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## Emergency Medical Services Division

# EMS Quality Improvement Program

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## **I. Authority**

On January 1, 2006 the California Emergency Services Authority (EMSA) implemented regulations related to quality improvement for Emergency Medical Service throughout the state. Kern County Emergency Medical Services Quality Improvement Program( EQIP), satisfies the requirements of Title 22, Chapter 12, Section 4 of the California Code of Regulations.

In addition, EMSA document #166, Emergency Medical Services System Quality Improvement Program Model Guidelines provided additional information on the expectations for development and implementation of a Quality Improvement Program for the delivery of EMS for Local EMS agencies and EMS service providers. Fundamental to this process is the understanding that the program will develop over time and allows for individual variances based on available resources.

## **II. Mission Statement**

To assure the safety and health of Kern County residents by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual quality improvement in emergency medical service care.

## **III. Vision Statement**

The vision of the Kern County Emergency Medical Services Division (Division) is to provide structure and future growth of our emergency medical services system. All actions will be dedicated to the continued advancement of quality emergency medical services delivered in Kern County.

This will be accomplished through consistent and thorough evaluation methods and proactive functions focusing on:

- Strengthening clinical capabilities of field personnel to meet the needs of each and every patient whose care is our primary purpose and mission.
- Develop a vigorous quality improvement program that is proactive and evolves with the communities we serve.
- Capitalizing on innovative and emerging technologies.
- Strengthening collaborative relationships with public safety agencies, BLS and ALS providers, hospitals, and educational partners to better serve the health care needs of our communities.
- Improve data systems
- Forging strong partnerships with all EMS stakeholders to provide educational campaigns.
- Achieving cultural change of current interoperable communications system.

- Building continuity of operations for disaster planning, response and mitigation.

#### **IV. Kern County EMS Quality Improvement Program (EQIP)**

The Kern County EQIP is made up of the following key components:

- Core Patient Care Indicators
- Quality Review Process
- QI Agency Activity tracking

These key components in tandem with effective communication processes are mission-critical in establishing a truly integrated and effective county-wide QI program. Improvements on performance and quality issues require a comprehensive understanding of what is happening in the field, effective identification of root causes, data focused analysis and non-punitive improvement interventions. This is coupled with strategies to establish realistic and appropriate priorities for improvement. Success is dependent on promoting collaborative quality partnerships with all stakeholders throughout the EMS system.

#### **V. Quality Improvement Defined**

The County is charged by the State to approve and monitor Quality Improvement Programs. Many healthcare providers, hospitals and other facilities have in place, or are implementing, Continuous Quality Improvement (CQI) Programs. CQI is a higher, broader level of Quality Assurance. The County mandates that all EMS providers, both BLS and ALS Providers, as well as Base Hospital Providers, and specialty centers institute CQI programs within their organizations. The programs are outlined in specific policies by the County EMS Director and are monitored by the EMS Medical Director and CQI Specialist/Coordinator.

CQI takes on the responsibility of continuously examining performance in the system to see where the personnel, system, and processes can continue to improve. The overall concept of quality improvement begins with the idea that all members of the team or system want to do well and continues with an examination of the system to determine how it can be structured to achieve this goal. The theories of CQI look at what was done and what was done right so that the members can learn from both. Positive reinforcement is of tantamount importance in a CQ Program so that trust is instilled and fear is driven out. This applies to the Administrator of the Program to the most junior level healthcare provider.

The program must define “quality” and also take into consideration what is timely (mandated), efficient, and effective. We must consider all system resources which includes personnel, facilities, equipment and financing. Some of the

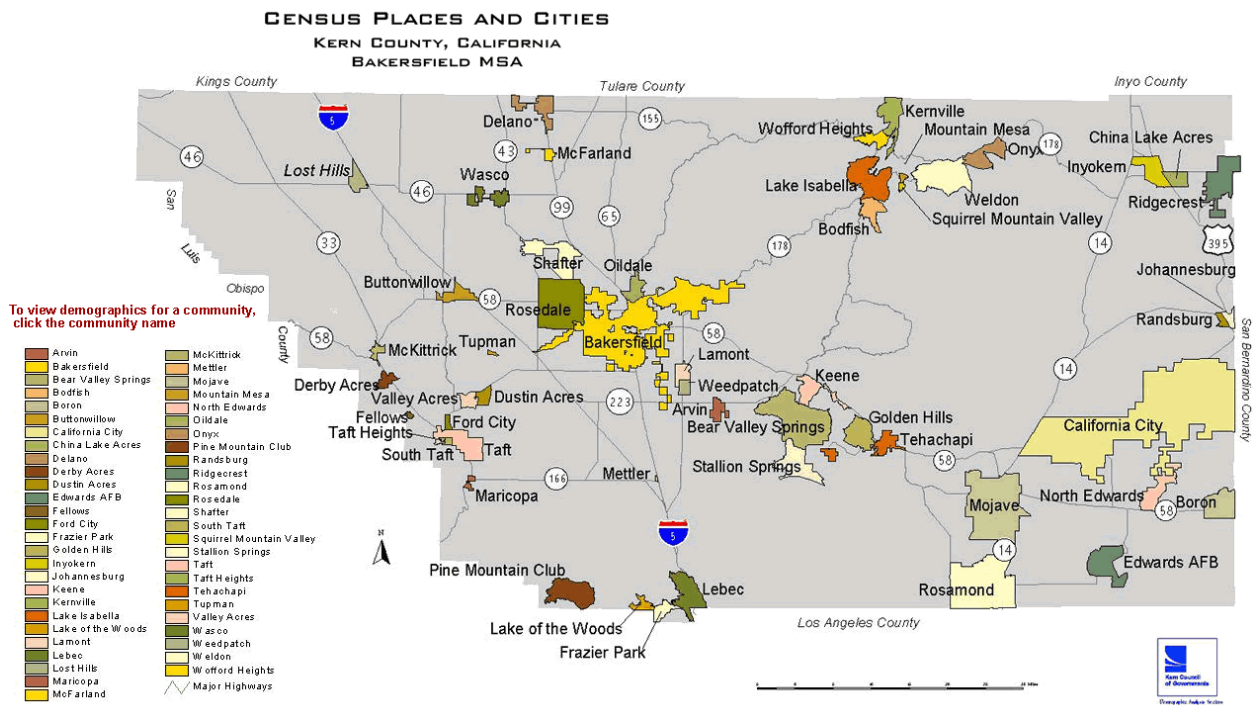
variables of these resources include communication, topography, bureaucracy, education and expectation.

## VI. Structure and Organizational Description

### Kern County Demographics

Kern County is both geographically and demographically diverse. Located at the southern end of California's great Central Valley, Kern County is the gateway to Southern California, the San Joaquin Valley, the Sierra Nevada and the Mojave Desert. Encompassing 8,161 square miles, Kern County is the third largest county in California. Larger than Delaware, Rhode Island and Connecticut combined Kern County has a population of 864,124.

(Sources - <http://quickfacts.census.gov/qfd/states/06/06029.html>, - <http://www.visitkern.com/about/>)



### EMS Overview

The Kern County EMS System responds to approximately 90,000 calls for medical emergencies per year.

Kern County's EMS System includes a variety of agencies and organizations working together to accomplish the goal of providing rapid emergency medical response and treatment. While most EMS responses are day-to-day emergencies, the Division also plans and prepares for disaster medical response. In addition, the Division is actively involved with preventative health

care and managed care in the overall scope of its functions. Kern County EMS includes:

- Emergency Medical Dispatch (EMD)
- Fire services first response and treatment
- Private ground and air ambulance response, treatment and transport
- Law enforcement agencies
- Hospitals and specialty care centers
- Training institutions and programs for EMS personnel
- Managed care organizations
- Preventative health care
- Citizen and medical advisory groups
- Public Health partners

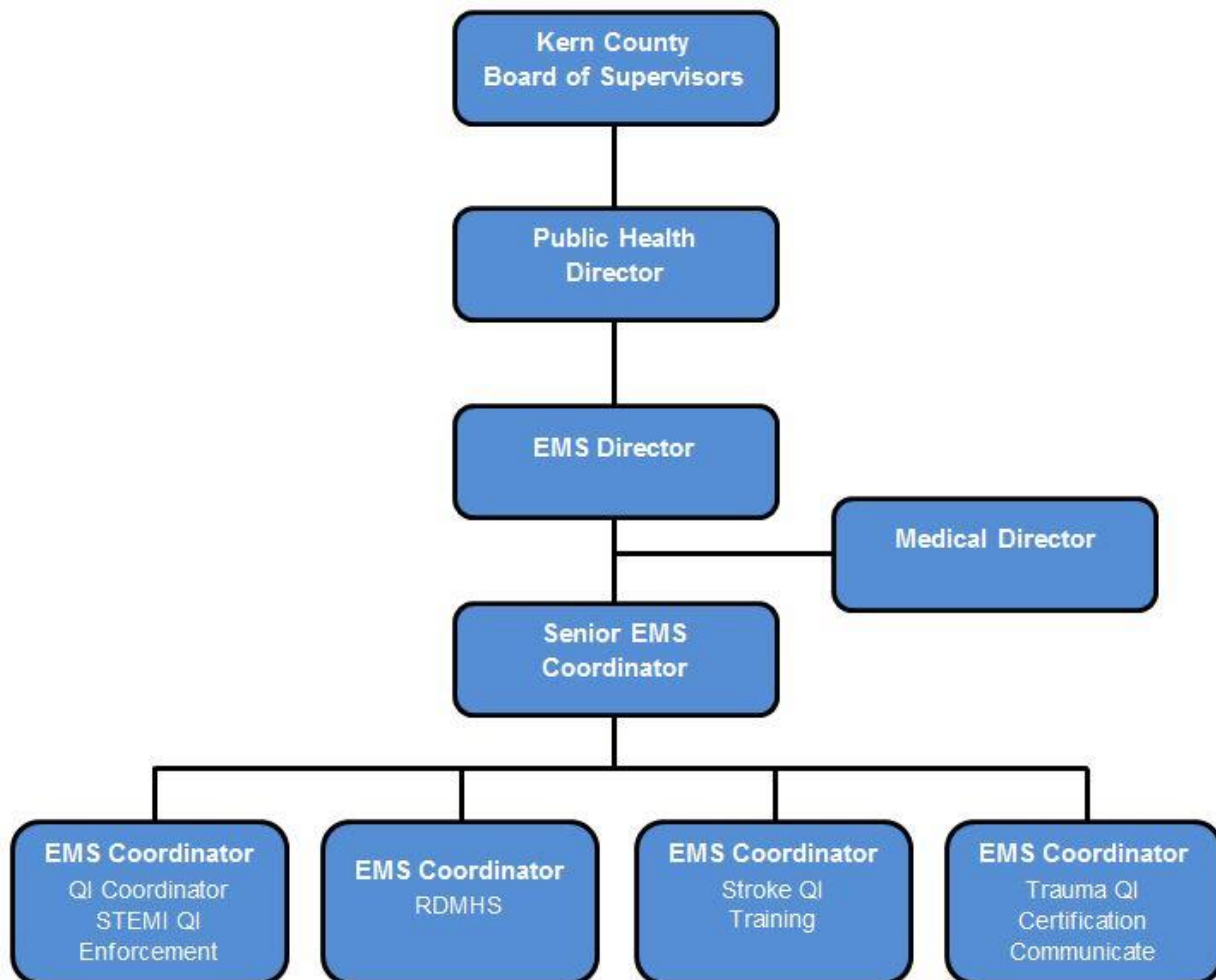
## **Organizational Structure**

Kern County Emergency Medical Services, a division of the Kern County Public Health Department, oversees a system of services organized to provide rapid response to serious medical emergencies, including immediate medical care and patient transport to definitive care in an appropriate hospital setting. In Kern County the Board of Supervisors designated the EMS Division as the Local EMS Agency (LEMSA). The Kern County Ambulance Ordinance, which governs the ground prehospital system in the County, was adopted by the Board of Supervisors in November 1990, and became effective on February 28, 1991.

The Director of the EMS Agency, reports to the Director of Public Health. The Director of Public Health Reports directly to the Board of Supervisors which is comprised of five elected Supervisors, each representing a distinct area of the County.

The EMS Medical Director oversees medical components of the EMS System and is responsible for prehospital medical control within the system. This includes protocol development, policies, procedures, equipment approval, medical dispatch, base station protocols, and continuous quality performance.

The Emergency Medical Care Advisory Board (EMCAB) is responsible for vetting local policies and procedures prior to implementation and acts as a sub-committee to the Board of Supervisors. EMCAB is a diverse board comprised of members representing the entire EMS system including: County Police Chiefs; County Fire Chiefs; County Medical Society; Kern County Hospital Administrators; County Ambulance Association; Board of Supervisors; Medical Director of Local EMS Agency; Two City Representatives, one selected by City Selection Committee and one representative of the City Managers Association.



## VII. EMS Services Provided

The EMS Division provides for overall administration, direction and management of the Kern County EMS System which includes:

- Training oversight and certification of over 5,960 EMS personnel
- Medical dispatch and communications management
- Interaction with thirteen hospital emergency departments and specialty care centers
- Emergency medical data collection and analysis
- Promotion of public information and EMS System education
- Medical disaster preparedness, planning, response
- Trauma system management
- STEMI system management
- Stroke system management
- Emergency Medical Services for Children

Coordination of five emergency medical transportation services and seven first responder agencies

### VIII. Data Collection and Reporting

Various databases currently exist which contain data relevant to Continuous Quality Improvement (CQI) in EMS. These databases include electronic patient care reporting (ePCR), ReddiNet, Trauma One, Mission Lifeline, Get With the Guidelines: Stroke, and Compliance data. These data systems are used to evaluate performance in the following ways:

- Prospectively identify areas of potential improvement
- Answer questions about the EMS System
- Monitor changes once improvement plans are implemented
- Provide accurate information enabling data driven decisions
- Monitor individual performance within the EMS system
- Support research that will improve our system and potentially broaden EMS knowledge through publication

Core Indicator reports, as provided by the state, have been identified and are in various phases of development (See Table A). Data elements used to compile core indicator reports will be compliant with both CEMSIS and NEMSIS. As state reporting becomes integrated with local EMS data systems and relationships between prehospital and hospital data merge, the vision of sharing clinical and outcome information will be realized.

Such a data management system will need to be adequately supported by data and technology experts. Mechanisms for the timely data management including the rapid interpretation by CQI reviewers/evaluators are essential to the process. Resources will need to be planned and established for these systems to evolve and become further refined. The Local EMS Agency plays an important role in supporting stakeholders in their efforts to integrate electronic prehospital records into their EMS systems.

Table A

Indicator ID	Performance Measure Name	Comments
TRA-1	Scene time for severely injured trauma patients	In use
TRA-2	Direct Transport to trauma center for severely injured trauma patients meeting criteria	In use
ACS-1	Aspirin administration for chest pain/discomfort	In use
ACS-2	12 Lead ECG performance	In use



ACS-3	Scene time for suspected heart attack patients	In use
ACS-5	Direct Transport to designated STEMI receiving center for suspected patients meeting criteria	In use
CAR-2	Out-of-Hospital cardiac arrests return of spontaneous circulation	In use
STR-2	Glucose testing for suspected stroke patients	In use
STR-3	Scene time for suspected stroke patients	In use
STR-5	Direct transport to stroke center for suspected stroke patients meeting criteria	In use
RES-2	Beta 2 agonist administration for adults	In use
PED-1	Pediatric asthma patients receiving bronchodilators	In use
PAI-1	Percent of Pain med given vs. Pain complaint	In use
SKL-1	Intubation	In use
RST-1	Response time to emergency calls	In use
RST-2	Response time to non-emergency calls	In use
RST-3	Transport percentage	In use

## IX. Evaluation of Indicators

Quality indicators are defined measurements that are part of a process. These indicators can then be used for analysis and comparison. ePCR within Kern County are NEMSIS compliant and are essential to the creation and evaluation of indicators.

These indicators are evaluated on a regular basis through various methods. ePCR review monitors a percentage of patient care reports for compliance with policies, procedures, and protocols. ReddiNet is used to monitor and report large scale incidents and assure that all local hospitals are updating bed availability.

The Quality Improvement Committees are used to identify indicators for review. Evidence of this can be seen in changes made to EMD codes based on data review. Specifically, using procedural data collected on low acuity calls to determine if resources are dispatched in a way that is appropriate to patient care indicators. Another example of this is with the TEC. This QI group has conducted special studies on pain management and cervical spinal immobilization practices. The TEC uses data and research to develop indicators and evaluates the system for trends. Identification of trends can be used to evaluate or modify policies, procedures, or protocols, identify topics for review at

annual update classes, and documentation errors that need correction by personnel.

In addition, Kern County uses compliance data, submitted by each provider to assure compliance with all local contractual obligations as well as specialty program reporting.

While the EMS Division is responsible for creating and coordinating the overall Quality Improvement Plan, each provider agency is responsible for developing their own EMS QI plan to monitor internal quality indicators and perform quality improvement activities.

For example, Field Supervisors, Quality Assurance Managers, and Training Officers performing audits of responses to monitor the quality of care provided.

It is important to note that the purpose of Quality Indicators and Activities is to improve on the things that EMS is doing well and to identify processes that require improvement. The focus of EMS performance improvement is not punitive.

The EMS Division oversees and evaluates the following on an on-going basis:

Categories	Specific areas to be monitored	Requirements/ Processes	Process
Personnel	EMD	Accreditation- Require NAED certification	Certification
	EMT	Certification-State requirements	Certification
	EMT Optional	Accreditation-Required for local providers CPR Mandatory update class	Certification
	Paramedic	Accreditation- ACLS PALS PHTLS CPR Pass local exam Mandatory update Class	Certification
	MICN	Accreditation- ACLS Mandatory class	Certification
	Preceptors	Preceptor Policy	Training
	EMT Training Programs	State required reporting Site Audit	Training

Categories	Specific areas to be monitored	Requirements/ Processes	Process
	Paramedic Training Programs	State requirements CoEMSP CAAHEP Site Audit	Training
	Continuing Education Providers	Site Audit Total courses taught	Training
Equipment and Supplies	Radio Communications	Mandatory channel inventory	Communications Coordinator
	Mandatory minimum inventory requirements	Defined in specific policy Site Audit	EMS Coordinator
	Narcotic oversight	Verification of narcotic resupply	EMS Coordinator
Documentation	Compliance reports	Mandated monthly compliance reports	EMS Coordinator
	ePCR mandatory elements	ePCR Policies and Procedures ePCR audit	QI Coordinator
Clinical Care and Patient Outcome	EMSA mandated Core Measures	Core Measures Reports	QI Coordinator
	Specialty system of care QI indicators	Mandated data elements Mandated QI elements in policies	Specialty Care Coordinator assigned to program
	ePCR audit for protocol compliance	Random sampling of ePCR for adherence to protocol and procedure guidelines	EMS Coordinator
	EMD Card Review	Annual review of EMD card data Response configuration analysis	EMD QI Coordinator
	Research	Specialty care committees may request research in to up to date literature review for best practices	Specialty Care Coordinator assigned to program
Skills Maintenance/ Competency	EMT	State mandated skills verification sheet EMS approved signers	Certification
	EMT Optional	Required skills every two years	Certification

Categories	Specific areas to be monitored	Requirements/ Processes	Process
	Paramedic	Required skills competency verification policy	Certification
	Provider specialty programs	Mandated skills education and verification in policy	EMS Coordinator
Transportation/ Facilities	Unusual Occurrences/ MCI	On-Call availability Site audits	On-Call EMS Coordinator
	Ambulance destination	Ambulance Destination Decision Policies and Procedures	EMS Coordinator
	Exclusive operating areas	Approved transport providers Contractual obligations	EMS Coordinator
	Base Station	Contractual obligations Site audit	EMS Coordinator
Public Education and Prevention	Specialty care centers	Policy requirement to provide education to the public Site Audit Contractual obligation	Specialty Care Coordinator assigned to program
	Approved ALS providers	Monthly reporting Contractual obligations Site audit	EMS Coordinator
Risk Management	Contracts	Hospital Re-designation processes Annual EOA provider performance evaluation	EMS Coordinator
	Investigation	Investigation Policy	EMS Coordinator
	Enforcement	Health and Safety Code standards Title 22 Standards	Enforcement Coordinator

## X. Quality Improvement Activities

QI activities are comprehensive in their scope and encompass many strategies. They use a number of approaches and models of problem solving and analysis. These activities, while distinct, are inter-related and address clinical and system issues.

### EMS QI CONTRIBUTIONS

#### Committees:

Kern County EMS has instituted multiple committee collaborations in specific areas to assure Quality Improvement. The following committees have at least

one EMS Division representative attending and whenever possible, the EMS Medical Director as well:

- Emergency Medical Dispatch Committee (EMD)
- Trauma Evaluation Committee (TEC)
- ST Elevation Myocardial Infarction QI Committee (STEMI)
- Stroke System of Care QI Committee
- Pediatric Advisory Committee (PAC)
- Emergency Medical Care Advisory Board
- EMS System Collaborative Meeting

#### **ePCR Audit:**

Each month EMS staff will perform an audit of electronic patient care reports (ePCR).

- Using the EMS data warehouse, EMS staff will determine a population based on the primary impression field as it directly relates to existing protocols (i.e. chest pain, stroke, multi-system trauma, etc).
- A random statistical sample will be calculated and reviewed without replacement.
- Each sample will be compared to the associated treatment protocol algorithm.
- The sample will then be scored based on documentation and adherence to protocols.

#### **Quality Review Request:**

In the event the EMS Division identifies an issue that would benefit from quality review, the Division may forward the information to the provider QI department for review. The provider will report to the Division the results and findings from the review.

#### **Reaccreditation:**

##### **Paramedic:**

Every two (2) years, upon local reaccreditation, a mandatory test must be passed with a passing grade of 80% or higher.

##### **Paramedic Mandated Certifications:**

Upon reaccreditation paramedics must be certified in all of the following:

- Cardio Pulmonary Resuscitation

- Pediatric Advanced Life Support
- Advanced Cardiac Life Support
- Pre-Hospital Trauma Life Support

### **Paramedic Skills Verification:**

The following skills require verification:

- Cricothyrotomy
- Thoracic Decompression
- Endotracheal Intubation
  - Adult
  - Pediatric
- Interosseous needle placement

### **Annual Update Class:**

Each year EMS staff may provide a mandatory update class for all Kern County accredited emergency medical technicians and/or paramedics. This class will be held over several days and will include but is not limited to the following:

- Review of reaccreditation testing for previous year
- Update of all policies, procedures, and protocols
- Run Review
- QI Committee Data Review

### **Process Control:**

As new processes are developed or changes made to existing processes, staff shall be assigned to identify and create measuring/monitoring systems to ensure success.

### **ALS/BLS PROVIDER CONTRIBUTIONS:**

#### **Prospective**

- Evaluation
- New Employee
- Peer Reviews
- Direct Observation
- Skills Evaluation

#### **Education**

- Design corrective action plans for individual deficiencies
- Provide continuing education courses and skill reinforcement training for pre-hospital care personnel
- Provide education specific to issues identified in evaluation and trend analysis

### **Retrospective Analysis**

- Develop performance standards for evaluating the quality of care delivered by the field personnel through retrospective analysis.
- Comply with reporting requirements and other quality improvement activities as specified by the EMS Division.

## **BASE HOSPITAL CONTRIBUTIONS:**

### **Prospective**

- Evaluation
- Develop criteria for the evaluation of individual Base Hospital personnel including, but not limited to:
  - Base Hospital documentation and tape review
  - Evaluation of new MICNs and ongoing routine evaluation of continued MICN communication with prehospital personnel
  - Compliance with routine base hospital procedures as outlined by county policies.
- Participate in EMS Peer Review committee and any QI related program as requested by the Division

### **Education**

- Participate in certification courses, field care audits, and educational opportunities to further the knowledge of prehospital and base hospital care providers
- Establish procedures for informing Base Hospital personnel of system changes

### **Concurrent**

- Provide online medical control for paramedics
- Develop procedures for identifying problem calls
- Appoint a quality improvement liaison to carry out CQI activities

### **Retrospective**

- Develop a process for retrospective analysis of base direction using audio, PCR, and patient follow up.

- Perform ALS base contact call audits
- Develop performance standards for evaluating the quality of medical direction delivered by both MICN staff and base hospital physicians through retrospective analysis
- Comply with reporting and other CQI requirements as specified by the EMS Division

## **XI. Annual Update**

The Kern County EMS Medical Director will evaluate the QI Program with the EMS QI Coordinator and EMS staff annually. This group will ensure that the QI Plan is in alignment with our strategic goals, and will review the plan to identify what did and did not work. From this information, an Annual Update will be created and will include the following:

- Indicated monitors
- Key findings and priority issues identified
- Identification of any trends
- Improvement action plans and plans for further action
- Description of any in-house policy revisions
- Description of any continuing education and skills training provided as a result of Improvement Plans
- Description of whether the goals were met and whether follow up is needed
- Description of next year's work plan based on the current year's indicator review

## **XII. Action to Improve**

Improvement can only be achieved through constant surveillance of the system and its components. The evaluation of the system as a whole is crucial to ensuring that optimal response to the sick and injured occurs when the system has been activated. Continuous Quality Improvement (CQI) provides a method for understanding the system processes and allows for their revision using data obtained from those same processes.

CQI is a dynamic process that provides critical feedback and performance data on the EMS system based on defined indicators that reflect standards in the community, state and the nation. Traditional components of a CQI process include:

- Define a problem
- Measure data to validate and quantify the problem



- Analyze the data and symptoms of the problem to determine the root cause
- Develop and implement a plan of action through education or policy/process revision
- Measure and monitor the results providing feedback
- Continuous monitoring of control system to assure compliance

CQI incorporates Quality Assurance aspects but is unique in its approach to problem analysis and problem solving.

CQI in Kern County is dynamic. Each specialty system of care, (STEMI, STROKE, TEC, EMD, PED), is supported by its own CQI committee. These specialty CQI committees, some of which are still in development, take a technical and clinical look at system performance. These committees thoroughly evaluate the effectiveness of each respective program as well as shortfalls. These committees are considered the experts in the field. They use available data and analysis to make recommendations for change, if needed, to each respective system of care. These recommended changes are discussed with the EMS Director. CQI reports and recommendations are taken to the EMS System Collaborative Group where the recommendations are further discussed on a broader stage.

The LEMSA CQI Coordinator is responsible for overseeing all CQI activities. The CQI Coordinator may act in an advisory role in the development of QI committees, performance indicators and reports, and data evaluation. The CQI Coordinator collects QI reports from providers of specialty programs and procedures, such as blood product transfers, Fireline Medic and rescue helicopter programs. The CQI Coordinator is also responsible for preparing annual reports of Core Measures for EMSA. The CQI Coordinator, in conjunction with the EMS Medical Director and the EMS Director, guides the CQI activities for mandated CQI programs and the EMS System as a whole.

The EMS System Collaborative meetings are held monthly. These meetings are open to the public. This is truly the multidisciplinary meeting for the County EMS System. All stakeholders are invited to attend. The purpose of this meeting is to evaluate and discuss changes to EMS on a system-wide scale. All CQI committees report to the EMS System Collaborative. The chairperson for each committee prepares a report of CQI activities, specialty system performance, committee recommendations. Based on feedback from the EMS System Collaborative, recommended changes are made to policies and are then published for public comment.

### **XIII. Training and Education**

The provider agencies, through their internal QI process, are responsible for creating and monitoring issue resolution programs in conjunction with the EMS

Medical Director, up to and including individual performance improvement plans, education and training, standardized education and if necessary discipline.

Once a decision to take action or to solve a problem has occurred, training, and education are critical components that need to be addressed. The need for training is presented to the provider agency and personnel from said agency work in conjunction with the QI personnel to ensure that appropriate training is presented to the pre-hospital care personnel.

To implement change, one must deliver verifiable, ongoing training that is appropriate to the skill level and service goals of the organization. The EMS Medical Director/Division can develop standardized training to be disseminated to all the provider agencies. Examples of this training include paramedic update classes held annually to assure that all field staff are up to date with all policies, procedures, and protocols, as well as Mobile Intensive Care Nurse updates.

The Division approves and monitors on an on-going basis EMT and Paramedic Training Programs, and Continuing Education Provider Programs. EMT and Paramedic Training Programs are approved, monitored, and managed in accordance with Title 22 regulations. Continuing Education Provider Programs are approved, monitored, and managed in accordance with Title 22 regulations and Division *Prehospital Continuing Education Policies and Procedures*. Updates are requested on a bi-annual basis with an account for the number of courses taught. Site audits are conducted on a rotating basis upon renewal for compliance with policies.

The Division conducts an orientation course to prospective paramedics seeking local accreditation. This course focuses on local policy, procedures, and protocols. An exam is given at the end of the course with a mandatory pass rate of 80%. A similar training is offered to nurses seeking MICN accreditation. Identical to the paramedic course, an exam is given at the end of the course with a mandatory pass rate of 80%. Additionally, MICN's are required to complete a sixteen (16) hour ALS ground ambulance transport ride-along, and are assigned a preceptor for responding to ALS radio call-ins and requests for medical control.

Division approved base hospitals are obligated by contract to provide education to pre-hospital providers. Typically this education is in collaboration with an ALS provider, the Division, or non-profit organizations such as American Heart Association. Other forms of Base Hospital education include case review, base station call review, specialty system of care overview, and clinical observations.