Commission on Accreditation of Medical Transport Systems
7th Edition – 2006
Accreditation Standards – Quality Management

08.00.00 QUALITY MANAGEMENT (Includes performance improvement, continuous quality improvement, total quality management, etc.)

08.01.00 There is an ongoing Quality Management (QM) program designed to objectively, systematically and continuously monitor, assess and improve the quality and appropriateness of patient care and safety of the transport service provided by the medical/ground interfacility service.

08.01.01 The QM program should be integrated and include activities related to patient care (including customer satisfaction), communications, performance improvement and all aspects of transport operations and equipment maintenance pertinent to the service's mission statement.

08.02.00 The medical transport service has established patient care guidelines/standing orders that must be reviewed annually (for content accuracy) by management, QM Committee members and the Medical Director(s).

08.03.00 The Medical Director(s) is responsible for ensuring timely review of patient care, utilizing the medical record and pre-established criteria.

08.04.00 There is an established and written Quality Management Program in place, including the Medical Director(s) and management, to assure the process is implemented.

GENERAL STANDARDS Quality Management

08.04.01 A QM flow chart diagram or comparable tool is developed demonstrating organizational structure in the QM plan and linkage to the Safety and Risk Management Committees.

08.04.02 The QM Program is linked with risk management, so that concerns raised through the risk management program can be followed up through the continuous quality improvement program
1. There is a process to identify, document and analyze sentinel events, adverse medical events or potentially adverse events (near misses) with specific goals to improve patient safety and/or quality of patient care.
2. A written policy outlines a process to report adverse medical events and operational events that had the potential to affect the patient or patient care even if it is a sole source event (only the individual involved would know about it) without fear of punitive actions for unintentional acts.

08.04.03 There is a written QM plan that may include but not be limited to the following components:
1. Responsibility/assignment of accountability.
2. Scope of care.
3. Important aspects of care, including clinical outcomes.
4. Operational processes such as financial outcomes and customer needs.
5. Indicators.
6. Thresholds for evaluation, which are appropriate to the individual service.
7. Methodology the QI process or QI tools utilized.
8. Groups should be assembled to address each identified area of quality concern; these groups should include representatives of all disciplines involved, ensuring optimal communication and problem-solving.
9. The plan should emphasize the quality of services offered on a continuing basis with constant attention to developing new strategies for improving; maintaining the status quo or achieving arbitrary goals are not considered the end-measures.
10. Evaluation of the improvement process.

08.04.04 There will be regularly scheduled QM meetings providing a forum for all disciplines involved in the medical transport service.

08.05.00
The monitoring and evaluation process has the following characteristics:

GENERAL STANDARDS Quality Management

08.05.01 Driven by important aspects of care, and operational practices identified by the medical transport service's QM plan.

08.05.02 Indicators and thresholds or other criteria are identified to objectively monitor the important aspects of care.

08.05.03 Evidence of QM studies and evaluation in compliance with written QM plan.

08.05.04 Evidence of action plans developed when problems are identified through QM and communication of these plans to the appropriate personnel.

08.05.05 Evidence of reporting QM activities through an established QM organizational structure. An annual summary Quality Management report should be generated.

08.05.06 Evidence of ongoing re-evaluation of action plans until problem resolution occurs.

08.05.07 Evidence of outcome studies should minimally include airway, fluid resuscitation and adherence to ACLS, PALS and NRP guidelines.

08.05.08 Evidence of annual goals established prospectively for the QM program that provide direction for the work groups and that are quantitative. The emphasis must be on loop closure and resolution of problems within a finite time period.

08.06.00 Quarterly review should include (at a minimum, but may exceed) criteria based upon the important aspects of care/service. The following examples are encouraged:

08.06.01 Reason for transport

08.06.02 Mechanism of injury or illness.

08.06.03 Medical interventions performed or maintained.
1. Time of intervention consistently documented.
2. Patient's response to intervention documented.
3. Appropriateness of interventions performed or omission of needed interventions.

08.06.04 Patient's outcome (morbidity and mortality) at the time of arrival at destination
1. Patient’s change in condition during transport.

08.06.05 Timeliness of the transport/Coordination of the transport from reception of request to liftoff of aircraft or ambulance enroute time.

GENERAL STANDARDS Quality Management

08.06.06 Safety practices
1. Safety issues may be handled through the Safety Committee where a problem, incident or accident should be identified with detailed reporting and analysis of aircraft and vehicular incidents and resolution of issues with findings and action plans reported back to the QM committee.
2. QM personnel may collect data and refer to the Safety Committee for action and resolution.

08.06.07 Operational criteria to include at a minimum the following quantity indicators:
1. Number of completed transports.
2. Number of aborted and canceled flights/transports due to weather.
3. Number of aborted and canceled flights/transports due to maintenance.
4. Number of aborted and canceled flights/transports due to patient condition and use of alternative modes of transport.
5. In addition the communications center should monitor and track (at a minimum but may exceed):
a. IFR/VFR
b. Weather at time of request and during transport if changes occur
c. Launch to lift off times.

d. All aborted and missed transports – times, reasons and disposition of patient as applicable

08.06.08 For both QM and utilization review programs, there should be written, objective evidence of actions taken in problem areas and the evaluation of the effectiveness of that action.

08.06.09 For both QM and utilization review programs, there should be evidence of reporting of results through established organizational structure to the service's sponsoring institution(s) or agency (if applicable). For both QM and utilization programs, there is direct integration of the medical

California Code of Regulations
TITLE 22. SOCIAL SECURITY
DIVISION 9. PRE-HOSPITAL EMERGENCY MEDICAL SERVICES
CHAPTER 12. EMS System Quality Improvement

Article 1. Definitions

100400. Emergency Medical Services System Quality Improvement Program.
"Emergency Medical Services System Quality Improvement Program" or EMS QI Program means 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 these causes, and take steps to correct the process and recognize excellence in performance and delivery of care.

100401. EMS Service Provider.
"EMS Service Provider" means an organization employing certified EMT-I, certified EMT-II or licensed paramedic personnel for the delivery of emergency medical care to the sick and injured at the scene of an emergency, during transport, or during interfacility transfer.

Article 2. EMS Service Provider

100402. EMS Service Provider Responsibilities.
(a) An EMS service provider shall:
(1) Develop and implement, in cooperation with other EMS system participants, a provider-specific written EMS QI program, as defined in Section 100400 of this Chapter. Such programs shall include indicators, as defined in Section III and Appendix E of the Emergency Medical Services System Quality Improvement Program Model Guidelines, which address, but are not limited to, the following:
(A) Personnel
(B) Equipment and Supplies
(C) Documentation
(D) Clinical Care and Patient Outcome
(E) Skills Maintenance/Competency
(F) Transportation/Facilities
(G) Public Education and Prevention
(H) Risk Management
(2) Review the provider-specific EMS QI Program annually for appropriateness to the operation of the EMS provider and revise as needed.
(3) Participate in the local EMS agency's EMS QI Program that may include making available mutually agreed upon relevant records for program monitoring and evaluation.
(4) Develop, in cooperation with appropriate personnel/agencies, a performance improvement action plan when the EMS QI Program identifies a need for improvement. If the area identified as needing improvement includes system clinical issues, collaboration is required with the provider medical director and the local EMS agency medical director or his/her designee if the provider does not have a medical director.
(5) Provide the local EMS agency with an annual update, from date of approval and annually thereafter, on the provider EMS QI Program. The update shall include, but not be limited to, a summary of how the EMS provider's EMS QI Program addressed the program indicators.
(b) The EMS provider EMS QI Program shall be in accordance with the Emergency Medical Services System Quality Improvement Program Model Guidelines (Rev. 3/04), incorporated herein by reference, and shall be approved by the local EMS agency. This is a model program

which will develop over time and is to be tailored to the individual organization's quality improvement needs and is to be based on available resources for the EMS QI program.
(c) The provider EMS QI Program shall be reviewed by the local EMS agency at least every five years.

EMERGENCY MEDICAL SERVICES SYSTEM QUALITY IMPROVEMENT PROGRAM MODEL GUIDELINES

"The ability of EMS to optimally meet communities and individual patients' needs in the future is dependent on evaluation processes that assess and improve the quality of EMS. Continuous evaluation is essential and should pervade all aspects of every EMS system."

Theodore R. Delbridge MD, MPH

PURPOSE

The purpose of these guidelines is to provide a model for the development and implementation of a Quality Improvement Program for the delivery of EMS for EMS service providers, the local EMS agencies (LEMSA), Base Hospitals/Alternate Base Stations, the EMS Authority (EMSA), and their respective personnel. This is a model program, which will develop over time with individual variances based on available resources.

BACKGROUND

Governmental decision makers, sponsors, and consumers need objective evidence that they are receiving value and quality for the cost of EMS. The statewide EMS system and its participants require objective feedback about performance that can be used internally to support quality improvement efforts and externally to demonstrate accountability to the public governing boards and other stakeholders. The primary goal of each EMS QI Program shall be to ensure continued high quality of patient care.

GUIDELINES

The EMS QI Program guidelines were developed to assist EMS professionals in the development and implementation of a program addressing the following components:

- ✓ Organizational structure
- ✓ Data collection and reporting
- ✓ Evaluation of EMS system indicators
- ✓ Methods for improvement
- ✓ Training and education

Before implementing the guidelines, any participant in the EMS system can benefit from creating an organization profile and conducting a self-assessment using the Baldrige Criteria for Performance Excellence (*Appendix A*).

The 2001 Health Care Criteria for Performance Excellence of the Baldrige National Quality Program should also be reviewed as they provide core values and concepts for an EMS QI Program (*Appendix B*).

D. Emergency Medical Service Provider Level

Responsible Agency

EMS Service Providers

The EMS Provider's EMS QI Program should involve EMS system participants including but not limited to dispatch agencies, the LEMSA, EMS personnel training programs, hospitals, specialty care centers, and other EMS service providers. A regional approach, with

collaboration between EMS service providers serving neighboring communities, is highly recommended.

Structure

The EMS Provider EMS QI Program should be reviewed by the LEMSA for compatibility with the EMSA EMS QI Program guidelines.

The organizational chart should reflect the integration of the EMS QI Program in the organization. There should be:

1. An EMS QI Team under the direction of the EMS Provider medical director or EMS administrator. Lead staff should have expertise in management of the EMS provider's EMS QI Program. The following staffing positions are identified (organizations with limited resources may combine positions):
   - Provider Medical Director or Designee
   - EMS QI Program Coordinator
   - Data Specialist

Note: Availability of resources can vary greatly between urban and rural agencies. It is understood that there are variances in staffing and staff responsibilities.

2. An internal EMS QI Program Technical Advisory Group with members which include but are not limited to:
   - Medical Director (Provider Medical Director or alternatively the LEMSA Medical Director)
   - Chief/Administrator or designee
   - EMS QI Program Coordinator
   - Service Personnel (Physicians, RNs, Paramedics, EMTs)
   - Other system participants
3. Cooperation with all EMS participants should include but not limited to:
   - State EMSA
   - LEMSA
   - Other EMS Provider(s)
   - Base and Receiving Facilities
   - Local Department of Health
   - Law Enforcement
   - PSAP(s)
   - Community Group(s)
   - Non-EMS Public representative(s)
   - EMS Dispatch Center(s)

Responsibilities

The EMS Provider's EMS QI Program Technical Advisory Group should be the primary source of EMS QI Program activity reporting for statewide and local EMS System information. The EMS Provider's EMS QI Program Technical Advisory Group will perform the following functions:

- Cooperate with the LEMSA in carrying out the responsibilities of the LEMSA's EMS QI Program and participate in the LEMSA Technical Advisory Group
- Cooperate with the LEMSA in the implementation of state required EMS system indicators
- Cooperate with the LEMSA in the implementation of state optional EMS system indicators
- Cooperate with the local EMS agency in monitoring, collecting data on, and evaluating state required and optional EMS system indicators
- Cooperate with the local EMS agency in monitoring, collecting data on, and evaluating local/regional EMS system indicators

- Cooperate in the re-evaluation and improvement of state and local EMS system indicators
- Develop, monitor, collect data on, and evaluate indicators specific to the EMS provider as needed (See *Appendix E*)
- Conduct meetings for internal review of EMS provider information and development of performance improvement plans related to the findings
- Establish a mechanism to receive input from the local EMS agency, other service providers and other EMS system participants for the development of performance improvement plans
- Assure reasonable availability of EMS QI Program training and in-service education for EMS provider personnel
- Prepare plans for expanding or improving the EMS Provider EMS QI Program
- Participate in meetings and presentations of state and local EMS system information for peer review to local designated advisory groups and other authorized constituents

Annual Updates

The EMS Provider EMS QI Team will annually publish summary reports of EMS QI Program activity for distribution.

SECTION II
DATA COLLECTION & REPORTING

Purpose
To improve the EMS system, information must first be collected, reported, and evaluated. The following are guidelines for data collection and reporting of EMS information.

A. Data Collection
Aspects of care which are identified as important should be monitored despite the possible complexity of necessary data or challenges associated with the data collection. All reliable sources of information should be utilized in the evaluation of system performance. EMS organizations should also consider the use of hard copy review, collection check-sheets, customer surveys, direct observation, and skills simulation.

B. Approach to Data System Development
Information systems should be designed to answer EMS system performance questions. It is strongly recommended that EMS organizations establish a practical consensus and clear understanding with all users regarding the purpose for collecting and processing the data. This step is vital to assure validity and reliability.
The following activities are recommended prior to data systems development:

1. Identify the specific mission and purpose of the organization
2. Identify the most important services that support the mission and purpose
3. Identify the resources, activities, and results that comprise the services
4. Identify what information must be reported to others, such as LEMSAs or the state EMSA
5. Identify specific questions (regarding the structures, activities, and outcomes within your organization), which need to be answered in order to better understand the success of the mission and purpose
6. Define how each question will be answered
7. Use the answers as the basis for developing indicators
8. Develop a quality indicator
9. Use the indicators as the basis for identifying what data is needed
10. Develop your technical plan for data collection based upon the elements identified
11. Test the process prior to investing in a data system
12. Recognize that an effective EMS QI Program is dynamic and therefore constantly changing, and incorporate this need for change into your data vendor contract (if applicable) and/or your data management plan

The California State EMS data set (with associated definitions) should be incorporated to allow for statewide data collection. Statewide EMS system indicators provide for comparative analysis between similar EMS providers/LEMSAs as well as statewide system evaluation. Additional data elements and code sets should be collected at a local level to focus on regional issues and concerns. The National EMS Information System (NEMSIS) data set (with associated definitions) may provide consistent data collection with these additional data elements.

Validity and Reliability

Validity - The data have validity if there is sufficient evidence to warrant the collection and use of the information for the purpose of measuring the performance of the EMS system. The information is valid if it is:

- Representative of important aspects of service performance
- Determined to be important for successful service performance
- Predictive of or significantly correlated with important elements of performance

Reliability – The data have reliability if the collection and interpretation methods can be trusted to be consistent and predictable. If the data collection is always performed in the same way, using the same data collection tools and interpreted with the same definitions, the information is likely to be reliable. Standardized definitions or agreement by the users regarding what the data will indicate and how they will be collected is critical to the success of the overall program.

C. Organizational Reporting

Data collection, reporting, and analysis shall occur at each of the four organizational levels. Each level shall submit information to their respective advisory group. Data collection and reporting should be done in the form of summary reports and may be based upon core EMS system indicators as adopted by the State EMSA, LEMSA, hospital, or individual EMS provider. Data collected specific to personnel shall only be exchanged between the personnel and provider levels. EMS information should be consistent in how it is organized, analyzed, presented and evaluated.

See A*ppendix D* for specific diagram showing the flow and exchange of information at all levels.

SECTION III
EVALUATION OF EMS SYSTEM INDICATORS

Organizational Structure

In order to provide a continuous evaluation of EMS services, it is recommended that the organizations establish technical advisory groups at each level (state, local, hospital, and provider). Each technical advisory group should be responsible for decision-making regarding evaluation and improvement and should be composed of stakeholders within the system under evaluation.

Organization of Information

EMS organizations shall develop indicators which address but are not limited to the following (*Appendix E*):

(1) Personnel
(2) Equipment and Supplies
(3) Documentation
(4) Clinical Care and Patient Outcome
(5) Skills Maintenance/Competency
(6) Transportation/Facilities
(7) Public Education and Prevention
(8) Risk Management

The recommended approach to organizing data and other sources of information is through the development and use of standardized indicators.

Indicators Defined

According to the Joint Commission on Accreditation of Healthcare Organizations, an indicator is "a quantitative performance measure…a tool that can be used to monitor performance and direct attention to potential performance issues that may require more intensive review within an organization." In other words, an EMS indicator measures the degree of conformance to a reasonable expectation as defined by the community served. Indicators may be related to structures (people, places, things), processes (activities occurring in a system), and outcomes (the results of the structures and activities within a system). In fact, the three types of indicators (structure, process, and outcome) are all related and dependent upon one another. Hence the following equation:

STRUCTURE + PROCESS = OUTCOME

Changes in structure may affect the process and the outcome. Likewise, changes in the process may affect the structure and outcome. Indicators, in short, are a way to simplify information so that data can be digested more efficiently and in a meaningful way.

Required EMS System Indicators

Statewide EMS system indicators as developed and adopted by the EMSA should be incorporated to allow comparison within the state at all levels. These indicators are developed through a statewide consensus process and supported by the statewide data system.
An example of a required EMS system indicator detail sheet is found in *Appendix G.*

Optional EMS System Indicators

Recommended indicators are developed and designed on an as-needed basis and may be used for the long or short term or on an ad hoc basis depending on the goals of the group developing the indicators. While the state may develop some indicators, most development will occur at the local level. All EMS organizations are encouraged to develop their own indicators based upon their specific needs. Ad hoc indicators are not reported outside of the specific user

group and level of organization. In order to assist EMS organizations with developing indicators, instructions on standardized indicator development can be found in *Appendix F*.

Analysis

Prior to presenting or distributing indicators, it is recommended that the results be analyzed to include measurements appropriate for rapid interpretation by evaluators. Measurements may include the following:

- Statistical
  - Measures of Central Tendency
  - Measures of Dispersion
- Process Analysis
  - Trending
  - Causation
  - Benchmarking
  - Best Practices
  - Published References

These measurements are defined and further illustrated in *Appendix K.*

Presentation

The results and measurements of indicators should be presented to the users of the information in a formal process and on a regularly scheduled basis. Each presentation should include the purpose, objectives, references, benchmarks, measurements, and indicator detail sheet for clarification of data. The indicator information should be displayed to evaluators in a format that is most appropriate for the speed and ease of interpretation. The following are typical ways to display an indicator result:

- Flow Chart
- Fishbone – Cause and Effect Diagram
- Pareto Chart
- Histogram
- Scatter Diagram
- Run Chart
- Control Chart

Examples, definitions, and application of these display methods are illustrated in *Appendix L.*

Decision-Making Process

Each organizational level should have a structured process for making decisions. The following is a general outline of the steps in a structured process for evaluation and decision-making by the Technical Advisory Group:

1. Identify the objectives of evaluation
2. Present indicators and related EMS information
3. Compare performance with goals or benchmarks
4. Discuss performance with peers/colleagues
5. Determine whether improvement or further evaluation is required
6. Establish plan based upon decision
7. Assign responsibility for post-decision action plan

SECTION IV
ACTION TO IMPROVE

Approach to Performance Improvement

Once valid information has been presented and reliability evaluated, the decision to take action or to solve a problem requires a structured approach that is adaptable and applied to each situation as it is identified. There are many standardized and well-developed quality/performance improvement programs, which may be used during this phase. In all cases, each EMS QI Program Technical Advisory Group should choose an improvement method that is systematic and based upon evidence. The approach to improvement should also be team oriented and be done in a way that does not overwhelm the process due to size and complexity. Small wins are sometimes the basis for the larger wins. It is recommended that initial improvement projects be simple and based upon a strong consensus within the Technical Advisory Group that improvement will benefit all.

Technical Advisory Group

The EMS QI Program at each organizational level should have an oversight body that is responsible for implementing the quality/performance improvement plan. This group may be the same group that collects data from and evaluates the local system. The group should be responsible for delegating action to smaller groups (e.g., the Quality Task Force) and for monitoring the process as it unfolds within the system.

Quality Task Force

It is recommended that the Technical Advisory Group utilize smaller groups within the organizational level to carryout improvement action plans. Quality Task Forces are smaller sub-groups of the larger quality oversight body. Task forces are established to develop and implement action plans. Each task force has one project and is responsible for reporting all activities to the larger oversight group. Once the project is completed, the task force is disbanded. There may be more than one task force working concurrently, with each task force working on a specific action plan.

Note: Availability of resources can vary greatly between urban and rural agencies. It is understood that one task force may handle multiple projects or the Technical Advisory Group may handle the projects without forming any task forces.

Performance Improvement Plan

While there are many approaches to a Performance Improvement Plan within an organization, it is recommended that each Quality Task Force 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 information
- Make a decision to take action to improve
- Establish criteria for improvement
- Establish an improvement plan
- Measure the results of the improvement plan
- Standardize or integrate change (plan) into the system
- Establish a plan for monitoring future activities

Attached in *Appendix H, I, and J* are examples of quality improvement models.

SECTION V
TRAINING AND EDUCATION

Introduction
Effectiveness of the EMS QI Program and related training is directly proportional to the energy and resources committed. Administrative oversight should be available and directly involved in the process. When clinical issues are addressed, medical oversight is recommended.

Action to improve process is intertwined with training and education
Once the decision to take action or to solve a problem has occurred, training, and education are critical components that need to be addressed. As a Performance Improvement Plan is developed, the Technical Advisory Group will establish criteria for measurement and evaluation. Based on these criteria, delivery methods and content of training will be developed. This integrated process will avoid any misdirection that may occur when training is isolated from the EMS QI Program. Success of the performance improvement plan is dependent upon changing the behavior and knowledge of the staff who deliver care to patients or services to other participants (e.g., EMSA to LEMSA, LEMSA to EMS provider) in the EMS system. To implement change, you must deliver verifiable, ongoing training that is appropriate to the skill level and service goals of the organization.

Medical direction
To successfully implement a Performance Improvement Plan, the organization's EMS QI Program team shall have input into the content and delivery methods of related training and education. This involvement will provide consistency between the current and subsequent Performance Improvement Plans. The structure of the organization shall place the oversight for directing clinical training and education at the highest level of medical knowledge.

Measure the results of the Performance Improvement Plan
Once the Performance Improvement Plan has been implemented, the measurement of a successful outcome will be dependent upon the validity of the plan and the effectiveness of the training and education. If the outcome is not satisfactory, it is necessary to examine both the content of the Plan and delivery method of related training and education.

Integrate change
Once the Performance Improvement Plan has been successfully implemented, the organization needs to standardize the changes within appropriate policies and procedures. When appropriate, assure that staff have successfully completed the training and educational components of the plan. The final steps in integrating change into the system will be to schedule continuing education at appropriate reoccurring intervals and re-evaluate the original EMS system indicators.

Annual Update Guidelines

The Annual Update is a written account of the progress of an organization's activities as stated in the EMS QI Program. In compiling the Annual Update, refer to the previous year's update and work plan.

Description of agency
The description should include an organizational chart showing how the EMS QI Program is integrated into the organization.

Statement of EMS QI Program goals and objectives
Describe processes used in conducting quality improvement activities.
Were goals and objectives met?

List and define indicators utilized during the reporting year

- Define state and local indicators
- Define provider specific indicators
- Define methods to retrieve data from receiving hospitals regarding patient diagnoses and disposition
- Audit critical skills
- Identify issues for further system consideration
- Identify trending issues
- Create improvement action plans (what was done and what needs to be done)
- Describe issues that were resolved
- List opportunities for improvement and plans for next review cycle
- Describe continuing education and skill training provided as a result of Performance Improvement Plans
- Describe any revision of in-house policies
- Report to constituent groups
- Describe next year's work plan based on the results of the reporting year's indicator review

Sample Work Plan Template

Indicators Monitored	Key Findings/Priority Issues Identified	Improvement Action Plan Plans for Further Action	Were Goals Met? Is Follow-Up Needed?