

EVALUATION OF EMERGENCY MEDICAL SERVICES

STRATEGIC MANAGEMENT OF CHANGE

BY: William M. Cody, Battalion Chief
Los Angeles City Fire Department
Los Angeles, California

An applied research project submitted to the National Fire Academy
as part of the Executive Fire Officer Program

October 2000

ABSTRACT

This applied research project evaluated existing performance evaluation models for fire based Emergency Medical Services (EMS) programs for possible implementation by the Los Angeles Fire Department (LAFD). The problem was that the LAFD did not have a comprehensive system for evaluating the performance of its EMS program. The purpose of the research was to evaluate whether or not a nationally and/or internationally recognized comprehensive performance evaluation model was available for implementation by the LAFD.

This research project employed the evaluative research methodology to answer the following questions:

1. Were there any national and/or international performance evaluation models that pertain to fire-based EMS programs?
2. What were the potential benefits and/or limitations of applying an existing performance evaluation model to the LAFD EMS program?
3. What factors would prevent the LAFD from implementing an existing performance evaluation model for its EMS program?
4. What performance evaluation models were other fire-based EMS providers using?

The principle procedures employed in this research project were: a review of the literature; personal interviews; searches of related areas via the Internet; an analysis of federal, state, and local laws, regulations, policies, and standards; and an analysis of LAFD EMS performance data.

The major findings of this research were that there were four nationally and/or internationally recognized comprehensive evaluation models that could be implemented by the LAFD. Each of the four models used a self-assessment and third party review to evaluate the

applicant agency. The criteria for both accreditation and quality award include substantially similar elements. The primary benefits of either accreditation or quality award were a comprehensive evaluation of the system against well-defined criteria and an objective third-party review. The obstacles to implementation included funding and support for the process from both internal and external sources. Of the four models evaluated by this research project, the majority of the fire-service agencies across the country have chosen to use the Commission on Fire Accreditation (CFAI) self-assessment and accreditation model as the basis for their quality improvement processes.

The recommendations resulting from this research were that the LAFD should:

1. Apply for accreditation through the Commission of Fire Accreditation International (CFAI) and use the self-assessment and accreditation process to: overhaul its EMS policies and procedures; bring the Department's EMS program into compliance with the community standard of care; and seek to perpetuate the process through continuous accreditation.
2. Use the National Academy of Emergency Medical Dispatch (NAEMD) program to: overhaul its dispatch policies and procedures; bring the Operations Control Dispatch Section (OCDS) into compliance with the community standard of care; and seek to perpetuate the process through accreditation as a center of excellence (ACE).
3. Use the four phases of the National Fire Academy (NFA) Change Management Model (CMM) to facilitate the implementation of the self-assessment and accreditation process.

4. Establish an executive level accreditation coalition that reports directly to the Fire Chief and has as their primary responsibility management of the self-assessment and accreditation processes.
5. Seek the political support and funding needed to pursue accreditation and to implement the recommendations that are developed as a result of the self-assessment and peer review evaluation process.

TABLE OF CONTENTS

ABSTRACT	2
TABLE OF CONTENTS	5
INTRODUCTION	6
BACKGROUND AND SIGNIFICANCE	7
LITERATURE REVIEW	12
PROCEDURES	20
RESULTS	25
DISCUSSION	28
RECOMMENDATIONS	29
REFERENCES	31
APPENDIX A (Non-Contact/Non-Transport Chart)	33
APPENDIX B (Standing Field Treatment Protocol Chart)	34
APPENDIX C (CFAI Accreditation by State)	35
APPENDIX D (Comparison of Evaluation Categories/Criteria)	36

INTRODUCTION

The Los Angeles Fire Department (LAFD) has used paramedic personnel as dedicated Quality Assurance/Improvement auditors/analysts to evaluate the performance of its Emergency Medical Services (EMS) program since 1989 when it established a Dispatch Quality Assurance Unit (DQAU) to monitor dispatcher compliance with Medical Priority Dispatch System (MPDS) protocols. In 1990, the quality assurance program was expanded to include concurrent and retrospective audits of EMS field operations. Despite the fact that the LAFD has had a formal Quality Assurance/Quality Improvement (QA/QI) program for over 10 years, management is still unable to evaluate the effectiveness of its EMS program.

The problem that prompted this research project is that the LAFD does not have a comprehensive system to evaluate the components of its EMS program. The purpose of the research was to evaluate whether or not a nationally and/or internationally recognized comprehensive performance evaluation model is available for implementation by the LAFD. The evaluative research method was used to answer the following research questions:

1. Are there any national and/or international performance evaluation models that pertain to fire-based EMS programs?
2. What are the potential benefits and/or limitations of applying an existing performance evaluation model to the LAFD EMS program?
3. What factors would prevent the LAFD from implementing an existing performance evaluation model for its EMS program?
4. What performance evaluation models are other fire-based EMS providers using?

BACKGROUND AND SIGNIFICANCE

“The fire service has evolved from an organization whose single responsibility was fire suppression to an emergency services organization that provides fire suppression, fire prevention, fire code enforcement, fire investigation, fire inspection, emergency medical services (basic and advanced life support), hazardous materials mitigation, and specialized rescue operations (urban search and rescue, wilderness search and rescue, high-angle rescue, confined space rescue, and trench collapse rescue)” (Strickland, 1995, p.311).

“Fire-based EMS systems were created to meet the immediate needs of the acutely ill and injured for stabilization and transportation. To provide the best care, EMS systems must be evaluated and modified to meet the changing needs of the community served. Evaluation is the essential process of assessing the quality and effects of EMS so that strategies for continuous improvement can be designed and implemented. There are several approaches to this evaluation component, all having quality as the focus; quality assurance (QA), quality control (QC), quality improvement (QI), continuous quality improvement (CQI), and total quality management (TQM)” (International Association of Fire Fighters [IAFF], 1997, p.3&9).

According to the American College of Emergency Physicians (ACEP), “Quality improvement in EMS is the sum of all activities undertaken within an EMS system to provide confidence to the patients treated in that system that the emergency services available maintain the standards of excellence established for emergency care by the individuals responsible for that EMS system and continually strive to become even better” (1992, p.16).

The Los Angeles Fire Department first established a formal QA program in 1989. The program was directed at dispatcher compliance with the newly adopted Medical Priority Dispatch System (MPDS). The decision to adopt a medical dispatch protocol with scripted

questions followed a highly publicized system failure in 1987, which resulted in the death of a 42-year old woman. The victim's family members had made three calls to 9-1-1, during which they described her as complaining about feeling faint and having chest problems. The dispatchers failed to ask basic medical questions and twice refused to send an ambulance. When paramedics finally arrived on-scene nearly a half-hour later, Ziporah Lam was in cardiac arrest (Lopez and Connell, 2000).

The Department hired, Jeff Clawson, MD, a nationally recognized expert in the area of medical dispatching, to bring his MPDS to Los Angeles. All dispatchers and floor supervisors at the Department's Operation Control Dispatch Section (OCDS) were trained and certified as Emergency Medical Dispatchers (EMDs). The paramedics assigned to the Dispatch Quality Assurance Unit (DQAU) as auditors were trained as both EMDs and EMD instructors.

The original QA program consisted of retrospective audits (case reviews) of EMS dispatches and monthly EMD continuing education for the dispatchers and floor supervisors. The DQAU auditors conducted all of the audits and training sessions. A Medical Dispatch Review Committee (MDRC) with representation from OCD, DQAU, and Fire Department management met periodically with Doctor Clawson to address systems issues.

In 1990, the QA program was expanded to include field operations. The field QA auditors performed concurrent audits on-scene and retrospective audits of patient care reports (PCRs). However, according to Captain Wade Jones, a former Field QA Unit (FQAU) Commander, "the peer review process was largely unsuccessful because the auditors repeatedly failed to report policy and protocol violations to their supervisors" (personal communication, September 11, 2000).

The LAFD's quality programs have undergone a variety of changes over the years, including a symbolic name change from Quality Assurance to Quality Improvement in 1995. However, the rank and file EMDs, EMTs, and paramedics have never embraced the QA/QI program because in their experience it has been punitive rather than progressive. Inspections (concurrent and retrospective audits) have led to corrective/disciplinary action at the level of the individual practitioner rather than system improvements and enhancements. This concept has been continually reinforced through the use of counseling and the issuing of Personnel Notices and Reprimands.

Although the LAFD has allocated significant resources to its quality improvement programs, numerous internal reports have identified persistent compliance problems with both dispatch and field treatment protocols. On Tuesday, September 5, 2000, the front-page headline in the *Los Angeles Times* proclaimed "Fire Department Dispatching in Dire Need of Revision." The story by Robert Lopez and Rich Connell cites an internal LAFD report that describes how "breakdowns in the way the Los Angeles Fire Department dispatches emergency incidents have been tied to at least three recent cases in which patients died" (2000, p.1).

In an effort to correct the problems, the Fire Chief approved a program that will provide the dispatchers with "new training and an interactive computer program requiring dispatchers to ask standardized questions in a specific order" (Lopez and Connell, p.2). The goal of the new program is to achieve Center of Excellence Accreditation (ACE) through the National/International Academy of Emergency Medical Dispatch (NAEMD). "To get there, dispatchers will have to ask the scripted questions more than 90% of the time. Los Angeles Firefighters, on average, do not ask key questions in 48% of their calls, according to several Fire Department studies" (Lopez and Connell, p.2).

Other internal audits have identified similar compliance problems with the Standing Field Treatment Protocols (SFTPs) and transportation policies used by paramedics and EMTs to treat patients in the field. The Quality Improvement Section (QIS) audits of “Non-Contact/Non-Transport” incidents for January, February, and March 1999 (Appendix A) revealed a significant percentage of documentation errors and outright violations of the Los Angeles County EMS Agency Base Hospital Contact and Transport policy (DHS, 1998, Reference #808), by both paramedics and EMTs. The majority of violations were attributable to improper documentation of patient assessments, vital signs, and refusals of transport.

The QIS audits of SFTP incidents for the same time period (Appendix B) showed an unacceptably high rate of deviations from established treatment protocols. In a significant percentage of SFTP incidents the paramedics failed to document the protocol used to treat the patient, administered medications not contained in the protocol, and/or did not contact the base hospital as required. Each of these instances constitutes operating outside of medical control (DHS, 1998, Health and Safety Code, 1798.200) and exposes the City, the Department, and the members to enormous liability.

The confidence of the medical community in the LAFD’s ability to provide emergency services that meet or exceed the established standards has eroded to the point that Virginia Hastings, Director of the Los Angeles County EMS Agency, has been forced to withhold her agency’s approval for a controversial staffing trial program proposed by the Fire Chief until the EMS Agency can complete an audit of the LAFD dispatch system (personal communication, September 13, 2000).

The potential liability that exists from the failures to comply with established policies, procedures, and protocols in both field and dispatch operations clearly speaks to the need for an

overhaul of the LAFD's EMS system. For the Department to correct the performance problems and restore the confidence of the medical community, the elected and appointed officials, and the citizens, it will need to embrace a process that clearly demonstrates its commitment to the delivery of quality patient care.

Performance in every area of the system needs to be evaluated and reported, a systemic improvement plan must be developed, and funding must be identified to implement the recommendations of the study. It is likely that because of the publicity associated with the problems, it may require an objective third party with the status of a blue ribbon committee, an accreditation review team, or a high priced consultant to perform the evaluation of the system.

Implementing changes of the magnitude needed to correct the systemic problems identified in this research will require careful analysis, planning, implementation, and evaluation in order to institutionalize the new processes and desired behaviors. The Change Management Model (CMM) that is used in the National Fire Academy (NFA) Strategic Management of Change (SMOC) course "is a tool that provides direction both for managing change thrust upon you and for seeking opportunities through change" (1996, p.2-3). Arleen Heiss, a senior manager with Ernst and Young, asks managers to consider "How great a change are they really undertaking and are both the organizational leadership and workforce prepared to undertake this level of change? What is needed is a framework for developing a comprehensive, yet pragmatic portfolio of improvement initiatives that align the organization's improvement objectives (1993, p.58). The CMM like the accreditation/award processes involves a clear progression of steps and tasks required to lead and facilitate change within an organization.

LITERATURE REVIEW

The historical information regarding EMS in the Los Angeles Fire Department was derived from a review of unpublished internal documents. The other literature reviewed for this research consisted of newspapers, fire and EMS journals and books, general management and supervision texts, along with standards, regulations, and policies published by federal, state, and local agencies, the International Association of Fire Fighters (IAFF), the National Academy of EMD, and the commissions on accreditation of fire and ambulance services.

The American College of Emergency Physicians (ACEP) suggests that “to effectively manage a program of continuous quality improvement (CQI), an EMS system must establish minimum standards of performance for the many varied aspects of its operation. Whether the focus of the QI effort is retrospective or concurrent, structure, process, or outcome, it must always be considered a dynamic process. The findings of any review need to be properly placed within the context of the process and then managed. Once a problem is delineated, a standard not met, regardless of how it occurs, an effort must be made to elaborate one or more causes for the problem. Once elaborated, the effort must be directed toward fixing the problem or finding workable solutions within the constraints of the systems resources (personnel, equipment, financial), its constraints (topographic, bureaucratic, financial), its medical support (physician, hospital), and its citizen’s expectations, or by changing the system’s constraints” (1992, p.7-8).

Are there any national and/or international performance evaluation models that pertain to fire-based EMS programs?

At the Federal level, “The Emergency Medical Services Act of 1973 defined EMS as a system that provides for the arrangement of personnel, facilities, and equipment for the effective and coordinated delivery of health care services under emergency conditions. The EMS Act

defined the prehospital components of an EMS system to consist of: manpower, training, communications, transportation, access to care, consumer participation, public safety agencies, standardized record keeping, public information and education, systems review and evaluation, disaster planning and mutual aid” (IAFF, 1999, p.39 &40).

A variety of organizations have established voluntary standards to define quality in fire and EMS systems. “Standards have been developed for virtually every component of EMS systems including personnel physical requirements, training, vehicle response time, equipment/supplies, vehicle maintenance, and patient care” (International Association of Fire Fighters [IAFF], 1999, p.41).

“In 1989, the National Association of EMS Physicians (NAEMSP) published its position paper on emergency medical dispatching. The following year the American Society for Testing and Materials (ASTM) set forth the “Standard Practice of Emergency Medical Dispatch” in the Annual Book of ASTM Standards” (Clawson, 1998, p.557).

The Commission on Accreditation of Ambulance Services (CAAS), a collaborative project of the American Ambulance Association and a cross section of EMS organizations, including fire chiefs, physicians, nurses and state EMS directors published their “Gold Standard” for ambulance service accreditation in 1991 (Page, 1991, p.6).

The National Fire Protection Association (NFPA) has published a series of standards on fire service professional qualifications, accreditation, and certification systems. “The intent of performance standards is to evaluate an individual regardless of his education, training, and experience” (Strickland, 1995, p.313).

The National Highway Traffic Safety Administration (NHTSA) in its *Leadership Guide to Quality Improvement for Emergency Medical Services Systems* advocates the use of the

“Malcolm Baldrige Quality Program as the model to guide an organization’s QI efforts and to evaluate progress. The Baldrige Award was established in 1987 through Federal legislation as a way to: 1) promote awareness of the importance of quality improvement; 2) recognize organizations that make substantial improvement in products, services and performance; and 3) foster inter-organizational information sharing on best practices. The Baldrige Award launched a special initiative in 1994 to extend the program to the realm of health care” (1997, p.2).

The Commission on Fire Accreditation International (CFAI), which started as a joint project of the International Association of Fire Chiefs (IAFC) and the International City/County Manager Association (ICMA), contends that while these “standards are extremely valuable for the purpose for which they were created, the time has come for the fire service to elevate its level of performance and professionalism by creating a process by which citizens, elected and appointed officials, and fire and emergency service personnel can assess all the activities and programs relative to modern Fire/EMS service, this to determine when the organization has achieved an appropriate level of performance and efficiency as an organization” (1999, p. 1-1). Their recommendation is the self-assessment and accreditation process.

The IAFF in its publication *Emergency Medical Services - A Guidebook for Fire-Based Systems*, describes in detail the important attributes of fire-based EMS systems and provides “a standard approach to assessing local needs and meeting those needs with specific service elements” (1999, p.25). The IAFF also issues a challenge to the fire service to “. . . evaluate our role and the possible need for change in the context of a rapidly evolving medical care system” (1997, p. forward). The guidebook explains that “In EMS systems, CQI demands an integrated approach to quality, involvement of the entire organization, empowerment of the front-line

personnel, and commitment of management. Regrettably, many CQI/TQM programs equate QA activities with disciplining providers rather than evaluating system issues” (1999, p.40-41).

What are the potential benefits and/or limitations of applying an existing performance evaluation model to the LAFD EMS program?

“The major advantage of having an accredited certification system is national recognition. Another advantage is that it standardizes a defined performance level(s) within the emergency services. National certification also offers to fire chiefs opportunities for increased public awareness, exposure, and good community relations” (Strickland, 1995, p. 322).

NHTSA encourages “EMS leaders to integrate continuous quality improvement practices into EMS operations to the extent that those practices become an essential and seamless part of EMS routines” (1997, p.2). Health care organizations that follow the Baldrige program have the option of asking for an external review but it is not a requirement. Most organizations report benefits simply by applying the Baldrige guidelines and recommendations. Some of the specific areas of improvement identified in the NHTSA report include service and patient care delivery; economic efficiency and/or profitability; patient and community satisfaction and loyalty; and health outcomes (1997, p.3).

The CFAI makes a strong case for its fire service accreditation program. “Through self assessment, a systematic evaluation can be accomplished to determine what is happening within an organization and focuses on whether or not the organization is meeting the goals that are commensurate with its responsibility” (1999, p.1-3).

Andrea Walter, Manager of the CFAI, cites the following as benefits of self-assessment and accreditation process:

- Promotes excellence within the fire and emergency services.

- Encourages quality improvement through a continuous self-assessment process.
- Provides assurance to peers and to the public that an organization has defined its missions and objectives and strives to meet them.
- Provides a detailed evaluation of a department and the services it provides to the community.
- Identifies areas of strength and weakness within a department.
- Provides a method or system for addressing deficiencies and building on strong points.
- Assists departments of any size or composition in justifying budget allocation.
- Provides a process for the development of a strategic or master plan for the agency.
- Compliments any local or state-mandated growth management or land development regulation pertaining to fire protection.
- Uses performance indicators that have been correlated and cross-referenced with the Insurance Services Office (ISO) components and with the standards of the Commission on Accreditation of Ambulance Services (CAAS), thus avoiding duplication of effort (1998, p.15-17).

Joe E. Hill, Chief of the Henderson Fire Department, led his department through the accreditation process. In discussing the benefits to his department, he stated that “The accreditation process has provided the Henderson Fire Department with the opportunity to make improvements in several areas. After the initial self-assessment, the Department changed its standard operating procedures (SOPs) to allow for better accounting of the elements of response time. A Standards of Response Coverage document was prepared and implemented. Several items were identified to be incorporated into our new Records Management System to allow for

better analysis of data and decision-making. The need for improved record keeping and data analysis in the area of public education was identified. The implementation of changes to address these needs will result in improved service to our customers as well as increased efficiency. Overall, the process has been a very positive experience for the Henderson Fire Department. It has provided a proactive vehicle for the agency to provide continuous quality improvement and enhance service delivery” (CFAI, 2000).

The Nashville Fire Department was accredited by CFAI on August 26, 1999. Chief Norman “Buck” Dozier explained the benefits to his department in this way: “While going through the self assessment process we realized it was benefiting this department in several ways. It has given us the tools to develop and implement departmental goals, with a vision for the future. It has given us a baseline by which to measure our development. It has also helped to point out our shortcomings. We devised a plan to correct the shortcomings, put that plan into action by initiating it, and completed it with documentation. In one particular situation in our department, this process has given the citizens of Nashville-Davidson County better coverage, as well as quicker response times to their emergency situations. This department believes that the total process will lead us in the right direction to make us an even better department for our citizens” (CFAI, 2000).

The IAFF however remains dubious about the value of voluntary standards and points out that “The voluntary standards . . . have met with little acceptance since they do not carry the force and authority of law and are easily bypassed. Moreover, the criteria set forth within each of these voluntary standards have not been validated as reliable indicators of quality in EMS” (1999, p.41).

What factors would prevent the LAFD from adopting an existing performance evaluation model for its EMS program?

Strickland contends that “The only real disadvantage is cost” (1995, p.322).

“Accreditation status is granted for five years, and annual reports must be filed with the commission verifying maintenance of the accreditation award. Agencies wishing to remain accredited must go through the reaccreditation process and pay a fee. A peer assessment team conducts an off-site and on-site assessment review on the fifth anniversary of the original accreditation award” (Walter, 1998, p.16).

There are substantial fees associated with the CFAI self-assessment and accreditation program. The current fee structure is:

- Registered-Department Fee – \$250/year
- Applicant-Department Fee – \$6,000
- Accreditation-Candidate Fee – travel and expenses for the on-site peer assessment team visits, which typical run approximately \$1000 per team member. On-site peer review teams vary from 4 to 7 members depending on the size and complexity of the organization being evaluated.
- Accredited-Department – \$1200/year (CFAI, 2000)

There is substantial staff-time required to perform the initial self-assessment, develop and compile the required exhibits, and then the annual maintenance and reports. “Experience from other fields shows that integrating QI into an organization or system takes several years” (NHTSA, 1997, p.3). The Culver City Fire Department (CCFD) is the only accredited department in the state of California. The Department has 66 uniformed members that serve a population of approximately 50,000 residents and a daytime population that exceeds 200,000.

Their three fire stations are strategically placed to provide coverage for approximately 5 square miles. Captain Jeff Eastman, the administrative captain and paramedic coordinator, was heavily involved in their self-assessment and accreditation process. He said that it took his Department almost 24 months to complete the self-assessment and one week with the on-site peer assessment (personal communication, September 12, 2000). Several of the agencies listed on the CFAI web site report similar commitments of staff time and resources to complete the assessment process (CFAI, 2000).

John P. Kotter, a professor of leadership at the Harvard Business School, suggests that there are eight reasons why transformation efforts fail:

1. Allowing too much complacency
2. Failing to create a sufficiently powerful guiding coalition
3. Underestimating the power of vision
4. Undercommunicating the vision by a factor of 10 (or 100 or even 1,000)
5. Permitting obstacles to block the new vision
6. Failing to create short-term wins
7. Declaring victory too soon
8. Neglecting to anchor changes firmly in the corporate culture (1996, p.16)

A similar set of issues is addressed within the framework of the NFA's Change Management Model. So in addition to the application of one of the accreditation models or quality award programs, a change management structure and guiding coalition will also be required to successfully manage the improvement process.

What performance evaluation models are other fire-based EMS providers using?

Since the inception of the CFAI program a total of 38 fire departments in 22 states, one Canadian province, and a U.S. Airbase in Iceland have been awarded accreditation by the Commission (CFAI, 2000). An additional 262 agencies in the United States are currently involved in the accreditation process (Appendix C) and over 600 agencies have requested application forms and information (CFAI, 2000).

Sixty EMS agencies are currently accredited by the Commission on Accreditation of Ambulance Services (CAAS, 2000). Of those, only five are fire departments. The Henderson Nevada Fire Department is the only agency that is accredited by both CFAI and CAAS. (CFAI, 2000)

The Sarasota County Fire Department has followed a program modeled after the Malcolm Baldrige National Quality Award to develop their quality programs. The success of their program was acknowledged in 1997, when they were awarded the Florida EMS Provider of the Year Award by the State Department of Health's Bureau of EMS (Taigman, 1998, p.45).

PROCEDURES

This research project employed the evaluative research methodology to identify the elements of an effective EMS evaluation program. The principle procedures employed in this research project were: a review of the literature; personal interviews; searches of related areas via the Internet; an analysis of federal, state, and local laws, regulations, policies, and standards; and an analysis of LAFD EMS performance data.

The research was limited to programs that were specifically geared to either the fire service or health care. The International Standards Organization (ISO) 9000 series standards were not considered or researched due to their broader range of application.

Definition of Terms

Accreditation: A process by which an association or agency elevates and recognizes a program of study or an institution as meeting certain predetermined standards or qualifications. It applies only to institutions or agencies and their programs of study or their services.

ACE: Center of Excellence Accreditation through the National Academy of Emergency Medical Dispatch.

ACEP: American College of Emergency Physicians

Advanced Life Support (ALS): Procedures and techniques used by EMT-P personnel to stabilize critically sick and injured patients who exceed Basic Life Support procedures.

ASTM: American Society for Testing and Materials

Basic Life Support (BLS): Basic noninvasive first-aid procedures used by EMT and First-Responder personnel to stabilize critically sick and injured patients.

California Governor's Quality Award (CGQA): A program administered by the California Center for Quality, Education and Development (CalQED), a non-profit corporation dedicated to helping California organizations produce the best business results in the world.

Certification: A process whereby an individual is tested and evaluated in order to determine his or her mastery of a specific body of knowledge or some portions of a body of knowledge.

Change Management Model (CMM): A systematic progression of behaviors designed to assist senior fire executives who must facilitate and adapt to rapid changes in the delivery of fire and emergency services.

Commission on Accreditation of Ambulance Services (CAAS): An independent Commission established to encourage and promote quality patient care in America's medical transportation system. The process includes a comprehensive self-assessment and an independent outside review of the EMS organization. This independent process provides verification to your Board of Directors, city council, medical community and others that quality care is provided to the community. All ambulance systems are eligible for the three-year accreditation including private, public, fire department and hospital-based.

Commission on Fire Accreditation International CFAI: Established as an independent, non-profit entity in 1996, the commission provides a comprehensive system of fire and emergency service evaluation that can help local governments determine their risks and fire safety needs, evaluate the performance of the organizations involved, and provide for continuous improvement.

Concurrent evaluation: A process designed to assess and ensure quality where actions are observed during an EMS system patient encounter.

Continuous Quality Improvement (CQI): A method of evaluation of services provided, which includes defined standards, evaluation methodology(ies) and utilization of evaluation results for continued system improvement. Such methods may include, but are not limited to, a written plan describing program objectives, organization, scope and mechanisms for overseeing the effectiveness of the program.

DQAU: Dispatch Quality Assurance Unit

Emergency Medical Dispatching (EMD): Reception and management of requests for emergency medical response using approved standardized dispatch protocols or guidelines, and the provision of pre-arrival instructions to callers at the scene of a medical emergency before the arrival of the medical response personnel.

Emergency Medical Services (EMS) System: A comprehensive, coordinated arrangement of health and safety resources that serves to provide timely and effective care to victims of sudden illness and injury.

Emergency Medical Technician I (EMT-I): An individual trained in Basic Life Support according to the standards prescribed by the local, regional, or state EMS agency.

Emergency Medical Technician Paramedic (EMT-P): An EMT-I who has received additional training in Advanced Life Support above that of an EMT-Basic as allowed by applicable state and local laws.

FQAU: Field Quality Assurance Unit

IAFC: International Association of Fire Chiefs

IAFF: International Association of Fire Fighters

ICMA: International City/County Managers Association

ISO: Insurance Services Office grading system

LAFD: Los Angeles Fire Department

Malcolm Baldrige National Quality Award (MBNQA): National award given to companies and businesses in recognition of their achievements in quality. The award is managed by the US Department of Commerce's National Institute of Standards and Technology.

MDRC: Medical Dispatch Review Committee

MPDS: Medical Priority Dispatch System

NAEMD: National/International Academy of Emergency Medical Dispatch

NFA: National Fire Academy

NFPA: National Fire Protection Association

NHTSA: National Highway Traffic Safety Administration

OCDS: Operations Control Dispatch Section

Outcome Standards: The results of the care given to the patient.

PCR: Patient Care Report

Process Standards: The use of EMS System resources and the appropriateness of such utilization.

Professional Designation: A process whereby an individual is evaluated based upon experience, education and related accomplishments and is awarded a designation based upon a third party evaluation.

Prospective evaluation: A process designed to assess and ensure quality where actions are taken prior to an EMS system patient encounter.

Protocol: Written medical standards which define and specify the appropriate treatments that are indicated following a logical sequential evaluation of a chief complaint, specific medical history, and pertinent positive and negative physical findings.

QA: Quality Assurance

QC: Quality Control

QI: Quality Improvement

Retrospective evaluation: A process designed to assess and ensure quality where data are gathered for review after an EMS system patient encounter.

Standardization: A process by which a service is assessed against some fixed standard of performance and quality.

Standing Field Treatment Protocol (SFTP): Written orders and associated policies allowing paramedics to initiate advanced life support procedures without voice contact for medical direction from a physician or mobile intensive care nurse (MICN).

Structure Standards: Address compliance with government mandated resources, such as response vehicles and trained responders, within the EMS system.

TQM: Total Quality Management

RESULTS

The research determined that there are a variety of standards available to the fire service for use in evaluating their programs and services. The key components of each program include a comprehensive self-assessment that requires the organization to: describe what it is doing; analyze the efficiency and effectiveness of their activities as they currently exist; document their organizational structure and processes; develop short range action plan and long term strategic plans; and then submit to an outside third party review.

Answers to Research Questions

Research Question1. Are there any national and/or international performance evaluation models that pertain to fire-based EMS programs? The research determined that there are four nationally and/or internationally recognized comprehensive evaluation models that could be implemented by the LAFD. Each of the four models uses a self-assessment and third party review to evaluate the applicant agency. The criteria for accreditation or award include substantially similar elements (Appendix D). The CFAI self-assessment and accreditation

model, although not limited to EMS operations, is the most directly applicable to the fire service. It is the most comprehensive model in that it addresses all of the management and service delivery components common to modern fire departments. It uses criteria that are cross-referenced to the CAAS model and the ISO grading system. The CAAS model is specific to ambulance operations but is sufficiently comprehensive to be used as a model for fire department EMS operations. The Malcolm Baldrige National Quality Award is targeted at the health care industry in general but NHTSA has developed a guidebook that explains the application of the Baldrige criteria to EMS. The California Governor's Quality Award (CGQA) uses the Baldrige criteria but also employs a tiered system to encourage applicants to start the process. The other applicable program is accreditation as a center of excellence (ACE) through the NAEMD. Although this program is limited to medical dispatch operations, it should be incorporated as a process component under one of the other more comprehensive models.

Research Question 2. What are the potential benefits and/or limitations of applying an existing performance evaluation model to the LAFD EMS program? There are several benefits to pursuing either accreditation or a quality award. The primary benefit is that each of the programs requires a comprehensive self-evaluation to examine every program and service provided by the Department. It requires the Department to describe what it is doing, analyze the efficiency and effectiveness of the activity as it currently exists, and then plan for the future. The documents assembled as a part of the accreditation/award process provide short-term action plans, long-term strategic plans, assist in the budget process, and help to justify departmental programs and services (CFAI, 2000).

One of the major benefits to the LAFD at this time is that "Proof of compliance with the self-assessment manual is determined by an assessment team made up of trained professionals

sent by the commission. The team conducts an on-site review of the agency's policies, procedures, plans, practices, and proof of compliance for each category" (Walter, 1998, p.16). However the most important results are "improved health of EMS patients, improved quality of EMS services, and improved efficiency of resource use" (NHTSA, 1997, p.5).

The criteria for each of the accreditations and/or awards are substantially similar. However, because the Baldrige Award and CGQA are applicable to a wide variety of industries, the LAFD may find it more difficult to use than one of the accreditation models. The other draw back to the Baldrige Award and CGQA is that although they are both very prestigious awards, the process is highly competitive and not every applicant that meets the criteria receives the award. Accreditation on the other hand is awarded to all applicants that satisfactorily meet the established performance criteria.

Research Question 3. What factors would prevent the LAFD from adopting an existing performance evaluation model for its EMS program? "The ideal situation for a community fire service agency involved in the accreditation and self assessment process is having support and involvement from not only the department and its leadership, but also the leadership of the city/county administration" (CFAI, 2000). Marketing the process to all of the constituent groups is perhaps the most significant challenge that the Department would face in implementing any of the models that were evaluated as part of this research. The use of the National Fire Academy (NFA) Change Management Model (CMM) components would be a necessary factor for effective implementation of any self-assessment and accreditation process.

Although there are substantial fees associated with the accreditation process, the fees are not large when you consider that the operating budget of the LAFD was \$360 million in 2000/2001. However, the budget cycle is such that line item funding would not be available for

the project until 2002/2003. It is conceivable that with proper marketing, the Mayor and City Council would make the necessary funds available to the Fire Department for a special project such as accreditation outside of the normal budget process.

Research Question 4. What performance evaluation models are other fire-based EMS providers using? The CFAI self-assessment and accreditation model has been the program of choice for the majority of fire service agencies across the country. The program is a comprehensive systems approach to quality that has proven beneficial to those organizations that have applied the degree of rigor required to successfully achieve accreditation. The other programs although valuable have been adopted by relatively few fire-based EMS providers.

DISCUSSION

Relationships between study results and findings of others.

The study identified that there are a variety of standards and programs currently being used by fire-based EMS providers to drive their CQI processes and that there are commonalities among all of the programs. They all use clearly defined performance criteria and a self-assessment process to answer some basic questions:

- Is the organization effective?
- Are the goals, objectives and mission of the organization being achieved? and
- What are the reasons for the successes and/or failures of the organization?

Each evaluation system also offers the option of an external review of the system by a trained evaluation team.

Organizational implications of results.

The citizens, elected and appointed officials, and the medical community have lost confidence in the LAFD's EMS program. The primary reason for this lack of confidence has been a series of investigative reports that have identified deficiencies in the use of protocols by both dispatchers and field providers. Given the state of the emergency medical services provided by the LAFD, it is essential that the Department embrace improvement processes that are seen as valid, reliable, and credible. The remedy required to rebuild trust will involve the application of a highly visible and highly credible comprehensive change program to reestablish the reputation of the Department as a provider that is concerned about the health and welfare of both the community and its employees. The combination of self-assessment and objective third-party review that are provided by the both the CFAI and CAAS models supply the opportunity for the Department to successfully address the needs of all the constituent groups.

However the CFAI and/or CAAS model should not be used as the sole program for the quality improvement process. The Department should also work towards ACE accreditation for OCD. The draft EMD regulations currently being circulated for public comment by the EMSA will ultimately require the Department to adopt most of the components of the NAEMD program. Adopting the system components of the NAEMD program will address some serious deficiencies at the front end of the process and contribute to the overall CQI goals.

RECOMMENDATIONS

The only truly viable solution for the LAFD at this point is to pursue accreditation. It will require substantial effort from the entire organization to embrace the concepts and processes that will correct the performance deficiencies and restore confidence in the Department's EMS

system. Accreditation is the key to the improvement process and well worth the effort.

“Departments all across the country have discovered the usefulness of the self-assessment process and accreditation model. It has the potential to drastically improve your Department, your services, and your way of thinking into the future” (CFAI, 2000).

Recommendation 1. The LAFD should apply for accreditation through the CFAI and use the self-assessment and accreditation process to overhaul its EMS policies and procedures to the Department’s EMS program into compliance with the community standard of care and seek to perpetuate the process through continuous accreditation.

Recommendation 2. The LAFD should use the NAEMD program to overhaul its dispatch policies and procedures, to bring OCD into compliance with the community standard of care, and seek to perpetuate the process through ACE accreditation as a center of excellence.

Recommendation 3. The LAFD should employ the four phases of the NFA Change Management Model to facilitate the implementation of the self-assessment and accreditation process.

Recommendation 4. The LAFD should establish an executive level accreditation coalition that reports directly to the fire chief and has as their primary responsibility management of the self-assessment and accreditation processes.

Recommendation 5. The LAFD should seek the political support and funding needed to pursue accreditation and to implement the recommendations that are developed as a result of the evaluation process.

REFERENCES

- Bruegman, R.R., & Coleman, R. J. (1997). Self-assessment: safeguarding the future. *Fire Engineering*, 150, (3), 83-86.
- The Center for Quality, Education and Development (CalQED). (1999). *California Governor's Quality Awards Program*. Danville, CA: Author.
- Clawson, J. J. and Dernocoeur, K. B. (1998). *Principles of Emergency Medical Dispatch*. 2nd Ed. Salt Lake City, UT: The National/International Academy of Emergency Medical Dispatch, Inc.
- Commission on Accreditation of Ambulance Services (CAAS). (1997). *Standards for the Accreditation of Ambulance Services*. 5th Printing. Glenview, IL: Author.
- Commission on Accreditation of Ambulance Services (CAAS). (2000). *Excellence Defined* [on line]. <http://www.caas.org>
- Commission on Fire Accreditation International (CFAI). (1999). *An Improvement Model Through Self Assessment*. Fairfax, VA: Author.
- Commission on Fire Accreditation International (CFAI). (2000). *CFAI OnLine* [on line]. <http://www.cfainet.org/WelcometoCFAI.htm>.
- Emergency Medical Services Authority (EMSA). (1998). *Shaping the Future of EMS in California*. Sacramento, CA: Author.
- Heiss, A. M. (1993). Quality as change management. *The Public Manager: The New Bureaucrat*, Fall, 57-59.
- International Association of Firefighters (IAFF), Department of Emergency Medical Services. (1997). *Emergency Medical Services – Adding Value to a Fire-Based EMS System*. Washington, DC: Author.
- International Association of Firefighters (IAFF), Department of Emergency Medical Services. (1999). *Emergency Medical Services – A Guidebook for Fire-Based Systems*. 2nd Ed. (pp. 39-50). Washington, DC: Author.
- Kotter, J. P. (1996). *Leading Change*. Boston, MA: Harvard Business School Press.
- Lopez, R. and Connell, R. (2000, September 5). Fire Department Dispatching in Dire Need of Revision. *Los Angeles Times*, pp. A1, A15.
- Los Angeles County Department of Health Services (DHS). (1998). *Prehospital Care Policy Manual*. Los Angeles, CA: Author.

National Fire Academy (NFA). (1996). *Strategic Management of Change: Student Manual*. Federal Emergency Management Agency (FEMA), United States Fire Administration (USFA). Emmitsburg, MD: Author.

National Highway Traffic Safety Administration (NHTSA). (1997). *A Leadership Guide to Quality Improvement for Emergency Medical Services (EMS) Systems*. United States Department of Transportation (USDOT). Washington, DC: Author.

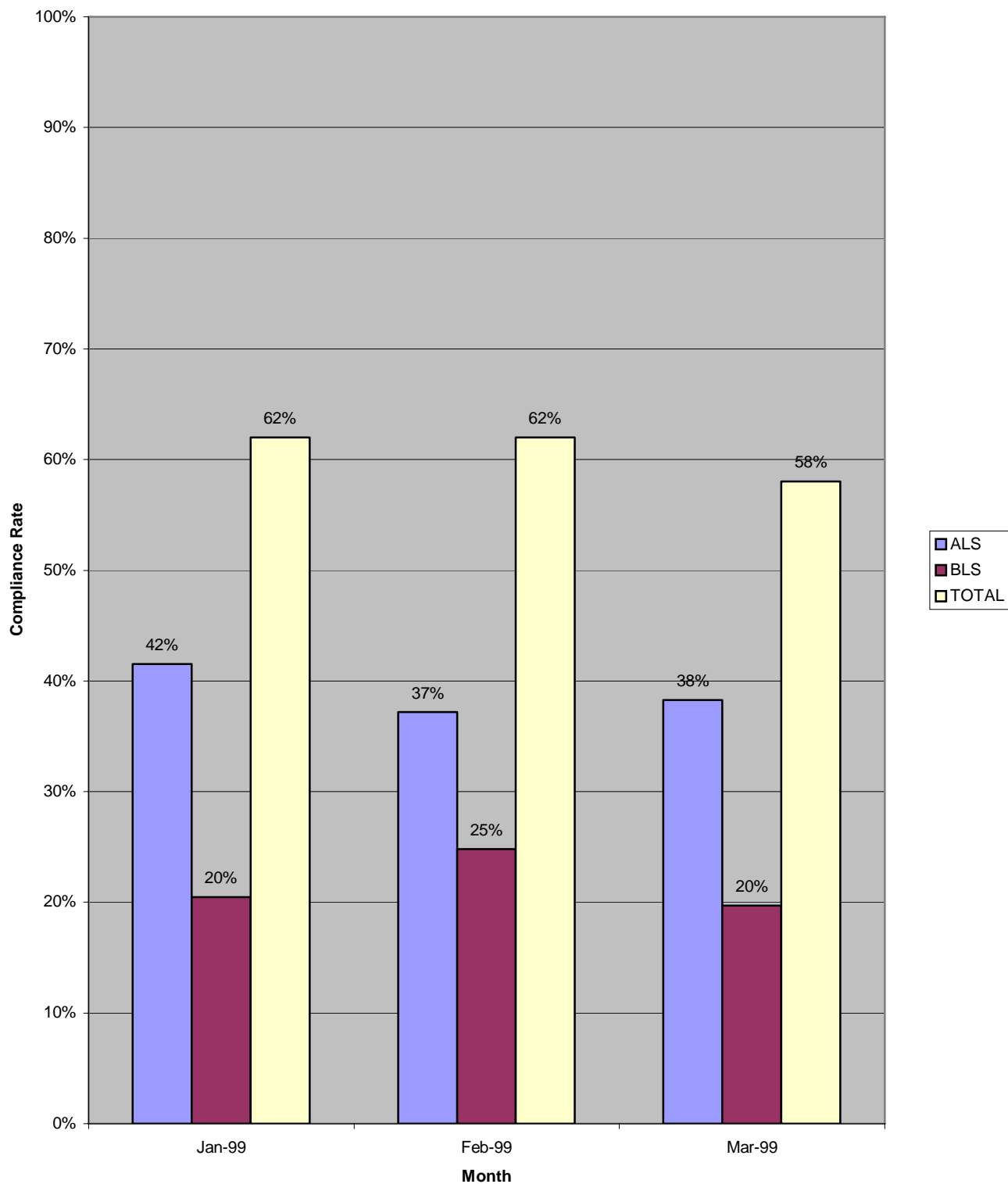
National Highway Transportation Safety Administration (NHTSA). (1999). *EMS Agenda for the Future* [on line]. <http://www.nhtsa.dot.gov/people/injury/ems/agenda/emsman.html>

Page, J. O. (1991). CAAS: a new gold standard. *JEMS*, 16 (10), 6.

Polsky, S. S. (Ed.). (1992). *Continuous Quality Improvement in EMS*. Dallas, TX: American College of Emergency Physicians.

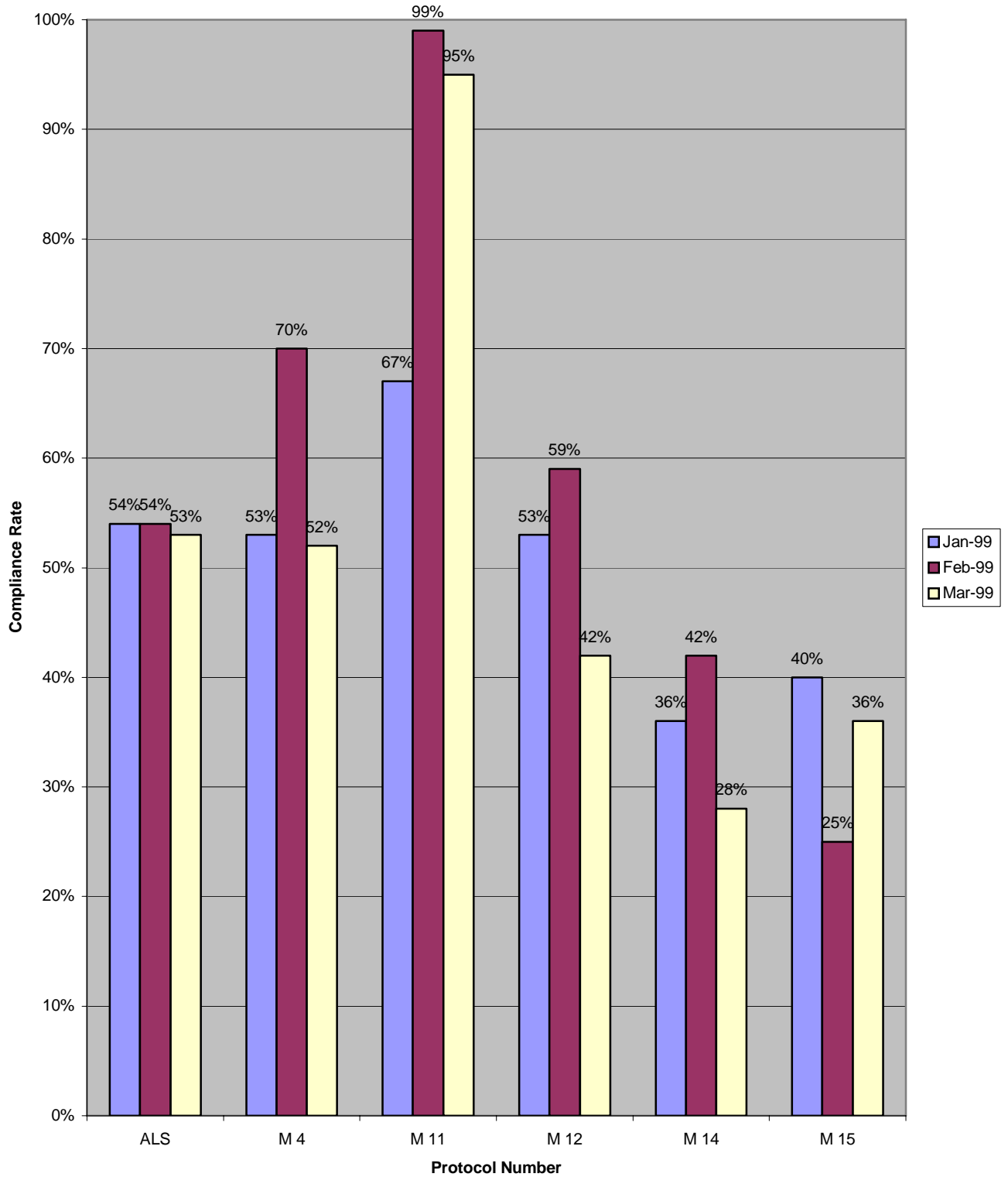
Strickland R. J. (1995). The National Professional Qualification System. In J. R. Bachtler, T. F. Brennan (Eds.) *The Fire Chief's Handbook*, 4th Ed. (pp.311-324). Saddle Brook, NJ: Fire Engineering.

Walter, A. A. (1998). Accreditation: building fire departments through self-assessment. *Public Management*, 80 (2), 14-19.

APPENDIX A**Non-Contact Non-Transport Compliance Data
January - March 1999**

APPENDIX B

Standing Field Treatment Protocol Compliance January - March 1999



APPENDIX C

CFAI ACCREDITATION BY STATE

State	Accredited	In Process	State	Accredited	In Process
Arizona	2	10	Montana	0	0
Alabama	0	3	Nebraska	1	0
Alaska	0	2	Nevada	1	5
Arkansas	0	3	New Hampshire	0	0
California	1	15	New Jersey	0	1
Colorado	1	12	New Mexico	1	2
Connecticut	0	2	New York	0	1
Delaware	0	0	North Carolina	4	11
DC	0	0	North Dakota	0	1
Florida	5	28	Ohio	1	18
Georgia	1	16	Oklahoma	0	2
Hawaii	1	0	Oregon	2	2
Idaho	0	2	Pennsylvania	1	6
Illinois	3	20	Rhode Island	0	0
Indiana	0	3	South Carolina	0	6
Iowa	0	3	South Dakota	0	2
Kansas	0	2	Tennessee	2	4
Kentucky	0	3	Texas	1	10
Louisiana	0	2	Utah	0	2
Maine	0	0	Vermont	0	1
Maryland	2	5	Virginia	1	17
Massachusetts	0	2	Washington	2	13
Michigan	1	8	West Virginia	0	0
Minnesota	1	6	Wisconsin	1	3
Mississippi	0	1	Wyoming	0	2
Missouri	0	5			
SUBTOTAL	18	153		18	109
US TOTAL	36	262			

<http://www.cfainet.org/AgenciesandTheirStatus.htm>

APPENDIX D

COMPARISON OF EVALUATION CATEGORIES/CRITERIA FOR PERFORMANCE EXCELLENCE

	<u>CFAI</u>	<u>CAAS</u>	<u>MBNQA</u>	<u>CGQA</u>
1	Governance & Administration	Organization	Leadership	Leadership
2	Assessment & Planning	Inter-Agency Relations	Strategic Planning	Strategic Planning
3	Goals & Objectives	Management	Focus on Patients, Other Customers, & Market	Customer & Market Focus
4	Financial Resources	Financial Management	Information & Analysis	Information & Analysis
5	Programs	Community Relations & Public Information	Staff Focus	Human Resource Focus
6	Physical Resources	Personnel & the Personnel Process	Process Management	Process Management
7	Human Resources	Clinical Standards	Organizational Performance Results	Business Results
8	Training & Competency	Other Standards of Operation		
9	Essential Resources	Equipment & Facilities		
10	External Systems Relationships	Communications		