County of San Luis Obispo
Emergency Medical Services Agency

Continuous Quality Improvement Plan

February 2016

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1. INTRODUCTION

The County of San Luis Obispo EMS Division is comprised of the Emergency Medical Services (EMS) Agency and the Public Health Emergency Preparedness Program. As a division of the Public Health Department, the County of SLO EMS Agency provides system guidance and oversight through pre-hospital provider and public comment-driven policy development and a comprehensive quality improvement program. We support medical disaster preparedness through the disaster response planning process, and support the appropriate use of 911, CPR, AEDs and First Aid through public education. We ensure excellent pre-hospital personnel through training, certification, accreditation, authorization and continuing education program review. We participate with the Public Health Department, in the management and coordination of public health emergencies, such as: Natural Disasters, Pandemic Flu and Bioterrorism incidents.

The County of San Luis Obispo is both geographically and demographically diverse. The county covers 3,200 square miles and includes urban areas along the Highway 101corridor, coastal recreational areas, and remote areas on the eastern side of the county. EMS providers serve approximately 300,000 residents which can fluctuate at various times of the year with the Cal Poly student and the tourism populations. The EMS system responds to approximately 21,000 calls a year.

Vision

The EMS Agency is dedicated to the assurance of optimal prehospital care. Our goal is to continuously improve the quality of the emergency medical care delivery system.

The EMS Agency operates on three basic principles:

- Foster growth, continuous improvement, and professional development of our staff and members of the EMS community.
- Promote and utilize innovative approaches to prehospital care.
- Support a cooperative and collaborative working environment.

As a public benefit agency, we are responsive and responsible to the community. We value and encourage the individual contribution in the achievement of our goals.

Philosophical Statement of Professional Ethics and Values

As an agency dedicated to the assurance of optimal prehospital care in the County of San Luis Obispo, the EMS Agency has an obligation to ensure the emergency medical services community maintains the highest possible standards for professional medical treatment of the public. To this end, the EMS Agency supports the need for the emergency medical services community to demand of its employees the highest expectation for professional ethics and personal integrity. This extends from personal conduct as a representative of the emergency medical services community, to the emergency medical assistance provided through the course of their employment.

Recognizing the public's expectation for professional and ethical conduct of those in the medical services field, the EMS Agency will continue to assist the emergency medical services community through its philosophic support of professional ethics and values. Moreover, the EMS Agency will maintain an expectation of professional and ethical conduct of those members of the emergency medical services community whom the Agency supports through its program coordination, including certification, training, accreditation and continuing education

Authority

On January 1, 2006 the California Emergency Medical Services Authority (EMSA) implemented regulations related to quality improvement for emergency medical services throughout the state.

This program has been developed in accordance with California Code of Regulations Title 22, Chapter 12, Article 4 and utilizes the guidelines established by the EMSA documents # 163 "EMS System Quality Improvement Indicators", #166 "Emergency Medical Systems Quality Improvement Program Model Guidelines", the EMS Core Quality Measures Document and the guidelines established by the Emergency Medical Services Administrators Association of California (EMSAAC).

As defined in Title 22 "Emergency Medical Services Quality Improvement Program" or EMS CQI Program are methods of evaluation that are composed of structure, process and outcome evaluations which focus on improvement efforts to identify root causes of problems, intervene to reduce or eliminate the causes, and take steps to correct the process and recognize excellence in performance and delivery of care.

Purpose

The purpose of the EMS Agency Continuous Quality Improvement (CQI) Program is to establish a system-wide process for evaluating and improving the quality of pre-hospital care in the County of San Luis Obispo. This plan is designed with the intent to facilitate a consistent ability to attain key EMS quality objectives with the input and cooperation of the providers and customers of those served. The objectives include:

- Assuring that the level of patient care is consistent with the policies and field treatment guidelines
- Evaluation and improvements of system-wide performance
- Assignment of responsibility for monitoring and evaluating activities
- Delineation of scope of care
- Identification of important aspects of pre-hospital care
- Collection, analysis and dissemination of data from dispatch to discharge
- Promotion of appropriate utilization of EMS resources and services
- Cultivate standardization of the quality improvement process.

Fundamental to the program is the understanding that it will be developed over time and allows for individual variances based on available resources.

There is a focus on quality improvement of the overall local EMS system and how it interfaces with the statewide EMS system. Nine (9) focus areas identified in Section III and Appendix E of the Emergency Medical Services System Quality Improvement Program shall include but not be limited to:

- Personnel
- Equipment and Supplies
- Documentation
- Clinical Care and Patient Outcome
- Skills Maintenance/ Competency
- Transportation /Facilities
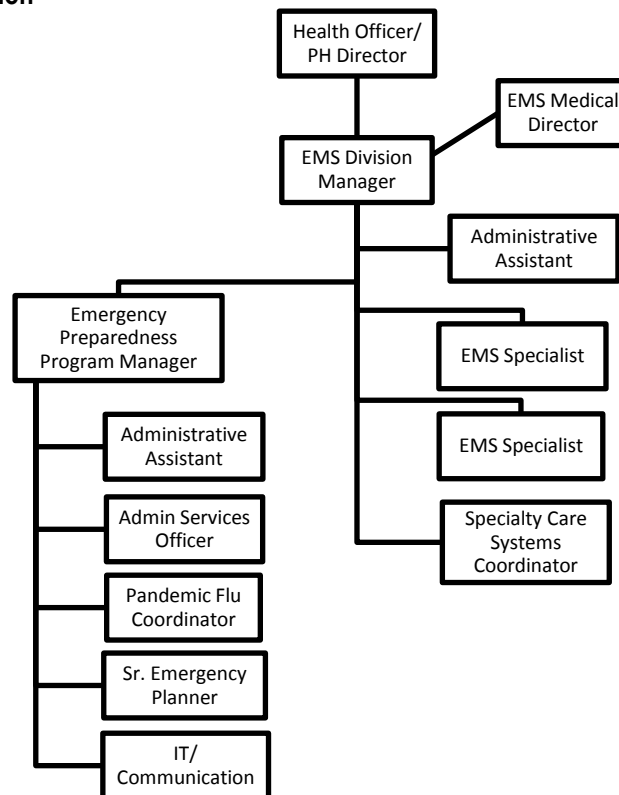- Public Education and Prevention
- Risk Management

1. STRUCTURE AD ORGANIZATION

The County of San Luis Obispo Emergency Medical Services, a division of the County of San Luis Obispo 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. The County the Board of Supervisors designated the Public Health Department as the Local EMS Agency (LEMSA). The County Health Officer/Public Health Department Director thus serves as the overall EMS Agency director, with the EMS Division Manager serving as the EMS Agency Administrator, and representative on EMSAAC. The Health Officer, who is appointed by the Board of Supervisors, reports administratively to the Health Agency Director, who in turn reports to the County Administrator and the Board of Supervisors. The Board 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 Committee (EMCC) is responsible for vetting local policies and procedures prior to implementation and acts as an advisory committee to the EMS Agency. The EMCC is a diverse board comprised of members representing the entire EMS system including: County Medical Association Physicians, Emergency Medicine Physicians, City Government, Consumers ,EMS Field Personnel, Sheriff's Department, Public EMS Providers, Hospitals, Prehospital Transport Providers, and Mobile Intensive Care Nurses.

EMS Agency Organization

EMCC Membership

Representing	Number of Representatives	Appointing Authority
Prehospital Provider	1	Ambulance providers
Physicians	1	County Medical Society
City Government	1	City Managers
EMS Field Personnel	1	County Health Officer
Public Providers	1	County Fire Chiefs Association
Sheriff's Department	1	County Sheriff
Hospitals	1	Hospital Administrators
Emergency Medical Physician	1	County Health Officer
MICN or ED Nurse Manager	1	County Health Officer
Consumer Representative	2	County Health Officer

CQI Process

Quality improvement is a dynamic process that provides feedback and performance data on the EMS system. This information is based on indicators that reflect standards of care in the community, state and nation.

- Define a problem
- Measure data to validate and quantify the problem
- Analyze the data and indicators of the problem to determine the cause
- Develop and implement a plan of action through education or policy/procedure revision
- Measure and monitor results, providing feedback
- Continue monitoring to assure compliance

CQI Committee Procedures

- The EMS Medical Director shall oversee the CQI program
- The EMS CQI Coordinator shall ensure the coordination of the committee programs and activities
- The EMS CQI Committee shall meet on regular intervals
- All committee members shall sign a confidentially statement
- The EMS Agency shall maintain records in a confidential manner during the review process and shall destroy identifiable patient information directly following the review process

In addition to the EMS Agency CQI Committee, the following identifies a number of collaborative committees established to review specific areas of Quality Improvement. Each committee has at least one EMS Agency representative who assists in identifying the EMS system quality indicators that are reviewed.

- Trauma Committee
- STEMI Committee
- Regional Trauma Care Committee (RTCC)
- Tri-county Trauma Committee (Tri-TAC)
- Ambulance Performance and Operations Committee (APOC)
- County Fire Chiefs Association
- EMDAC/ EMSAAC
- Field Training Officer (FTO) Committee

CQI Committee Membership

The organizational structure of the EMS Agency CQI Committee shall be multidisciplinary and representative of the participating agencies. The EMS Agency is the receiving agency of the information collected by the participating agencies and shall provide guidance to the CQI Committee. The CQI Committee shall be an advisory body to the EMS Medical Director
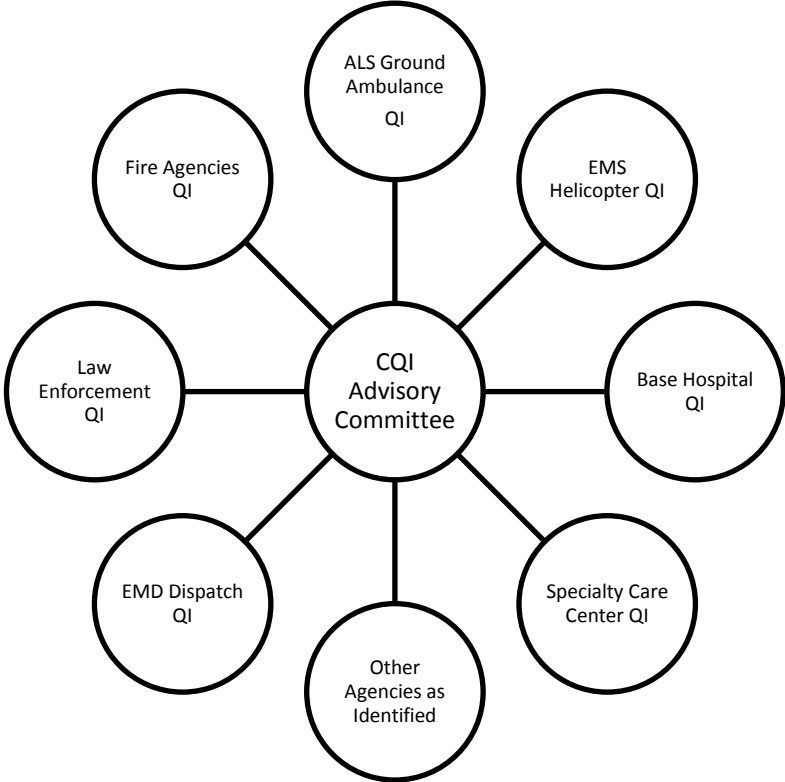
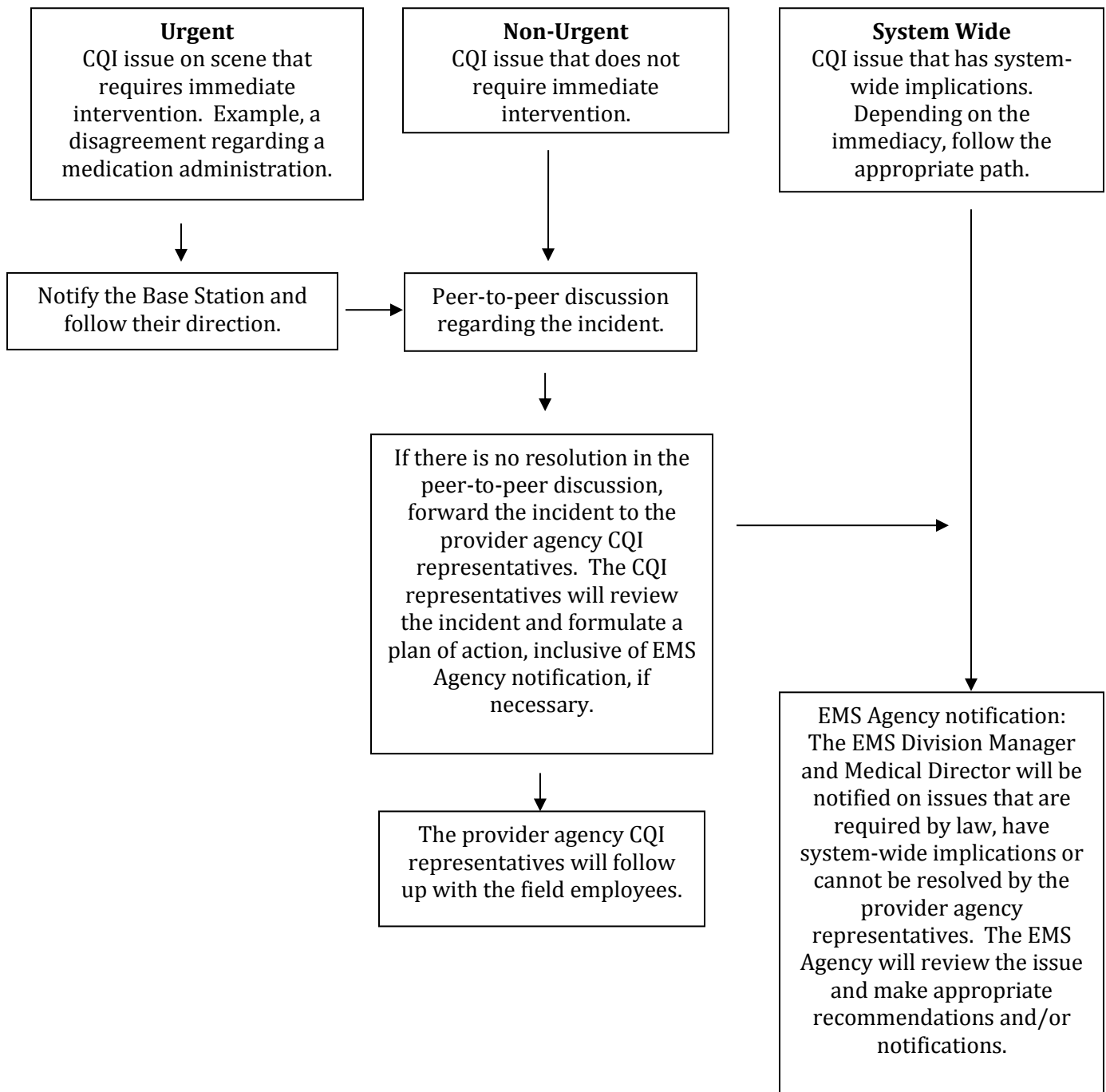| Agency	Number of Representatives	Appointing Authority
ALS Ground Ambulance Provider	1	EMCC Ambulance Provider Representative
EMS Helicopter - Public	1	EMCC/Operations Committee Representative
EMS Helicopter - Private	1	EMCC/Operations Committee Representative
Fire Service BLS	1	EMCC/Operations Committee - Fire Chiefs Assoc. Representative
Fire Service ALS	1	EMCC/Operations Committee - Fire Chiefs Assoc. Representative
Law Enforcement	1	EMCC/Operations Committee Representative County Criminal Justice Admin. Assoc.
EMS Dispatch	1	EMCC/County Sheriff Dept. Operations Committee Representative
Emergency Physician	1	EMCC Emergency Physician Representative
Base Hospital/MICN	1	EMCC -MICN Representative
Specialty Care Center	1	As Approved e.g. Trauma, STEMI Center

Responsibilities of the EMS CQI Committee

California Code of Regulations Title 22¸Division 9, Chapter 12, Section 100400

- Develop and implement a system-wide EMS CQI program to include indicators addressing the nine (9) State ECQIP focus areas
- Annual evaluation of the system-wide EMS CQI Program for effectiveness and outcomes
- Provide for continuous input and feedback with EMS Provider groups
- Ensure availability of training and in-service education for EMS personnel
- Develop in cooperation with appropriate agencies/personnel a performance improvement plan to address identified improvement needs and provide technical and medical oversight for system and clinical issues
- Publish a summary of activity and plan implementation for periodic review
- Ensure that their respective agencies monitors, collects data on and evaluates information on the locally identified indicators

CQI Committee
Organizational Structure
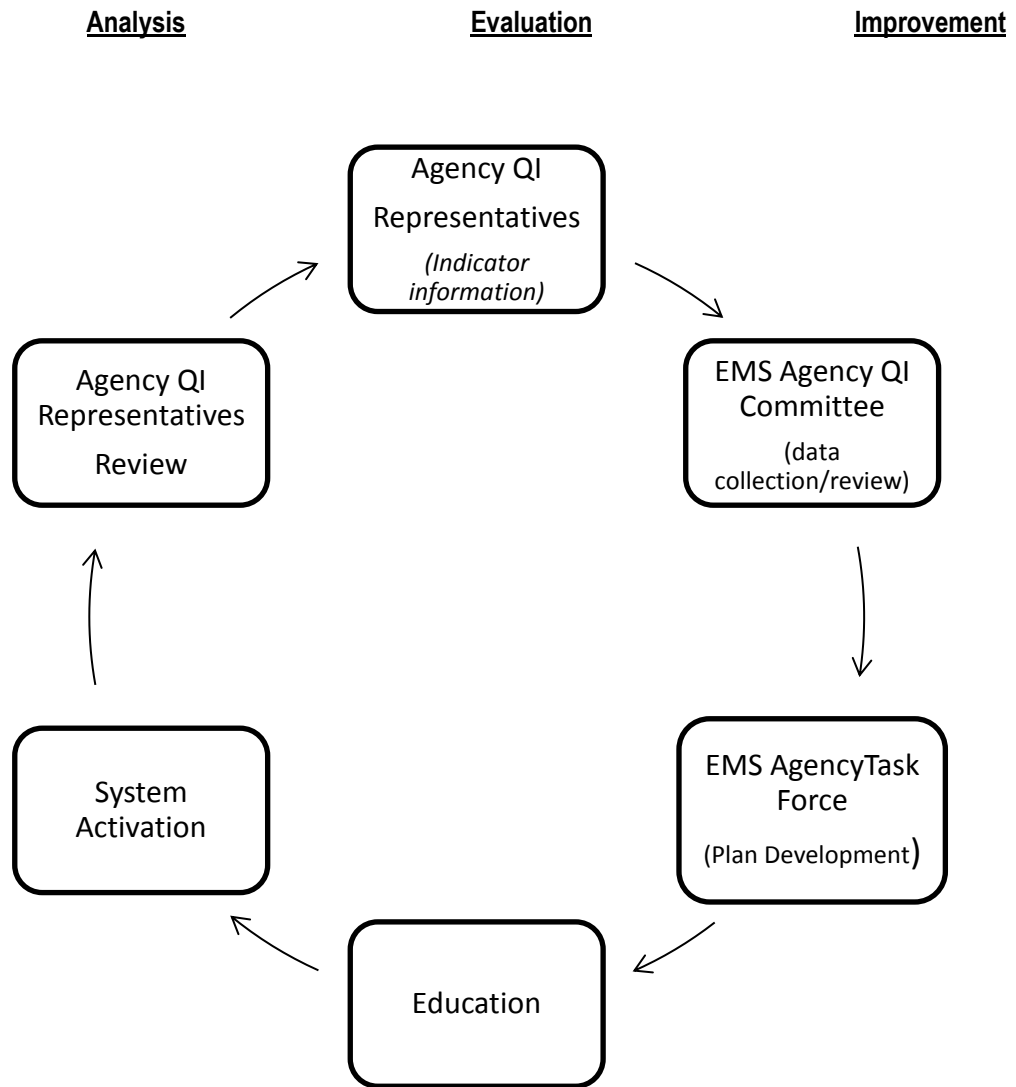**CQI Representatives from the Participating Agencies**

CQI Review Process:

Urgent	Non-Urgent	System Wide
CQI issue on scene that requires immediate intervention. Example, a disagreement regarding a medication administration.	CQI issue that does not require immediate intervention.	CQI issue that has system-wide implications. Depending on the immediacy, follow the appropriate path.

Notify the Base Station and follow their direction.

Peer-to-peer discussion regarding the incident.

If there is no resolution in the peer-to-peer discussion, forward the incident to the provider agency CQI representatives. The CQI representatives will review the incident and formulate a plan of action, inclusive of EMS Agency notification, if necessary.

The provider agency CQI representatives will follow up with the field employees.

EMS Agency notification: The EMS Division Manager and Medical Director will be notified on issues that are required by law, have system-wide implications or cannot be resolved by the provider agency representatives. The EMS Agency will review the issue and make appropriate recommendations and/or notifications.

- Depending on the issue, the CQI representative(s) may contact the EMS Agency as soon as necessary.

Flow of Information and Activity

Analysis   **Evaluation**   **Improvement**

Agency QI
Representatives
*(Indicator
information)*

Agency QI
Representatives

Review

EMS Agency QI
Committee
(data
collection/review)

System
Activation

EMS AgencyTask
Force

(Plan Development)

Education

Interagency CQI Responsibilities

Interagency CQI responsibilities listed below are based upon Title 22 California Code of regulations Chapter 12 EMS System Quality Improvement (EMSA Policy QI Program Guidelines #101)

County of SLO EMS Agency

- Provide a Medical Director to oversee the EMS system medical care
- Provide staff as needed to provide the coordination of the EMS CQI program
- Cooperate with the State EMSA with statewide CQI programs
- Provide for system-wide direction through the establishment of policies, procedures and guidelines
- Designate EMS Base Hospitals to provide on-line consultation and triage
- Provide for and coordinate retrospective evaluation of EMS system performance – both clinical and operational. Determine educational or other needs to improve system performance
- Credential and maintain records for EMT I, EMT P, MICN and EMD providers
- Approve primary and continuing education programs
- Conduct periodic review of policies, procedures and treatment guidelines.
- Ensure that all EMS personnel are notified of system changes
- Develop and distribute EMS System Plans/Updates, Hospital Resource guides and any other system reports as is appropriate
- Collect system data to evaluate system performance
- Process and review all incident review requests to assure evaluation and/or investigation
- Provide other contract compliance activities as warranted

Base Hospital Responsibilities

- Designate an Emergency Department Physician as a base hospital Medical Director
- Designate a Base Hospital MICN Liaison/CQI Nurse
- Assure the presence of a currently certified MICN or Base Hospital Physician in the ED at all times for radio consultation to the pre-hospital personnel
- Assure staff, MICNs and Base Physicians are familiar with EMS policies, procedures and treatment protocols
- Implement a Base Hospital CQI program to include:
  - Evaluation and education of performance
  - Assist pre-hospital providers and the EMS Agency in evaluating and improving EMS patient care
- Develop and implement CQI programs consistent with State regulations and local guidelines
- Provide for follow up on base-directed calls
- Provide education, in coordination with ALS Provider, through formal and informal classes
- Provide clinical setting for maintenance and remediation of skills, as available
- Provide statistical information for monitoring and evaluating EMS system as needed
- Assist in the coordination, training, and evaluation of new procedures and pilot programs
- Participate in EMS Agency CQI activities

Emergency Medical Dispatch Agency

- Provide dispatchers trained and certified as EMD
- Assure dispatchers follow EMD policies and procedures
- Establish a procedure to implement updates and system changes
- Assign a liaison/CQI representative to interface with EMS Agency
- Assist the EMS Agency in evaluating and improving EMS services
- Use EMD formal CQI plan to evaluate and improve performance
- Provide CQI summary and protocol compliance according to policy
- Participate in EMSA CQI activities

First Responder Agencies

- Provide first responder services with staff trained to minimum of first aid, CPR and AED
- Assure personnel are familiar with EMS policies and procedures
- Assign a liaison/CQI representative to interface with EMS Agency
- Establish a procedure to update agency personnel of EMS system changes and updates
- Participate in EMS Agency CQI and training activities
- Provide staff oversight, monitoring, data collection and feedback
- Submit all pre-hospital patient data to EMS Agency following AED use
- Monitor response times and identify ways to improve if deemed necessary

ALS /BLS Responding Agencies

- Assure EMS personnel are currently and appropriately credentialed per EMSA policy
- Assign a liaison/CQI representative to interface with EMS Agency
- Assure personnel are familiar with EMS policies and procedures
- Establish a procedure to update agency personnel of EMS system changes and updates
- Develop, implement and participate in CQI programs consistent with pertinent State regulations and local guidelines
- Provide the EMS Agency with data necessary for monitoring and evaluating the EMS system
- Provide dispatch data and clinical data as specified in County agreements
- Document accurately patient care information for each patient contact on an EMS Agency-approved electronic/paper patient care report
- Monitor and evaluate patient care issues, response times and other pertinent issues. Identify areas of improvement and steps to improve and re-evaluate
- Participate in EMS Agency CQI programs

Air Ambulance Agencies
- Assign a liaison/CQI representative to interface with EMS Agency
- Assure EMS personnel and pilots are currently and appropriately credentialed at all times
- Establish a procedure to update agency personnel of EMS system changes and updates
- Develop, implement and participate in CQI programs consistent with pertinent State regulations and local guidelines
- Provide the EMS Agency with data necessary for monitoring and evaluating the EMS system
- Document accurately patient care information for each patient contact on an EMS Agency-approved electronic/paper patient care report

- Monitor and evaluate patient care issues, response times and other pertinent issues. Identify areas of improvement and steps to improve and re-evaluate
- Participate in EMS Agency CQI programs

3. DATA COLLECTION , EVALUATION of INDICATORS AND REPORTING

Purpose: in order to effectively evaluate the EMS system the data must be valid, reliable and standardized.

Data Collection Programs:

Various data collection systems currently exist within the EMS Agency that are relevant to the CQI process. These include:

- SIMON/NOMIS – the electronic PCR utilized by transporting agencies
- Provider submitted study data – e.g. airway study forms
- Dispatch CAD data
- PCRs from fire based programs
- Trauma One – trauma registry
- Mission Life/ACTION
- ReddiNet
- Image Trend planned in fiscal year 2016-17

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 the system and potentially broaden EMS knowledge through publication

Evaluation of Indicators

The EMS Agency CQI coordinator will review and analyze the quality indicators on a regular basis (monthly/quarterly/ annually) and create a report to be presented to the CQI Committee and any other committees as deemed appropriate.

Analysis shall be presented in a format that allows for rapid interpretation by the evaluators. Measurements may include:

Statistical
      Measures of central tendency
      Measures of dispersion
      Process analysis
      Trending
      Causation
      Benchmarking
      Best practices
      Published references

Decision-Making Process – the following is a sample of a process used for evaluation, analysis and decision-making to be used by the EMS CQI Committee:

- Identify the objective
- Present the indicators and EMS information
- Compare performance with benchmarks or goals
- Discuss performance with peers/colleagues
- Determine if improvement or further evaluation needed
- Establish a plan
- Develop training/educational needs
- Assign follow-up for the plan of action

4. ACTION TO IMPROVE AND REPORTING

Once the need for improvement has been identified by the CQI Committee a number of approaches and models of problem solving and analysis are available. In each case the EMS CQI Committee should choose a method that is systematic, based on finding and measurable. The approach is a team-oriented process that is designed to be accomplishable and not overwhelm the system. Smaller sub-group of the EMS CQI Committee may be utilized in the design and oversight of such programs.

It is recommended that the CQI Committee choose a standardized approach and use the same process each time a project is undertaken. The following are traditional components of a standardized improvement process:

- Establish criteria for measurement and evaluation
- Evaluate the information
- Make decision to take action to improve
- Establish measurable criteria for improvement
- Establish an improvement plan
- Measure the results of the improvement plan
- Evaluate the need to standardize or integrate change into the system
- Establish a plan to monitor future activities

Specific CQI Indicators for County of SLO EMS Agency

It would be overwhelming to list each activity and quality indicator the system reviews. The following is a list of standard focus areas with a table to follow that identifies specific target areas. The target areas are identified and updated each year through input from the providers and other system activities.

- Approval of EMT and EMT-P Training Programs
- Approval of EMD program
- Approval of EMS CE programs
- Pharmaceutical inventory control
- Treatment protocol review and update
- Treatment protocol compliance
- Cardiac Arrest
- Trauma System
- STEMI System
- Intubation success rate

- Competency in infrequently used skills
- Air ambulance utilization
- EMS Authority Core Measures

Sample of CQI programs

Clinical Area	Element	CQI Indicator /performance Measure	CQI Status	Improvement Activities/Plan
Airway				
Airway	ETT	▪ % Success by attempt ▪ % success by patient ▪ Success by type of device ▪ Success by location of patient (floor/gurney)	Ongoing, Core Measure	▪ Continue accreditation requirement of 2 tubes every 6 mos. ▪ Provide CE and advanced skill lab opportunities
Airway ETCO2	ETCO2	% patients with advanced airway placement utilizing ETCO2	Ongoing, Core Measure	▪ Provide training on documentation ▪ ePCR improvements
Cardiac				
Cardiac Arrest	By-stander CPR	% Cardiac arrest receiving bystander CPR	Active	▪ Hands-only CPR programs ▪ Public education
Cardiac Arrest	ROSC/ survival to discharge	% Survival to Hospital Discharge	Active, Core Measure	▪ Implementation HPCPR training ▪ Update field P&P ▪ Add Mega Code training to Advance Protocol Review ▪ Investigate CARES
Cardiac Arrest	Time from 911 to defibrillation	Median time from 911 to defibrillation	Ongoing	▪ Identify AED placement Inclusion into CADs ▪ Public education
STEMI	Times	▪ % E2D <90 min ▪ % D2D < 90 min ▪ %ED 2D from SRF to SRC transfers <120 min	Ongoing	▪ ACTION participation ▪ Outcome data sharing
STEMI	ASA	% Patient meeting chest pain protocol receiving ASA	Ongoing Core Measure	▪ Monthly monitoring
Trauma				
Trauma	Time	▪ Time on scene without extrication < 15min ▪ # response times of > 20 min for transport unit without BLS on scene <10 min ▪ # transport to TC > 30 min	Ongoing	▪ PHTLS ▪ Helicopter utilization review committee

Trauma	Over/under triage	▪ % patient transported to non-TC with subsequent transfer to TC from the ED ▪ ISS of >15 at a non-trauma center that was transferred to a TC	Ongoing	▪ Quarterly monitoring ▪ Tri—County TAC review
Trauma	PCR to trauma service <24 hrs.	▪ % of PCRs that are missing after 24 hours	Ongoing	▪ Quarterly monitoring
Trauma	Documentation of Triage Step	▪ % of PCRs with triage correctly documented	Ongoing	▪ Quarterly monitoring
Stroke				
Stroke	Glucose	% patients presenting with stroke symptom and have glucose test documented	Ongoing	▪ Quarterly monitoring
Procedures				
IO	Success	% Success by device - adult and pediatric	Ongoing	▪ Quarterly monitoring
Spinal Motion Restriction	Spinal Motion Restriction	% patients Meeting NEXIS criteria receiving Spinal Motion restriction	In process	
Operations				
Transportation	Ambulance Response times	% compliance to response time requirements by Zone, Urban reserve lines and city/area	Ongoing and in process	▪ Annual monitoring
Transportation	Rate of transport	% of Code 3 responses that are transported	On going	▪ Annual monitoring
Dispatch	Pre-arrival instructions	% pre-arrival instructions for cardiac arrest	In process	
Education				
CE Program	Compliance to CE program approval requirements	% CE records meet compliance standards for EMS CE program approval	In Process	▪ Random annual audit
Public Health	Hands-Only CPR	▪ # of citizens trained in Hands-only CPR ▪ # of cardiac arrest responses with by-stander CPR	Ongoing	▪ Annual monitoring

5. TRAINING AND EDUCATION

Once the CQI Committee has identified plans to address a need, education and training becomes a critical component of the process. The EMS Agency and EMS CQI Committee will make recommendations for educational needs/offerings throughout the system based upon their findings.

Any recommended changes in policy, procedure or practice go before the appropriate advisory committees and are signed by the County of San Luis Obispo Medical Director or EMS Division Manager.   Once the plan has been implemented the EMS Agency will standardize the changes within the appropriate policies and procedures. The EMS Agency oversees all policy updates. The EMS Agency ensures and documents that the updates are available and completed by all affected EMS personnel. This can be accomplished via training classes, training memos, train-the trainer programs and other means as recommended. The providers are ultimately responsible for ensuring staff has met the training requirements. Rosters and records may be requested by the EMS Agency for verification.

Policy changes and training material are made available on the EMS Agency website with implementation.

www.sloemsa.org

6. ANNUAL UPDATE

Annual progress reports shall serve as the annual update of the CQI program. The EMS Agency is responsible for annually updating the EMS Plan and its compliance with the current strategic goals.   The CQI Plan and the EMS Plan will be reflective of the common goals and objectives of the EMS Agency. The CQI Coordinator will complete a summary of the activity to include:

- Indicators monitored
- Key findings/priority issues identified
- Improvement actions plans
- Goals met or require follow-up

Any updates to the EMS CQI Plan shall be submitted to the State EMS Authority with the EMS Agency System Plan update.