced EMS system reports.
- E. Interactions and presentations to the public and media organizations.

Organization and/or EMS system changes are implemented using multiple different processes specific to the type of change that is necessary.

- A. EDC EMS Agency staff regularly participates in internal staff meetings to discuss Agency activities and organizational changes.
- B. EDC EMS Agency staff regularly coordinates and attend multi-disciplinary meetings to inform system participants of organizational and EMS system changes.
- C. EDC EMS Agency policy and protocol changes are routinely released on an annual basis on July 1st (implementation date). Updated policies and treatment protocols are packaged together in a user friendly format and include a summary of changes document. The EMS Agency, both Base Hospitals, and Service Agencies coordinate appropriate training/education for all policies, protocols and EMS system changes.
- D. Current EDC EMS Agency policies and treatment protocols are available 24/7/365 on the EDC EMS website and are also available in multiple other formats (printed policy manuals, field manuals, mobile application, etc.).

Training and Education

- A. EDC EMS Agency staff members are trained/qualified/experienced EMS educators and regularly provide training/education to EMS system participants.
- B. MICN course curriculum is provided by Marshall Medical Center for both base hospitals to ensure standardized instruction to all new MICN candidates.
- C. Training/education materials for new skills/medications and annual training modules are developed by the EDC EMS Agency in collaboration with all ALS Service agencies

and Both Base Hospitals. These training/educational materials are developed in a collaborative manner with input and assistance from other Agency staff, EMS system participants and subject matter experts.

- D. Other training/education materials are developed and updated on a routine basis by appropriate staff members based on job requirements, responsibilities, experience and expertise. These additional training/education materials are developed in a collaborative manner with input from other Agency staff, EMS system participants and subject matter experts.
- E. All training/educational materials are reviewed and approved by the EDC EMS Agency Medical Director prior to distribution or utilization by EMS system participants.
- F. EDC EMS Agency staff conducts regular audits of EMS system participant personnel documentation to ensure that training/education requirements are maintained.
- G. All EDC EMS Agency accredited paramedic personnel are required to obtain and maintain Pediatric Advanced Life Support (PALS).
- H. EDC EMS Agency collaborates with the El Dorado County Training Officers to conduct regular EMS training events to ensure continued compliance with regulatory requirements.

Annual Update

The following indicators were tracked, reviewed (with the assistance of appropriate advisory committees) and addressed as indicated over the past year:

Indicators Monitored	Key Findings/Priority Issues Identified	Improvement Action Plan Plans for Further Action
SKL-1 Endotracheal intubation success rates	Success rates have been marginal with variances from 50-90%. It is difficult to gauge because of low call volumes in some areas (i.e., 1 failure with only 2 intubations for the year could result in a dismal success rate).	Developed Paramedic Accreditation Training and Skills (PATS) program which requires 4 supervised training intubations or 4 successful real intubations per year. We are still conducting a trial study in video intubation on several transporting units as well.
ACS-1 Aspirin administration for chest pain/discomfort rate	This has been on-going and success rates have been good with compliance above 95%.	Continued tracking of ASA usage.
EMT/Public Safety AED	AED patient usage data is submitted to the EDC EMS Agency and reviewed on a	Continue to monitor AED usage data to identify QI issues or concerns.

	routine basis. No specific issues have been identified.	
Indicators Monitored	Key Findings/Priority Issues Identified	Improvement Action Plan Plans for Further Action
STEMI Patient Prehospital 12 Lead Transmission	12 Lead transmission is mandatory in EDC. STEMI patient cases where a 12 Lead is not transmitted are almost exclusively isolated to service agencies that do not have transmission cell service.	Continue to encourage and assist in identifying funding for 12 Lead transmission access by all ALS prehospital service agencies. Continue to monitor prehospital 12 Lead transmission data at both base hospitals and address identified issues.
Review and Approval of EMS System Service Agency Quality Improvement Plans	All of the Service Agency QI Plans were updated in 2016 and will be reviewed again in 2017.	Continue to review and approve Service Agency submitted QI Plans. Deliver feedback to service agencies related to suggested plan revisions to comply with Title 22 § 100402.
Spinal Immobilization Policy	Ensuring the most appropriate level of spinal immobilization is being used consistently.	Review significant spinal immobilization calls where immobilization outcomes where SMR and Full-Spinal Immobilization presented challenges.

The following EDC EMS Agency Policies and protocols were developed or revised with the assistance and input of multiple EDC EMS Agency Paramedic Advisory Committee over the past year (2015/2016):

- **Protocols:**
 - Bradycardia
 - Child Birth
 - Cold Exposure
 - Crush Syndrome
 - Head Trauma
 - Heat Exposure
 - Neonatal Resuscitation
 - Pulseless Arrest
 - Sepsis
 - Severely Agitated
 - Shock
 - Snake Bite

- **Procedures:**

- Automated External Defibrillation (AED)
- ETCO2 Monitoring
- Endotracheal Intubation
- King Airway Device
- Needle Chest Decompression
- Needle Cricothyroidotomy
- Transcutaneous Pacing
- Stomal Intubation

- **Policies:**
 - Air Ambulance Minimum Equipment Inventory
 - Against Medical Advice (AMA)
 - BLS Medication Administration
 - Controlled Substances
 - EMS Aircraft
 - Endotracheal Intubation Verification
 - Guidelines For Interfacility Transfer of 5150 Patients
 - Highest Medical Authority on Scene of A Medical Emergency
 - Inter-County EMT-Paramedic Response and Transport
 - Management of Taser/Stun Device Patients
 - MD at scene
 - Nerve Agent Exposure
 - On-Scene Photography
 - Pandemic Influenza
 - Patients Under a 5150 Hold
 - Physical Restraint
 - Reporting of Suspected Abuse
 - Safely Surrendered Babies
 - Spinal Immobilization