A Systems Development Guide for Emergency Medical Services:

A Systematic Approach to Funding and Administration

Emergency Systems
Oklahoma State Department of Health

Oklahoma Cooperative Extension Service
Oklahoma State University

June 2011

A Systems Development Guide for Emergency Medical Services:

A Systematic Approach to Funding and Administration

Study Prepared Jointly by:

Lee Martin, Trauma and Systems Director
Dale Adkerson, EMS Director

Emergency Systems
Oklahoma State Department of Health
Phone: 405-271-4027

and

Cheryl F. St. Clair, Associate State Extension Specialist
Debbie Wedel, Extension Associate

Oklahoma Cooperative Extension Service
Oklahoma State University

Phone: 405-744-6083 or 9824

June 2011

CHAPTER I

Planning the Emergency Medical Services System

Systems Development - A Systematic Approach to Planning Emergency Medical Services Systems

Whenever an emergency medical service (EMS) system is discussed, it is often perceived as being the local ambulance service. However, ambulance service is only the transportation portion of a total EMS system. The EMS system creates a coordinated response to the immediate needs of the emergency patient.

A complete EMS system must include a coordinated working relationship with hospitals, public service agencies, and other providers of health care. Total care from the scene of an accident or the onset of sudden illness, through rehabilitation, and return to normal living should be the goal of EMS planners and implementers.

The EMS system must have strong continuous medical leadership. A qualified physician (Medical Director) is the leader of the EMS team. He/she directs and coordinates all elements of care. "Team care" requires cooperation at every level of the system and should be the goal of every EMS system. EMS system development should remain in the hands of the local populace. There are no hard and fast rules because population, economics, and geography all present unique problems in establishing each individual EMS system. However, if the system is to be of life-saving quality, standards for personnel training, vehicles, manpower, facilities, communications, and continuous quality improvement must be adopted.

An EMS system may be an organization of one ambulance transport service or an EMS system may be a complex organization with a network of ambulance transport services, and/or a network of emergency medical response agencies (EMRAs), and /or a central dispatch, and/or other components. In this document, EMS system, EMS services, EMS providers, and ambulance providers are used to basically indicate an ambulance transport service.

HIPAA Compliance

Public Law 104-191, The Health Insurance Portability and Accountability Act of 1996, commonly known as HIPAA, was published December 28, 2000, and required that providers get *consent* of the patient in order to use the patient's protected health information (PHI) to bill and share that information with other health care providers.

http://www.hhs.gov/ocr/privacy/
In August of 2002, the requirements were changed to only require that patients acknowledge that they have been given *notice* of the organization's privacy policies. However, the required implementation data of April 14, 2003 remained unchanged. Even though consent to use the protected health information is no longer needed, EMS providers must instill in every person in the company (or organization) that the privacy of the patient's health information must be protected and that there must be formal policies, procedures, and training established to assure compliance.

Privacy Task Force

HIPAA clearly sets a national standard for privacy that goes beyond most health care providers' rules. In order to comply with the standard, EMS providers could establish a privacy task force within their agency that has the following responsibilities:

1. Learn the requirements of the rule.
2. Identify the patient information currently collected by the agency, how it is stored, who has access to it, how it is shared, and how it is used.
3. Develop written security standards for that information, including identification of the positions in the organization that have access to each specific piece of information (for example, billing information cannot be accessed by those who do not need it). Design patient privacy standards, patient consent forms, patient authorization forms, and business associate agreements. Designate the privacy official for the organization, and so forth.

4. Develop formal privacy training program for all employees.
5. Develop a compliance program to ensure that the privacy policies are enforced on an ongoing basis.

An EMS provider could break down the privacy requirements as they apply to each phase of the ambulance process where protected health information is collected and communicated. This is a practical approach because it addresses how the privacy provisions must be addressed in a logical fashion. It addresses the relationships with agencies (e.g., dispatch centers, first responders, emergency medical response agencies, mutual aid providers, and receiving hospitals) that share PHI with your agency.

The EMS provider should be able to answer such questions as: Is the 9-1-1 dispatch center a covered entity or a business associate? Does the rule apply to volunteer ambulance services? Is a written business associate agreement needed with hospitals? Can patient information be transmitted over the radio? In addition to the typical situations that use PHI, the EMS provider needs to determine how to deal with the use of PHI in quality assurance, mass casualty situations, etc.

EMS providers need to answer more specific legal questions such as what constitutes "notice" versus "consent" versus "authorization." It must address the definition of personal representatives (people who can sign for the patient) – something very important to ambulance providers. They also must address what information can be shared with other agencies, e.g. the State EMS office, researchers, police law enforcement agencies, the press, etc. Another important consideration is who reviews the patients' rights to see their medical records and/or controls others' access to their medical records.

HIPAA Summary

The privacy and security rules established under HIPAA *require* that ambulance services establish new procedures that affect all phases of the operation. Those that do not establish these new procedures open themselves up to not only losing their rights to bill Medicare, but also to potential civil litigation for violation of patients' privacy rights.

Do You Need an EMS Council and a Privacy Task Force?

These two entities could have the same membership. However, the EMS Council is designed to look at overall organizational needs and the Privacy Task Force is specifically looking at patients' PHI.

EMS Agendas for the Future

During the past 30 years, EMS systems in the United States have experienced explosive development and growth. Yet initiatives to create a system to provide emergency medical care for the nation's population began with limited knowledge about what constituted the most efficient processes for delivering ideal resources to the spectrum of situations encountered by contemporary EMS. The "15 Components of an EMS System" are a part of the genesis of EMS systems we know today. In 1996, a multi-disciplinary group, under the leadership of the National Highway Traffic Safety Administration, expounded on these components and developed the *EMS Agenda for the Future*. Realizing that rural America is unique and requires unique solutions, a group of rural health advocates, along with the National Association of EMS Directors, developed the *Rural/Frontier EMS Agenda for the Future* in 2004 to target national goals to meet the needs of rural/frontier communities.

15 Components of an EMS System

1. Manpower
2. Training
3. Communications
4. Transportation
5. Facilities
6. Access to Critical Area Units
7. Utilization of Public Safety Agencies
8. Consumer Participation
9. Accessibility to Care

10. Transfer of Patients
11. Standard Medical Record Keeping
12. Consumer Information – Public Education
13. Review and Evaluation
14. Disaster Planning
15. Mutual Aid Agreements

EMS systems of the future will be community-based health management systems and will be fully integrated with the overall health care system. A theme running through the *Rural/Frontier EMS Agenda for the Future* is that such EMS integration is not only a reasonable approach to making community health care more seamless and to meeting community health care needs that might not otherwise be met, but that providing a variety of EMS-based community health services may be crucial to the survival and advancement of many rural/frontier EMS agencies. Another related theme is that EMS should not only weave itself into the local health care system but into the fabric of the community itself. Communities can objectively assess and publicly discuss the level and type of EMS care available, consider other options and accompanying costs, and then select a model to subsidize. Where this happens through a well-orchestrated and timely process of informed self-determination, community EMS can be preserved and advanced levels of care can be attained. The EMS will have the ability to identify and modify illness and injury risks, provide acute illness and injury care and follow-up, and contribute to treatment of chronic conditions and community health monitoring. This new entity will be developed from redistribution of existing health care resources and will be integrated with other health care providers and public health and public safety agencies. The EMS will improve community health and result in more appropriate use of acute health care resources. EMS will remain the public's emergency medical safety net.

The Vision

The rural/frontier EMS systems of the future will assure a rapid response with basic and advanced levels of care as appropriate to each emergency, and will serve as a formal community resource for prevention, evaluation, care, triage, referral, and advice. Its foundation will be a dynamic mix of volunteer and paid professionals at all levels, for and determined by its community.

The *EMS Agenda for the Future* provides a vision for pre-hospital EMS. Achieving such a vision will require deliberate action and application of the knowledge gained during the past 30 years of EMS experience. The EMS of the future will be more than merely an emergency transportation service. The EMS Divisions at the state level and at the local EMS District levels are the workhorses of the national *Agenda*. A thorough knowledge of the *Agenda* will assist the local decision-makers to understand the reasoning behind most of the EMS legislation and regulation. If pursued conscientiously, the *Agenda* will be an achievement with great benefits for all of society.

The *Rural/Frontier EMS Agenda for the Future* is built on the foundation of the 1996 *EMS Agenda for the Future*. With one minor change, the *Rural/Frontier EMS Agenda for the Future* also proposes continued development of the following 14 EMS attributes:

1. Integration of Health Services
2. EMS Research
3. Legislation and Regulation
4. System Finance
5. Human Resources
6. Medical Direction/Oversight
7. Education Systems
8. Public Education
9. Prevention
10. Public Access
11. Communication Systems
12. Clinical Care and Transportation Decisions/Resources
13. Information Systems
14. Evaluation

Fulfilling this vision requires the application of significant federal, state, and local resources as well as committed leadership at all levels to address such issues as:

- Staff recruitment and retention
- The role of the volunteer
- Adequate reimbursement and subsidization
- Effective quality improvement
- Appropriate methods of care and transportation in remote, low-volume settings
- Assurance of on-line and off-line medical oversight
- Adequacy of data collection to support evaluation and research
- Adequacy of communications and other infrastructure
- Ability to provide timely public access and deployment of resources to overcome distance and time barriers

Recommendations to Achieve the Goals for the 14 EMS Attributes

Each of the 14 EMS attributes is outlined in detail in each *Agenda* as to where we are, where we want to be, and how to get there. Recommendations to achieve the goals for each attribute are listed below for both *Agendas*. For comparison, the recommendations from the *Rural/Frontier EMS Agenda for the Future* are listed in the left columns and the recommendations from the *EMS Agenda for the Future* are listed in the right columns of the following chart.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
1. Integration of Health Services	1. Integration of Health Services
• Encourage EMS-based community health service program development through the funding of pilots, cataloguing of existing successful practices, exploration of opportunities for expanded EMS scopes of practice, and on-going reimbursement for the provision of such services. • Federal and state incentives should exist for participation in EMS-based health care services and for other forms of EMS integration with the greater health system, public safety services, academic centers, and the community at large. • Establish statewide rural/frontier health care committees which include EMS. • Federal, state and local programs addressing all-hazards planning, and addressing the specific needs of special rural populations, should include EMS as a categorical component. Establish statewide and border-state networks of formal regional EMS mutual aid agreements, including EMS licensee recognition. • The Indian Health Service should integrate tribal EMS-based community health service and Community Health Representative programming and consider the use of both tribal and non-tribal sources of care.	• Expand the role of EMS in public health. • Involve EMS in community health monitoring activities. • Integrate EMS with other health care providers and provider networks. • Incorporate EMS within health care networks' structure to deliver quality care. • Be cognizant of the special needs of the entire population. Incorporate health systems within EMS that address the special needs of all segments of the population.
2. EMS Research	2. EMS Research
• Fund and implement the recommendations of the NHTSA "EMS Research Agenda for the Future" but address the following needs and challenges of rural/frontier EMS systems research: 1) No less than two of the five national EMS research centers (NEMSCRs) named and funded have rural/frontier EMS research missions and qualifications. 2) Both of the additional national centers for the coordination of multi-center research (NCCMCRs) have missions, in part, and a specific percentage of their projects, dedicated to rural/frontier EMS.	• Allocate federal and state funds for major EMS systems research thrust. • Develop information systems that provide linkage between various public safety services and other health care providers. • Develop academic institutional commitments to EMS-related research. • Interpret informed consent rules to allow for clinical and environmental circumstances inherent in conducting credible EMS research. • Develop involvement and/or support of EMS research by all those responsible for EMS structure, processes, and/or outcomes.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
2. EMS Research (Continued) 3) All these centers with rural/frontier EMS research missions coordinate their rural/frontier activities with one another and with other national resources including the National EMSC Data Analysis Resource Center (NEDARC), the agency operating the National EMS Information System (NEMSIS), the rural health research center network, the Rural EMS and Trauma Technical Assistance Center (REMSTTAC), and state EMS offices and offices of rural health. 4) These centers with rural/frontier EMS research missions specifically address the role of EMS-based community health care and prevention, service regionalization, alternative modes of ALS intercept, appropriate local-county-state-federal mixes of rural/frontier EMS system funding, and other models to preserve and develop the BLS/ALS safety net in rural/frontier areas. 5) These centers with rural/frontier EMS research missions address the roles of CAHs, the use of aeromedical and other major systems and technology, the application of clinical/operational practices specific to delayed transport settings, the impact of skills retention on performance, and other clinical/ operational practices relevant to rural/frontier EMS. 6) Availability of research methodology training opportunities is expanded to candidates with Bachelor's and Master's degrees, particularly those with on-going, first-hand involvement in the clinical operations of rural/frontier EMS systems. 7) There is a well-identified set of resources among these centers and other agencies or organizations that offer materials, training and advice in basic research methodology for EMS system participants. These resources are well-communicated through every state and regional EMS system structure to all service providers. These	2. EMS Research (Continued) • Designate EMS as a physician subspecialty, and a subspecialty for other health professions. • Include research related objectives in the education processes of EMS providers and managers. • Enhance the quality of published EMS research. Develop collaborative relationships between EMS systems, medical schools, other academic institutions, and private foundations.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	• **EMS Agenda for the Future**
2. EMS Research (continued) centers pursue bringing researchers and service providers closer together to understand what they stand to gain from collaborating with each other. 8) One or more of these centers is charged with encouraging the formation of state-level EMS research committees, consisting of EMS medical directors, field professionals (volunteer and paid EMTs, Paramedics, and service managers), and researchers. These committees, affiliated with the state EMS office, would consider the need for and methods of research and evaluation projects from both practical application and research perspectives, and promote opportunities for needed research. • Make rural and frontier EMS systems research an eligible category of application for all rural, medicine, and health-related federal grant program offerings. • Existing federally funded rural health research centers, academic departments with rural and EMS interests, rural EMS fellowship programs, and other research-related entities should engage in EMS research. Integrate these entities into the proposed network of rural/frontier EMS research centers. • Encourage non-governmental funding sources, such as foundations, to provide leadership and resources in rural/frontier EMS research efforts (e.g., Robert Wood Johnson). • Make data that are collected through information systems at state and federal levels available for community-based assessment and research, and provide tools to promote community-based research.	
3. Legislation and Regulation • Authorize and fund a restructured Federal Interagency Committee on EMS (FICEMS) to coordinate and formalize the network of existing and new agencies with federal EMS responsibility and provide national leadership. •	3. Legislation and Regulation • Authorize and sufficiently fund a lead federal EMS agency. • Pass and periodically review EMS enabling legislation in all states that supports innovation and integration, and establishes and sufficiently funds an EMS lead agency.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
3. Legislation and Regulation (Continued) • Fund FICEMS adequately to continue the current/planned activities of the agencies it coordinates. • Create within ORHP, and coordinated by FICEMS, a dedicated, ongoing rural/frontier staff and focus. Create a FICEMS advisory board with rural/frontier representation. • Adequately fund the state EMS lead agency to enable it to carry out its designated responsibilities. • Create funding incentives and legislation models to help state EMS lead agencies acquire sufficient legal basis, authority, resources and leadership to broadly develop and implement EMS systems on an ongoing basis and to provide sufficient flexibility to adapt to the unique needs of rural/frontier EMS. • Assure that state EMS lead agency advisory boards are representative of rural/frontier EMS interests. • Create the opportunity for the development of state-level public policy to delineate the roles, support and treatment of EMS volunteers, while fulfilling public expectation on level and type of EMS provided. Give state EMS agencies the flexibility to effectively implement these policies. • The EMS interface between tribal sovereign nation status and state government regulation and coordination of EMS should be addressed by each state and tribal government. An interface between Alaskan Native/American Indian sovereign nations and state government coordination of EMS should be generated by the lead federal agency in collaboration with appropriate tribal leadership agencies. The EMS interface among local, county and state governments should be similarly addressed where conflicts have existed.	3. Legislation and Regulation (Continued) • Enhance the abilities of state EMS lead agencies to provide technical assistance. • Establish and fund the position of State EMS Medical Director in each state. • Authorize state and local EMS lead agencies to act on the public's behalf in cases of threats to the availability of quality EMS to the entire population. • Implement laws that provide protection from liability for EMS field and medical direction personnel when dealing with unusual situations.
4. System Finance • Authorize and appropriate sufficient funds for CMS (Medicare and Medicaid) to reimburse EMS providers based on the per call cost of	4. System Finance • Collaborate with other health care providers and insurers to enhance patient care efficiency.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
4. System Finance (Continued) maintaining full-time response with specific recognition of the increased cost of doing so in rural/frontier areas. Third party payers must also recognize the increased cost of rural/frontier ambulance service. • Implement the following federal reimbursement reforms for emergency and interfacility EMS clinical care and operations: a. Call-components performed by first-response, ALS intercept, ambulance and other EMS response agencies which should be eligible for reimbursement, not duplicated on any given call, should include emergency response, assessment, treatment, triage and transportation or other disposition that may, or may not, involve traditional transportation. b. Retrospective review of medical necessity should not be done for emergency response calls. c. Immediately implement the patient condition codes model from the Negotiated Rule-Making process. d. Remove the "35 mile" restriction on cost-based reimbursement for EMS agencies that are owned and operated by Critical Access Hospitals. e. Employ definitions of "access" and "rural" (and its degrees) in reimbursement which will help to maintain an adequate rural/frontier EMS infrastructure. f. Consider a "critical access ambulance service" definition or other means to assure a minimal level of EMS infrastructure in all geographic areas. g. Assure that interfacility transports that are "appropriate" from an EMTALA perspective are fairly reimbursed and not subjected to retrospective medical necessity determinations. h. Adopt reimbursement practices that encourage patient treatment and recovery at the facility closest to the patient's home that is desired by the patient and capable of providing the care required at the given stage of recovery.	4. System Finance (Continued) • Develop proactive financial relationships between EMS, other health care providers, and health care insurers/provider organizations. • Compensate EMS on the basis of a preparedness-based model, reducing volume-related incentives and realizing the cost of an emergency safety net. • Provide immediate access to EMS for emergency medical conditions. • Address EMS relevant issues within governmental health care finance policy. Commit local, state, and federal attention and funds to continued EMS infrastructure.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	EMS Agenda for the Future
4. System Finance (continued) i. Facilitate the use of subscription services as a part of the overall funding of the EMS safety net infrastructure, in cooperation with state insurance authorities. j. Consider a single fiscal intermediary for all EMS providers, and develop a "successful practice" guide to assist EMS providers in maximizing billing efficiency and accuracy. • Make federal and state domestic preparedness and response funding programs such as those of the Department of Homeland Security, CDC, HRSA, and ODP available explicitly and categorically to EMS systems and providers including private and for-profit agencies. • CMS, MCOs and other third-party payers should fund EMS-based community health care pilot projects and define EMS personnel as reimbursement-eligible care-providers under physician medical oversight for primary care, prevention, and other services they render. • Form, and fund through county, regional, state or federal tax dollars, rural/frontier EMS operational or service-contracting networks in those areas where they provide economies of scale, improved access to EMS care, improved quality and/or increased tax payer value.	
5. Human Resources • Extend federal and state rural and health manpower recruitment and retention planning leadership, technical assistance and funding specifically and categorically to rural/frontier/tribal EMS and implemented through state EMS offices, state offices of rural health or other appropriate entities. • Analyze, at the state EMS agency level, rural/frontier workforce recruitment and retention efforts and develop statewide plans for improvement.	5. Human Resources • Ensure that alterations in expectations of EMS personnel to provide health care services are preceded by adequate preparation. • Adopt the principles of the National EMS Education and Practice Blueprint. • Develop a system for reciprocity of EMS provider credentials. • Develop collaborative relationships between EMS systems and academic institutions. • Conduct EMS occupational health research. Provide a system for critical incident stress management.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
5. Human Resources (Continued) • Establish incentive programs to recruit and retain rural/frontier EMS human resources. • Foster the development of a culture of volunteerism and community service through local schools in partnership with community agencies. • A national EMS service leadership and service management training model should be developed and shared with all state, territorial and tribal governments. This model should include successful practices in EMS volunteer and paid human resources management. • Target occupational safety in EMS for research funding and the development of guidance materials. • The REMSTTAC should maintain and disseminate successful practices in implementing components of the national EMS service leadership and service management training model.	
6. Medical Oversight • Establish statewide networks of EMS medical oversight, including medical directors at the local, regional, and state levels as appropriate in a given state to ensure the provision of EMS medical oversight for every EMS service. a. Implement at least one full time equivalent position of state EMS medical director in every state with a job description as defined by consensus of EMS-related professional medical and state EMS director organizations. b. Compensate EMS medical directors for the EMS medical oversight services which are provided. The level of compensation should be equivalent to the level of compensation the physician would experience (for the equivalent hours) in their normal clinical practice. c. Require that EMS medical directors be physicians, but encourage the use of physician extenders and regionalized arrangements of medical oversight to	6. Medical Direction • Formalize relationships between all EMS systems and medical directors. • Appropriate sufficient resources for EMS medical direction. • Require appropriate credentials for all those who provide on-line medical direction. • Develop EMS as a physician and nurse subspecialty certification. Appoint state EMS medical directors.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	EMS Agenda for the Future
6. Medical Oversight (Continued) increase the EMS medical oversight resources in rural/frontier areas. d. EMS medical directors must actively participate in local, regional, and state EMS program planning and implementation. States must seek out and include rural/frontier medical directors for these purposes. e. Implement EMS based community health programs and services through an interdisciplinary approach involving EMS operational and medical oversight components and primary care professionals. • Assure federal and state funding resources to maintain these statewide networks of medical oversight. a. States must assure funding of the state EMS medical director. b. System/provider reimbursement should be based on the cost for providing EMS services and patient care delivery. The cost associated with trained and qualified EMS medical oversight should be included in this cost basis. c. Federal programs which provide financial incentives to physicians serving in rural areas (underserved and hospital based programs, e.g., Critical Access Hospital program) should require involvement in the local EMS system. If the EMS system is without medical oversight, these physicians should be required to provide this service. d. Federal agencies and professional EMS organizations should provide and maintain technical assistance resources for EMS medical oversight. • Prepare and protect rural/frontier emergency and primary care physicians to serve as EMS medical directors and assure adequate systems of performance improvement to support their activities. a. Legislate, at the state level, peer review protection for EMS system quality management and performance	

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
6. Medical Oversight (Continued) improvement initiatives to exist without fear of discovery and litigation. b. Assure liability coverage for EMS medical oversight to be included in the normal liability coverage for primary care and emergency medicine physicians. This coverage should provide protection for both the clinical and administrative duties associated with EMS medical oversight. c. Review all existing EMS medical oversight courses and establish a Rural/Frontier EMS Medical Directors Course which should be made available and distributed through multiple mechanisms to allow maximum access by EMS medical directors. d. EMS medical oversight must be introduced in medical schools and included in the curriculums of primary care residency programs (both MD and DO degree-granting institutions).	
7. Education Systems • Address, as part of the development and implementation process for the *EMS Education Agenda for the Future: A Systems Approach*, the unique needs of rural/frontier practice and EMS-based community health services through the development of non-traditional education methods focused on: ➢ Vocational training ➢ Maintenance of clinical skills ➢ Affordability • Fund at the state and national levels a Rural/Frontier EMS Education and Training Initiative including: 1) Funding to geographic areas which considers progress in completing community EMS assessments and informed self-determination processes. 2) Funding through state EMS offices where needed, to develop effective systems of training and education program/system quality review and approval. 3) Development of flexible models for the implementation of a national model,	7. Education Systems • Ensure adequacy of EMS education programs. • Update education core content objectives frequently enough so that they reflect patient EMS health care needs. • Incorporate research, quality improvement, and management learning objectives in higher level EMS education. • Commission the development of national core contents to replace EMS program curricula. • Conduct EMS education with medical direction. • Seek accreditation for EMS education programs. • Establish innovative and collaborative relationships between EMS education programs and academic institutions. • Recognize EMS education as an academic achievement. • Develop bridging and transition programs. • Include EMS-related objectives in all health professions' education.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
7. Education Systems (continued) including certificate and college-based programs, for providing basic, intermediate, and advanced EMS training and continuing education to rural/frontier areas and its implementation through state EMS offices. a. Development of this model should include strong consideration of the EMS education dissemination mechanisms, policies and procedures established by successful education programs and consortia. b. Recognition within the model that EMS education will be provider-need specific, conducted with varied teaching techniques emphasizing hands-on training and, where appropriate, distance learning, to assist the transfer of learning and retention of essential skills and knowledge so as to provide state-of-the-art rural emergency care. c. Recognition within the model that educational processes should include the evaluation of resources (e.g., EMS system, health care, public safety) and needs (e.g., for cultural competence) at a local level to encourage an integrated community-based approach to EMS education. d. Recognition within the model that training and education should be driven by health risks of the local population and time-sensitive access to definitive care (e.g., mental health, trauma, and stroke). e. Emphasis within this model on integration of EMS within the health care system, EMS-based community health service opportunities and program development, and the use of local health service resources as clinical and practical skills development settings. f. Emphasis within the national model on the adult, non-traditional student.	

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
7. Education Systems (continued) 4) Development of a national model to enhance career mobility within EMS practice levels, and between EMS and other health professions, to enhance the ability of rural/frontier areas to retain health workers who wish to gain new skills or advance or change health careers. 5) Emphasizing optimal interdisciplinary care of the ill or injured patient, including complex event management such as cardiac arrest and multiple casualty incidents. 6) Subsidization of training courses and continuing education programs and the instructor, equipment supply, and technical assistance infrastructure necessary to make them accessible to rural/frontier areas. 7) The use of interoperable systems of telemedicine and distance learning to improve the accessibility of training courses, effective quality improvement, and continuing education programs. 8) Incentives to increase the involvement of university medical centers and area health education centers to provide outreach educational programs to rural and frontier areas. 9) Recognition of the need for flexible scheduling to accommodate the lifestyle realities of rural volunteers. 10) Improved rural/frontier accessibility to training programs in emergency medical dispatch, critical incident stress management, and occupational safety training, as well as continuing education programs with curriculum content geared to rural/frontier application as appropriate. 11) Improved rural/frontier accessibility to a training program for service managers which includes EMS leadership, public and elected official advocacy, public education, grant-writing, data collection, research, governing board management,	

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
7. Education Systems (Continued) and volunteer management among other topics. 12) Encouraging the development of realistic, dynamic patient simulators and mannequins for case-based and psychomotor skill training and critical-decision making improvement. Support for the development of patient simulator outreach programs. 13) Development of state/regional stockpiling, and sharing of expensive training devices such as mannequins and patient simulators. 14) Ongoing assessment by rural/frontier EMS agencies and local hospitals of their resources and needs, and searching for common educational opportunities.	
8. Public Information, Education and Relations • Develop a national template for community EMS system assessment and informed self-determination processes to help communities determine and be accountable for their own EMS type, level and investment. • Fund processes for community EMS system assessment and informed self-determination. Consider regional and statewide resources (e.g., aeromedical services) in implementing these processes. • Federal and state EMS agencies, in partnership with public health agencies and national organizations, should continue to develop and distribute data-driven public information resources to local EMS providers which are coordinated with national campaigns but can be tailored for local use and cultural considerations. Develop materials which target the potential community volunteer pool, highlighting the educational and other benefits to volunteers and the benefits to businesses that support volunteers.	8. Public Education • Acknowledge public education as a critical activity for EMS. • Collaborate with other community resources and agencies to determine public education needs. • Engage in continuous public education programs. • Educate the public as consumers. • Explore new techniques and technologies for implementing public education. Evaluate public education initiatives

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
9. Prevention • Make prevention one of the EMS-based community health service roles of adequately staffed rural/frontier EMS provider agencies. • Among local, state, federal and national EMS and public health agencies (and other agencies with prevention roles), cooperatively develop and fund community health advocacy roles and prevention programs for rural/frontier EMS personnel that are mutually beneficial. • Federal agencies and national organizations with prevention roles should channel existing programs through state EMS agencies to local EMS provider agencies. • Provider agency policy/procedures and innovative incentives, EMS curricula, and accreditation and other standards target EMS provider health, safety and prevention.	9. Prevention Collaborate with community agencies and health care providers with expertise and interest in illness and injury prevention. • Support the Safe Communities concept. • Advocate for legislation that potentially results in injury and illness prevention. • Develop and maintain a prevention oriented atmosphere within EMS systems. • Include the principles of prevention and its role in improving community health as part of EMS education core contents. Improve the ability of EMS to document injury and illness circumstances.
10. Public Access • Assure telephonic or other access to completed Enhanced 9-1-1 (i.e. including accurate physical addressing) and Wireless Enhanced 9-1-1 (i.e. with geolocation of the calling device) through effective federal and state programs, mandates, and funding. a. State EMS offices should consider a patient-centered, medical leadership initiative to encourage E-9-1-1 and WE-9-1-1 system completion where other approaches have failed. b. Federal funding for state and local public safety communications development should consider progress toward E-9-1-1 and WE-9-1-1 systems completion. • Public Safety Answering Points should manage the 9-1-1 call system efficiently and effectively without redundancy (except as created for back-up protection), and assure a coordinated response across traditional, geographical, and jurisdictional boundaries. • Integrate Automatic Crash Notification (and other Intelligent Transportation System and Department of Defense technology) and health event advice lines into the process of	10. Public Access • Implement 9-1-1 nationwide. • Provide emergency telephone service for those who cannot otherwise afford routine telephone services. • Ensure that all calls to a Public Safety Answering Point (PSAP), regardless of their origins, are automatically accompanied by unique location-identifying information. • Develop uniform cellular 9-1-1 service that reliably routes calls to the appropriate PSAP. • Evaluate and employ technologies that attenuate potential barriers to EMS access. • Enhance the ability of EMS systems to triage calls and provide resource allocation that is tailored to patient's needs.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	EMS Agenda for the Future
10. Public Access (Continued) EMS public access and EMS resource deployment. • Provide formal Emergency Medical Dispatch to every caller seeking EMS. • States should establish formal plans for roadside call-box, satellite, and/or cellular networks to effectively cover all rural/frontier primary roads. • State EMS offices should assure appropriate integration of AEDs and other public access emergency medical device into EMS systems. • As home health monitoring devices and automated remote diagnostic technology develop, EMS leaders should pursue roles for EMS in their use to further EMS-based community health services.	
11. Communication Systems • Conduct comprehensive state EMS communications needs assessments upon which to base federal, state, and local investment in communications infrastructure improvement. • The Universal Service Program fund, Federal Communications Commission, frequency allocation and other national public safety communications organizations and agencies should work to assure that rural/frontier EMS communications are enhanced. • Rededicate radio spectrum to EMS and other public safety use. • Explore EMS applications of innovative communications and resource management technologies. Encourage federal and state agencies to provide pilot funding and access to their agencies' technology developers and resources for this purpose. • EMS leaders should continue to develop ongoing paths of communication with state and federal telecommunications interoperability and Intelligent Transportation Systems industry planning entities.	11. Communication Systems • Assess the effectiveness of various personnel and resource attributes for EMS dispatching. • Receive all calls for EMS using personnel with the requisite combination of education, experience, and resources to optimally query the caller, make determination of the most appropriate resources to be mobilized, and implement an effective course of action. • Promulgate and update standards for EMS dispatching. • Develop cooperative ventures between communications centers and health providers to integrate communications processes and enable rapid patient-related information exchange. • Determine the benefits of real-time patient data transfer. • Appropriate federal, state, and regional funds to further develop and update geographically integrated and functionally-based EMS communications networks. • Facilitate exploration of potential uses of advancing communications technology by EMS. Collaborate with private interests to effect shared purchasing of communication technology.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future

12. Clinical Care and Transportation Decisions/Resources

- The national model for community EMS system assessment and informed self-determination (recommended in the section on Public Information, Education and Relations) should include systems and sources of local medical transportation.
- Define and require a statewide minimum type and level of EMS to be provided to all communities including equipment and clinical care standards. Fund the services which demonstrate a reasonable inability to comply with minimum standards to enable compliance. Community EMS system assessments, and CMS and third-party payers, should utilize these state standards.
- Plan, integrate and regulate, at the state level, aeromedical, critical care transport, and other statewide or regionwide systems of specialty care and transportation. Consider the evolving role of telehealth resources and their application to EMS patient management and medical oversight.
- Improve community access to health care and advanced levels of EMS by creating mechanisms for EMS personnel to participate in EMS-based community health services, non-EMS personnel to participate in EMS care, and by exploring and integrating new roles and scopes of practice for all available providers.
- Create a statewide policy governing the use of controlled substances, devices, and procedures in rural/frontier settings for EMS responders in private vehicles.
- Facilitate a state-level process, guided by an appropriate multi-disciplinary committee, to ensure inclusive systems of trauma and other time-critical emergency care which define the roles of rural/frontier hospitals. Create a guide to assist these system development processes.
- Fund pilot EMS-based community health services, transportation and other alternative ALS delivery methods, and projects to support improved EMS infrastructure in

EMS Agenda for the Future

12. Clinical Care

- Commit to a common definition of what constitutes baseline community EMS care.
- Subject EMS clinical care to ongoing evaluation to determine its impact on patient outcomes.
- Employ new care techniques and technology only after shown to be effective.
- Conduct task analyses to determine appropriate staff configurations during secondary patient transfers.
- Eliminate patient transports as a criterion for compensating EMS systems.
- Establish proactive relationships between EMS and other health care providers.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
12. Clinical Care and Transportation Decisions/Resources (Continued) rural/frontier areas where data demonstrate a particular unmet need.	
13. Information Systems • Fund and implement the National EMS Information System (NEMSIS) to assure smooth, universal data flow from the local through national levels. Facilitate local EMS data collection and information system development. a. Implement EMS information systems to provide for the aggregation of EMS data among systems at the local, regional, state, and national levels. b. Implement and maintain a statewide EMS information system in every state. Maintain data on every EMS event in the state in a manner which is timely and of value to local and state EMS agencies. c. Implement and maintain a local EMS information system at every local EMS service/agency. Maintain data on every EMS event in a manner which is timely and able to drive the quality of the EMS system service and patient care delivery. d. As needed, share costs and resources required to implement and maintain an EMS information system among multiple systems to achieve an economy of scale. e. Reflect the development and sophistication of each EMS system in the implementation of its EMS information system. The complexity of equipment and technology used by the EMS information system should be congruent with personnel, education, training, and capability of the EMS system. f. EMS systems must provide analyzed and descriptive information on the service and patient care delivery which they provide to their EMS personnel, administration, and community. g. Include the importance, need, and use of EMS service delivery and patient care	13. Information Systems • Adopt uniform data elements and definitions and incorporate them into information systems. • Develop mechanisms to generate and transmit data that are valid, reliable, and accurate. • Develop information systems that are able to describe an entire EMS event. • Develop integrated information systems with other health care providers, public safety agencies, and community resources. Provide feedback to those who generate data.

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
13. Information Systems (continued) data in the educational curriculums and continuing educational programs for EMS providers, administrators, and medical directors. h. Assure a NHTSA or lead federal EMS agency mechanism for the support and every three to five year review of the Uniform EMS Prehospital Dataset, the Guide to Performance Measures and other components important to the NEMSIS effort. i. Link/integrate EMS data systems with other relevant health information systems at all levels such as public health surveillance, crash, medical examiner, hospital discharge, and emergency department, including CDC surveillance monitoring systems. j. Provide technical assistance for local EMS provider data system development through federal/state agency and professional EMS organization coordination. k. Encourage multi-system data collection for specific research and performance improvement purposes.	
14. Evaluation • Federal and state funds should be made available to support the development and implementation of state EMS evaluation activities. • Fund the availability of training and toolkits to encourage effective local service/system quality improvement processes. • Assure a mechanism for the on-going support and review of the NHTSA "Guide to Performance Measures" and "Leadership Guide to Quality Improvement for EMS Systems" and encourage their use in services and systems. • Encourage the development of evidence-based competency criteria.	14. Evaluation • Develop valid models for EMS evaluations. • Evaluate EMS effects for multiple medical conditions. • Determine EMS effects for multiple outcome categories. • Determine EMS cost-effectiveness. • Incorporate consumer input in evaluation processes. A full copy of the *EMS Agenda for the Future* is available on the internet at: http://www.ems.gov/pdf/2010/EMSAgendaWeb_7-06-10.pdf

Summary of Recommendations to Achieve the Goals for the 14 EMS Attributes

Rural/Frontier EMS Agenda for the Future	**EMS Agenda for the Future**
14. Evaluation (Continued) • EMS-based community health services pilots and programs should have a physician-supervised evaluation system.	

CHAPTER II

Organization of Emergency Medical Services Systems

Organization of EMS Systems

EMS systems are organized based on level of care, type of operation, and type of ownership. The organization of EMS systems may vary in different states. Each state has legislation that governs the EMS systems in that state. However, the most common organizational definitions are given below.

Level of Care

Typically, the level of care closely resembles the levels of EMT training, as follows:

- Basic
- Intermediate
- Paramedic (ground or air)
- Specialty care

The basic level of care provides *basic life support (BLS) care*; a minimum combination of interacting elements and personnel to provide the most basic level of life support. According to Oklahoma Regulations, under no circumstance during the transport of an ambulance patient shall the attendant be less than a licensed basic emergency medical technician.

In some cases, involving inter-hospital transfer of an ambulance patient(s), a physician, physician assistant (PA), nurse practitioner, respiratory care practitioner, registered nurse, or licensed practical nurse may be required to assist the emergency medical technician because the medical care required exceeds the level of the ambulance service personnel. If this option is used, written physician orders, and/or documentation of orders given via radio or telephone contact with a physician, shall become a part of the ambulance patient run report. The *intermediate level of care (intermediate life support [ILS] care)* requires a more highly trained EMT and provides an additional level of care, above the basic level including intravenous administration and advanced airway support.

Paramedic services require a higher level of training and provide *an advanced level of care [advanced life support [ALS] care)* including cardiac monitor/defibrillator. Paramedic services can be either ground services (ambulance vehicles) or air services (helicopter or fixed-wing aircraft).

A higher level of EMS care is a licensed specialty care service with personnel and equipment for specific and special needs such as neonatal. Each specialty care patient must be attended by at least one currently licensed paramedic. Attending staff may also be physicians, registered nurses, and other health care professionals with specialty care training in the specialty care area needed by the patient.

Type of Operation

EMS systems have many different types of operation. The types of systems in Oklahoma are as follows:

- Paid Fire Department
- Volunteer Fire Department
- Law Enforcement
- Hospital-Based
- Private (not subsidized)
- Private (subsidized)
- Government (not fire or police)
- Volunteer (not fire or police)
- Other

The most common type of operation is an EMS system that is part of a government entity, but not as a part of the fire or police department. The second most common method of organization is under the operation of a fire department, either volunteer or paid. An EMS system can organize as a volunteer operation that is not under a fire or police service. EMS systems can be private ventures and can be either subsidized or not subsidized by the local citizens. Hospital-based services are becoming less common and law enforcement is an available type of operation but is not currently used in Oklahoma.

Some states, as in Oklahoma, have legislation that allows EMS systems to organize as a trust authority with a governing trustee board. This type of operation may allow for specific funding mechanisms under the trust legislation. There

may be other types of operations allowed under individual state laws.

Type of Ownership

EMS systems have many types of ownership. Listed are types of ownership in Oklahoma:

- City
- County
- City/County
- Hospital
- Authority or Board
- Private
- Volunteer
- Other

In rural areas, the majority of EMS systems are owned by cities (towns or municipalities). Some systems are owned by county government; others are owned jointly by city and county governments; and others may be owned by hospitals. If systems are organized as a trust, the authority of the trust or trustee board is the owner of the system.

Special legislation in some states, including Oklahoma, allows for the creation of an EMS special taxation district. EMS special taxation districts must be established through a vote of the citizens and provide a mechanism for funding the district. After a vote passes to establish the EMS district, the EMS district is governed by an EMS board. The EMS district may choose to own the EMS system or to contract for EMS services.

Private entrepreneurs own their own systems and volunteer organizers become the owners of the volunteer systems. Other types of ownership may be utilized in different states.

Organization of Oklahoma EMS Systems

Oklahoma EMS systems by level of care, type of operation, and type of ownership are illustrated in the next three tables. This information was provided by Emergency Systems of the Oklahoma State Department of Health, based on the data received from Oklahoma EMS systems.

Table 1 illustrates the level of care of Oklahoma EMS systems in 2010. Oklahoma has a total of 195 EMS systems. The basic level of care was the most common type of EMS system in Oklahoma with 95 BLS systems or 48.7 percent of the total.

Table 1
Oklahoma EMS Systems
by Level of Care, 2010

Level of Care	Number	Percent
Basic Life Support (BLS)	95	48.7%
Intermediate Life Support (ILS)	34	17.4%
Advanced Life Support (ALS)	49	25.1%
Specialty Care	17	8.7%
Stretcher Aid Vans	0	0.0%
Total	195	100.0%

Source: Emergency Systems, Oklahoma State Department of Health, 2010 data.

Oklahoma EMS systems by type of operation in 2010 are illustrated in **Table 2**. The type of operation with the largest number of EMS systems was government (not fire or police) with 69 services or 35.4 percent of the total. The type of operation with the next largest number of EMS systems was private (not subsidized) with 35 services or 17.9 percent of the total.

Table 2
Oklahoma EMS Systems
by Type of Operation, 2010

Type of Operation	Number	Percent
Government (not fire or police)	69	35.4%
Private (not subsidized)	35	17.9%
Paid Fire Department	26	13.3%
Hospital Based	19	9.7%
Volunteer (not fire or police)	19	9.7%
Private (subsidized)	14	7.2%
Volunteer Fire Department	7	3.6%
Other	6	3.1%
Law Enforcement	0	0%
Total	195	100.0%

Source: Emergency Systems, Oklahoma State Department of Health, 2010 data.

Table 3 shows the EMS systems by type of ownership for Oklahoma in 2010. The type of

ownership with the largest number of EMS systems was city ownership (town or municipality) with 60 EMS systems or 30.8 percent of the total. There were another 55 Oklahoma EMS systems (28.2 percent) that reported ownership by authorities or boards, including special taxation district boards. Another 46 services (23.6 percent) were privately owned.

Table 3
Oklahoma EMS Systems
by Type of Ownership, 2010

Type of Ownership	Number	Percent
City	60	30.8%
Authority or Board	55	28.2%
Private	46	23.6%
Hospital	18	9.2%
Other	8	4.1%
Volunteer	4	2.1%
City/County	2	1.0%
County	2	1.0%
Total	195	100.0%

Source: Emergency Systems, Oklahoma State Department of Health, 2010 data.

CHAPTER III

Basic Level of Support: "Walk Before You Run"

Basic Life Support: "Walk Before You Run"

As in any system, components of an EMS system must work together smoothly. More importantly, people who are involved in planning, developing, and implementing the system must function in a like manner – cooperating with each other – for effective and efficient EMS delivery.

Example BLS System

A basic life support (BLS) system is a minimum combination of interacting components and personnel. The system should include:

- ***Programs to train the citizen(s)*** in emergency care of the sick and injured and to inform the public how to summon an ambulance.
- ***Easy and quick telephone access*** by which the public can obtain aid rapidly within a designated geographical area.
- ***Coordinated dispatch of ambulances*** from the call receiving point on a 24 hour per day basis by dispatchers trained to analyze the severity of medical occurrences.
- ***A dedicated radio network that allows communications*** among ambulances, hospitals, physicians, and other medical and public safety resources.
- ***Ambulance personnel trained in emergency procedures*** who can stabilize the patient at the scene and maintain that stable condition while transporting the patient.
- ***Vehicles designed specifically for transport*** of the critically injured and sudden illness patient ***and adequately equipped*** with life-supporting supplies to sustain the patient while en-route to the hospital.
- ***Physicians*** in charge of all medical operations and ***in control of medical decisions***.

The above points were first made in a Robert Woods Johnson Foundation Special Report on EMS in 1977. After a quarter-century, they still very succinctly sum up the major components necessary for a BLS system.

Components of a BLS EMS System

All of the major components are of prime importance in forming a complete, efficient, quality EMS system. These major components are the building blocks of any EMS system:

- Manpower and Training,
- Transportation,
- Communications,
- Hospital Facilities, and
- Continuous Quality Improvement.

Manpower and Training

Manpower and training are complete, equal, and separate components of an EMS system. Due to their close relationship, however, they have been combined here for descriptive purposes.

EMS skills and knowledge represent a continuum of complexity and risk. As the licensure levels increase, the knowledge required to practice safely, the skill complexity (the difficulty in acquiring and maintaining skill competency), and the potential for harm increase. Communities must assess their needs and the resources they are willing and able to invest in out-of-hospital emergency care.

All EMS life support systems are dependent upon dedicated professionals working to provide quality emergency care 24 hours per day, 365 days per year. A single EMS Director should be responsible for management decisions and operations. An adequate number of licensed personnel are needed to make the system operate efficiently.

First Responder is a generic term used to describe all types of emergency responders, such as law enforcement officials, fire fighters, and medical responders. Emergency Medical Technicians (EMTs) are the type of First Responder used in pre-hospital ambulance operations. EMTs must react quickly to a given medical situation and ensure patients are stable while transporting them to medical facilities.

EMTs usually work in pairs. One EMT drives to a medical care facility, while the other EMT cares for the patient and performs any additional medical care in the ambulance. A dispatcher (or emergency medical dispatcher) communicates with the EMTs regarding the type of incident and location. Using special equipment and training, EMTs are sometimes able to handle the situation on site without any need for the patient to be rushed to a medical facility.

Information was obtained from the U. S. Department of Labor, Bureau of Labor Statistics, for the qualification and training levels associated with EMS personnel as illustrated in the remainder of this section.

http://www.bls.gov/oco/ocos101.htm

From the Bureau of Labor Statistics, several qualification and training levels are associated with EMTs:

- Emergency Medical Responder,
- EMT-Basic (or EMT-1),
- EMT-Intermediate (EMT-2 and -3), and
- EMT Paramedic (EMT-4).

Some states may name the levels differently, but the divisions are essentially the same. The lowest qualification levels allow the Emergency Medical Responder (EMR) to perform basic emergency medical care such as CPR. As qualification level increases, EMRs perform more and more complex medical care on patients. Upon reaching the EMT Paramedic rating, EMRs can use complex medical equipment, administer drugs and perform many other pre-hospital care functions.

Physical strength and mental and emotional stability are prerequisites for a career as an EMR. They are often required to lift a patient, which requires bending and load bearing activity. In addition, they are exposed to unsettling sights and life-or-death situations, which can drain on people's mental well being and emotions. In addition, EMRs work in all outdoor conditions, like rain, sleet and snow.

A license or certification is required in all 50 states to become an EMT; though, requirements may vary state to state. Certification must be renewed periodically by completing education, training, and employment criteria by registration every two years. Some training programs culminate in an associate degree along with EMT certification. Training programs are typically progressive starting with the lowest level of certification and moving up to the highest. Training can be obtained at technology centers (formerly vocational-technical schools) or community and junior colleges.

EMTs may work for any type of EMS system, including fire departments (paid or volunteer), law enforcement agencies, hospitals, private agencies or organizations, county, city, or tribal governments, volunteer agencies, or other. With appropriate education and/or experience, these workers could progress to become supervisors, managers, directors, or even executive directors of an EMS system.

EMTs may desire to seek additional education to qualify for other related positions; i.e. dispatchers (or emergency medical dispatchers), physician assistants, instructors, licensed practical nurses, registered nurses, etc. Working as an EMT can be an exciting and very rewarding career. Check with your state and local schools to find more information about training and education in your area.

Emergency Medical Responders (EMRs)

Emergency medical responders (EMRs) are trained to provide emergency care before the ambulance arrives at the scene of the emergency. Additionally, EMRs may drive for ambulance services. Rescue teams trained and certified as EMRs are desirable for EMS systems; they can provide professional emergency care and prepare the patient for transport prior to the arrival of the ambulance vehicle. EMRs that drive ambulance vehicles must complete an Emergency Vehicle Operator

Course (EVOC). Check with your state for specific requirements.

Emergency Medical Technicians (EMTs)

Emergency Medical Technicians (EMTs) are responsible for on-scene care. The emergency care continues through transport and should extend into the emergency department if requested. Under no circumstance during the transport of an ambulance patient shall the attendant be less than a licensed basic emergency medical technician. EMTs are required to be trained in BLS procedures through a nationally standardized training course developed by the United States Department of Transportation. The course is taught by certified EMS instructors and is supervised by a medical director. Training for the EMT basic course includes clinical and classroom training. This not only prepares the EMT candidates for their role in prehospital care, but gives them an insight into hospital emergency department procedures as well.

EMTs are required to be licensed by most states. As a prerequisite to applying for a state EMT license, a written and practical skills examination is administered by the National Registry of EMTs. Some states also require that EMTs complete an Emergency Vehicle Operator Course (EVOC). Check with your state EMS office for licensing requirements.

Emergency Medical Dispatchers (EMDs)

Emergency Medical Dispatchers (EMDs) are the vital link between those calling for help and rapid emergency care response. The speed of the initial receipt and dispatch of the call is the only phase of the ambulance call that can be shortened. Once the ambulance leaves the station, the time for hurrying has passed. Dispatchers should answer the 9-1-1 and other emergency numbers and dispatch the appropriate vehicles and manpower. All dispatchers should complete the United States Department of Transportation Dispatcher Training Course.

Additional training could be available for dispatchers; they could also be licensed EMTs or EMDs certified by the National Association of Emergency Medical Dispatchers. Through this training, EMDs can give a caller advice on immediate patient care until the ambulance arrives, can determine the severity of illness or injury, and can dispatch appropriate resources based on the severity of the situation.

Rural areas may not be able to support this high level of trained dispatchers. One possible way for rural areas to provide EMDs would be through partnerships with multiple agencies (i.e. fire, police, EMS, etc.). Another approach could be development of regional EMS systems to centralize dispatch. Regionalization could prove to be more cost and resource effective and could allow for the higher level of trained dispatch.

Incidentally, Medicare reimbursement rates are directly related to the quality of information obtained during the dispatch phase. Documentation is critical to obtain appropriate Medicare reimbursement. The use of EMDs can provide better outcomes for emergency care and, therefore, an increased reimbursement rate from Medicare.

Emergency Department Nurses and Physicians

Emergency department nurses and physicians require specific training in emergency medicine so they can smoothly continue care begun at the scene. Hospital emergency departments have been classified at various levels according to their capabilities of delivering specialized definitive emergency treatment.

Community Physicians

Community physicians provide invaluable leadership for the entire EMS system. They may assist in the training of EMTs and emergency nurses and often assume leadership in developing emergency medical care. EMS systems and Emergency Medical Response Agencies (EMRAs) are required to have physician medical direction for consultation, protocol development, and continuous quality improvement.

Medical Directors

Medical Directors must be a licensed physician, board-certified in emergency medicine, and have broad experience in emergency care. The medical directors work with all ambulance services to establish patient care protocols, assure continuous quality improvement (CQI), and to be available for on-line medical control, triage, diagnosis, and on-scene treatment, if necessary. EMTs, regardless of licensure level, are permitted to work through the Medical Director. The Medical Director authorizes the personnel to treat and transport patients within approved protocols. A specialized certification training program is available for medical directors through the American College of Emergency Physicians. Continuing education is available through the National Association of State EMS Medical Directors.

EMS Directors

EMS Directors integrate all the components discussed above into one cohesive EMS system. The EMS Director is the individual in charge and is responsible for the overall operation of the EMS system, including administration and clinical segments. EMS Directors are charged with the responsibility that all personnel are competent and have the appropriate initial training at their level of licensure. EMS Directors also must design and have in place programs of continuing education and refresher courses to maintain and advance the skill levels of EMRs, EMTs, and EMDs.

Transportation

All ambulance vehicles must meet the Federal Specifications KKK-A-1822 in effect at the time of manufacture. According to the Federal Specifications, the ambulance is defined as a vehicle for emergency medical care that provides:

- A driver's compartment
- A patient compartment to accommodate an EMS provider and one patient located on the primary cot so positioned that the primary patient can be given intensive life support during transit
- Equipment and supplies for emergency care at the scene as well as during transport
- Safety, comfort, and avoidance of aggravation of the patient's injury or illness
- Two-way radio communication
- Audible and visual traffic warning devices

The ambulance shall be designed and constructed to afford safety and comfort and to avoid aggravation of the patient's injury or illness.

All of these shall be standard commercial products, tested and certified to meet or exceed the requirements of the Federal Specifications. The ambulance shall comply with all Federal Motor Vehicle Safety Standards (FMVSS) and other Federal and state regulations applicable or specified for the year of manufacture. The chassis, components, and optional items shall be as represented in the chassis manufacturers current technical data. The ambulance body, equipment, and accessories shall be as represented in their respective manufacturer's current technical data. The contractor shall provide total standardization and interchangeability between similar vehicles, equipment, items, and accessories specified for all ambulance units under each contract.

EMS placement planners should make selections for new and replacement vehicles from the following three basic vehicle types:

Type I - (10,001 to 14,000 GVWR)

Type I vehicle shall be a cab chassis furnished with a modular ambulance body.

Type I - AD - (Additional Duty) (14,001 GVWR or More)

Type I-AD shall be a Cab-Chassis with modular ambulance body, increased GVWR, storage, and payload.

Type II - (9201 – 10,000 GVWR)

Type II ambulance shall be a long wheelbase Van, with Integral Cab-Body.

Type III – (10,001 to 14,000 GVWR)

Type III shall be a Cutaway Van with integrated modular ambulance body.

Type III - AD (Additional Duty) (14,001 GVWR or More)

Type III-AD shall be a Cutaway Van with integrated modular body, and increased GVWR, storage, and payload.

Primary cot shall be loaded to position the patient's head forward in the ambulance. The Primary cot shall be mounted to provide maximum access from the EMSP seat. The ambulance and the allied equipment furnished under this specification shall be the manufacturer's current model year commercial vehicle of the Type and Configuration specified. The ambulance shall be complete with the operating accessories, as specified. The design of the vehicle and the specified equipment shall permit accessibility for servicing, replacement, and adjustment of component parts and accessories with minimum disturbance to other components and systems. The term "heavy-duty," as used to describe an item, shall mean in excess of the standard quantity, quality, or capacity and represents the best, most durable, strongest, etc., part, component, system, etc., that is commercially available on the OEM chassis.

Transportation by means other than ground ambulance will be required under certain conditions and in some types of terrain. Helicopters may prove effective rescue units in large cities and congested traffic areas. The most efficient use of helicopters is for the transfer of critical patients from remote rural areas into urban specialty care centers. EMS systems that can finance a helicopter's initial cost and maintenance expenses may operate such a service, but this is not usually the case. Climatic and geographic conditions may dictate still other emergency rescue vehicles such as a fixed wing aircraft, boats, snowmobiles, snow-cats, specialty four-wheel drive vehicles, and boats of various types.

Ambulances should be strategically based within the service area. Each ground ambulance service shall have on staff an adequate number of emergency medical personnel and a sufficient number of ambulances available in order to be en route to 90 percent of all emergency calls within five (5) minutes of the time the call is received in dispatch at the highest level of care for which the service is licensed.

The amount of time that is needed to arrive at a scene will vary depending on the environment, weather, traffic, topography, etc. The communities and the ambulance service should work together to establish reasonable times based on the resources available and the community needs and expectations.

All ambulances are required to carry specific patient care equipment as recommended by the American College of Surgeon's Committee on Trauma and the National Academy of Sciences National Research Council. Additional equipment may be directed by terrain, environment, or other special hazards. The required minimum equipment for an ambulance in Oklahoma is specified in **Appendix A**.

Communications

Communications are key to an efficient EMS system and tie all components of the system together into a single responsive unit. The communications system should provide:

- Toll-free, 24-hour telephone access to a centralized communications center through the common 9-1-1 system. Ideally, the 9-1-1 system should be enhanced (E 9-1-1) to provide the dispatcher with the actual physical address or location of the caller, even when the call is placed from a cellular telephone.
- Alerting of ambulance crews and rescue squads through the use of voice or alphanumeric pagers or portable radios.
- Rapid voice and data communication among all elements of the system: First Responders, EMRs, ambulance personnel, fire and rescue squads, law enforcement agencies, and hospitals.

Once alerted, the certified EMD must make quick and proper decisions regarding equipment and manpower requirements to adequately respond and deal with the emergency, whether it involves a single patient or scores of patients. Dispatch and response pre-plans should be utilized so that all dispatchers know how to utilize support services such as utility companies and heavy equipment. They should have access to information on hazardous substances. In the event of widespread disaster, central dispatch coordinates all personnel, vehicles and equipment, and facilities until the stricken area is secured. A mobile command post may be needed to coordinate support functions in the stricken area while central dispatch continues day-to-day operations elsewhere.

Two-way radio voice communication equipment makes it possible for the EMT to speak to competent medical authorities in the hospital and notify the emergency department of estimated time of arrival and patient condition. All ambulances, regardless of level of care provided, should be equipped with radios with remote radio control in the patient compartment. ***Narrow banding is required for all ambulances as of January 1, 2013.*** Inter-hospital communications, such as the Medical Emergency Response Center, provide capabilities for monitoring the availability of hospital beds and facilities within the area and alerting specialty and tertiary care centers of the pending transfer of critical patients.

EMS planners should be aware that an alternate power source must be available to the communications center. This ensures uninterrupted service in the event of a power outage. Similarly, it is important that EMS planners not rely solely on one method of communication. Recent disasters have shown that cellular telephone systems quickly become overburdened and fail during a disaster of even minor proportions. Common radio frequencies may become saturated and require switching to an alternate frequency.

Hospital Facilities

All hospitals should be classified according to their abilities to handle specific types of emergencies in terms of their facilities, equipment, and staffing. Classification systems will vary with each state. Such classification should be a joint effort of EMS planners and administrators and local physician groups.

Existing patient flow patterns in the community should be studied to determine the most logical designation of critical care, particularly trauma centers. In areas where there is excessive duplication of emergency services (e.g., urban areas), several hospitals may discontinue emergency department services. Or, if all hospitals provide emergency services, even the smallest, most remote hospital must be capable of performing life-saving stabilization and preparing the patient for transfer to a larger or specialized hospital for definitive care.

For a hospital to be available for emergency care there must be at least one licensed individual in the hospital at all times. The licensed individual can be an RN, EMT, physician assistant, nurse practitioner, paramedic, physician, etc. Alternatives must be established for the care of non-urgent patients in outpatient clinics or by other means and protocols must be established for triage. The ultimate goal of the EMS system, quite simply, is to get the right patient to the right facility in the right amount of time.

At least one hospital in the EMS system must provide 24-hour coverage by a physician. This

hospital should be designated as a trauma center at a level three or above. Other hospitals should have a physician identified as "on call" around the clock. All emergency departments must have the potential for temporary expansion of services and facilities to accommodate all victims of a mass casualty disaster.

Within the EMS system, the hospitals have the responsibility to cooperate in the training of personnel, coordinate physician services, house or have access to a poison control center, produce emergency department records for evaluation of service, and provide BLS care. Hospitals may further contribute by housing the EMS system's ambulances or communication system or support services. The community and hospital may also choose to have the hospital provide the ambulance service. A committee composed of staff physicians should be responsible for regularly reviewing emergency department services and operations. Committee recommendations should lead to upgrading and improvement of such services.

For example, in Oklahoma, the Emergency Services Classification System was mandated by the legislature in 1999. The legislation directed the Oklahoma State Department of Health to "…develop a classification system for all hospitals that treat emergency patients. The classification system shall… identify stabilizing and definitive emergency services provided by each hospital." The law also requires a data gathering system to evaluate the effectiveness of the effort. In Oklahoma, all hospitals are now classified in ten clinical categories and levels of service (Oklahoma Hospital Report, 2008). The Oklahoma classification system was patterned according to national guidelines. It was developed by the Oklahoma State Department of Health with extensive public input from organizations such as the Oklahoma Hospital Association, the State Medical and Osteopathic Associations, the OU Medical School Faculty, and the State EMS and Trauma Advisory Boards.

The system was not intended to force upgrades, but allows direct comparisons based entirely on clinical criteria. It is intended to classify current capabilities only.

The hope is that destination decisions will be simplified for EMS providers. Their Medical Directors can write more precise destination protocols, and (hopefully) improve triage accuracy to ensure only the most severe patients go "upstream." For example, incorporation of the Oklahoma State Triage Transport and Transfer Guidelines and the Oklahoma Hospital Classification System would encourage appropriate distribution of patients, protect tertiary facilities against overload, and discourage inappropriate "bypasses of regional facilities."

There are ten clinical categories and levels of service within the Oklahoma classification system:

- Trauma & Emergency Operative Services: Levels I –IV
- Cardiology: Levels I –III
- Pediatric Medicine and Trauma: Levels I-IV
- Dental: Levels I-III
- Obstetrics/Gynecology: Levels I-IV
- Ophthalmology: Levels I-III
- Neurology: Levels I-III
- Psychiatry: Levels I-III
- General Medicine: Levels I-IV
- Stroke: Primary or Secondary

There are multiple, graduated levels within each category, graduated from the lowest levels of care to the highest, as in the American College of Surgeons (ACS) model for trauma center verification. Level I facilities have the highest clinical capabilities and Levels III and IV have the lower capabilities.

Capabilities are determined by the available medical staff, services, and physical plant. In Oklahoma, the initial classifications were self-reported by the facilities in July 2000 and verified by health department facility surveyors in unannounced surveys performed from September 2000 to March 2001. The classifications are published in the Oklahoma

Medical Facilities report and are listed on the State of Oklahoma Health Department website:

http://www.ok.gov/health/

Trauma capabilities require special verification. At Level II and III the state survey teams are physician-led, while Level I must be verified by the ACS. Provisional classification at the two highest levels is possible through July 2001; it must be confirmed by the ACS within 18 months or revert to the highest level that can be confirmed by an in-state survey team.

There are either three or four levels per classification category. The general requirements for the levels are very consistent across the categories. They follow what the drafters hope are natural break-points within hospital evolution. They are expected to change over time as the system evolves.

Reference the following link for detailed classifications of all levels of care:

http://www.ok.gov/health/documents/MF%20OAC310-667eff.07.25.10corrected.pdf

The minimum levels (Level III or IV) are equivalent to the minimum hospital licensure requirements:

- licensed staff on-site,
- a physician on call and immediately available,
- certain minimum resuscitation equipment on-site, and
- transfer protocols in place.

At the next higher level (Level II or III), the requirements are as follows:

- a physician is on duty in the facility 24 hours per day,
- specialty consultation services are immediately available, and
- surgery is available, if applicable.

At the next higher level (Level I or II), the requirements are:

- a specialist within that category of care is immediately available as are support services (staff and equipment), and
- there is a dedicated service within the medical staff for that specialty (OB/GYN, pediatrics, neurology, ophthalmology, etc.).

These are usually a regional resource hospital facility. The highest-level facility will be a tertiary referral center and is usually a teaching center. A research component may be required.

Specific questions or concerns should be addressed to the Medical Facilities Service Division at the Oklahoma State Department of Health (405) 271-6576.

Continuous Quality Improvement (CQI)

The Trauma Division of the Oklahoma State Department of Health continues to steadily move forward with trauma system development and improvement statewide. Oklahoma Statute, Title 63 § 2530.6, specify periodic reviews of trauma care and CQI activities related to trauma care by a state Medical Audit Committee (MAC). In accordance with the statute, the Commissioner of Health appointed the members of the MAC and the group began meeting regularly in November 2004. The MAC is composed of nine physicians from both rural and urban areas representing: trauma surgery, emergency medicine, orthopedics, oral-maxillofacial surgery, neurosurgery, pediatric critical care and general surgery. To date, the MAC has received and reviewed a number of cases and provided follow up, education, and resolution.

Additionally, each of the eight Regional Trauma Advisory Boards in Oklahoma has established a Regional CQI Committee to review trauma systems issues. The Regional CQI Committees are multidisciplinary and consist of, at minimum, physicians, nurses and EMTs from the region who are active in the provision of trauma care.

The statute provides that the meetings of the MAC and Regional CQI Committees, where

patient care reviews are conducted, shall not be public meetings and shall not be subject to the provisions of the Oklahoma Open Meetings Act. Materials generated at such meetings shall also be protected and not subject to the Open Records Act or to disclosure by subpoena or otherwise (O.S. 63 § 1-2530.7).

Traditionally reserved for hospitals and metropolitan agencies, CQI has not often been utilized in rural or BLS systems. CQI will be adopted and embraced by all levels of EMS and in all demographic areas. The application for certification at the State level now requires CQI to be included. How do EMS decision-makers know that what the EMTs are doing makes a difference unless they take a critical look?

Some questions to be asked include:

- What are we doing?
- How often are we doing it?
- How well are we doing it?
- How do we know we are doing it well?
- What are we doing it with?
- Under what conditions are we doing it?
- To whom are we doing it?
- Why are we doing it?
- What are our desired consequences for doing it?
- How well are we documenting what we are doing?
- How much did it cost for us to get ready to do it?
- How much will it cost for us to continue doing it?
- What is the benefit if we do it this way, or another?
- Who is doing it?
- Should we be doing it at all?

CQI involves planning, implementing the plan, monitoring, analyzing, improving the plan, working the improved plan, monitoring the improved performance, etc. In this way, EMS systems are continuously seeking to provide their constituents the most up-to- date, efficient, and cost-effective services.

All ambulance services transferring injured patients from hospitals outside the region to hospitals in the region shall contact the trauma transfer and referral center before entering the region to advise the center of the patient transfer. The center shall maintain a record of the transfer for regional CQI activities.

If the EMS system plans for quality, monitors quality, and improves quality, then the EMS system will continuously deliver quality care to their patients.

As the EMS System Matures, Other Components Emerge

The EMS system involves much more than the provision of pre-hospital and in-hospital emergency care. Once these important aspects of EMS are in place and operational, other capabilities and responsibilities will expand as the system grows. Other needs will be recognized and emerge as:

- Mutual Aid Agreements,
- Coordinated Medical Record Keeping,
- Disaster Linkages, and
- Public Information and Education.

Mutual Aid Agreements

Mutual aid agreements with all surrounding contiguous or overlapping licensed emergency ambulance services that contain procedures for disaster response should be signed to ensure that emergency situations will be adequately and consistently covered by ambulance service. As stated in Oklahoma regulations, mutual aid and pre-arranged agreements between licensed ambulance services and surrounding licensed or certified EMS providers shall be developed and placed in the service files for inspection. Mutual aid agreements shall be reviewed by all parties biennially. Licensed ambulance services shall provide mutual aid, if the capability exists without jeopardizing the primary service area.

When all vehicles within a community are responding to emergencies or away on transfers, neighboring ambulance services should be

notified and be prepared to handle emergency calls on a temporary basis. If the mutual aid system is activated frequently or on a regular basis, EMS managers will need to consider enhancing their capabilities by scheduling non-emergency transfers or adding vehicles and crews.

Coordinated Medical Recordkeeping

Coordinated medical recordkeeping permits the EMS system to "track" the patient and thereby determine whether or not the patient has received the most appropriate response and care at every level within the system. Such accurate recordkeeping will allow EMS researchers to evaluate just what the EMS system does that actually "makes a difference" for patients. It simplifies billing procedures for providers and makes records available for continuous review and evaluation of the EMS system, especially when these data are computerized.

The Oklahoma State Department of Health (OSDH) is required to collect EMS data from Oklahoma licensed Ambulance Services. Since 2009, Oklahoma Emergency Medical Services Information System (OKEMSIS) is the database receiving the data from licensed agencies. The Oklahoma Highway Safety Office has provided funding to support the OKEMSIS system.

OKEMSIS is part of an effort to build a national database for EMS information. The National EMS Information System (NEMSIS) is receiving data and is working to provide research quality information regarding the activities of EMS.

Providers submit data to the database one run at a time or in "batches." A website is available for agencies to submit runs one at a time. "Batch" submitters will need to work with data vendors to ensure compatible download formats. Most vendors have developed NEMSIS-compliant download formats and will need to add only the "Oklahoma-specific" data fields to be fully compliant. Formats can be tested at the OKEMSIS website:

https://okemsis.health.ok.gov/

Periodically, regional training sessions are presented to assist agencies with data entry into OKEMSIS. Please contact the EMS office at 405-271-4027 to inquire about this training.

Few things are as important to the future of EMS as quality data. Quality data are needed to show EMS makes significant differences in patient outcomes. Participation and cooperation in data collection, submission, and analysis are important to the continuing development of EMS.

Disaster Linkages

Disaster linkages increase the ability of the EMS system to bring all resources together in a mass casualty situation. Such disasters require all components of the system to react to injured patients and ensure their movement to appropriate facilities in the briefest possible time. The primary goal of EMS in disaster situations is to do the greatest amount of good for the greatest number of people. The EMS system should regularly test its capabilities by holding disaster drills.

None of us can "go it alone" with regard to disaster response. Ambulances are an important disaster response partner. However, in a disaster, local agencies could be adversely affected to the point that they may be unable to respond even to their own communities.

The need to develop a coordinated approach to manage requests, movement, and support of ambulances in a disaster has presented itself in several instances in recent years, although none of these events required the movement of a large numbers of vehicles.

No EMS system exists in a vacuum. With the bombing of the federal building in 1995, the terrorist attacks in 2001, and the hurricane disaster in 2005, our nation has seen how a coordinated regional response works best. A coordinated regional response services the needs of the emergency locale as well as providing for the overall continuing emergency response capabilities of the EMS system. EMS systems need to be prepared for regional response to any

disaster, which may also include pandemic flu outbreaks and other biological disasters.

In 2007, OSDH, RMRS and MERC confirmed the need for "Ambulance Strike Teams," and regional ambulance deployment as a critical resource for Oklahoma disaster planning and preparedness. The OSDH, with Homeland Security, Emergency Management, representatives from OKAMA, OEMTA, ERSDAC, RMRS, MERC and others, has worked to create these guidelines as a vital part of the State's response to disasters. The disaster medical response system would process and provide supplemental ambulances and personnel to "impacted counties" whose resources are overwhelmed by an emergency.

Ambulance personnel are an extremely valuable service delivery resource and participate in large-scale disaster response: medical triage, on-scene medical care, transportation to hospitals, shelter medical care, etc. The guidelines focus on system organization (policies and procedures), communications, and logistic support without addressing in detail the issues related to reimbursement.

Public Information and Education

Public information and education can be as important as education of emergency medical personnel. It is incumbent upon the EMS community to educate the public on the following:

- What situations constitute an "Emergency?"
- Benefits of using "9-1-1" addressing systems.
- What information is necessary for emergency medical dispatchers to properly dispatch the most appropriate equipment and personnel to the correct location?
- Early CPR and first aid measures.

In addition, a properly trained Public Information Officer can enhance the public image of the EMS system. The public news media can be the EMS system's best friend or worst enemy. Every effort should be made to present the EMS system in its best light, to highlight its successes, and to mitigate the impact of occasional errors.

CHAPTER IV

Advanced Life Support: Moving Toward a Higher Level of Emergency Care

Advanced Life Support: Moving Toward a Higher Level of Emergency Care

Citizens soon realize that a good, quality BLS system does save lives. This becomes obvious through newspaper stories, television, and populace word of mouth. As this realization occurs, progressing to an ALS system provides even more life-saving opportunities.

Education and training

A high school diploma is usually required to enter a formal EMT training program. Training is offered at progressive levels: EMT-Basic, EMT-Intermediate, and Paramedic.

At the EMT-Basic level, coursework emphasizes emergency skills, such as managing respiratory, trauma, and cardiac emergencies, and patient assessment. Formal courses are often combined with time in an emergency department or ambulance. The program provides instruction and practice in dealing with bleeding, fractures, airway obstruction, cardiac arrest, and emergency childbirth. Students learn how to use and maintain common emergency equipment, such as backboards, suction devices, splints, oxygen delivery systems, and stretchers. Graduates of approved EMT-Basic training programs must pass a written and practical examination administered by the State licensing agency or the National Registry of EMT (NREMT).

At the EMT-Intermediate level, training requirements vary by State. The nationally defined levels (EMT-Intermediate 1985 and EMT-Intermediate 1999) typically require 30 to 350 hours of training based on scope of practice. Students learn advanced skills such as the use of advanced airway devices, intravenous fluids, and some medications.

The most advanced level of training for this occupation is Paramedic. At this level, the caregiver receives training in anatomy and physiology as well as advanced medical skills. Most commonly, the training is conducted in community colleges, junior colleges, and technology centers or schools and may result in an associate degree. These programs may take up to one to two years. Such education prepares the graduate to take the NREMT examination to become certified as a Paramedic. Extensive related coursework and clinical and field experience is required.

Refresher courses and continuing education are available for EMTs and paramedics at all levels. EMTs and Paramedics must take refresher training courses or complete continuing education requirements.

For renewal, all EMT levels must have current CPR certification and Paramedics must also have current ACLS certification. The completion of appropriate continuing education requires the following hours for the EMT levels:

- 24 hours for EMT-Basic
- 36 hours for EMT-Intermediate
- 48 hours for Paramedic

Components of an ALS System

In an ALS system, the delivery of emergency care is refined and many components are upgraded. Those requiring extensive improvement are:

- Manpower and Training
- Transportation
- Communications
- Facilities - Critical Care Designation
- Medical Control
- Continuous Quality Improvement (CQI)

Other system functions should have already been put into operation during the BLS phase of EMS system development and implementation. These will be continued and should be closely coordinated. Some will be intensified, particularly EMT training and provision for more life-saving equipment.

Manpower and Training

Manpower and training change dramatically when the system moves forward to ALS. EMTs licensed at advanced levels (EMT-Intermediates and Paramedics) must be available for an ALS system to function. Rural areas may find it more difficult than their urban counterparts to establish viable ALS due to run volumes resulting in lower revenues (economies of scale).

More and more, ALS is becoming the standard expectation of the public consumer. Manpower, availability of initial and continuing education, and preservation of clinical skills present much greater problems in rural areas than in cities. Usually cost prohibits staffing for two advanced level EMTs on each crew in rural areas. Therefore, several options may be considered, and each depends heavily upon a medical priority call screening process by EMDs. ***The agency must review the state requirements regarding minimum staffing levels and licensure requirements.***

Each shift may have one or more vehicles staffed with advanced level EMTs. That ambulance is sent out only when certain medical criteria are met in the call screening process. This alternative would generally be used in communities with a moderate to large population base.

In areas of lesser population or insufficient licensed manpower, communities may opt for a crew consisting of one Nationally Registered First Responder or one EMT Basic and one advanced level EMT. This combination will allow for certain ALS procedures to be performed, if not all of them.

Finally, all ambulances can be staffed as a full ALS service utilizing only advanced level EMTs. This type of system may be found only where availability of licensed personnel and financing are not great hurdles.

Education in advanced skills should be accomplished following the curricula established by the United States Department of Transportation. Advanced Cardiac Life Support, Advanced Medical Life Support, Prehospital Trauma Life Support, Pediatric Advanced Life Support, and other adjunct courses should also be considered in the provision of initial and continuing education.

An additional level of certification is available to EMT-Paramedics. The Critical Care Transport Paramedic course is an additional certification level that provides for even more advanced assessment, monitoring, and therapeutic intervention techniques. This advanced capability is particularly helpful in rural areas that may have long transport times to tertiary care centers in distant cities. A strong relationship with the Medical Director is of vital importance in making the critical care transport program work.

EMS educators should consult with their State EMS office in selecting or developing curricula.

Transportation

Transportation, a prime component of an EMS system becomes even more critical in an ALS system. Ground transportation will remain basically the same, although some systems may be staffed by teams of specialists. A neonatal transport vehicle is an example of such specialized care.

Helicopter emergency care service is developing rapidly. Some hospitals, individually or collectively, have underwritten the costs of providing helicopter services. Other helicopter services are funded by a membership subscription arrangement. Helicopters may assure rapid patient movement to the hospital best equipped and staffed to handle specific critical cases. Helicopters and other aircraft may be hindered, however, by such variables as landing location and adverse weather. EMS planners should be cautious when considering helicopter emergency care services. Helicopter transportation is simply an adjunct to the ground EMS system and should function in conjunction with it.

As the system upgrades and changes from BLS to ALS, serious study and thought should be

given to planning a more sophisticated and rapid response for both emergency and routine transfers of patients. Some commercial providers offer a fixed wing air evacuation system. Such a system would allow routine transfers to move long distances on a scheduled basis, allowing ambulances to remain in their home base or immediate response area. A quick response for acute emergencies would also be made available under such a system. An air evacuation system might involve several states or at least a regional system within a state and may require financial assistance such as joint federal funding or other grants. This type of system is only practical for specific geographic areas, i.e. remote areas of Montana only accessible by air, western Kansas, frontier areas of Nevada, and Arizona.

Communications

Communications take on a new urgency with an ALS system. While the additional education make the paramedic more competent to provide more detailed assessment and invasive treatment protocols, the emergency department physician has an even greater responsibility to be kept informed of the patient's condition and the treatment being rendered.

Data communication equipment allows the paramedic to transmit 12-lead electrocardiograms to enhance the diagnoses and treatment of acute cardiac problems while on scene or during transportation to the hospital.

Considering various medical protocols and geographical locations, consultation with a medical communications expert is recommended to design a system to meet the precise specifications of a particular area. Some consideration should be given toward regionalization of communication systems, including call receiving, pre-arrival instructions, and EMD.

Facilities – Critical Care Designation

Facilities should have been categorized in the BLS phase. Hospitals in the ALS system must provide critical care units in the ten critical care categories or make arrangements for rapid transport to a facility outside the system that can offer such care.

These categories are:

- Trauma & Emergency Operative Services: Levels I –IV
- Cardiology: Levels I –III
- Pediatric Medicine and Trauma: Levels I-IV
- Dental: Levels I-III
- Obstetrics/Gynecology: Levels I-IV
- Ophthalmology: Levels I-III
- Neurology: Levels I-III
- Psychiatry: Levels I-III
- General Medicine: Levels I-IV
- Stroke: Primary or Secondary

Medical Control

Medical Control is a requirement in all EMS systems and is especially critical in ALS systems. All EMTs, especially those possessing advanced level skills, in essence become an extension of the emergency department physician. For this reason, as well as others, emergency department physicians should assist as much as possible in educating the advanced level personnel.

Medical control does not necessarily mean voice contact and on-line direction of all pre-hospital care by the responsible physician. It also includes assisting in formation of patient care protocols and issuing standing orders. The protocols and orders should be periodically reviewed to ensure they are kept current with the rapidly changing medical environment and approved by other physicians involved in the EMS system and the hospitals. Sending and receiving physicians and hospitals should be kept aware of the protocols to ensure smooth transfer and transition of the patient into and out of their care.

Standing Orders

Standing orders are used in some instances when radio communication with a physician

is not possible. These should be used with prudence and physicians should be thoroughly familiar with the education and skills of advanced EMTs authorized to execute standing orders.

Typically, the EMS system is inverted, in that most ALS systems are available in the urban areas, while most rural areas are served by BLS systems. Because travel time and distances are greater in rural areas, rural BLS systems should consider the economic feasibility of advancing in the level of care provided.

Continuous Quality Improvement (CQI)

Just as a series of questions were presented in the BLS chapter of this Guidebook, the same questions should be asked at the ALS level. These questions are all the more pertinent as we are now dealing with invasive skills and procedures, high-tech biomedical equipment, and medications of various types that interact with and react to each other in various ways.

The same CQI planning, monitoring, and improvement process should be conducted at the ALS levels and can be adapted for any process being studied.

The ALS CQI Team should include:

- Medical Director
- Training Coordinator
- Communications Manager
- Data Management Person
- Patient Accounts Person
- Senior EMT or Paramedic

Peer review is one concept that works in some areas, allowing for EMTs and Paramedics to review one another's reports. In this way, everyone learns from their successes and mistakes, and the peer review process assists the Medical Director to key in on potential areas of concern for improvement or outstanding recognition.

A CQI Checklist for Your EMS System

Yes No Are emergencies promptly reported via a toll-free, 24-hour, all purpose telephone number such as 9-1-1?

Yes No Are citizens trained in first aid, the obstructed airway technique, CPR and use of the AED?

Yes No Are public safety responders trained and certified as First Responders?

Yes No Are all personnel trained and licensed in accordance with statutory requirements?

Yes No Are there two-way voice communication linkages, other than cellular telephones, between hospital emergency departments and ambulances? Public safety responders, hospitals, and ambulances? All hospitals in the area? Data transmission capabilities?

Yes No Is there a physician present in the hospital emergency department 24 hours a day?

Yes No Are emergency department nurses and physicians specially trained and certified in emergency medicine?

Yes No Are hospitals identified according to their capabilities and are critical patients transported to the hospital that can best provide care for their injuries or sudden illnesses?

Yes No Is your EMS system subject to at least quarterly review and evaluation to measure its successes and to improve on its weak points?

Yes No Are patient care records initiated by ambulance personnel and transferred with the patient through all phases of his/her care?

Yes No Are skill levels of all personnel regularly updated and continuing education classes offered at regular intervals?

Yes No Do mutual aid agreements exist with other emergency medical services in neighboring towns to "cover" while local ambulances are on call or involved in patient transfers?

Yes No Does your community have an Emergency Medical Service council or committee?

Yes No Is medical control from a recognized hospital a function of your EMS system?

Yes No Do your EMS personnel and physician medical director regularly participate in Continuous Quality Improvement (CQI) activities?

Yes No Is adequate extrication and rescue equipment available?

CHAPTER V

EMRs:
“Where Do They Fit In?”

EMRs: "Where Do They Fit In?"

EMRs may hold the front lines of EMS by being first on the scene and responding to the immediate needs of the patient until the ambulance arrives. With proper education and basic equipment, EMRs can make great strides in patient stabilization before ambulances arrive at the scene.

An EMR is a trained or certified individual who, upon arriving early to an incident or emergency, assumes immediate responsibility for the protection and preservation of life, property, evidence and environment.

The use of EMRs for smaller communities or more remote communities within the EMS response area should be emphasized and encouraged. As EMR teams within these communities are identified; their response to emergency calls should become closely integrated into the EMS system.

EMRs should become an integral part of the ambulance service with respect to continuing education and refresher courses. This interface of ambulance service and EMR crews will establish working rapport between the groups that can only improve patient care on the scene.

EMRs may be notified of an emergency by pager or portable radio. Telephones should not be considered due to the restrictive nature of this type of communication. Portable radios allow for mobility of the EMRs and allow communication with ambulance services while the EMRs are working.

EMRs must be educated using the U.S. Department of Transportation's National Standard Curriculum for EMRs. The requirements may vary by state. In Oklahoma, EMRs are required to successfully complete the National Registry of EMTs' practical skills and written examinations. This curriculum consists of crash injury management, cardiopulmonary resuscitation and use of automated external defibrillators (AEDs), vehicle extrication, and hazardous materials awareness. Local industries may consider making EMR training an integral part of their industrial safety program.

EMRs have positioned themselves to come to the aid of their friends and neighbors in emergency situations.

http://www.nasemsd.org/Projects/ScopeOfPractice/FINALEMSSept2006_PMS314.pdf.pdf.pdf

The primary focus of the EMR is to initiate immediate life-saving care to critical patients who access the emergency medical system. This individual possesses the basic knowledge and skills necessary to provide life-saving interventions while awaiting additional EMS response and to assist higher level personnel at the scene and during transport. EMRs function as part of a comprehensive EMS response and require medical oversight. EMRs perform basic interventions with minimal equipment.

One of the eligibility requirements for licensure at this level requires successful completion of an EMR course and a certification test.

Description of the Profession

The EMRs scope of practice includes simple skills focused on life-saving interventions for critical patients. Typically, the EMR renders on-scene emergency care while awaiting additional EMS response and may serve as part of the transporting crew, but not as the primary care giver.

In many communities, EMRs provide a mechanism to increase the likelihood that trained personnel and life-saving equipment can rapidly be deployed to serious emergencies. In all cases, EMRs are part of a tiered response system. EMRs work alongside other EMS and health care professionals as an integral part of the emergency care team.

The EMRs scope of practice includes simple, non-invasive interventions to reduce the morbidity and mortality associated with acute out-of-hospital medical and traumatic

emergencies. Emergency care is based on assessment findings. Additionally, the EMR provides care designed to minimize secondary injury and comfort the patient and family while awaiting additional EMS resources.

A major difference between the lay person and the EMR is the "duty to act" as part of an organized EMS response.

In some systems, EMRs serve as a part of the crew on transporting EMS units; however, the EMR is not intended to be the highest level caregiver in such situations. They must function with an EMT or higher level personnel during the transportation of emergency patients. The scope of practice model of an EMR is limited to simple skills that are effective and can be performed safely in an out-of- hospital setting with medical oversight.

After initiating care, the EMR transfers care to higher level personnel. The EMR serves as part of an EMS response system that ensures a progressive increase in the level of assessment and care.

Psychomotor Skills

The following are the minimum psychomotor skills of the EMR:

- Airway and Breathing.
  - Insertion of airway adjuncts intended to go into the oropharynx.
  - Use of positive pressure ventilation devices such as the bag-valve mask.
  - Suction of the upper airway.
  - Supplemental oxygen therapy.
- Pharmacological interventions.
  - Use of unit dose auto-injectors for the administration of life-saving medications intended for self or peer rescue in hazardous materials situations (MARK I, etc.).
- Medical/Cardiac Care.
  - Use of an automated external defibrillator.
- Trauma Care.
  - Manual stabilization of suspected cervical spine injuries.
  - Manual stabilization of extremity fractures.
  - Bleeding control.
  - Emergency moves.

CHAPTER VI

Estimating Costs of an EMS System

Estimating Costs of an EMS System

Knowledge of EMS costs, as well as revenues, is necessary to plan for EMS service within the community's financial capability. To obtain up-to-date cost data for providing service, consult ambulance dealers, communications equipment distributors, and medical equipment suppliers, especially those in the community's immediate area. Information and data to assist in cost determination will be presented in the text.

The level of service an EMS system provides can range from an EMRAs to ALS - Specialty Care. The most common level of service in Oklahoma is BLS. A complete system may have EMR capabilities in remote, low-volume emergency call areas and may have ALS capabilities in high-volume emergency call areas. No matter what level of service is provided, the estimated costs of providing that level of care are needed for accurate planning.

This chapter includes cost information and resources for an EMRA, a BLS system, and an ALS system. Also, decision-makers desiring to move from a BLS to an ALS system can estimate the additional costs and revenues from this information.

Both capital and operating costs will be discussed. Capital costs consist of total capital equipment outlay costs and annual capital equipment costs. Capital and operating costs are based on average known costs. Annual capital equipment costs are further defined as annual replacement costs of the capital equipment items based on a straight-line depreciation system or an annual amortization amount based on years of the loan and interest rate. The annual capital replacement costs are important since they act as a sinking fund to replace worn capital items and are needed to purchase additional capital items in the future. Annual operating costs are the day-to-day expenses of operating the EMS system (salaries, wages, benefits, fuel, oil, maintenance, supplies, insurance, etc.).

Once you have determined current costs, future costs can be estimated using an adjustment factor. There are two different adjustment factors, construction cost index and consumer price index. The adjustment factors can be applied to the current costs to project the costs for future years. The adjustment factors are:

Adjustment Factor 1

$$\frac{\text{Current Construction Cost Index}}{\text{2010 Construction Cost Index}}$$

Adjustment Factor 2

$$\frac{\text{Current Consumer Price Index}}{\text{2010 Consumer Price Index}}$$

Adjustment Factor 1 should be used for construction costs only, such as the building itself. **Adjustment Factor 2** should be used for all other costs.

Estimating Costs of an EMRA

Wherever people live and work, even if the population is small, one or more of them will eventually need emergency medical care. Many communities, however, experience such a small number of emergency calls that they cannot economically support a complete ambulance service and communication system. An EMRA can fill this void. EMRs are usually volunteers within a community who are trained to respond to an emergency and stabilize the patient until the ambulance and EMTs arrive. EMRs are different from the First Responders in that they have the "duty to act" as part of an organized EMS response. EMRs increase the likelihood that trained personnel and life-saving equipment can be rapidly deployed to serious emergencies. Thus, many decision-makers in rural communities have created systems including EMRAs.

Ambulance services and EMRAs can work together to meet the needs of the community for staffing, response, and preparedness. The system can be as simple as agencies responding together or more complex by sharing staff responsibilities.

EMRs need three equipment items:

- Medical supply kit (containing oxygen),
- Automated external defibrillator (AED), and
- Communications equipment.

The cost of the EMR kit is estimated to be $500. AEDs can cost from $1,600 to $3,800. Government programs and foundations may provide partial funding for AEDs, especially to smaller, rural communities.

Summary –
Typical EMR Medical Supply Kit

Quantity	Item
1	Kit box (hard/soft)
1	Blood Pressure Unit
1	Stethoscope
1set	Oral airways
1 pr.	Bandage shears
1	Splinter forceps
1	Penlight
1	Adult Bag (Valve-Mask Resuscitator)
1	Child Bag (Valve-Mask Resuscitator)
2	Adjustable Cervical Collar
2	Malleable splint (per local option)
4	Trauma pads (8”x10”)
4	Trauma pads (5”x9”)
20	Gauze pads (4”x4”)
3	Kling roller gauze (4”)
2	Elastic bandages (3”)
2	Adhesive tape (1”)
6	Triangular bandages
2	Petroleum gauze
10	Band-aids (1”x3”)
2	Band-aids (2¼”x3½”)
2	Burn kits
1	Eye wash
1	Ear syringe
2	Cold packs
1	Bottle Bio hand cleaner
2	Rescue blanket
1	“D” oxygen cylinder
1	Brass oxygen regulator/flow meter
2	Non-rebreather oxygen masks
2	Nasal cannulas
2	Oxygen tubing
4 pr.	Latex gloves (L)
4 pr.	Latex gloves (XL)
1	Flashlight, with extra batteries

EMRs need communication equipment so they can be notified of calls and go directly where they are needed. The least desirable system is one that requires the EMR to remain near a telephone or in the range of a cellular telephone signal. If cellular telephones are used, the calling plans vary in cost according to regional availability and frequency of use. The most efficient and effective communication system is one that involves the EMR carrying a pager while on call so the dispatcher can notify the EMR of the location and type of emergency. Alphanumeric pagers and voice pagers are efficient systems for an EMRA. All of these systems require a monthly service cost and this amount needs to be added to your chosen system to obtain a true cost.

A portable radio with a built-in pager for each EMR is another effective way to communicate. A portable radio allows the EMR to communicate directly with the responding ambulance. This type of portable radio (5 watts) would be adequate for most EMRAs. There are maintenance contract costs for the portable radios with built-in pagers. If distance and terrain are a problem, decision-makers might consider the installation of a repeater and tower system. The local decision-makers must take into consideration signal strength, height and construction of the tower, land acquisition and necessary federal permits. Consult your local or area communications sales for the radio system best suited for the EMS system.

Another cost associated with EMRAs is training. In Oklahoma, training for EMRs is available at many Oklahoma technology centers, fire departments, and ambulances services. The cost may vary from agency to agency.

There is a fee for testing at the National Registry and at other testing sites. The initial certification is effective for two years. During the two year licensing period, the EMR is required to maintain CPR certification, successfully complete a refresher course for renewal.

There is an initial licensing fee for an EMRA and a renewal every two years. There are other

costs associated with EMRAs, including medical supplies per call and defibrillator use per call.

Summary
Capital and Operating Items Needed
for an Emergency Medical Response Agency

Capital Items Needed
Medical Supply Kits
Automated External Defibrillators (AEDs)
Telephones (land line)
Cellular Phones
Pagers
Portable Radios
Repeater & Tower System
Operating Items Needed
Medical Supplies per Call
AED Use per Call
Telephones
Cellular Phones
Pagers
Portable Radio Maintenance Expenses
EMR Initial Training
EMR Initial Training Books
EMR National Registry Exam
EMR Continuing Education Class
Renewal National Registry Certification
EMRA Initial License Fee
EMRA Renewal License

Expensing the EMS System

The next section will discuss the costs and revenues to develop an EMS system for both a BLS system and an ALS system. The costs include the initial capital costs, the annual cost to replace or amortize the capital items, and the annual recurring, operating costs. Summary tables are included after each section to list the items that need to be considered to expense the system. Consult local and area vendors to receive the most efficient costing for your area and service.

Capital Items – Vehicles and Equipment

There are three types of ambulance vehicles: Type I, Type II, and Type III (**Figure 2***)*. Vehicles must comply with the Federal Specifications for the Star-of-Life Ambulance KKK-A-1822 in effect at the time of manufacture. The EMS planners will need to decide what type of ambulance the EMS system will require as well as whether to purchase new, used, or remount vehicles. With the addition of optional available equipment, the vehicle price will increase. ***Note: The price per vehicle does not include the cost to equip the vehicle for patient care.*** An additional expense is necessary to equip the vehicle for the level of service. To equip an ambulance for ALS will be at least triple the dollar amount to equip for BLS.

Other vehicles that may be needed for an EMS system are command vehicles and EMR vehicles. These vehicles are not as common in rural EMS systems. The command vehicle is typically an SUV that is available to the EMS Director to be available at the scene and/or to provide additional equipment and supplies. The EMR vehicle is to provide transportation for the EMRs to be at the scene. More typically, the EMRs provide their own transportation.

Additional equipment for EMS vehicles includes oxygen sets, EMR medical supply kits, and AEDs. Oxygen sets can range in cost from $1,000 to $2,500. EMR kits are $500 each and AEDs can cost from $1,600 to $3,800.

Summary –
Capital Items - Vehicles and Equipment

Item
Type I Vehicles
Type II Vehicles
Type III Vehicles
BLS Equipment
ILS Equipment
ALS Equipment
Command Vehicle
EMR Vehicles
Oxygen Sets
EMR Medical Supply Kits
Automated External Defibrillators (AEDs)

Type I Ambulance

Type II Ambulance

Type III Ambulance

Figure 2. Types of Ambulances as Described in KKK-A-1822 Specifications

Capital Items - Communication System

The type of communication system needed will depend on several factors. An EMS system may be able to use an already existing base communications through the local or area law enforcement agencies. Using an existing communication system may provide a substantial cost savings. If an existing system is not available, the EMS service may need to construct, maintain, and operate its own base communication system.

The general equipment needed to build a base communication system include: a tower, an antenna, a base radio component, and a backup generator. The base communication system must have the capability to reach the entire coverage area of the EMS system. The coverage area could have a radius in excess of forty miles.

If distance and terrain are a problem, decision-makers might consider the installation of a repeater and tower system. To determine what is needed for the installation, decision-makers must take into consideration signal strength, height and construction of the tower, land acquisition, and necessary federal permits. Consult local or area communication equipment suppliers for the radio system best suited for the EMS system.

The EMS system needs communication equipment to ensure that each employee can be contacted. The least desirable system is one that requires the EMS personnel to remain near a telephone or in the range of a cellular telephone signal. Cell phones and calling plans vary in cost according to regional availability and frequency of use. More desirable is a system that involves the EMS personnel carrying a pager while on-call so the dispatcher can notify them of the location and type of emergency. Alphanumeric pagers and voice pagers are efficient systems for an EMS system. All of these systems require monthly service costs and these need to be added to the cost of the EMS system.

A portable radio with a built-in pager for each EMS employee is a more desirable way to notify them of an emergency. A portable radio allows the EMS personnel to communicate directly with the responding ambulance. This type of portable radio (5 watts) would be adequate for most EMS systems. There are maintenance contract costs for the portable radios with built-in pagers.

Each vehicle must be equipped with a communications system that enables the personnel to be in constant contact either with the base communications, the hospital and medical staff, or law enforcement agencies. ***Narrow banding is required on all ambulances as of January 1, 2013.*** The most common type of communications is a business band or VHF two-way radio installed in the vehicle. An additional radio is necessary for the patient compartment. The function of the added radio is to maintain communications between the EMT and the hospital medical staff to inform medical personnel of patient vital signs and to receive instruction from competent medical personnel on medical procedures.

Some consideration should be given toward regionalization of communication systems, including call receiving, pre-arrival instructions, and ambulance dispatch. Multiple EMS systems within a county or district can benefit from the "sharing" of their resources for communication. A centralized communication system is nearly always more efficient and effective. Consult with local or area communication equipment suppliers for the best possible options.

Summary –
Capital Items - Communication System

Item
Base Communication System
Tower
Antenna
Base Radio Component
Backup Generator
Repeater Tower System
Telephones (land lines)
Cellular Telephones
Pagers
Portable Radios
Vehicle Two-Way Radios
Vehicle Patient Compartment Radio

Capital Items - Building

A building is needed to house the ambulance vehicles, auxiliary equipment, living and sleeping quarters, and the EMTs. The building may also need to accommodate the administration of the system, which may include the billing office. The building can be new construction or an existing building that can be adapted to provide adequate space to meet the current and future needs of the EMS system.

The example floor plan of a two-bay building includes bay areas for two ambulance vehicles, office space, meeting room, and living and sleeping quarters for EMTs (**Figure 3**). This floor plan is used for illustration purposes only; actual size can be modified based on the needs of the system and actual costs vary considerably depending on the specific area of the country. The building is designed for around the clock housing for EMT shifts. The building should be a comfortable environment for all personnel in the living and working areas. Building costs can vary with the type of materials and the cost of labor. Construction costs can be lowered if volunteer labor can be organized for part or all of the building construction. A building built locally with donated labor is the best option to pursue.

A building can be purchased and renovated to accommodate the EMS system with cost variances depending on the location. The cost of renovating a building will also vary considerably depending on the location and local construction costs or volunteer labor.

See **Appendix B** for amortization factors to help determine annual building expense. Local estimates should be obtained to estimate the costs of the EMS system.

Capital Item - Building Furnishings

Building furnishings include a desktop computer and printer, telephones, filing cabinets, desks, chairs, couches, tables, lamps, TV/VCR, beds, etc. In some cases, items may be donated to the EMS system by community members or purchased at a reduced cost.

Annual Capital Equipment Expenses

The annual capital equipment expenses provide a method to determine the annual replacement costs of the capital equipment. EMS systems are encouraged to establish a “sinking fund” or “capital equipment replacement fund” based on these total annual expenses.

The EMS system would set aside an amount of funding (the annual capital equipment expenses total) each year to have enough to replace the items when their usefulness has expired. By establishing this methodology, the EMS system will have available funding to replace all capital equipment items and will have up-to-date equipment at all times. In other words, each capital equipment item has a useful life expectancy (i.e., 5 years, 7 years, or 10 years) and when the item is no longer useful, the sinking fund would provide the capital to replace the items.

Summary –
Capital Items -Building and Furnishings

Items
Construct Building
Contract for entire building
2-Bay Building
2,880 sq. ft. Steel Building
Partial Contract, Partial Donate Labor
2-Bay Building (materials outlay only)
Purchase Building
Building Cost
Renovation Cost
Building Furnishings

Annual capital equipment expenses are either the annual amortization cost of a loan or the replacement cost based on straight-line depreciation. For example, the building expense could be annualized based on a specified loan interest rate and length of loan.

Other capital equipment items can also be amortized; however, the life of the other items is a much shorter term than the building. A separate loan with a term more in line with the

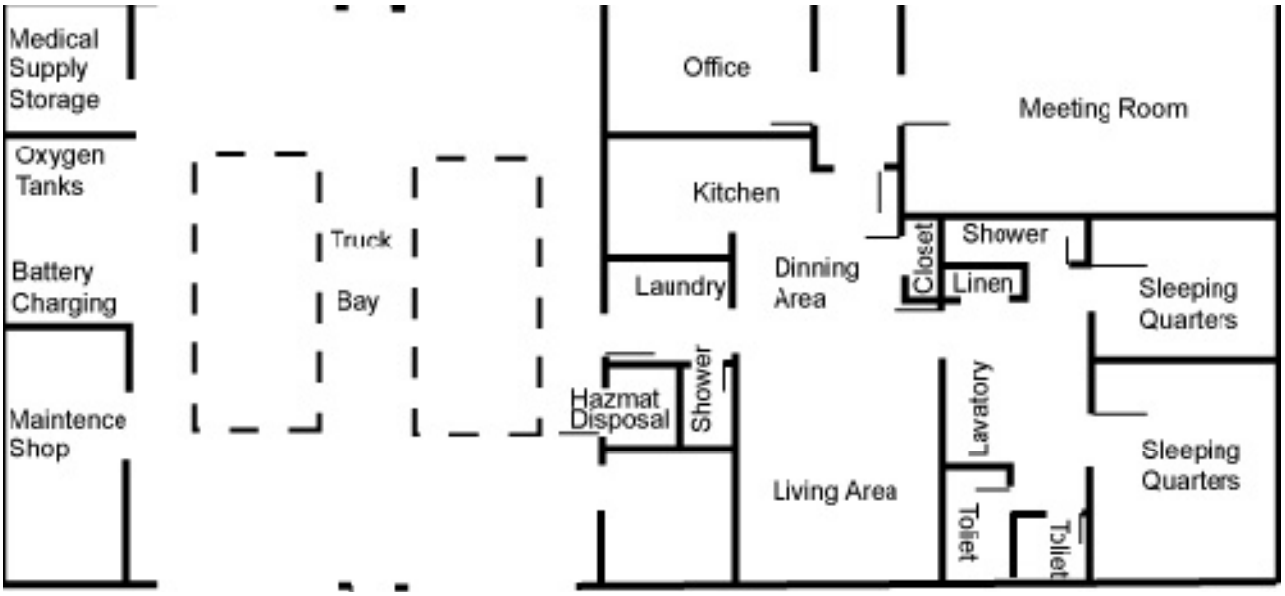

Figure 3. Example Floor Plan of a Two-Bay Building for an EMS System

life expectancy of these items would be more financially prudent. If capital equipment items are donated, then the sinking fund provides funding to replace these items upon their expiration.

If a capital equipment item was funded through loans, replacement may involve initiating another loan upon the expiration of the item.

Ambulance vehicles are depreciated based on 75,000 miles or 7 years, whichever comes first. This is the current standard for vehicle replacement in Oklahoma and may vary from state to state. The additional equipment is depreciated at the same rate as the vehicle. If a vehicle needs to be replaced every 3 years, then the expected life expectancy of the equipment is also calculated at 3 years due to the higher level of usage volume. The additional medical equipment has an expected life of 3-5 years, depending on the level of usage and the technological changes.

The life expectancy of the communications equipment is typically 5 years. However, the base station and repeater tower systems may be up to 10 years. The building furnishings typically need to be replaced in 5 years, also.

Summary –
Annual Capital Equipment Items and Basis

Item	Expense Basis
Building	Amortize loan (max 25-30 yrs) or replacement based on life expectancy
Vehicles	
Loan Replacement	Amortize
Straight-line Depreciation	7 yrs or 75,000 miles
Vehicle Equipment	Same as vehicle
Communications	
Equipment	5 years
Base Station System	Up to 10 years
Repeater Tower System	Up to 10 years
Building Furnishings	5 years

Annual Operating Expenses - Licenses

The minimum initial license fee for a new ambulance service in Oklahoma is currently $600 plus $20 for each additional ambulance vehicle in excess of two plus $150 for each additional substation. Thereafter, the minimum renewal license fee is $100 plus $20 for each additional ambulance vehicle in excess of two plus $50 for each substation. The current initial license fee for an EMRA is $50 with a renewal fee of $20 every year. License fees for EMTs differ by the level of training.

Summary –
Oklahoma License Fees for 2011

Item	Initial Fee	Every Two Years
EMS System	$600+	$100+
EMRA	$50	$20
EMR	$20	$10
EMT-Basic	$75	$10
EMT-Intermediate	$150	$15
Paramedic	$150	$20

Annual Operating Expenses - Vehicle Expenses

Vehicle operating expenses include fuel, oil, filter, lubrication, tires, insurance, an d licensing. An EMS system may project estimated annual miles by analyzing call data from a prior year.

Estimated mileage can be derived from call origination and call destination data. Estimated fuel consumption uses the Environmental Protection Agency's estimated miles per gallon (mpg) and divides that number into the estimated total annual miles driven. Most Type I and Type III ambulances are estimated for fuel consumption of 8 mpg. The Type II vehicle is estimated at 9 mpg.

An EMS system may contract with a fuel supplier as a way to maintain a stable pricing structure. EMS systems that are not-for-profit or government-based or government-supported may be eligible to purchase fuel with a reduction in state and federal taxes. Consult the State EMS

Division or local government representatives to determine eligibility requirements. If not eligible for this reduced fuel price, use the current fuel cost (unleaded or diesel).

Recommendations by the manufacturer suggest the vehicle should be serviced for oil, filter, and lubrication every 2,000 to 3,000 miles. An EMS system may be able to save some expense by purchasing service maintenance agreements for their vehicles, which may lower the expense for vehicle service. Also, the EMS system may be able to negotiate a service agreement at a lower cost.

Replacement of tires is a substantial expense to an EMS system. Ambulance vehicles must replace tires when a certain amount of tread is remaining. Studies have shown that the average tire wear is estimated at 27,000 miles. Tire cost can vary depending on the type and quality, load range, and road hazard. Contact your local tire sales for the type of tire that best serves your needs.

The ambulance vehicles require other maintenance and repairs depending on the age and condition of the vehicle. These costs need to be taken into consideration when expensing the system.

Ambulance systems must carry liability and collision insurance on all vehicles. Some insurance companies will offer discounts for multi-vehicle fleets. The EMS system may find insurance at a less expensive rate through the state. Consult the state EMS Division about possible lower insurance cost availability.

Oklahoma vehicle license fees for city- or county-owned ambulances will also need to be included.

Annual Operating Expenses - Communications

Operating expenses for communications equipment are assumed to equal the costs of service contracts for the separate components. A service contract for ambulance mobile radio units (vehicle radios) and base station service are monthly expenses. Consult locally for options available.

Summary –
Annual Operating Expenses - Vehicles

Vehicle Expense Items	Expense Basis
Type I or III Vehicles	8 mpg
Type II Vehicles	9 mpg
Fuel Cost/Gallon	
Miles between Oil Changes	2,000 - 3,000 miles
Oil, Filter, and Lubrication	Cost/service
Average Tire Wear	27,000 miles/tire
Cost per Tire	
Vehicle Maintenance & Repairs	
Vehicle Insurance	
Vehicle License Fee	
City- or County-Owned	
Privately-Owned	

Summary –
Annual Operating Expenses - Communications

Maintenance Contracts
Vehicle Radios
Base Station

Annual Operating Expenses - Medical

This cost can vary depending on the severity of the patient's condition and the type of care needed.

Summary -
Annual Operating Expenses - Medical Expenses*

Item
Basic Life Support
For All Calls
Additional for Emergency Calls Only
Intermediate Life Support
For All Calls
Additional for Emergency Calls Only
Advanced Life Support
For All Calls
For Emergency Calls Only

* Costs are based on averages and can vary depending on severity of patient condition and type of care needed.

Annual Operating Expenses - Labor

Traditionally, EMTs, regardless of license level, have been under-compensated professionals. Many paid EMTs are forced to work more than one EMS job, or to work at other types of employment, to earn enough money to raise a family above the poverty level. Many rural EMS systems are completely dependent on volunteer laborers who often work other full-time jobs. Reflecting the multi-faceted functions of the EMS system of the future and increased educational requirements coming from the federal level, compensation for these professionals must be improved.

Decision-makers in rural areas with limited budgets need to understand the downfalls in choosing the most economical solution for staffing the EMS. Since payroll is a major budget item, labor requirements under several arrangements are discussed. These alternatives are fully staffed service, volunteer service, and partly-paid, partly-volunteer service.

EMTs are classified and paid according to the level of training and licensing; i.e., EMR, EMT-Basic, EMT-Intermediate, and Paramedic. Depending on the size of the EMS system, the position of supervisor or EMS Director may be a full-time position. A full-time EMS Director may need to have a higher level of training and licensing; i.e., EMT-intermediate or paramedic. Administrative salaries vary based on level of training and volume of calls.

Supervisors may be needed in larger EMS systems. Supervisors may receive a base salary plus benefits or just an additional amount per hour worked as supervisor.

Dispatch could be provided through the local law enforcement agency. Non-EMT staff radio dispatch, clerical, billing, EMT Radio Dispatch/EMD for internal provision of dispatch is another option to consider. Depending on the size of the system, two separate individuals may be needed to occupy these positions. A smaller system may be able to utilize one person for both duties. The most common overtime policy for all systems is time and one half over 40 hours per week. An estimation of an additional percent of annual salary (typically ranges from five to ten percent of base salaries) can be used to calculate annual overtime pay. The expense of fringe benefits such as insurance(s) and retirement can be estimated by using a percent of base salaries (typically ten to thirty percent of base salaries). The percentage will vary depending on what benefits are provided by an EMS System.

Summary -
Annual Operating Expenses - Labor

Labor Expense Item	Expense Basis
Non-EMT Radio Dispatch/Clerk	
Emergency Medical Dispatcher/EMT Radio Dispatch	
EMR	
Basic	
EMT-Intermediate	
Paramedic	
Supervisor	Additional hourly/salary + benefits
EMS Director	Salary + benefits
Overtime Pay	5 to-10% of base labor
Benefits	10 to 30% of base labor

Labor - Fully Staffed EMS System

Operating a fully-staffed service, 24-hours per day, 365 days, requires 8,760 hours of labor annually per crew member. This is equivalent to 4.2 full-time equivalent employees. **Summary Table (One Crew Member, based on 8,760 hours [24/7], at Base Hourly Rate plus Benefits)** on the next page presents examples of annual base salary expense to staff one crew member 24 hrs/day, 365 days/year (a total of 8,760 hours per year) at the base hourly rate. For example, for an EMT-Basic with an hourly rate of $8.00, the total annual base salary cost would be $70,080. The table also shows various benefit rates. Assuming the EMS service pays benefits at 20 percent, the cost would increase to $106,381. This table is designed to cover many hourly rates. With different EMS providers paying different rate levels to different licensing levels, the first column lists the possible level of licensing. The table also shows the various benefit rates. This makes the table more useful for multiple situations.

Summary Table (One Crew Member, 24/7, based on 8,760 hours [24/7])
Annual Base Labor Expense based on Various Hourly Rates and Various Benefit Rates
for *ONE* Crew Member for 8,760 hours, 24/7

Possible Level of Licensing	Hourly Rate	Annual Cost (8,760 hours)	Annual Base +10% Benefits	Annual Base +15% Benefits	Annual Base +20% Benefits	Annual Base +25% Benefits	Annual Base +30% Benefits
EMR/Basic	$7.25	$63,510	$69,861	$80,340	$96,408	$120,510	$156,663
EMR/Basic	$8.00	$70,080	$77,088	$88,651	$106,381	$132,976	$172,869
EMR/Basic	$8.25	$72,270	$79,497	$91,422	$109,706	$137,133	$178,273
Basic/Intermediate	$8.50	$74,460	$81,906	$94,192	$113,030	$141,288	$183,674
Basic/Intermediate	$9.00	$78,840	$86,724	$99,733	$119,680	$149,600	$194,480
Intermediate/Paramedic	$10.00	$87,600	$96,360	$110,814	$132,977	$166,221	$216,087
Intermediate/Paramedic	$11.00	$96,360	$105,996	$121,895	$146,274	$182,843	$237,696
Intermediate/Paramedic	$12.00	$105,120	$115,632	$132,977	$159,572	$199,465	$259,305
Intermediate/Paramedic	$13.00	$113,880	$125,268	$144,058	$172,870	$216,088	$280,914
Paramedic	$14.00	$122,640	$134,904	$155,140	$186,168	$232,710	$302,523
Paramedic	$15.00	$131,400	$144,540	$166,221	$199,465	$249,331	$324,130
Paramedic	$16.00	$140,160	$154,176	$177,302	$212,762	$265,953	$345,739

Summary Table (Annual Cost for Two Crew Members, based on 8,760 hours [24/7] per Crew Member)
Annual Base Labor Expenses based on Various Hourly Rates and Various Benefit Rates
for *TWO* Crew Members for 8,760 hours, 24/7

Possible Level of Licensing	1st Crew Rate	2nd Crew Rate	Annual Cost (8,760 hrs ea) for Two Crew Members	Annual Base +10% Benefits	Annual Base +15% Benefits	Annual Base +20% Benefits	Annual Base +25% Benefits	Annual Base +30% Benefits
EMR/Basic or Basic/Basic	$7.25	$8.00	$133,590	$146,949	$168,991	$202,789	$253,486	$329,532
Basic/Basic or Basic/Int.	$7.25	$8.50	$137,970	$151,767	$174,532	$209,438	$261,798	$340,337
Basic/Basic or Basic/Int.	$8.00	$9.00	$148,920	$163,812	$188,384	$226,061	$282,576	$367,349
Basic/Basic or Basic/Int.	$8.00	$10.00	$157,680	$173,448	$199,465	$239,358	$299,198	$388,957
Basic/Int./Paramedic	$7.25	$10.00	$151,110	$166,221	$191,154	$229,385	$286,731	$372,750
Basic/Int./Paramedic	$7.25	$12.00	$168,630	$185,493	$213,317	$255,980	$319,975	$415,968
Basic/Int./Paramedic	$7.25	$14.00	$186,150	$204,765	$235,480	$282,576	$353,220	$459,186
Basic/Int./Paramedic	$8.50	$11.00	$170,820	$187,902	$216,087	$259,304	$324,130	$421,369
Basic/Int./Paramedic	$8.50	$12.00	$179,580	$197,538	$227,169	$272,603	$340,754	$442,980
Basic/Int./Paramedic	$8.50	$13.00	$188,340	$207,174	$238,250	$285,900	$357,375	$464,588
Basic/Int./Paramedic	$8.50	$15.00	$205,860	$226,446	$260,413	$312,496	$390,620	$507,806
Intermediate/Paramedic	$9.00	$11.00	$175,200	$192,720	$221,628	$265,954	$332,443	$432,176
Intermediate/Paramedic	$9.00	$13.00	$192,720	$211,992	$243,791	$292,549	$365,686	$475,392
Intermediate/Paramedic	$9.00	$15.00	$210,240	$231,264	$265,954	$319,145	$398,931	$518,610
Intermediate/Paramedic	$10.00	$12.00	$192,720	$211,992	$243,791	$292,549	$365,686	$475,392
Intermediate/Paramedic	$10.00	$14.00	$210,240	$231,264	$265,954	$319,145	$398,931	$518,610
Intermediate/Paramedic	$10.00	$16.00	$227,760	$250,536	$288,116	$345,739	$432,174	$561,826

Another table on the following page is provided to show the cost for two crew members. See **Summary Table (Two Crew Member, based on 8,760 hours [24/7] per Crew Member, at Base Hourly Rate plus Benefits)** on the next page. This table presents examples of annual base salary expense to staff two crew member 24 hrs/day, 365 days/year (a total of 8,760 hours per year per crew member) at different base hourly rates. For example, for a two member crew with an EMT-Basic with an hourly rate of $8.50 and a Paramedic at $11.00 hourly, the total annual base salary cost would be $170,820.

The table also shows various benefit rates. Assuming the EMS service pays benefits at 20 percent, the cost would increase to $259,304. This table is also designed to cover many different combinations of crew members and hourly rates.

The next two tables illustrate an annual salary expense of 40 hours per week with different benefit rates. **Summary Table (Annual Cost for One Crew Member, based on 40 hours/week for 2,080 hours/year, at Base Hourly Rate plus Benefits)** shows the 40-hour week for one crew member. To staff a 40-hour per week position, this table will assist the EMS system planner. For an EMT-Basic to work 40 hours/week, the annual cost would be $32,560, based on $8.25 per hour and benefits of 25 percent. The next table shows the 40-hour week costs for two crew members, **Summary Table (Two Crew Members, based on 40 hours/week for 2,080 hours/year, at Base Hourly Rate plus Benefits**. For a crew with two EMT-Basics, the annual cost would be $48,151, based on one EMT-Basic with an hourly rate of $7.25 and the second EMT-Basic with an hourly rate of $8.00 with a benefit rate of 20 percent.

Any system with only one crew staffed would need to have Mutual Aid agreements with other EMS systems to serve as back-up to cover calls when the crew is already occupied with a call. Mutual aid agreements are common among most EMS systems and are an effective way of providing EMS to the area when only one crew is available or when a crew is on a call outside of the EMS service area.

Many alternatives may be considered for staffing an EMS system. Twelve hour shifts, 24-hour shifts, 48-hour weekend shifts. Some systems work their medics for two 24-hour shifts, which would total 48 hours each week. This would pay the staff 40 regular hours and 8 hours of overtime. The staff would then be on call for two 24-hour shifts. The eight hours of overtime pay also covers call pay for the next 48 hours. Additional call-in pay would be paid to the staff if they are called in to service an EMS call. This method provides a backup crew at all times.

By adequately staffing the EMS system, overtime hours can be kept to a minimum level. Paying overtime wages can be very costly and detrimental to an EMS system. Consideration should be given to keeping overtime pay to a minimum to control costs of the EMS system.

Labor - Volunteer EMS Service

A volunteer EMS services is referred to as volunteer, but in fact, volunteers are often reimbursed for their expenses and/or paid a nominal fee. There are a large number of volunteer EMS systems in Oklahoma. They differ some in their methods of utilizing volunteers and reimbursing volunteers for their expenses. In volunteer systems, ambulance calls are answered and dispatched by the all-emergency dispatcher located either at the fire station, local law enforcement, or area law enforcement. A volunteer EMS system will not have any added benefits other than the payments of taxes required by law. Contact your state Department of Labor or employment or equivalent agency or the U.S. Department of Labor to determine the legalities concerning volunteer labor in your region or area.

There are two basic methods of reimbursing a volunteer:

- Fee per call is a nominal fee for actually responding to a call.
- On-call fee is a nominal fee for being scheduled to be “on-call” to be available to respond to calls immediately.

Summary Table (Annual Cost for One Crew Member, based on 40 hours/week for 2,080 hours/year, at Base Hourly Rate plus Benefits)
Annual Base Labor Expense based on Various Hourly Rates and Various Benefit Rates
for *ONE* Crew Member for 8,760 hours, 24/7

Possible Level of Licensing	Hourly Rate	Annual Cost (2,080 hours)	Annual Base +10% Benefits	Annual Base +15% Benefits	Annual Base +20% Benefits	Annual Base +25% Benefits	Annual Base +30% Benefits
EMR/Basic	$7.25	$15,080	$16,588	$19,076	$22,891	$28,614	$37,198
EMR/Basic	$8.00	$16,640	$18,304	$21,050	$25,260	$31,575	$41,048
EMR/Basic	$8.25	$17,160	$18,876	$21,707	$26,048	$32,560	$42,328
Basic/Intermediate	$8.50	$17,680	$19,448	$22,365	$26,838	$33,548	$43,612
Basic/Intermediate	$9.00	$18,720	$20,592	$23,681	$28,417	$35,521	$46,177
Intermediate/Paramedic	$10.00	$20,800	$22,880	$26,312	$31,574	$39,468	$51,308
Intermediate/Paramedic	$11.00	$22,880	$25,168	$28,943	$34,732	$43,415	$56,440
Intermediate/Paramedic	$12.00	$24,960	$27,456	$31,574	$37,889	$47,361	$61,569
Intermediate/Paramedic	$13.00	$27,040	$29,744	$34,206	$41,047	$51,309	$66,702
Paramedic	$14.00	$29,120	$32,032	$36,837	$44,204	$55,255	$71,832
Paramedic	$15.00	$31,200	$34,320	$39,468	$47,362	$59,203	$76,964
Paramedic	$16.00	$33,280	$36,608	$42,099	$50,519	$63,149	$82,094

Summary Table (Two Crew Members, based on 40 hours/week for 2,080 hours/year, at Base Hourly Rate plus Benefits)
Annual Base Labor Expenses based on Various Hourly Rates and Various Benefit Rates
for *TWO* Crew Members for 8,760 hours, 24/7

Possible Level of Licensing	1st Crew Rate	2nd Crew Rate	Annual Cost (2,080 hrs ea) For Two Crew Members	Annual Base +10% Benefits	Annual Base +15% Benefits	Annual Base +20% Benefits	Annual Base +25% Benefits	Annual Base +30% Benefits
EMR/Basic or Basic/Basic	$7.25	$8.00	$31,720	$34,892	$40,126	$48,151	$60,189	$78,246
Basic/Basic or Basic/Int.	$7.25	$8.50	$32,760	$36,036	$41,441	$49,729	$62,161	$80,809
Basic/Basic or Basic/Int.	$8.00	$9.00	$35,360	$38,896	$44,730	$53,676	$67,095	$87,224
Basic/Basic or Basic/Int.	$8.00	$10.00	$37,440	$41,184	$47,362	$56,834	$71,043	$92,356
Basic/Int./Paramedic	$7.25	$10.00	$35,880	$39,468	$45,388	$54,466	$68,083	$88,508
Basic/Int./Paramedic	$7.25	$12.00	$40,040	$44,044	$50,651	$60,781	$75,976	$98,769
Basic/Int./Paramedic	$7.25	$14.00	$44,200	$48,620	$55,913	$67,096	$83,870	$109,031
Basic/Int./Paramedic	$8.50	$11.00	$40,560	$44,616	$51,308	$61,570	$76,963	$100,052
Basic/Int./Paramedic	$8.50	$12.00	$42,640	$46,904	$53,940	$64,728	$80,910	$105,183
Basic/Int./Paramedic	$8.50	$13.00	$44,720	$49,192	$56,571	$67,885	$84,856	$110,313
Basic/Int./Paramedic	$8.50	$15.00	$48,880	$53,768	$61,833	$74,200	$92,750	$120,575
Intermediate/Paramedic	$9.00	$11.00	$41,600	$45,760	$52,624	$63,149	$78,936	$102,617
Intermediate/Paramedic	$9.00	$13.00	$45,760	$50,336	$57,886	$69,463	$86,829	$112,878
Intermediate/Paramedic	$9.00	$15.00	$49,920	$54,912	$63,149	$75,779	$94,724	$123,141
Intermediate/Paramedic	$10.00	$12.00	$45,760	$50,336	$57,886	$69,463	$86,829	$112,878
Intermediate/Paramedic	$10.00	$14.00	$49,920	$54,912	$63,149	$75,779	$94,724	$123,141
Intermediate/Paramedic	$10.00	$16.00	$54,080	$59,488	$68,411	$82,093	$102,616	$133,401

The following table illustrates the different volunteer pay methodologies.

Summary
Volunteer EMS Systems – Nominal Fees

Method and Basis for Fees
Call Pay or Fee per Call
Flat rate per call serviced
Mileage fee per mile driven
(Typically, sum of above two fees cannot exceed a maximum amount per call)
On-Call Fee Options
Flat amount per shift
Nominal fee per hour
Nominal fee per 24-hour or for 48-hour weekend

Volunteer Labor – Recruitment. Being realistic with potential recruits is especially important when they are volunteers, who usually have fewer and weaker ties to an organization than regular employees. When volunteers, especially EMS volunteers, decide the job is more than they bargained for, they can and will quit. Volunteers must not be given the impression that the job is all glamour and happy endings. They need to be aware of the difficult problems they will face so that when a crisis occurs they are not completely surprised. If the EMS organization fails to provide volunteers with sufficient notice regarding the difficult situations EMTs may face, the unanticipated emotional trauma of an emergency run with an unsatisfactory result may lead to the volunteer's subsequent failure to show up for calls or even to resignation.

By the same token, potential volunteers should be encouraged to be honest about what they have and can do and what their own personal limitations are. Volunteers may develop an ability to deal with difficult situations, but if they are faced with tough problems they are not ready for, they are likely to quit. Volunteers may not know how they will react to the misfortune of others and should be encouraged to think this through and make a realistic assessment of what they can handle.

There are many ways to encourage a person to volunteer. Shared experiences, films, and role-playing exercises are techniques that can be used to develop a fair assessment by both the recruiter and a potential volunteer to determine whether or not that individual should volunteer for EMS work. Recruitment does not mean dwelling on the negative parts of the job, but it does mean providing an accurate picture of what is likely to happen.

The bottom line is that volunteers themselves must have enough information about what they will do in the EMS organization to make a decision that is right for them. Written job descriptions and signed commitment statements are useful tools for ensuring that both the volunteer and the EMS organizations have shared expectations about the volunteer's role in organizational activities.

Volunteer Labor – Retention. Keeping volunteers in EMS organizations is becoming more and more difficult. An EMS organization's efforts to retain its volunteers are as important to the success of an EMS organization as its recruitment program. The best recruitment program is of little value if the organization cannot retain its members. EMS managers must identify and respond to the social, organizational, and job-related conditions that contribute to early or increased turnover if they are to maintain an adequate level of qualified volunteer staff for the organization.

There are many reasons why individuals discontinue volunteer service. Today's lifestyles and work patterns mean that many have less extra time for volunteer work in general. Two-career and single-parent families feel sharp time constraints. The changes in volunteers' lives may make it difficult for them to continue to serve for the same length of time in the same capacities as in the past.

The demands within EMS organizations also can have a negative effect on retention. The requirements for becoming and remaining an EMS professional volunteer and career are more stringent. Meeting additional training and certification requirements is time-consuming and even costly. Internal conflicts, potential health and safety risks, work-related stress, and

lack of confidence in the use and performance of specialized equipment may contribute to early volunteer resignations.

EMS Directors need to identify alternative options and develop a strategy for retaining their most valuable resource--the existing staff of trained, competent volunteers. The factors within the control of the EMS Director that contribute to turnover need to be recognized and eliminated if possible. The EMS Director needs to adjust to those factors that cannot be controlled. For example, opportunities for reduced levels of participation could be provided for volunteers whose personal life or job requires them to reduce their time commitment to the organization. Volunteers suffering from boredom or stress in their present positions could be reassigned to new or less stressful jobs at least on a temporary basis.

For additional information on recruitment and retention, review the "Emergency Medical Services **(**EMS**)** Recruitment and Retention Manual" at the Federal Emergency Management Agency website at:

http://www.usfa.fema.gov

Also visit the Virginia Office of EMS website at:

http://www.vdh.state.va.us/OEMS/Recruitment_Retention/index.htm

Labor - Partly Paid/Partly Volunteer Service

In areas where a fully-paid system is not feasible and more service is demanded than can be provided by volunteers, the EMS system may be staffed with some full-time EMTs and some volunteers. The full-time personnel work during the busier hours of the day and the volunteers work the slack hours. The volunteers can be paid only a nominal fee per actual EMS call or the volunteers could be paid both a nominal fee per actual EMS call and a nominal fee to be on-call (the on-call fee is paid whether there are any actual calls received).

The paid staff would be paid as a regular paid staff member. The volunteer personnel would be paid as a volunteer system, with either a fee per call or a combination of fee per call and on-call pay. The EMS Director and or owner of system will decide the type of volunteer pay.

Annual Operating Costs - Building

Annual building operating costs will vary by locality and building type. Insurance premium costs are necessary to protect the EMS system for the building and its contents. The costs for electricity, heating, and cooling need to be included. The additional cost of fuel to heat the building using natural gas, LP gas, fuel oil, and/or electricity should be considered.

Building maintenance will depend on the climate and building location for lawn service, snow removal and maintenance of the building. Water, sewer, and domestic trash disposal is usually available in most small communities. In smaller EMS systems, most EMTs provide the general daily housekeeping and uniform laundry within the building. A larger EMS system may consider the option of janitorial services for the building or a laundry service for uniforms**.** These building costs can vary greatly depending on ownership, climate, and location of the EMS service.

Summary
Annual Operating Expense - Building

Building Items
Insurance for building and furnishings
Electricity, Heating and Cooling
Maintenance
Water, Sewer, Trash
Janitorial Services
Laundry Services

Annual Operating Expenses - Telephone

A telephone at the EMS building is a necessity. Typically, only one line is necessary; however, larger EMS systems choose to have more than one phone line. EMS systems that have full-time administrative staff will need additional phone services. These costs are assuming dispatch is

provided at another location and uses other communication modes for call notification. With the other communications systems utilized in EMS, personnel should be able to keep telephone costs to a minimal amount.

Annual Operating Expenses - Office Supplies

Office supplies will be needed in any EMS system. The smaller EMS providers may actually need more office supplies than larger EMS providers that outsource their billings or accounts receivables.

Annual Operating Expenses - Billing Services

Billing for EMS services is an important component of an EMS service. Billing arrangements can vary from the EMT director or supervisory staff performing this task in-house to a billing clerk in-house to a separate specialty EMS billing service. In a municipal system, the city clerk typically does the billing. The internal billing system will not always incur an additional cost. If the EMS system chooses to outsource the billing function, the current collections rate can vary from a flat fee per every call to a percent of the total amount collected. Outsourcing billing may actually be more efficient; these services have the resources to remain up-to-date on the Medicare, Medicaid, and private insurance company billing requirements. This knowledge may assist them in maximizing the amount of collections. Check to compare what is available in your local area.

Annual Operating Expenses - General Liability Insurance

General liability is required for all EMS services. Cost can vary based on ownership of the system, volume of calls, and the level of service. For instance, a city-owned system can include their EMS service under the city's general liability insurance. A privately-owned system would incur more costs for general liability insurance through a private insurance carrier.

Annual Operating Expenses - Training

Additional training and continuing education is required for all EMS staff. Costs will vary based on the level of service and the level of training previously attained by each individual technician, i.e. EMR, EMT-Basic, EMT-Intermediate, or Paramedic. Different states may have different levels of requirements for training and continuing education. Check with Emergency Systems of Oklahoma State Department of Health for the Oklahoma requirements.

http://www.ok.gov/health/Protective_Health/index.html

Annual Operating Expenses - Miscellaneous

A miscellaneous expense category is not designated for any particular expense, but rather is available in case of variance in the budget amounts and in case of any unexpected expenditures. The miscellaneous expense also varies by the size of the EMS system. An example to use would be 5 to 10 percent of your annual operating expenses for smaller systems and 10 to 25 percent for larger systems. It is the decision-makers who decide the amount of this budget item.

Summary -
Annual Operating Expenses - General

Telephone	Needed at the EMS station and/or substations
Office Supplies	Varies depending on billing
Billing Services	In-house or outsource
General Liability	
Training	Varies on level of service
Miscellaneous	5 to 10% for smaller services and 10 to 25% for larger services

Summary

One of the purposes of this guidebook is to provide a methodology to estimate costs and revenues of an EMS system. To determine the feasibility of an EMS system, planners must analyze the call data unique to the area to be served. To estimate current call volume is to

review the previous year's EMS call reports. The planners must determine the number of transport calls (both emergency and non-emergency), transfer calls, and treated, no transport calls since these calls are usually billable calls. Also, decision-makers must realize that there are many EMS calls which do not generate revenues, yet still provide a service to the community. Calls such as cancelled, refused treatment, false calls, community service calls, and standby calls all have some type of expense but do not generate any revenues. The total number of emergency and non-emergency calls should be considered. The day of week and time of day can aid the system planners on how they may want to staff the system.

Collecting data on call origination locations can play an important part in finding an ideal location for the EMS building. This also may help to determine the average response time and miles to the scene for each call. The type of traumatic incident and chief medical complaints should also be studied to determine the level of service so the EMS system may properly equip the ambulance and train personnel appropriately for the situations they may encounter. The destination locations of calls is necessary to help determine the average miles from the scene to the destination and also estimating arrival time to the destination and the time for the ambulance vehicle to return to service. By estimating the mileage, EMS systems are able to estimate revenues available for loaded miles, as well as determine cost for fuel, maintenance, tires, and upkeep of vehicles based on the use and depreciation of the vehicles. Finally, the EMS system should look at the population demographics of the patients. Comparing these data with census population data, the EMS system can estimate the age and gender of most patients. Call volume is closely tied to the age and gender of the patients.

An effective way of obtaining this information would be to gather a full year of data from the EMS systems currently serving the area. If information on EMS calls cannot be acquired, check with Emergency Systems at the Oklahoma State Department of Health to aid in obtaining information vital to the success of the EMS system.

When developing a budget for an EMS system, local cost data should be utilized. The information included in this cost section is only intended as a general guideline. The methodology is designed to assist decision-makers in developing an EMS system to fit their needs.

CHAPTER VII

EMS Funding Alternatives

EMS Funding Alternatives

Decision-makers for an EMS system have several options available to raise revenues. Some of these options, like community fund-raisers, are commendable but not reliable. More reliable sources are user fees, mileage fees, sales tax collections, public utility assessments (surcharges), subscription/membership fees, county and city subsidies, third party reimbursement, and special taxation districts. Collection percentages for EMS charges have declined due to decreased Medicare and Medicaid reimbursements. Collection percentages average between 30 percent and 70 percent. Costs for operating the EMS system were illustrated in the previous chapter; however, the "readiness" cost per ambulance will normally be around $200,000 per year and will increase as the number of calls increases over the average numbers that are the basis of the budget. This amount is important to keep in mind when you are evaluating your funding options.

Summary
EMS System Funding Mechanisms

Method
User Fee Per Call (vary based on level of service)
Non-Emergency Transport Fee
Emergency Transport Fee
Transfer Fee (Inter-facility)
Treat, No Transport Fee
Mileage Fees (per loaded miles)
City Sales Tax
County Sales Tax
Public Utility Assessments (surcharges)
Subscription/Membership Fees
County and City Subsidies
Third Party Reimbursements
Special Taxation District
Up to 3 mills for operations
Up to 3 mills for Capital Equipment (Re-paid by bonds)

User fees and mileage fees

User fees and mileage fees are generally charged for EMS service. Different fees can be charged for non-emergency transports, emergency transports, transfer calls, and treat, no transport calls. Mileage fees are charged per loaded or transport mile. For the smaller rural EMS systems, these fees generally do not cover costs and have not kept up with EMS costs and inflation. Thus, they are often supplemented with other forms of revenues. Other funding sources may need to be used to supplement funding for the EMS system.

User fees and mileage fees are typically collected from Medicare, Medicaid, private insurances, military insurances, and private pay from individuals representing deductibles, co-pays, and full-payment from the uninsured.

Sales tax collections

Sales tax collections are another way to fund an EMS System. An election of the citizens of the medical service area is required to authorize a sales tax. Percentages for sales tax collections designated for EMS systems vary based on the size of the systems. Sales taxes can be either city sales tax or county sales tax. County sales taxes have a maximum of 2 percent total in Oklahoma.

Public utility assessments

Public utility assessments (or surcharges) are another method that community residents might use to pay for the EMS service. This method is available for an EMS system that is owned by a city, town, or municipality that owns its utilities. Residents may already pay for water, sewer, sanitation, and/or electrical services. The city, town, or municipality can authorize through their governing board or council a public utility assessment without a vote of the residents. The assessment is added to the residents' normal utility bill and is paid monthly based on the current system of collection.

In county or multi-county EMS systems, subscriptions equal to the public utility assessment fees in the cities, towns, or municipalities are offered for sale to rural residents. In a city, town, or municipality that has a public utility assessment, when service is

supplied to residents in the service area that are not paying that fee, then the EMS user fees charged to the non-participants approximates the actual costs per call or is charged at a higher fee level than the EMS user fees charged to those residents that are paying the public utility assessment. Thus, persons not within the geographical boundaries of the system will pay their fair share of the cost of EMS.

Subscription/Membership Fees

Subscription/membership fees are another source of funding for EMS systems. Cities and/or rural areas in a county can pay a membership fee to the EMS system. Subscription fees are voluntary payments from individuals and/or businesses. A subscriber may be allowed a discounted user fee if and when the subscriber should utilize the EMS service. These fees are collected on a voluntary basis.

County and City Subsidies

County and city subsidies are funds allocated to EMS systems by local governments. Local governments may allocate funds to the EMS systems to supplement the service in order to assure that the residents of the area will have adequate EMS services available. EMS is beginning to be perceived as a necessary infrastructure emergency response service, like police and fire.

Special Taxation Districts

Special taxation districts are another method for funding EMS. As stated in Article X, Section 9C of the Constitution of the State of Oklahoma, an EMS district (special taxation district) can be created by a majority vote of the people at a specially-called election, within the area the district is to be established.

http://www.ok.gov/health/documents/ArticleX.pdf

The district must follow the boundaries of a county (or counties), school district (or school districts) or an incorporated city or town. If the proposed district only covers a part of a county, or part of more than one county, then school district boundary lines must be followed. The proposed district is formed to establish an annual recurring ad valorem tax levy of not more than three (3) mills per dollar of assessed valuation of all taxable property in the district for EMS operations and/or to establish funds for a bond issue for capital equipment for EMS not to exceed an additional three (3) mills per dollar of assessed valuation of all taxable property in the district. These two types of funding (for EMS operations or for EMS capital equipment) can be voted on in the same election or in separate elections.

An EMS Board of Trustees will be appointed by the board(s) of county commissioner(s) to administer and expend such tax funds for the EMS. The operational millage levy continues until voters change it; the capital millage levy is in effect until bonds are completely repaid. The board of trustees appointed by the County Commissioners assumes the responsibility to make necessary rules, procedures, and contracts, to hire appropriate personnel, to issue bonds upon approval by a majority of the voters at a special election (bonds are paid out of the capital millage levy), for the economic expenditure of funds, and to assess additional fees for services. The Board can sue and be sued.

For any 522 district Board, a “Resource Guidebook for Oklahoma 522 Districts” was updated in 2011. Guidebooks and training may be provided through Emergency Systems at the Oklahoma State Department of Health and Oklahoma Cooperative Extension Service at Oklahoma State University. The guidebook will be available online at some time in the future.

Third Party Reimbursements

Third party reimbursements are collections of payments made by governmental agencies and private insurance companies. These amounts can account for as much as 80 percent of the fees charged to patients. Understanding how to access these funding sources is vitally important. The rules and regulations to bill vary by source of third party collections. Many EMS systems

are outsourcing their billings in order to better access these funds and the billing companies will charge a flat fee per call or a percentage of fees collected for their services. If an appropriate and successful billing service is available, the increased collections will typically pay the additional cost for the service.

Medicaid Ambulance Coverage

Medicaid is a joint program of the federal and state governments. Each state establishes its own Medicaid regulations. Therefore, the reimbursement level for ambulance service from Medicaid varies greatly from state to state. There is no standard methodology to determine reimbursement rates.

Medicare Ambulance Coverage

Medicare began using a national fee schedule effective January 1, 2000, as per the Balanced Budget Act of 1997. In February 2002, the Centers for Medicare and Medicaid (CMS) published the Final Rule implementing the fee schedule. The fee schedule applies to all ambulance services, including volunteer, municipal, private, independent, and institutional providers, i.e., hospitals, critical access hospitals (except when it is the only ambulance service within 35 miles), and skilled nursing facilities. Ambulance providers and suppliers must accept the Medicare allowed charge as payment in full and not bill or collect from the beneficiary any amount other than any unmet Part B deductible and the Part B coinsurance amounts. The fee schedule is effective for claims with dates of service on or after April 1, 2002. Ambulance services covered under Medicare will then be paid based on the lower of the actual billed amount or the ambulance fee schedule amount. The fee schedule was fully implemented as of January 1, 2006. Base rates and mileage rates are included in the new schedule. Base rates are adjusted for geographic cost variations and mileage rates are designated as rural, urban, or super urban based on the zip code of the trip origination.

http://www.cms.gov/AmbulanceFeeSchedule/

The rates will vary based on the level of service provided and based upon appropriate documentation of services provided, making documentation important for EMS providers to be reimbursed properly, equitably, and at the maximum allowable level. The current 42 CFR §414.601-414.625, Fee Schedule for Ambulance Services can be accessed at:

http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title42/42cfr414_main_02.tpl

Medicare regulations complicate the billing procedures and documentation process. The EMS providers must take a proactive role in properly billing Medicare calls and providing adequate documentation to ensure maximum reimbursement levels. The EMS providers will need to either research Medicare guidelines on a regular basis to keep billing procedures current at all times or to contract (or outsource) their billing to a professional billing service.

An EMS provider should thoroughly document to promote good patient care, to reduce liability, and to ensure proper conscientious management.

For complete information on the new Medicare Fee Schedule, visit the CMS website at

http://cms.hhs.gov/

or the Medical Emergency, Rescue and Global Information Network at:

http://www.merginet.com

How to Determine Fees

EMS providers can become confused about what fees can be charged to various individuals and insurance companies. The different payment polices of the third party payers are causing this confusion.

Medicare's main requirement is that the EMS system does not routinely charge other payers less than they charge the Medicare program for the same services. An EMS provider can set up a comprehensive list of the different levels of

service with pricing for each level of service that is billed to all patients/insurers.

EMS providers should establish their own fee schedules based on the needs of their communities. They should follow the following principles:

- The levels of service must be consistently defined based on patient need, not what is covered and not covered by Medicare or other insurers.
- The levels of service should have a standard price that is charged consistently to all patients, regardless of who pays the bills.
- All coinsurance and deductibles should be collected unless the patient demonstrates financial hardship.

Medicare is strict about how the EMS providers bill for the range of services for which they pay. How the EMS providers bill for services that Medicare does not cover is up to the EMS provider.

To obtain additional information on the Medicare regulations for fee determination, visit the CMS website at:

http://cms.hhs.gov/

or the Medical Emergency, Rescue and Global Information Network at:

http://www.merginet.com

Funding Options Summary

In summary, there are many mechanisms to fund EMS systems in Oklahoma. The funding mechanisms discussed in this chapter are not all-inclusive and each state may have different funding mechanisms. This guidebook intends to represent EMS systems based on the current rules, regulations, and laws in Oklahoma at the time of this writing. The information in this guidebook could be affected by new legislation involving EMS enacted after the date of this publication. Contact the state EMS Division to determine the funding mechanisms available in a particular state.

CHAPTER VIII

Example EMS System Case Studies

Example EMS System Case Studies

Estimated Costs and Revenues for EMS System Development

Two case studies will be presented to illustrate costs and revenues (funding) for EMS system development. Capital and operating costs are based on the average known replacement or operating costs. Capital costs are the costs of all capital equipment needed to operate an EMS system; i.e., building, furnishings, computers, vehicles, vehicle radios, oxygen sets, and communications equipment. Annual capital costs are defined as the annual amortized costs or annual straight-line depreciation of the capital equipment (building, furnishings, computers, vehicles, vehicle radios, oxygen sets, other communications equipment, etc.). These annual capital costs are important since they act as a "sinking fund" or capital equipment replacement fund to replace worn capital items and these funds are needed to purchase additional capital items in the future. Annual operating costs are the day-to-day expenses of operating the EMS system (salaries, benefits, utilities, fuel, maintenance, supplies, insurance, etc.).

The first case study will show a certified Emergency Medical Response Agency (EMRA). The second case study is based on a volunteer basic life support (BLS) EMS service providing coverage 24 hours per day, 365 days per year. The case studies are not recommendations but rather an informational analysis of a methodology for estimating costs and revenues (or budgeting) for an EMS system. The two case studies are illustrated here.

Case Study – Certified Emergency Medical Response Agency (EMRA)

To illustrate the costs of a certified Emergency Medical Response Agency (EMRA), a case study, **Example EMRA Case Study**, is illustrated on **Form 1**. There will be no adjustment factor since this is being budgeted for the current year. The case study shows the cost for an EMRA with four Emergency Medical Responders (EMRs) equipped with four EMR medical supply kits ($500 x 4 = $2,000), two automated external defibrillators (AEDs) ($2,200 x 2 = $4,400), and four portable radios with built-in pagers ($800 x 4 = $3,200). The total capital costs for the **Example EMRA Case Study** are estimated to be $9,600.

The **Example EMRA Case Study** will need to either borrow money to cover the capital costs or establish a replacement fund to replace equipment as it expires. The capital equipment items are estimated to have a life expectancy of approximately five years. Each item will include the annual replacement cost based on a 5-year straight-line depreciation method. The expected life of items can vary based on the level of usage and on technological changes in equipment. The total annual capital costs for the **Example EMRA Case Study** are $1,920.

Two EMRs need to be trained for licensing. Currently, the EMR course costs $225 ($225 x 2 = $450). For registrations, the EMRs must take and pass the National Registry ($65 x 2 = $130). The other two EMRs will attend a refresher/continuing education class this year ($50 x 2 = $100) and have their National Registry fees renewed ($20 x 2 = $20).

The **Example EMRA Case Study** services approximately 65 calls per year based on call records from the previous year. Medical supplies will be needed for the calls ($20 x 65 = $1,300) with 25 percent of the calls needing AED use ($25 x 16 = $400). There is a maintenance contract on the four portable radios with built-in pagers that costs $10 per quarter per radio, for a total cost of $160 annually. The total annual operating costs are $2,600 for the **Example EMRA Case Study**. The total annual capital and operating costs are estimated to be $4,520, which is an average cost of $70 per call for the 65 calls.

Case Study – Basic Life Support Volunteer Service

The BLS Case Study is based on estimated costs for a basic life support (BLS) EMS system that would provide one working EMS Director and

two volunteer BLS crews, 24 hours per day, 365 days per year. The capital equipment items needed for the **BLS Case Study** are included in the first column of **Form 2**.

BLS Case Study *– Capital Equipment*

The EMS system has two Type III ambulance vehicles with an estimated replacement cost of $130,000 each, for a total of $260,000. The vehicles are equipped with basic life support equipment, at a cost of $18,000 per ambulance, for a total of $36,000. The BLS equipment necessary to equip an ambulance is listed in **Appendix A**. The EMS service may desire to contract through a Mutual Aid Agreement with a neighboring EMS service for backup support in the event the EMS crews are not available.

The EMS system uses the local law enforcement for dispatch services. A vehicle radio and a vehicle patient compartment radio for communications will be needed for each ambulance at an estimated cost of $2,400 per vehicle, for a total of $4,800 to stock both vehicles. Communications between the dispatcher and the EMS staff are of utmost importance; portable radios will be needed to facilitate these communications. It is estimated that ten portable radios will be needed. At a cost of $700 each, the total cost is estimated at $7,000.

Oxygen sets will be stocked at a cost of $1,500 each; a total of $6,000 will be spent to stock two oxygen sets for each vehicle. The building costs $100,000 for two bays. This is based on local data from the community. Total capital costs for the BLS Case Study are estimated to be $413,800.

BLS Case Study *– Annual Capital Equipment*

A sinking fund or capital equipment replacement fund is necessary to provide for the long-term needs of an EMS system. Items can be depreciated based on straight-line depreciation methodology or money can be borrowed and the amortization can be illustrated. For this alternative, the annual capital costs (or annual replacement costs or depreciation costs) are shown in column 9 of **Form 2**.

Ambulance vehicles are depreciated based on 75,000 miles or seven years, whichever comes first. Annual depreciation cost for the ambulance vehicle is based on annual total miles of 10,200 as reported by the BLS Case Study EMS. Over a seven-year period, the total miles driven will be approximately 71,400 (10,200 miles x 7 years = 71,400 miles). Since this number is less than the 75,000, the vehicles will be depreciated over 7 years, based on the maximum of number of years. This results in an estimated annual replacement cost of $37,143 for both Type III ambulance vehicles. The BLS equipment is also depreciated the same period as the vehicles (in this case, seven years), resulting in an annual replacement cost of $5,143 for the two ambulances. Total annual capital costs relating to vehicles are $42,286.

The vehicle communications, portable radios, and oxygen sets, are all depreciated over five years, resulting in annual replacement costs of $960, $1,400, and $1,200, respectively. To keep the building facilities updated according to local and state codes, a building replacement/ improvement fund needs to be established for the future. Amortizing the building over 30 years at an interest rate of 7 percent results in an annual capital cost of $8,059. The estimated total annual capital costs for the BLS Case Study are $53,905.

BLS Case Study *– Annual Operating Expenses*

Annual operating costs are the day-to-day expenses of operating the EMS system (salaries, benefits, fuel, oil, maintenance, supplies, insurance, etc.). The annual operating costs for this alternative are shown in column 8 of **Forms 3a, 3b, 3c, and 3d**.

Vehicle expenses include fuel being purchased at an estimated cost of $3.80/gallon. Based on 8 mpg for the Type III vehicles and total mileage for the year estimated to be 10,200 miles, the total gallons estimated to be needed is 1,275

(10,200/8 = 1,275). The annual cost for gas is estimated at $4,845 ($3.80 x 1,275 = $4,845). Fuel may be obtained at a lower cost from local government officials if local arrangements can be made. The vehicle tires are estimated at a cost of $160 per tire for 6 tires. The annual mileage is divided by the estimated life of a tire which is 27,000 miles to derive at an annual cost of $363 for tires. Oil, filter and lubrication changes are based on a cost of $85 per oil every 2,500 miles. The total cost is $347. The vehicle licenses are based on a cost of $10 per vehicle for a total of $20. Other vehicle maintenance and repairs is estimated at $1,750 per vehicle per year. The vehicle insurance is estimated to cost $2,500 per vehicle for a total of $5,000. Check with your state to see if lower rates are available through a state subsidized insurance program or risk management or insurance commission. The total vehicle operating costs are estimated to be $14,075 (**Form 3a**).

From **Form 3b**, the insurance expense for the building is $950, based on a cost of $10 per $1,000 of building value of $95,000. Utilities are budgeted at $400 per month, for a yearly total of $4,800. Telephone is an additional monthly expense of $55, for a yearly total of $660. The medical supply expenses are based on a cost of $10 per call for all 238 calls ($10 x 238 = $2,380) and an additional cost of $25 per call for each of the 38 emergency calls ($25 x 38 = $950). The communications maintenance expense is for the vehicle radios and the portable radios, with a monthly expense of $210, for an annual cost of $2,520. General liability insurance for the **BLS Case Study** is estimated at $400 per month for a total of $4,800. This is based on a municipal government system so the cost is quite low. The cost for this insurance can vary widely based on the type of ownership and the area of the U.S.

The labor costs for the **BLS Case Study** are detailed in **Form 3c**. The EMS Director has an annual salary of $6,000. Duties are to oversee the day-to-day operations of the **BLS Case Study** EMS. There will be one volunteer crew staffing the **BLS Case Study** EMS, with a backup crew on-call. The staff will consist of one EMT-Basic and one EMT or EMR 24 hours a day. These volunteers are being paid $1 per hour while on duty and an established fee per transport call of $30 per call. A back-up crew is paid $0.50 per hour and also a transport call fee of $30 per call. There were 200 transports resulting in an estimated total volunteer cost of $12,000 for call pay. The total expense of base salaries, volunteer on-call pay per hour, and volunteer call pay is estimated to be $44,280 for the **BLS Case Study**. Benefits are basically only the government required social security rate, calculated at 10 percent of total base salaries or $4,428 annually. All of the labor costs are broken down in detail in **Form 3c**. The total labor costs are estimated to be $48,708 annually.

From **Form 3d**, billing expenses are provided either in-house or can be outsourced to a professional billing service. The **BLS Case Study** is outsourcing the billing and based on forty percent collections and an emergency fee of $450, non-emergency fee of $350, and mileage fee of $10 per loaded mile, the collections total approximately $57,296. Based on a fee of eight percent of total collections, the Case Study would pay approximately $4,584 in billing expenses. Office supplies are estimated at $50 per month, for an annual expense of $600. Training expenses are estimated at $100 per person for five persons per year, for an annual training expense of $500. EMT licensing expenses are estimated to be $75 per year and the license for the service is a $10 renewal fee. A miscellaneous expense of $1,200 is also included in the budget to cover any unexpected costs or any items that exceed the budgeted amounts.

BLS Case Study *– Cost Summary*

To summarize the costs, **Form 4** shows the total capital costs of $413,800, the annual capital costs of $53,905, and the annual operating costs of $88,787. The BLS Case Study EMS total annual capital and operating costs are estimated to be $142,642, representing a cost of $599 per call.

BLS Case Study *- Alternative Revenue Sources*

Decision makers for the BLS Case Study EMS service have several ways to raise revenues. Some of these ways, like community fund-raisers, are commendable but not reliable. More reliable sources are user fees, sales taxes, subscription/membership fees, third party reimbursement, fee collected on local utility bill, and special taxation districts. User fees are generally charged for EMS services; however, these fees generally do not cover costs and have not kept up with EMS costs and inflation in the smaller rural EMS systems. Thus, they are often supplemented with other forms of revenues. For this study, mileage and user fees, millage levies from formation of a special taxation district, and sales tax are presented in **Forms 5a, 5b, 5c, and 5d**.

Form 5a shows the revenues possible for user fees with alternative collection rates. Base rates for user fees for emergency calls are illustrated, starting at $400 and ranging up to $575 are shown. Base rates for non-emergency user fees are shown, starting at $250 up to $550. These are shown so that an EMS service could charge different rates for different types of calls. Alternative collection rates are shown: 70%, 60%, 50%, 40% and 30%.

Mileage charges (**Form 5b**) are shown for $9.00 per mile up to $12.00 per mile for one-way (loaded) miles. For the BLS Case Study, estimated one-way miles are approximately 4,284 miles. Calculations are shown on how much revenue could be generated if 30, 40, 50, 60 or 70 percent of the total mileage fees are collected.

Form 5c illustrates the estimated revenues that would be generated from millage levies through the creation of a special taxation district for the Case Study school district. The total net property valuation for the Case Study school district for FY 2010 was $25,040,678. Three mills would generate $75,122, two mills $50,081, and one mill $25,041.

Form 5d illustrates the revenue from a sales tax collection. The table shows the revenues resulting from ¼¢ up to 2¢ sales tax based on FY 2010 sales tax collections obtained from the Case Study's State Tax Commission. The sales subject to sales tax totaled $10,485,234 for the Case Study's municipal government. A 1¢ sales tax would result in an estimated $104,852 in revenues. These estimates are based on historical data and are only intended to estimate future revenues.

To illustrate how to utilize the revenue tables, **Form 6** presents 2 funding options for BLS Case Study. The BLS Case Study would need an estimated $142,289 for total annual capital and operating expenses. One method to fund this alternative is shown in **Funding Option #1.** All collections are based on forty percent collections:

- Emergency call fee of $450;
- Non-emergency call fee of $350;
- Mileage fee of $10; and
- Special taxation district (522) for 3 mills ad valorem taxes.

From the first column of **Form 6**, the total for these four funding mechanisms is $132,418. When subtracting the revenues from the total costs, there is a deficit of $9,871 based **Funding Option #1** (**Form 6**).

Another method to fund this alternative would be to consider passing a 1 cent sales tax to generate approximately $104,852. This would be in lieu of the 522 district. **Form 6, Funding Option #2** shows the same user fees and mileage fees and the sales tax instead of the three mills ad valorem taxes. When comparing the revenues to the costs for **Funding Option #2**, this would result in a surplus of $19,859.

BLS Case Study *- Conclusion*

The analysis of the BLS Case Study EMS service is based on average costs received from many different sources; from the Oklahoma EMS studies completed over the last few years, from equipment suppliers, from the EMS

training facilities in Oklahoma, from the experiences of the EMS Division field staff in Oklahoma, etc. This guidebook is designed to assist an EMS service to develop their own Case Study by using the blank forms in **Appendix C**. If additional assistance is needed, refer to resources included in **Chapter X**.

Regional Budgeting Alternatives

For current EMS systems, the methodology from above for analyzing costs and revenues could be utilized to determine if any of the following regional budgeting alternatives could be beneficial. Regional budgeting is a concept that the Emergency Systems of Oklahoma State Department of Health and Oklahoma Cooperative Extension Service designed. Regional budgeting includes alternative funding mechanisms, alternative organizational options, and more efficient and effective modes of operation, including those described below:

- Purchasing options are expanded with opportunities to receive reduced prices and/or discounts on medical supplies, ambulance vehicles, etc.
- Combine billing and collections with other EMS systems
- Combine medical direction with other EMS systems
- Combine administrative and/or billing staff with other EMS systems
- Combined mechanic, maintenance, and/or repair activities with other EMS systems
- Develop Certified Emergency Medical Response Agencies (EMRAs)
- Regional dispatch and communication mechanisms
- Determine appropriate staffing patterns
- Determine appropriate user fees per call
- All-inclusive EMS system; combining two or more EMS providers

The regional budgeting considerations presented are not considered to be the only possible methods for providing more efficient and effective emergency medical services. These are presented as ideas for the EMS providers to consider. EMS providers may be innovative and develop their own ideas.

Other thoughts on regional budget considerations include location of stations and substations to maximize efficiency, review detailed call data for determination of stations and substations, review medical condition data in determining the level of care to be provided, consider the level of care that can be provided in conjunction with EMRAs to assist with coverage in remote or isolated areas, and consider seasonal trends in call frequencies and staff efficiently for coverage.

Regional budgeting alternatives are provided as ideas on developing efficiencies to maintain, sustain, and retain emergency medical services for the future.

Budgeting Assistance Available

These analyses can be provided for a single EMS provider or for multiple EMS providers considering regional budgeting alternatives. For assistance with determining the costs and funding alternatives for an EMS system, contact Oklahoma Cooperative Extension Service at Oklahoma State University at 405-744-6083.

Form 1. Certified Emergency Medical Response Agency (EMRA) - Estimating the Annual Cost for _EMRA Case Study_

(1) Item	(2) Unit Cost		(3) No. of Units		(4) Adjustment Factor		(5) Total Capital Costs		(6) Years to Replace	or	(7) Amortization Factor		(8) Annual Costs	
Capital Equipment Costs														
Medical Supply Kits	**$500**	x	**4**	x	**1**	=	**$2,000**	÷	**5**	or x		=	**$400**	A.
Semi-Automated Electronic Defibrillator	**$2,200**	x	**2**	x	**1**	=	**$4,400**	÷	**5**	or x		=	**$880**	B.
Communications (Choose One)														
Portable Radios with Built-In Pagers	**$800**	x	**4**	x	**1**	=	**$3,200**	÷	**5**	or x		=	**$640**	C.
Portable Radios		x		x		=		÷		or x		=		D.
Pagers (Alpha-Numeric or Voice)		x		x		=		÷		or x		=		E.
Cellular Telephones		x		x		=		÷		or x		=		F.
CAPITAL EQUIPMENT COST TOTALS					**Total Capital**		**$9,600** Sum A. - F.		**Total Annual Capital**				**$1,920** Sum A. - F.	G.
Annual Operating Costs														
EMR Courses/Books/Supplies	**$225**	x	**2**	x	**1**							=	**$450**	H.
National Registry EMR Exams	**$65**	x	**2**	x	**1**							=	**$130**	I.
EMR Continuing Education														
EMR Biennial Refresher Course	**$50**	x	**2**	x	**1**							=	**$100**	J.
National Registry EMR Renewal Fees	**$10**	x	**2**	x	**1**							=	**$20**	K.
EMRA Initial License Fee														L.
EMRA Renewal License Fee (every 2 yrs)	**$20**	x	**2**	x	**1**							=	**$40**	M.
Medical Supplies Per Call	**$20**	x	**65**	x	**1**							=	**$1,300**	N.
Defibrillator Use Per Call	**$25**	x	**16**	x	**1**							=	**$400**	O.
Monthly Pager/Cellular Telephone Fees		x		x								=		P.
Equipment Maintenance Contracts	**$40**	x	**4**	x	**1**							=	**$160**	Q.
TOTAL ANNUAL OPERATING COSTS													**$2,600** Sum H.-R.	R.
TOTAL ANNUAL CAPITAL AND OPERATING COSTS													**$4,520** G. + R.	S.

Form 2. EMS System - Estimating Capital Costs and Annual Capital Costs for __BLS Case Study

	(1) Capital Expenditures	(2) Unit Cost $		(3) No. of Units		(4) Adjustment Factor		(5) Total Capital Costs		(6) Life*/Miles/ Years to Replace		(7) Annual Miles	OR	(8) Amortization Factor		(9) Annual Capital Costs
	Vehicles and Vehicle Equipment															
A	Vehicle Type I		x	x			=			÷ (	÷	)	or x		=	
B	Vehicle Type II		x	x			=			÷ (	÷	)	or x		=	
C	Vehicle Type III	**$130,000**	x	**2** x		**1**	=	**$260,000**		÷ (**7**	÷	**10,200**)	or x		=	**$37,143**
D	Command Vehicle		x	x			=			÷ (	÷	)	or x		=	
E	EMR Vehicle		x	x			=			÷ (	÷	)	or x		=	
F	BLS Equipment	**$18,000**	x	**2** x		**1**	=	**$36,000**		÷ (**7**	÷	**10,200**)	or x		=	**$5,143**
G	ALS Equipment		x	x			=			÷ (	÷	)	or x		=	
H	**Subtotal - Vehicle and Vehicle Equipment**							**$296,000**								**$42,286**
								Sum A5:G5								Sum A9:G9
	Communications Equipment															
I	Base Communications		x	x			=			÷			or x		=	
J	Repeater and Tower Systems		x	x			=			÷			or x		=	
K	Vehicle Communications	**$2,400**	x	**2** x		**1**	=	**$4,800**		÷ **5**			or x		=	**$960**
L	Pagers/radios/phones	**$700**	x	**10** x		**1**	=	**$7,000**		÷ **5**			or x		=	**$1,400**
	Additional Equipment															
M	Oxygen Set	**$1,500**	x	**4** x		**1**	=	**$6,000**		÷ **5**			or x		=	**$1,200**
N	First Responder Kit		x	x			=			÷			or x		=	
O	Defibrillator Unit		x	x			=			÷			or x		=	
	Building and Furnishings															
P	Building	**$100,000**	x	**1** x		**1**	=	**$100,000**		÷			or x	**0.08059**	=	**$8,059**
Q	Furnishings		x	x			=			÷			or x		=	
R	**Subtotal - Communications, Additional Equipment, & Building/Furnishings**							**$117,800**								**$11,619**
								Sum I5:Q5								Sum I9:Q9
S	TOTAL OF CAPITAL COSTS							**$413,800**								**$53,905**
								H5+R5 TOTAL								H9+R9 ANNUAL

* Maximum life for vehicle is 75,000 miles or 7 years, whichever comes first.

Form 3a. EMS System - Estimating Annual Operating Costs for BLS Case Study

	(1) Item	(2)		(3)		(4)		(5)		(6)		(7) Subtotal	(8) Annual Operating Costs
	Vehicle(s)												
	Gasoline												
A	Cost per Gallon of Gas	**$3.80** Cost/Gallon	x	**1** Adj. Factor	=	**$3.80** Adj. $/gal.							
B	Type I or Type III vehicle	**10,200** Yr. Mileage	÷	**8** Avg. mpg	x	**$3.80** A4					=	**$4,845**	
C	Type II vehicle	Yr. Mileage	÷	Avg. mpg	x	A4					=		
	Tires (radials)												
D	Cost per Tire	**$160** Cost/Tire	x	**1** Adj. Factor	=	**$160** Adj. $/Tire							
E	Type I or Type III Vehicle	**10,200** Yr. Mileage	÷	**27,000** Mileage/Tire	x	**$160** Adj. $/Tire	x	**6** No. of Tires			=	**$363**	
F	Type II Vehicle	Yr. Mileage	÷	27,000 Mileage/Tire	x	Adj. $/Tie	x	4 No. of Tires			=	$0	
G	Oil, filter and lubrication	**$85** Cost/Change	x	**1** Adj. Factor	=	**$85** Adj. $/Change	x	**10,200** Yr. Mileage	÷	**2,500** Miles/Change	=	**$347**	
H	Vehicle Licenses	**$10** Cost/Vehicle	x	**2** No. Vehicles							=	**$20**	
I	Vehicle Maintenance and Repairs	**$1,750** Yr. Cost	x	**1** Adj. Factor	x	**2** No. of Vehicles					=	**$3,500**	
J	Vehicle Radio Contract	Yr. Cost	x	Adj. Factor	x	No. of Vehicles					=	$0	
K	Vehicle Insurance	**$2,500** Yr. Cost	x	**1** Adj. Factor	x	**2** No. of Vehicles					=	**$5,000**	
L	Subtotal - Annual Operating Costs - Vehicles												**$14,075** Sum B7:K7

Form 3b. EMS System - Estimating Annual Operating Costs for ___BLS Case Study_____

	(1) Item	(2)		(3)		(4)		(5)		(6)		(7) Subtotal	(8) Annual Operating Costs
	Building												
A	Insurance	**$10** Cost/$1,000	x	**1** Adj. Factor	=	**$10** Adj. $/$1,000	x	**$95,000** $ Insured Value	÷	**$1,000**	=	**$950**	
B	Heat/Cool, Water, Sewer, Trash	**$400** Cost/Month	x	**1** Adj. Factor	=	**$400** Adj. $/Month	x	**12** No. Months			=	**$4,800**	
C	Telephone	**$55** Cost/Month	x	**1** Adj. Factor	=	**$55** Adj. $/Month	x	**12** No. Months			=	**$660**	
D	Building Maintenance	_____ Cost/Sq. Ft.	x	_____ Adj. Factor	=	_____ Adj. $/Sq. Ft.	x	12 No. Months			=	_____	
	Medical Supplies												
E	Non Emergency Calls	**$10** ($/linens)	x	**1** Adj. Factor	=	**$10** Adj. $/Linen)	x	**238** No. Calls			=	**$2,380**	
F	Emergency Calls	**$25** ($/linens)	x	**1** Adj. Factor	=	**$25** Adj. $/Linen)	x	**38** No. Calls			=	**$950**	
	Communications Expense												
G	Communications Mo. Expense	_____ Cost/Month	x	_____ Adj. Factor	=	_____ Adj. $/Month	x	12 Months			=	_____	
H	Communications Maint. Expense	**$210** Cost/Month	x	**1** Adj. Factor	=	**$210** Adj. $/Month	x	**12** Months			=	**$2,520**	
I	**General Liability Insurance**	**$400** Cost/Month	x	**1** Adj. Factor	=	**$400** Adj. $/Month	x	**12** Months			=	**$4,800**	
J	Subtotal - Annual Operating Costs - Building/Medical Supplies/Communications/Liability Insurance												**$17,060** Sum A7:I7

Form 3c. EMS System - Estimating Annual Operating Costs for BLS Case Study

	(1) Item	(2)	(3)	(4)	(5)	(6)	(7) Subtotal	(8) Annual Operating Costs
	Labor							
A	**EMS Director - Hourly**	____ x	____ x	____ x	____ =			
		No.	Hrs./Day	Days/Yr.	Hourly Rate			
B	**EMS Director - Annual Salary**	**1** x	**$6,000**			**$6,000**		
		No.	Yr. Salary					
	Crew - Paid or Volunteer							
C	1st Crew Member_____	**1** x	**24** x	**365** x	**$1.00** =	**$8,760**		
		No.	Hrs./Day	Days/Yr.	Hourly Rate			
D	2nd Crew Member_____	**1** x	**24** x	**365** x	**$1.00** =	**$8,760**		
		No.	Hrs./Day	Days/Yr.	Hourly Rate			
	Crews - Paid or Volunteer							
E	1st Crew Member_____	**1** x	**24** x	**365** x	**$0.50** =	**$4,380**		
		No.	Hrs./Day	Days/Yr.	Hourly Rate			
F	2nd Crew Member_____	**1** x	**24** x	**365** x	**$0.50** =	**$4,380**		
		No.	Hrs./Day	Days/Yr.	Hourly Rate			
	Call or Transport Pay							
G	1st Crew Member_____	**200** x	**$30.00**		=	**$6,000**		
		No.	Rate					
H	2nd Crew Member_____	**200** x	**$30.00**		=	**$6,000**		
		No.	Rate					
I	Dispatch Clerk	____ x	____ x	____ x	____ =			
		No.	Hrs./Day	Days/Yr.	Hourly Rate			
J	Total Base Salaries				=	**$44,280**		
K	Overtime	$ ____ x	____		=			
		J6	Percent					
L	Total Base Salaries and Overtime					=	**$44,280**	
M	Benefits	**$44,280** x	**10.0%**			=	**$4,428**	
		L7	Percent					
N	Subtotal - Annual Operating Cost - Labor Costs							= **$48,708**
								L7+M7

Form 3d. EMS System - Estimating Annual Operating Costs for BLS Case Study

	(1) Item	(2)	(3)	(4)	(5)	(6)	(7) Subtotal	(8) Annual Operating Costs
A	**Billing Expense**	____ Cost/Call x ____ Billable Calls	or	**8%** Percent x	**$57,296** Collections =			**$4,584**
B	**Office Supplies**	**$50** Cost/Month x	**12** No. Months =					**$600**
C	**Uniform Allowance**	**$200** Cost/Yr/Person x	**10** No. Medics =					**$2,000**
	Training Costs							
D	Training Courses/Books/Supplies	**$100** Cost x	**5** No. =			=	**$500**	
E	National Registry Exams	**$15** Cost x	**5** No. =			=	**$75**	
	Training Costs Subtotal							**$500**
F	Licensing Expenses							
	EMS System License	**$10** Cost/Yr. x	**1** No. =					**$10**
G	**Car Allowance**	____ Cost/Mile x	____ Mileage				=	
H	**Miscellaneous**	**$100** Cost/Month x	**12** No. of Months				=	**$1,200**
I	Subtotal - Annual Operating Expenses - Billing, Office, Uniform Training, Car Allowance, Miscellaneous							**$8,894** Sum A8:I8

Form 4. EMS System - Summary Costs for _____BLS Case Study_____

	(1) Item	(2)	(3)
A	Total Capital Costs		$413,800 Form 2, S5
B	Total Annual Capital Costs		$53,905 Form 2, S9
C	Annual Operating Costs		
D	**Form 3a** Subtotal - Vehicles	$14,075 Form 3a, L8	
E	**Form 3b** Subtotal - Building/Medical Supplies/Communications/Liability Insurance	$17,060 Form 3b, J8	
F	**Form 3c** Subtotal - Labor	$48,708 Form 3c, N8	
G	**Form 3d** Subtotal - Billing, Office, Uniform Training, Car Allowance, Miscellaneous	$8,894 Form 3d, I8	
H	Total Annual Operating Costs		$88,737 Sum(D2:G2)
I	Total Annual Capital & Operating Costs		$142,642 B3+H3

Form 5a. EMS System Revenues - Estimated User Fee Per Call for BLS Case Study

Transported Calls	
Emergency Calls	38
Non-Emergency Call	238
Total Transported Calls	276

EMERGENCY CALLS		Estimated User Fee Per Call						
		$400	$450	$475	$500	$525	$550	$575
No. of Calls	38	$15,200	$17,100	$18,050	$19,000	$19,950	$20,900	$21,850
Collections at	70%	$10,640	$11,970	$12,635	$13,300	$13,965	$14,630	$15,295
Collections at	60%	$9,120	$10,260	$10,830	$11,400	$11,970	$12,540	$13,110
Collections at	50%	$7,600	$8,550	$9,025	$9,500	$9,975	$10,450	$10,925
Collections at	40%	$6,080	$6,840	$7,220	$7,600	$7,980	$8,360	$8,740
Collections at	30%	$4,560	$5,130	$5,415	$5,700	$5,985	$6,270	$6,555

NON-EMERGENCY CALLS		Estimated User Fee Per Call						
		$250	$300	$350	$400	$450	$500	$550
No. of Calls	238	$59,500	$71,400	$83,300	$95,200	$107,100	$119,000	$130,900
Collections at	70%	$41,650	$49,980	$58,310	$66,640	$74,970	$83,300	$91,630
Collections at	60%	$35,700	$42,840	$49,980	$57,120	$64,260	$71,400	$78,540
Collections at	50%	$29,750	$35,700	$41,650	$47,600	$53,550	$59,500	$65,450
Collections at	40%	$23,800	$28,560	$33,320	$38,080	$42,840	$47,600	$52,360
Collections at	30%	$17,850	$21,420	$24,990	$28,560	$32,130	$35,700	$39,270

Form 5b. EMS System Revenues - Estimated Mileage Fees for BLS Case Study

Total Loaded Miles 4,284

		Mileage Fees						
		$9.00	$9.50	$10.00	$10.50	$11.00	$11.50	$12.00
For One-Way Miles		$38,556	$40,698	$42,840	$44,982	$47,124	$49,266	$51,408
Collections at	70%	$26,989	$28,489	$29,988	$31,487	$32,987	$34,486	$35,986
Collections at	60%	$23,134	$24,419	$25,704	$26,989	$28,274	$29,560	$30,845
Collections at	50%	$19,278	$20,349	$21,420	$22,491	$23,562	$24,633	$25,704
Collections at	40%	$15,422	$16,279	$17,136	$17,993	$18,850	$19,706	$20,563
Collections at	30%	$11,567	$12,209	$12,852	$13,495	$14,137	$14,780	$15,422

Form 5c. EMS System Revenues - EMS District Mills for BLS Case Study

School District	Total Net Valuation	One Mill	Two Mills	Three Mills
School District - Case Study	$25,040,678	$25,041	$50,081	$75,122
School District B	$_____	$_____	$_____	$_____
School District C	$_____	$_____	$_____	$_____
School District D	$_____	$_____	$_____	$_____
School District E	$_____	$_____	$_____	$_____
School District F	$_____	$_____	$_____	$_____
School District G	$_____	$_____	$_____	$_____
School District H	$_____	$_____	$_____	$_____
School District I	$_____	$_____	$_____	$_____
Total	$25,040,678	$25,041	$50,081	$75,122

Form 5d. EMS System Revenues - Sales Tax for BLS Case Study
Based on FY Sales Tax Collections

City	Sales Subject to Sales Tax	Sales Tax Rates ¼¢	½¢	¾¢	1¢	1¼¢	1½¢	1¾¢	2¢
Case Study	$10,485,234	$26,213	$52,426	$78,639	$104,852	$131,065	$157,279	$183,492	$209,705
City B	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City C	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City C	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City D	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City E	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
Totals	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____

Form 6. EMS System - Possible Funding Options for ___BLS Case Study_____

Funding Option #1		Funding Option #2	
Costs:		Costs:	
Total Annual Capital & Operating Expenses	$142,642	Total Annual Capital & Operating Expenses	$142,642
Revenues:		Revenues:	
Emergency Fee $450, 40%	$6,840	Emergency Fee $450, 40%	$6,840
Non-Emergency Fee $350, 40%	$33,320	Non-Emergency Fee $350, 40%	$33,320
Mileage Fee $10, 40%	$17,136	Mileage Fee $10, 40%	$17,136
522 District, 3 mills	$75,122	Sales Tax, 1 cent	$104,852
Total Revenues	$132,418	Total Revenues	$162,148
Difference	($10,224)	Difference	$19,506

CHAPTER IX

Effective Administration:
A Key to a Viable EMS Program

Effective Administration: A Key to a Viable EMS Program

What works in the **BLS Case Study** may not work someplace else. For instance, **BLS Case Study** EMS and the city in which it is located have created an EMS District (or 522 District). The district will receive tax monies for operation, and will charge its users for services it renders. The tax revenue ensures a consistent funding stream for EMS operations, a funding mechanism for EMS capital equipment needs, and flexibility in the overall organization and management of the EMS agency (or agencies). If collections for service are vigorously pursued, there may be adequate continuous funding to support operation of the EMS system.

Dispensation of the tax funds are the responsibility of the 522 Board appointed by the taxing authority upon creation of the district. The Board also has the power to contract, organize, maintain, and otherwise assure life-sustaining emergency care within the EMS District. Members of the Board are professional, business and civic leaders of the area to be served. They are responsible for day-to-day operation of the EMS system but cannot, because of their personal business and professional obligations, supervise daily operations themselves. Three alternatives are available: contract for EMS services with current EMS providers, own and operate the EMS system, or employ an administrator to handle the business of the 522 Board. Each of these is discussed:

522 District – Contracting for EMS services

The first alternative for structuring EMS operations in the 522 district is to contract with licensed established EMS providers to provide services. If a 522 board decides to contract with licensed established EMS providers, the 522 board is not the employer and may not need to know the labor/personnel laws in detail. The 522 board will rely heavily on the EMS directors for providing EMS in the district.

522 District – Owning & Operating System

The other alternative for structuring district EMS operations is to own and operate the EMS. This requires the most amount of time to establish. However, once the system is established and operational, the director of the EMS will then provide the day-to-day management of the system and report regularly to the 522 board. The 522 board will have regular meetings and oversee the operations of the EMS through the EMS Director. This means that the 522 Board will need to employ a knowledgeable, capable, trustworthy EMS director.

The 522 board typically employs a qualified EMS director who will be responsible for the establishment of SOPs, the day-to-day EMS operations, quality assurance, and collection of accounts. In addition, the EMS administrator is required to prepare reports (as specified by the 522 board) to present regularly to the 522 board and to develop plans for future development of EMS in the district to present to the 522 board. The 522 board is an appointed, voluntary board and, as such, it is recognized that the members may have other fulltime job responsibilities or other affairs to conduct. The EMS Director will provide requested reports and information, and overall support and staff to the 522 board. The 522 board is not expected to be fully knowledgeable of the technical aspects of EMS operations and management; however, the 522 board must ensure that appropriate personnel are available to provide this expertise to meet the 522 board's due diligence and fiscal responsibilities. Owning and operating the EMS system requires the most involvement of a 522 board and the most knowledge of the legislation, rules, regulations, information, and forms.

Although this is the most complicated structure of an EMS district, the district may have advantages over contractual arrangements for EMS. The 522 board has full control of all aspects of the EMS operations. This can prove to be advantageous in having unified medical direction, communications systems (dispatch), and/or backup vehicles. Owning and operating a 522 district may result in improved quality

control, better coordination and cooperation, better preparation for unexpected disasters, and rotation of personnel for more effective coverage.

522 District – Employ Board Administrator

Another alternative the 522 board may consider is the employment of an administrator to manage and oversee all of the board's business activities. This would require the 522 board to become an employer. This means that the 522 board will need to employ a knowledgeable, capable, trustworthy administrator to handle the business of the board.

The duties of an administrator could include contracting with licensed established EMS providers for EMS in the district. The administrator will need a thorough knowledge of all the legislation, rules, and regulations relating to the administration of the 522 board. Also, the administrator will need knowledge of the legislation, rules, regulations, and legal opinions for EMS operations and EMS-related activities. The administrator may also need the specific information and legislation concerning labor or personnel issues. Methods and concepts of EMS administration vary and depend on how the system functions.

EMS Director

The EMS Director is the individual in charge and responsible for the overall operation of the EMS system, administration and clinical segments. The EMS Director should be the coordinator of EMS resources, an innovator of workable solutions to problems, and a capable administrator or business manager. The utilization of a qualified EMS Director will enhance the success of any EMS system. The EMS Director's role should be primarily administrative, not patient care. The EMS Director is responsible for the following:

- The EMS Director shall be responsible for the fiscal aspects of the system. Prepare and submit invoices to users of the ambulance service on a monthly basis, then accomplish actions necessary to assure maximum collection of bills for service including personal contact with debtors and where appropriate, filing actions in small claims court to collect debts. He/she should be cognizant of all avenues of payment for services rendered, particularly those involving third party reimbursement. The EMS director should also consider an alternative of contracting with a billing service to pursue billing and collections.
- The EMS Director should have a thorough knowledge of the EMS system and its components. He/she should establish contact with the Emergency Systems of the Oklahoma State Department of Health and take full advantage of the technical assistance available.
- The EMS Director, who may or may not be a licensed EMT, should be capable of responding to major incidents to serve as Medical Incident Commander or should have staff available to serve as Medical Incident Commander. A senior EMT could be appointed to this important function. The EMS Director could alsoassist in the care and transport of patients when necessary to compliment the availability of existing personnel, if a licensed EMT.
- Medical direction by physicians is required by statute and rule. Additional assistance from nurses and allied health professionals within the district are valuable allies in building an EMS system. Their expertise and cooperation will be invaluable in acquiring necessary involvement from public officials, civic leaders and the district at large. The EMS Director should establish a good rapport with the medical community to ascertain their needs and solicit their participation in the system.
- Public education is a major component of any EMS system. The general public and industry will need instruction in basic first aid and cardiopulmonary resuscitation. Most will contact the EMS district to obtain this training. If this training is available from the EMS district under the auspices of the American Heart Association or the

American Red Cross, the public relations benefits will be immeasurable.

- Education within the EMS system is another major task of the EMS Director. He/she should be familiar with the educational resources available in or near the district. In some areas, it is desirable to appoint an In-house Instructor to provide continuing education to EMTs. It is important to seek guidance from the Emergency Systems at the Oklahoma State Department of Health in this process.
- In order for people to use the system, they must be informed of what it does and the reasons for its existence. This can be accomplished by stressing the EMS system's goals and accomplishments through efficient media relations. The various media channels can be the greatest ally of the EMS system if properly utilized and nurtured.
- Maintain records of service utilization and effectiveness to provide necessary data for continuing evaluation of the service thus assuring CQI.
- Maintain close working relationships with the EMS contractor to assure that the provisions of the agreement for emergency medical care between the EMS Authority or Board and the EMS provider are met, if applicable.
- Maintain working relationships with neighboring EMS providers, and with other emergency service agencies in the area, in provision of communications services and continuing education as well as mutual aid response agreements.
- Perform such other administrative duties as may be required by the authority to assure the provision of quality emergency medical care and transportation services to the citizens of the EMS district.
- The EMS Director is also the personnel director responsible for selecting and hiring personnel, scheduling shifts and personnel grievances. He/she should have authority to deal with day-to-day personnel matters. This should include hiring and dismissal of employees coupled with an appeal mechanism before the governing body available to employees who feel they have been unjustly treated.

The salary established for the EMS Director should be lucrative enough to attract the type of person needed to manage the system and work harmoniously with employees, volunteers, elected officials, civic groups, and the general public. The position of EMS Director is extremely important. The EMS Director's task is very demanding - - the wrong person could adversely affect the public confidence in the EMS system's performance.

Emergency Systems of the Oklahoma State Department of Health work with agency directors and community leaders to improve and strengthen their services and may be contacted for additional information.

CHAPTER X

Available Resources and Services

Available Resources and Services

This section is designed as an aid for interested citizens and local leaders to establish or improve EMS in their area. This section lists available resources and functions of EMS groups throughout the state.

Emergency Systems at the Oklahoma State Department of Health has been designated the lead state agency for emergency services. It plans, establishes, or supplements emergency services and is also the enforcement department to ensure that EMS regulations and guidelines are followed in local EMS services.

The Division of EMS acts as a clearinghouse for information on EMS activities at national, state, and local levels and directs inquiries for assistance to appropriate agencies.

Training for EMTs is available from various sources. Many community colleges offer an associate degree for EMTs. Technology Centers and Schools offer EMT training ranging from basic to advanced levels. The Oklahoma State University Fire Protection and Safety Engineering Technology also offers training for EMTs. This chapter contains contact information for training sources as well as state and national contacts. For other information on EMS, contact county health departments, EMS district board of trustees, county medical societies, agricultural extension agents, ambulance service providers, hospital administrators, city managers, and boards of county commissioners.

Resources

For additional information on specific EMS system components or EMS system development in Oklahoma, contact the following:

Oklahoma State Department of Health
Emergency Systems, EMS Division
Trauma and System Development Division
1000 NE 10th
Oklahoma City, Oklahoma 73117-1299
405-271-4027

Oklahoma Cooperative Extension Service
Department of Agricultural Economics
Oklahoma State University
513 Ag Hall
Stillwater, Oklahoma 74078
405-744-6083

Publications

Statutes and Regulations
Oklahoma State Department of Health
EMS Division
1000 NE 10th
Oklahoma City, OK 73117-1299
405-271-4027

Training

Oklahoma Department of Career and Technology Education
Communications and Marketing Office
1500 W 7th Ave
Stillwater, OK 74074
405/377-2000 Fax: 405/743-5541
www.okcareertech.org/

Oklahoma State University
Fire Protection and Safety Engineering Technology
499 Cordell S
Stillwater, OK 74078-8017
405/744-5721 Fax: 405/744-6758
http://fpst.okstate.edu/

Government Agencies

Environmental Protection Agency (EPA)
Ariel Rios Building
1200 Pennsylvania Ave, NW
Washington, DC 20460
202/272-0167
www.epa.gov

Federal Emergency Management Agency
Emergency Management Institute
16825 S Seton Ave
Emmitsburg, MD 21727
301/447-1000; 800/238-3358
Fax: 301/447-1658
www.fema.gov

Federal Emergency Management Agency
Response and Recovery Directorate
500 C Street SW
Washington, DC 20472
202/646-3456; Fax: 202/646-4684
www.fema.gov

Federal Emergency Management Agency
U.S. Fire Administration
National Fire Academy, EMS Program Chair
16825 S Seton Ave
Emmitsburg, MD 21727
301/447-1000, 800/238-3358
Fax: 301/447-1346
www.usfa.fema.gov

Federal Emergency Management Agency
U.S. Department of Homeland Security
500 C Street, SW
Washington, D.C. 20472
202/646-2500

U.S. Dept. of Agriculture, Rural Development, Community Programs
Rm 5014, S Building
1400 Independence Ave, SW
Washington, DC 20250-0701
202/720-9619; Fax: 202/720-2080
Email: rhs@wdc.usda.gov
www.rurdev.usda.gov/rhs/index.html

U.S. Dept. of Health and Human Services, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control (NCIPC)
4770 Buford Hwy, NE MS F-63
Atlanta, GA 30341-3717
800/232-4636
Fax: 770/488-1667
E-mail: cdcinfo@cdc.gov
www.cdc.gov/ncipc

U.S. Dept. of Health and Human Services, CDC, National Institute for Occupational Safety and Health (NIOSH)
395 E St, SW St 9200
Patriots Plaza Building
Washington, DC 20201
800/232-4636; Int'l 513/533-8328
Fax: 202/245-0625
www.cdc.gov/niosh

U.S. Dept. of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau, EMS for Children National Resource Center
8737 Colesville Road, Ste 400
Silver Spring, MD 20910
202/476-4927
Fax: 202/476-6845

U.S. Dept. of Health and Human Services, Public Health Service, National Disaster Medical System/Office of Preparedness and Emergency Operations (OPEO)
200 Independence Avenue, SW
Rm 638G
Washington, DC 20201
301/443-1167
Fax: 301/443-5146; 800/USA-KWIK
E-mail: ndms@usa.net
http://www.phe.gov/preparedness/Pages/default.aspx

U.S. Dept. of Labor, Occupational Safety and Health Administration (OSHA)
Office of Public Affairs
200 Constitution Ave NW, Rm N-3649
Washington, DC 20210
202/693-1999; Fax: 202/693-1634
www.osha.gov

National Highway Traffic Safety Administration
Emergency Medical Services Division
400 Seventh St SW (NTI-140)
Washington, DC 20590
202/366-5440 Fax: 202/366/7721
www.nhtsa.dot.gov

National Highway Traffic Safety Administration
Federal Interagency Committee on EMS
16825 S Seton Ave
Emmitsburg, MD 21727
301/447-1000; 800/238-3358
Fax: 301/447-1102
E-mail: usfaweb@fema.gov
www.usfa.fema.gov

American College of Emergency Physicians
National Headquarters:
1125 Executive Circle
Irving, TX 75038-2522

Mailing Address:
PO Box 619911
Dallas, TX 75261-9911
800/798-1822 or 972/550-0911
Fax: 972/580-2816
www.acep.org

American College of Surgeons
633 N Saint Clair St
Chicago, IL 60611-3211
312/202-5000 or 800-621-4111
Fax: 312/202-5001
www.facs.org

American Medical Association
515 N State St
Chicago, IL 60654
800-621-8335
www.ama-assn.org

National Academy of Sciences National Research Council
500 Fifth St, NW
Washington, DC 20001
202/334/2000
www.nationalacademies.org

National Association of State EMS Officials
201 Park Washington Ct
Falls Church, VA 22046-4527
703/538-1799 Fax: 703/241-5603
E-mail: info@nasemso.org
www.nasemsd.org

National Registry of Emergency Medical Technicians (NREMT)
Rocco V. Morando Building
6610 Busch Blvd., PO Box 29233
Columbus, OH 43229
614/888-4484 Fax: 614/888-8920
www.nremt.org

National Highway Traffic Safety Administration

Emergency Medical Services Division
National Highway Traffic Safety Admin.
400 Seventh St, SW (NTI-140)
Washington, DC 20590
202/366-5440 Fax: 202/366/7721
http://www.nhtsa.gov/

NHTSA Regional Offices

Region 1 – CT, ME, MA, NH, RI, VT
VOLPE National Transportation Systems Center
55 Broadway, Kendall Square, Code 8E
Cambridge, MA 02142
617/494-3427 Fax: 617/494-3646
E-mail: region1@dot.gov

Region 2 – NJ, NY, PA, Puerto Rico, Virgin Islands
222 Mamaroneck Ave., Ste 204
White Plains, NY 10605
914/682-6162 Fax: 914/682-6239
E-mail: region2@dot.gov

Region 3 – DE, DC, KY, MD, NC, VA, WV
10 S Howard St, Ste 6700
Baltimore, MD 21201
410/926-0090 Fax: 410/962-2770
E-mail: region3@dot.gov

Region 4 – AL, FL, GA, SC, TN
Atlanta Federal Center
61 Forsyth St SW
Atlanta, GA 30303
404/562-3739 Fax: 404/562-3763
E-mail: region4@dot.gov

Region 5 – IL, IN, MI, MN, OH, WI
4749 Lincoln Mall Dr, Ste 300B
Matteson, IL 60443-3800
708/503-8822 Fax: 708/503-8991
E-mail: region5@dot.gov

Region 6 – Indian Nations, LA, MS, NM, OK, TX
819 Taylor St, Rm 8A38
Fort Worth, TX 76102
817/978-3653 Fax: 817/978-8339
E-mail: region6@dot.gov

Region 7 – AR, IA, KS, MO, NE
901 Locust St, Rm 466
Kansas City, MO 64106
816/329-3900 Fax: 816/329-3910
E-mail: region7@dot.gov

Region 8 – CO, NV, ND, SD, UT, WY
12300 West Dakota Ave, Ste 140
Lakewood, CO 80228-2583
720/963-3100 Fax: 720/963-3124
E-mail: region8@dot.gov

Region 9 – AZ, CA, HI, Northern Marianas, American Samoa, Guam
201 Mission St, Ste 1600
San Francisco, CA 94105
415/744-3089 Fax: 415/744-2532
E-mail: region9@dot.gov

Region 10 – AK, ID, OR, WA
3140 Jackson Federal Building
915 Second Ave
Seattle, WA 98174
206/220-7640 Fax: 206/220-7651
E-mail: region10@dot.gov

National Association of EMS Officials:

http://www.nasemsd.org/

State EMS Offices

Alabama
334-206-5383
http://www.adph.org/ems/

Alaska
907-465-3027
http://www.hss.state.ak.us/dph/ipems/default.htm

American Samoa
011-684-633-5003
No webpage available; being updated.

Arizona
602-364-3150
www.azdhs.gov/bems

Arkansas
501-661-2262
www.healthyarkansas.com/ems

California
916-322-4336
www.emsa.ca.gov

Colorado
303-692-2980
www.cdphe.state.co.us/em/index.html

Connecticut
860-509-8000
http://www.ct.gov/dph/cwp/view.asp?a=3127&q=387362&dphNav_GID=1827

Delaware
302-744-5400
www.dhss.delaware.gov/dph/ems/ems.html

District of Columbia
202-671-4222
http://fems.dc.gov/DC/FEMS/

Florida
850-245-4440
www.fl-ems.com

Georgia
404-679-0547
http://ems.ga.gov/

Guam
671-735-7303
no Web site provided

Hawaii
808-733-9210
www.hawaii.gov/health/family-child-health/ems/index.html

Idaho
208-334-4000
www.IdahoEMS.org

Illinois
217-785-2080
http://www.idph.state.il.us/ems/index.htm

Indiana
317-232-3986
www.in.gov/sema

Iowa
1-800-728-3367
www.idph.state.ia.us/ems

Kansas
785-296-7296
www.ksbems.org

Kentucky
1-866-97KBEMS
http://kbems.kctcs.edu/

Louisiana
225-763-5700
www.dhh.louisiana.gov/offices/?ID=220

Maine
207-626-3860
www.maine.gov/dps/ems

Maryland
410-706-5074
www.miemss.org

Massachusetts
617-753-7300
www.mass.gov/dph/oems

Michigan
517-241-3024
www.michigan.gov/ems

Minnesota
651-201-2800
www.emsrb.state.mn.us

Mississippi
601-576-7380
www.msdh.state.ms.us/msdhsite/_static/44,0,99.html

Missouri
573-751-6356
www.dhss.mo.gov/EMS/

Montana
406-444-3895
http://MontanaEMS.mt.gov

Nebraska
402-471-2158
www.hhs.state.ne.us/ems/emsindex.htm

Nevada
775-687-7590
http://health.nv.gov/EMS_EmergencyMedical.htm

New Hampshire
603-223-4200
www.state.nh.us/safety/ems

New Jersey
609-633-7777
www.state.nj.us/health/ems

New Mexico
505-476-8200
www.nmems.org

New York
518-402-0996
www.health.state.ny.us/nysdoh/ems/main.htm

North Carolina
919-855-3935
www.ncems.org

North Dakota
701-328-2388
www.ndhealth.gov/EMS/

Northern Mariana Islands
670-664-9135
http://www.dps.gov.mp/index.php/firediv/ems

Ohio
614-466-9447
http://www.ems.ohio.gov/

Oklahoma
405-271-4027
www.ok.gov/health/Protective_Health/Emergency_Medical_Services/

Oregon
971-673-0520
www.dhs.state.or.us/publichealth/ems

Pennsylvania
717-787-8740
http://www.portal.state.pa.us/portal/server.pt/community/emergency_medical_services/14138

Puerto Rico
787-754-2550
No Website provided

Rhode Island
401-222-2401
http://www.health.ri.gov/emergency/medicalservices/

South Carolina
803-545-4204
www.scdhec.net/health/ems/

South Dakota
605-773-4031
http://dps.sd.gov/emergency_services/default.aspx

Tennessee
615-741-2584
www.health.state.tn.us/EMS/

Texas
512-834-6700
www.dshs.state.tx.us/emstraumasystems/default.shtm

Utah
801-538-6435
www.health.utah.gov/ems/

Vermont
802-863-7310
www.healthvermont.gov/hc/ems/ems_index.aspx

Virgin Islands
340-776-8311
No Website provided

Virginia
804-864-7600
www.vdh.virginia.gov/oems/

Washington
360-236-2830
www.doh.wa.gov/hsqa/emstrauma/

West Virginia
304-558-3956
www.wvoems.org

Wisconsin
608-266-1568
www.dhfs.wisconsin.gov/ems

Wyoming
307-777-7955
http://www.health.wyo.gov/sho/ems/index.html

APPENDIX A

Required Equipment for Oklahoma Ambulances

Oklahoma State Statutes and Regulations
310:641-3-23

Oklahoma State Statutes and Regulations: Required Equipment for Ambulance

310:641-3-23. Equipment for ground transport vehicles

(a) Each ambulance vehicle, except for stretcher aid vans, shall carry the following:

(1) In addition to the on-board suction unit, a functioning portable suction apparatus with wide-bore tubing (1/4"), rigid and soft suction catheters for adults, children and infants, which may be electronically, manual or oxygen powered;
(2) A minimum of two (2) each, single use adult, pediatric and infant bag-valve mask resuscitators with an adult, child, and infant clear masks;
(3) Oropharyngeal airways, set or a minimum of one (1) of each size for adult (size 7, 8, or 9), child (size 3, 4, 5, or 6), and infant (sizes 0, 1, or 2), -- nasal pharyngeal airways are optional;
(4) Portable and wall mounted oxygen sets, with variable flow regulators and adequate length tubing, and an extra bottle of portable oxygen;
(5) A minimum of two (2) each adult, child, and infant size oxygen masks, and a minimum of two (2) adult nasal cannulas;
(6) Bandaging materials, as follows:
  (A) Two (2) burn sheets, clean, wrapped, and marked in a plastic bag that need not be sterile;
  (B) Fifty (50) sterile 4"x4" dressings;
  (C) Six (6) sterile 6"x8" or 8"x10" dressings;
  (D) Ten (10) roller bandages, 2" or larger, such as kerlix, kling, or equivalent;
  (E) Four (4) rolls of tape (1/2" and larger);
  (F) Four (4) sterile occlusive dressings, 3" x 8" or larger;
  (G) Eight (8) triangular bandages, and;
  (H) One (1) pair of bandage scissors must be on the ambulance or must be a required personal carry item for the EMS crew.
(7) Fracture immobilization devices, as follows:
  (A) One (1) traction splint for lower extremity, with limb support slings, padded ankle hitch, padded pelvic support, traction strap;
  (B) Upper and lower extremity splints for joint above and below fracture (such as pneumatic, wire ladder, wood, cardboard);
  (C) Short spine board or vest type immobilizer, including straps and accessories;
  (D) Two (2) long spine board including straps and head immobilization device;
  (E) Two (2) rigid or adjustable extrication collars in large, medium, small adult sizes, and pediatric sizes for children ages 2 years or older and one (1) infant collar. Collars shall not be foam or fiber filled.
(8) Pediatric equipment including:
  (A) Oropharyngeal airways, sizes 00-5, two (2) each;
  (B) Self-inflating resuscitation bag, two (2) each infant and child sizes;
  (C) Masks for bag-valve mask device, two (2) each neonate, infant and child sizes;
  (D) Oxygen masks, two (2) each infant and child sizes;
  (E) Nonrebreathing mask, two (2) pediatric size

(F) Stethoscope, one (1) pediatric size;
(G) Backboard, one (1) pediatric size;
(H) Cervical immobilization device infant, child and adolescent sizes, two (2) each;
(I) Blood pressure cuff, two (2) each infant and child sizes;
(J) Suction catheters, one (1) each tonsil-tip and 6-14 French catheters;
(K) Extremity splints, one (1) complete set of pediatric sizes;
(L) Bulb syringes, sterile, two (2);
(M) Obstetric pack, sterile, one (1);
(N) Thermal blankets, two (2);
(O) Water-soluble lubricant packets, two (2);
(P) Blood glucose analysis system; and,
(Q) CO2 detection devices, either electronic or two (2) disposable.

(9) Pediatric Equipment and Supplies for Advanced Life Support Ambulances Only. Including:
(A) One (1) transport monitor;
(B) One (1) defibrillator with pediatric paddles;
(C) Monitoring electrodes, two (2) set pediatric sizes;
(D) Laryngoscope with straight blades, two (2) sets 0-2, and curved blades two sets 2-4;
(E) Endotracheal tube stylets, two sets of pediatrics sizes;
(F) Endotracheal tubes, two (2) sets of uncuffed 2.5 – 5.5, two (2) sets of cuffed 6.0-8.0;
(G) Magill forceps, one (1) pediatric size;
(H) Nasogastric tubes, two (2) each 8F-16F;
(I) Nebulizer, one (1) pediatric size;
(J) IV catheters, 14 to 26 gauge, Six (6) each;
(K) Interosseous needles, two (2) each;
(L) One (1) Length/weight-based drug dose chart or tape (eg. Broselow Tape);
(M) Resuscitation drugs (ACLS & PALS) and IV fluids (NS and/or LR) per Department approved protocols.

(10) Miscellaneous medical equipment, as follows:
(A) Portable blood pressure set in adult, child, and infant sizes;
(B) Stethoscope;
(C) Obstetrical kit, with towels, 4"x4" dressing, umbilical tape, bulb syringe, cord cutting device, clamps, sterile gloves, aluminum foil, and blanket;
(D) Universal communicable disease precaution equipment including gloves, mask, goggles, gown, and other universal precautions;
(E) Blood-glucose measurement equipment per medical direction and Department approval;
(F) CPAP per medical direction and Department approval; and
(G) Automated external defibrillator (AED).

(11) Other mandatory equipment, as follows:
(A) Trash receptacle which shall include a sufficient number of replacement bags and a receptacle for containment of medical wastes that displays the "biological hazard" emblem.
(B) Two-way radio communication equipment on VHF; with a minimum of 155.340 MHz for hospital communications.
(C) One (1) sturdy, lightweight, all-level cot for the primary patient

(D) A crash stable side or center mounting cot fastener and/or anchorage assembly of the quick release type;
(E) At least three (3) strap type restraining devices (chest, hip, and knee), and compliant shoulder harness shall be provided per stretcher, cot, and litter (not less than two (2") inches wide, nylon, easily removable for cleaning, two (2) piece assembly with quick release buckles)
(F) Patient run reports;
(G) Two (2) fire extinguishers, mounted with quick release in cab and patient compartment (each dry powder, ABC, five (5#) pound);
(H) Two (2) operable flashlights;
(I) All ambulance equipment and supplies shall be maintained in accordance with OAC 310:641-3-60. Additionally, sterility shall be maintained on all sterile packaged items.
(J) Digital or strip type thermometers and single use probes.
(K) Six (6) instant cold packs.

(b) Intermediate equipment, in addition to the basic equipment the ALS ambulance shall carry the following:

(1) Intravenous administration equipment in a sufficient quantity to treat multiple patients requiring this level of care;
(2) Interosseous administration equipment if approved by local medical control;
(3) Appropriate quantities of sterile fluid as approved by local medical control;
(4) Adequate advanced airway equipment per medical control;
(5) Blood sampling equipment if approved by medical control;
(6) One (1) Occupational Safety and Health Administration (OSHA) approved sharps container;
(7) Pulse oximetry device if approved by medical control; and
(8) End tidal CO2 monitoring device

(c) Paramedic equipment, in addition to the required basic and intermediate equipment, the ALS ambulance will carry the following:

(1) Cardiac monitor/defibrillator with printout, defibrillator pads, quick-look paddles, EKG leads, chest attachment pads. Telemetry capability is optional. Monitor must be recalibrated every twelve months and;
(2) Drugs (pre-load when available) approved by medical control, including those which are compatible with the recommendations of the American Heart Association's Emergency Cardiac Care Committee, as reflected in the Advanced Cardiac Life Support and Pediatric Advanced Life Support guidelines. Expired medications shall be immediately removed.

(d) Extrication equipment shall be available for each ambulance service by either mutual aid assistance with a fire department, other ambulance service, rescue squad, or carried in total on the service's vehicle.

(1) All ambulance vehicles shall carry the following equipment:
(A) Three (3) reflectors (triangular) or battery powered warning lights;
(B) Two (2) OSHA approved hard hats, with goggles or face shield; and
(C) Gauntlet leather gloves, two (2) pair of heavy work gloves; and
(D) One (1) spring-loaded window punch.
(2) All ambulance services shall have available either on board the ambulance or through mutual aid agreement with a fire department rescue unit, the following extrication equipment:
(A) One (1) hammer (3# to 5# with 15" handle);
(B) One (1) fire ax, flat head
(C) One (1) crowbar, (51" pinch point)
(D) One (1) bolt cutter (minimum 18")
(E) One (1) power jack, portable, hydraulic or pneumatic, and one (1) spreader tool kit, hand powered, at least of four (4) ton capacity and one (1) air gun kit, air cutting tools, (250psi with cylinder and chisels); "Jaws of Life" may be substituted
(F) One (1) shovel, pointed blade
(G) One (1) tin snip, double action (at least 8")
(H) Two (2) ropes, synthetic, kernmantle (50' x 3/4")
(I) Protective goggles, one (1) per occupant
(J) Two (2) utility knives, curved blade
(K) Two (2) lights, portable, battery operated;
(L) One (1) blanket (large 5'x 6' for patient protection during extrication)
(M) Two (2) baling hooks;
(N) One (1) spring loaded window punch;
(O) Twelve (12) blocks, hardwood shoring, (2"x4"x12" blocks with rope handles);
(P) Four (4) blocks, hardwood cribbing, (4"x4"x12" blocks with rope handles);
(Q) Four (4) blocks, hardwood cribbing, (wedge shaped with rope handles);
(R) One (1) come-along (2 ton, chain type and two (2) pull chains, alloy steel, rescue type (10' at least with grab hooks and rings);
(S) Two (2) extrication straps, synthetic fabric, (9' with quick release buckles)
(T) One (1) loop sling, extrication, (1" wide nylon or equal x 6' circumference with closure ring)

(e) Equipment shall be clean, in good working condition, and appropriately secured.

(f) Optional equipment:

(1) Portable battery powered ventilator per local medical direction.
(2) Pneumatic anti shock garment (PASG), compartmentalized (legs and abdomen separate), control valves (closed/open), inflation pump per local medical direction.

[Source: Added at 8 Ok Reg 3143, eff 7-18-91 (emergency); Added at 9 Ok Reg 1495, eff 5-1-92; Amended at 17 Ok Reg 392, eff 11-1-99 (emergency); Amended at 17 Ok Reg 2948, eff 7-13-00; Amended at 19 Ok Reg 386, eff 11-19-2001(emergency); Amended at 19 Ok Reg 1053, eff 5-13-2002; Amended at 19 Ok Reg 2087, eff 6-27-2002; Amended at 20 Ok Reg 2368, eff 7-11-2003; Amended at 21 Ok Reg 2755, eff 7-12-2004; Amended at 22 Ok Reg 2418, eff 7-11-2005; Amended at 23 Ok Reg 2386, eff 6-25-2006; Amended at 25 Ok Reg 2443, eff 7-11-2008]

APPENDIX B

Amortization Factors

Amortization Factors

Interest Rate (Percent)	Years for Repayment									
	3	5	7	10	15	20	25	30	35	40
5	0.367215	0.230974	0.172819	0.129505	0.096342	0.080243	0.070953	0.065051	0.061072	0.058278
6	0.374111	0.237394	0.179134	0.135868	0.102963	0.087185	0.078226	0.072649	0.068974	0.066462
7	0.381054	0.243891	0.185553	0.142377	0.109795	0.094393	0.085810	0.080587	0.077234	0.075009
8	0.388034	0.250456	0.192072	0.149030	0.116830	0.101850	0.093679	0.088827	0.085803	0.083860
9	0.395055	0.257092	0.198691	0.155820	0.124059	0.109546	0.101806	0.097336	0.094636	0.092960
10	0.402115	0.263797	0.205405	0.162745	0.131474	0.117460	0.110168	0.106079	0.103690	0.102259
11	0.409213	0.270570	0.212215	0.169801	0.139065	0.125576	0.118740	0.115025	0.112927	0.111719
12	0.416349	0.277410	0.219118	0.176984	0.146824	0.133879	0.127500	0.124144	0.122317	0.121304
13	0.423522	0.284314	0.226111	0.184290	0.154742	0.142354	0.136426	0.133411	0.131829	0.130986
14	0.430731	0.291284	0.233192	0.191714	0.162809	0.150986	0.145498	0.142803	0.141442	0.140745
15	0.437976	0.298315	0.240360	0.199252	0.171017	0.159761	0.154699	0.152300	0.151135	0.150562
16	0.445257	0.305409	0.247613	0.206901	0.179358	0.168667	0.164013	0.161886	0.160892	0.160424
17	0.452573	0.312564	0.254947	0.214657	0.187822	0.177690	0.173423	0.171545	0.170701	0.170319
18	0.459923	0.319778	0.262362	0.222515	0.196403	0.186820	0.182919	0.181264	0.180550	0.180240
19	0.467308	0.327050	0.269855	0.230471	0.205092	0.196045	0.192487	0.191034	0.190432	0.190181
20	0.474725	0.334380	0.277424	0.238523	0.213882	0.205357	0.202119	0.200846	0.200339	0.200136

Calculated using the following formula: $\text{Amortization Factor} = \frac{i}{1-(1+i)^{-n}}$

where i = interest rate; n = number of years

APPENDIX C

Forms for Estimating Costs of EMS Systems

Appendix C
Forms for Estimating Costs of EMS Systems

Appendix C includes the forms needed to build budgets for either a First Responder system or an EMS system at any level of care. These forms are designed to utilize with the costs illustrated in **Chapter VI** and the completed Case Studies in **Chapter VII**.

This guidebook was developed in June of 2011. To determine costs in the future, an adjustment factor can be used. There are two different adjustment factors for 2010, construction cost index and consumer price index. For future years, the adjustment factors are applied to the current costs in this guidebook to determine costs for the appropriate year in the future. The adjustment factors for 2010 are:

Adjustment Factor 1

$$\frac{\text{Current Construction Cost Index}}{\text{2010 Construction Cost Index}}$$

Adjustment Factor 2

$$\frac{\text{Current Consumer Price Index}}{\text{2010 Consumer Price Index}}$$

Adjustment Factor 1 should be utilized for construction costs only, such as the building itself. **Adjustment Factor 2** should be utilized for all other costs.

For additional information, **Chapter X** lists additional resources.

Budgeting Assistance Available

For assistance with determining the costs and funding alternatives for an EMS system, contact Oklahoma Cooperative Extension Service at Oklahoma State University 405-744-6083.

Regional Budgeting Alternatives

For current EMS systems, the methodology from above for analyzing costs and revenues could be utilized to determine if any of the regional budgeting alternatives could be beneficial. Regional budgeting is a concept that the Emergency Systems of Oklahoma State Department of Health and Oklahoma Cooperative Extension Service designed. Regional budgeting includes alternative funding mechanisms, alternative organizational options, and more efficient and effective modes of operation (see **Chapter VIII**). The regional budgeting alternatives are not considered to be the only possible methods for providing more efficient and effective emergency medical services. These are ideas for the EMS providers to consider. EMS providers may be innovative and develop their own ideas. Regional budgeting alternatives are provided as ideas on developing efficiencies to maintain, sustain, and retain emergency medical services for the future.

Form 1. Certified Emergency Medical Response Agency (EMRA) - Estimating the Annual Cost for _____

(1) Item	(2) Unit Cost		(3) No. of Units		(4) Adjustment Factor		(5) Total Capital Costs		(6) Years to Replace	or	(7) Amortization Factor		(8) Annual Costs	
Capital Equipment Costs														
Medical Supply Kits	_____	x	_____	x	_____	=	_____	÷	_____	or x	_____	=	_____	A.
Semi-Automated Electronic Defibrillator	_____	x	_____	x	_____	=	_____	÷	_____	or x	_____	=	_____	B.
Communications (Choose One)														
Portable Radios with Built-In Pagers	_____	x	_____	x	_____	=	_____	÷	_____	or x	_____	=	_____	C.
Portable Radios	_____	x	_____	x	_____	=	_____	÷	_____	or x	_____	=	_____	D.
Pagers (Alpha-Numeric or Voice)	_____	x	_____	x	_____	=	_____	÷	_____	or x	_____	=	_____	E.
Cellular Telephones	_____	x	_____	x	_____	=	_____	÷	_____	or x	_____	=	_____	F.
CAPITAL EQUIPMENT COST TOTALS					**Total Capital**		Sum A. - F.				**Total Annual Capital**		Sum A. - F.	G.
Annual Operating Costs														
EMR Courses/Books/Supplies	_____	x	_____	x	_____							=	_____	H.
National Registry EMR Exams	_____	x	_____	x	_____							=	_____	I.
EMR Continuing Education														
EMR Biennial Refresher Course	_____	x	_____	x	_____							=	_____	J.
National Registry EMR Renewal Fees	_____	x	_____	x	_____							=	_____	K.
EMRA Initial License Fee	_____		_____		_____								_____	L.
EMRA Renewal License Fee	_____	x	_____	x	_____							=	_____	M.
Medical Supplies Per Call	_____	x	_____	x	_____							=	_____	N.
Defibrillator Use Per Call	_____	x	_____	x	_____							=	_____	O.
Monthly Pager/Cellular Telephone Fees	_____	x	_____	x	_____							=	_____	P.
Equipment Maintenance Contracts	_____	x	_____	x	_____							=	_____	Q.
TOTAL ANNUAL OPERATING COSTS													_____	R.
													Sum H.-R.	
TOTAL ANNUAL CAPITAL AND OPERATING COSTS													_____	S.
													G. + R.	

Form 2. EMS System - Estimating Capital Costs and Annual Capital Costs for _____

	(1) Capital Expenditures	(2) Unit Cost $		(3) No. of Units	(4) Adjustment Factor		(5) Total Capital Costs		(6) Life*/Miles/ Years to Replace		(7) Annual Miles	OR	(8) Amortization Factor		(9) Annual Capital Costs
	Vehicles and Vehicle Equipment														
A	Vehicle Type I		x	x		=			÷ (	÷	)	or x		=	
B	Vehicle Type II		x	x		=			÷ (	÷	)	or x		=	
C	Vehicle Type III		x	x		=			÷ (	÷	)	or x		=	
D	Command Vehicle		x	x		=			÷ (	÷	)	or x		=	
E	EMR Vehicle		x	x		=			÷ (	÷	)	or x		=	
F	BLS Equipment		x	x		=			÷ (	÷	)	or x		=	
G	ALS Equipment		x	x		=			÷ (	÷	)	or x		=	
H	**Subtotal - Vehicle and Vehicle Equipment**														
							Sum A5:G5								Sum A9:G9
	Communications Equipment														
I	Base Communications		x	x		=			÷			or x		=	
J	Repeater and Tower Systems		x	x		=			÷			or x		=	
K	Vehicle Communications		x	x		=			÷			or x		=	
L	Pagers/radios/phones		x	x		=			÷			or x		=	
	Additional Equipment														
M	Oxygen Set		x	x		=			÷			or x		=	
N	First Responder Kit		x	x		=			÷			or x		=	
O	Defibrillator Unit		x	x		=			÷			or x		=	
	Building and Furnishings														
P	Building		x	x		=			÷			or x		=	
Q	Furnishings		x	x		=			÷			or x		=	
R	**Subtotal - Communications, Additional Equipment, & Building/Furnishings**														
							Sum I5:Q5								Sum I9:Q9
S	TOTAL OF CAPITAL COSTS														
							H5+R5 TOTAL								H9+R9 ANNUAL

* Maximum life for vehicle is 75,000 miles or 7 years, whichever comes first.

Form 3a. EMS System - Estimating Annual Operating Costs for _____

	(1) Item	(2)		(3)		(4)		(5)		(6)		(7) Subtotal	(8) Annual Operating Costs
	Vehicle(s)												
	Gasoline												
A	Cost per Gallon of Gas	_____ Cost/Gallon	x	_____ Adj. Factor	=	_____ Adj. $/gal.							
B	Type I or Type III vehicle	_____ Yr. Mileage	÷	_____ Avg. mpg	x	_____ A4					=	_____	
C	Type II vehicle	_____ Yr. Mileage	÷	_____ Avg. mpg	x	_____ A4					=	_____	
	Tires (radials)												
D	Cost per Tire	_____ Cost/Tire	x	_____ Adj. Factor	=	_____ Adj. $/Tire							
E	Type I or Type III Vehicle	_____ Yr. Mileage	÷	27,000 Mileage/Tire	x	_____ Adj. $/Tire	x	6 No. of Tires			=	_____	
F	Type II Vehicle	_____ Yr. Mileage	÷	27,000 Mileage/Tire	x	_____ Adj. $/Tie	x	4 No. of Tires			=	_____	
G	Oil, filter and lubrication	_____ Cost/Change	x	_____ Adj. Factor	=	_____ Adj. $/Change	x	_____ Yr. Mileage	÷	2,500 Miles/Change	=	_____	
H	Vehicle Licenses	_____ Cost/Vehicle	x	_____ No. Vehicles							=	_____	
I	Vehicle Maintenance and Repairs	_____ Yr. Cost	x	_____ Adj. Factor	x	_____ No. of Vehicles					=	_____	
J	Vehicle Radio Contract	_____ Yr. Cost	x	_____ Adj. Factor	x	_____ No. of Vehicles					=	_____	
K	Vehicle Insurance	_____ Yr. Cost	x	_____ Adj. Factor	x	_____ No. of Vehicles					=	_____	
L	Subtotal - Annual Operating Costs - Vehicles												_____ Sum B7:K7

Form 3b. EMS System - Estimating Annual Operating Costs for _____

	(1) Item	(2)		(3)		(4)		(5)		(6)		(7) Subtotal	(8) Annual Operating Costs
	Building												
A	Insurance	_____ Cost/$1,000	x	_____ Adj. Factor	=	_____ Adj. $/$1,000	x	_____ $ Insured Value	÷	$1,000	=		
B	Heat/Cool, Water, Sewer, Trash	_____ Cost/Month	x	_____ Adj. Factor	=	_____ Adj. $/Month	x	_____ No. Months			=		
C	Telephone	_____ Cost/Month	x	_____ Adj. Factor	=	_____ Adj. $/Month	x	_____ No. Months			=		
D	Building Maintenance	_____ Cost/Sq. Ft.	x	_____ Adj. Factor	=	_____ Adj. $/Sq. Ft.	x	_____ No. Months			=		
	Medical Supplies												
E	Non Emergency Calls	_____ ($/linens)	x	_____ Adj. Factor	=	_____ Adj. $/Linen)	x	_____ No. Calls			=		
F	Emergency Calls	_____ ($/linens)	x	_____ Adj. Factor	=	_____ Adj. $/Linen)	x	_____ No. Calls			=		
	Communications Expense												
G	Communications Mo. Expense	_____ Cost/Month	x	_____ Adj. Factor	=	_____ Adj. $/Month	x	_____ Months			=		
H	Communications Maint. Expense	_____ Cost/Month	x	_____ Adj. Factor	=	_____ Adj. $/Month	x	_____ Months			=		
I	**General Liability Insurance**	_____ Cost/Month	x	_____ Adj. Factor	=	_____ Adj. $/Month	x	_____ Months			=		
J	Subtotal - Annual Operating Costs - Building/Medical Supplies/Communications/Liability Insurance												_____ Sum A7:I7

Form 3c. EMS System - Estimating Annual Operating Costs for _____

	(1) Item	(2)	(3)	(4)	(5)	(6)	(7) Subtotal	(8) Annual Operating Costs
	Labor							
A	**EMS Director - Hourly**	_____ No. x	_____ Hrs./Day x	_____ Days/Yr. x	_____ Hourly Rate =	_____		
B	**EMS Director - Annual Salary**	_____ No. x	_____ Yr. Salary			_____		
	Crew - Paid or Volunteer							
C	1st Crew Member_____	_____ No. x	_____ Hrs./Day x	_____ Days/Yr. x	_____ Hourly Rate =	_____		
D	2nd Crew Member_____	_____ No. x	_____ Hrs./Day x	_____ Days/Yr. x	_____ Hourly Rate =	_____		
	Crews - Paid or Volunteer							
E	1st Crew Member_____	_____ No. x	_____ Hrs./Day x	_____ Days/Yr. x	_____ Hourly Rate =	_____		
F	2nd Crew Member_____	_____ No. x	_____ Hrs./Day x	_____ Days/Yr. x	_____ Hourly Rate =	_____		
	Call or Transport Pay							
G	1st Crew Member_____	_____ No. x	_____ Rate			= _____		
H	2nd Crew Member_____	_____ No. x	_____ Rate			= _____		
I	Dispatch Clerk	_____ No. x	_____ Hrs./Day x	_____ Days/Yr. x	_____ Hourly Rate =	_____		
J	Total Base Salaries					= _____		
K	Overtime	$ _____ J6 x	_____ Percent			= _____		
L	Total Base Salaries and Overtime					=	_____	
M	Benefits	_____ L7 x	_____ Percent			=	_____	
N	Subtotal - Annual Operating Cost - Labor Costs						=	_____ L7+M7

Form 3d. EMS System - Estimating Annual Operating Costs for _____

	(1)	(2)		(3)		(4)		(5)		(6)	(7)	(8)
	Item										Subtotal	Annual Operating Costs
A	**Billing Expense**	_____ Cost/Call	x	_____ Billable Calls	or	_____ Percent	x	_____ Collections	=			_____
B	**Office Supplies**	_____ Cost/Month	x	_____ No. Months	=							_____
C	**Uniform Allowance**	_____ Cost/Yr/Person	x	_____ No. Medics	=							_____
	Training Costs											
D	Training Courses/Books/Supplies	_____ Cost	x	_____ No.	=					=	_____	
E	National Registry Exams	_____ Cost	x	_____ No.	=					=	_____	
	Training Costs Subtotal											_____
F	Licensing Expenses											
	EMS System License	_____ Cost/Yr.	x	_____ No.	=							_____
G	**Car Allowance**	_____ Cost/Mile	x	_____ Mileage							=	_____
H	**Miscellaneous**	_____ Cost/Month	x	_____ No. of Months							=	_____
I	Subtotal - Annual Operating Expenses - Billing, Office, Uniform Training, Car Allowance, Miscellaneous											_____ Sum A8:I8

Form 4. EMS System - Summary Costs for _____

	(1) Item	(2)	(3)
A	Total Capital Costs		Form 2, S5
B	Total Annual Capital Costs		Form 2, S9
C	Annual Operating Costs		
D	**Form 3a** Subtotal - Vehicles	Form 3a, L8	
E	**Form 3b** Subtotal - Building/Medical Supplies/Communications/Liability Insurance	Form 3b, J8	
F	**Form 3c** Subtotal - Labor	Form 3c, N8	
G	**Form 3d** Subtotal - Billing, Office, Uniform Training, Car Allowance, Miscellaneous	Form 3d, I8	
H	Total Annual Operating Costs		Sum(D2:G2)
I	Total Annual Capital & Operating Costs		B3+H3

Form 5a. EMS System Revenues - Estimated User Fee Per Call for _____

Transported Calls

Emergency Calls	_____
Non-Emergency Call	_____
Total Transported Calls	_____

EMERGENCY CALLS		Estimated User Fee Per Call						
		_____	_____	_____	_____	_____	_____	_____
No. of Calls	____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____

NON-EMERGENCY CALLS		Estimated User Fee Per Call						
		_____	_____	_____	_____	_____	_____	_____
No. of Calls	____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____

Form 5b. EMS System Revenues - Estimated Mileage Fees for _____

Total Loaded Miles _____

		Mileage Fees						
		_____	_____	_____	_____	_____	_____	_____
For One-Way Miles	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____
Collections at	_____	_____	_____	_____	_____	_____	_____	_____

Form 5c. EMS System Revenues - EMS District Mills for _____

School District	Total Net Valuation	One Mill	Two Mills	Three Mills
School District A	$_____	$_____	$_____	$_____
School District B	$_____	$_____	$_____	$_____
School District C	$_____	$_____	$_____	$_____
School District D	$_____	$_____	$_____	$_____
School District E	$_____	$_____	$_____	$_____
School District F	$_____	$_____	$_____	$_____
School District G	$_____	$_____	$_____	$_____
School District H	$_____	$_____	$_____	$_____
School District I	$_____	$_____	$_____	$_____
Total	$_____	$_____	$_____	$_____

Form 5d. EMS System Revenues - Sales Tax for _____

Based on FY Sales Tax Collections

City	Sales Subject to Sales Tax	Sales Tax Rates ¼¢	½¢	¾¢	1¢	1¼¢	1½¢	1¾¢	2¢
City A	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City B	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City C	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City C	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City D	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
City E	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
Totals	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____
County	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____	$_____

Form 6. EMS System - Possible Funding Options for _____

Funding Option #1		Funding Option #2	
Costs:		Costs:	
Total Annual Capital & Operating Expenses	$_____	Total Annual Capital & Operating Expenses	$_____
Revenues:		Revenues:	
	$_____		$_____
	$_____		$_____
	$_____		$_____
	$_____		$_____
	$_____		$_____
Total Revenues	$_____	Total Revenues	$_____
Difference	$_____	Difference	$_____

APPENDIX D

Example EMS Call Data for Adair County from OKEMSIS

Adair County EMS Call Data for 2010

The Oklahoma EMS Information System (OKEMSIS) through the Oklahoma State Department of Health provided data for EMS calls serviced in Adair County for 2010. All the data tables based on OKEMSIS data (**Tables 1-7**) will be presented at the end of this section of the study. **Table 1** presents the EMS calls by type of call with transport calls of 58.1 percent, cancelled calls of 21.3 percent, and patient refused care calls of 16.1 percent. Due to privacy concerns, any category with less than ten responses does not include the specific numbers; therefore, these data are summed together. For this table, the categories of "Not Applicable," "Missing," and "No Treatment Required" are included together in aggregate total.

Table 2 illustrates the Adair County call data by day of the week and time of day. Friday is the day of the week with the most calls with 494 calls or 16.6 percent of the total; Wednesday had 432 calls or 14.5 percent. The time of day with the most calls was 8:00 am to 3:59 pm with 1,245 calls or 41.8 percent of the total calls. The time of day with the next most calls was 4:00 pm to 7:59 pm with 737 calls or 24.8 percent of the total.

Table 3 shows the call origin for the EMS calls in Adair County in 2010. Stilwell was the origin of 1,561 calls or 52.5 percent of the total calls. Westville was the origin of 1,036 calls or 34.8 percent of the total calls. Watts was the origin of 168 calls or 5.7 percent of the total calls.

Table 4 shows the call destination locations for EMS calls in Adair County that resulted in transports in 2010. Memorial Hospital in Stilwell was the destination location of the most EMS calls with 798 calls or 46.6 percent. Siloam Springs Memorial Hospital was the destination location for the next most EMS calls with 314 calls or 18.3 percent.

Table 5 includes data for EMS calls in Adair County in 2010 for patients transferred between facilities. Two facilities received the majority of the transfer calls; Saint Francis

Hospital Inc. in Tulsa received ten inter-facility transfer calls or 27.0 percent of the total calls and Hillcrest Medical Center in Tulsa received nine inter-facility transfer calls or 24.3 percent of the total calls.

Table 6 includes all EMS calls except the cancelled calls and the calls with no patient found for Adair County for 2010. The total of these EMS calls was 2,261 in 2010, with 50.5 percent of these patients being male and 49.5 percent being female. The 40-49 age group had the most patients with 376 or 16.6 percent. The 60-69 age group was the second largest age group with 356 or 15.7 percent.

Table 7 shows the medical conditions for all EMS calls in Adair County in 2010. These data do not include cancelled calls or calls with no patient found. There were 691 calls or 30.5 percent with no medical condition listed; another 218 calls or 9.6 percent showed the medical condition category as not applicable. The medical condition with the largest incidence was pain with 132 incidences or 5.8 percent of the total. The medical condition with the second largest incidence was chest pain/discomfort with 125 incidences or 5.5 percent. The third largest incidence was for palpitations with 118 or 5.2 percent.

Table 1
Combined EMS Service Calls for Adair County, 2010

Type of Call	Number of Calls	Percent of Calls
Treated, Transported by EMS	1,727	58.1%
Cancelled	634	21.3%
Patient Refused Care	480	16.1%
No Patient Found	75	2.5%
Treated, Transferred Care	22	0.7%
Dead at Scene	20	0.7%
Treated and Released	12	0.4%
Not Applicable, Missing, & No Treatment Required*	5	0.2%
Totals	**2,975**	**100.00%**

SOURCE: OKEMSIS, Oklahoma State Department of Health, 2010.
NOTE: All call types are included in this table.
* Categories are not represented individually due to privacy concerns; categories are summed together and included in aggregate total only.

Table 2
EMS Calls by Day of the Week and Time of Day for Adair County, 2010

Day of the Week	Time of Day: Midnight to 7:59am	8:00am to 3:59pm	4:00pm to 7:59pm	8:00pm to 11:59pm	Total Calls	Percent of Calls
Sunday	85	174	103	65	427	14.4%
Monday	58	177	107	68	410	13.8%
Tuesday	66	160	105	72	403	13.6%
Wednesday	53	215	88	76	432	14.5%
Thursday	65	169	89	70	393	13.2%
Friday	65	201	132	96	494	16.6%
Saturday	68	149	113	86	416	14.0%
Totals	**460**	**1,245**	**737**	**533**	**2,975**	**100.0%**
Percent of Calls	**15.5%**	**41.8%**	**24.8%**	**17.9%**	**100.0%**	

SOURCE: OKEMSIS, Oklahoma State Department of Health, 2010.
NOTE: All call types are included in this table.

Table 3
EMS Service Call Origin (Zip code) Adair County, 2010

Call Area	Number of Calls	Percent of Calls
Stilwell, OK	1,561	52.5%
Westville, OK	1,036	34.8%
Watts, OK	168	5.7%
Tahlequah, OK	35	1.2%
Bunch, OK	26	0.9%
Proctor, OK	26	0.9%
Kansas, OK	19	0.6%
Siloam Springs, AR	16	0.5%
Sallisaw, OK	13	0.4%
Stroud, OK	7	0.2%
Tulsa, OK	5	0.2%
All Other Calls*	28	0.9%
Unknown	35	1.2%
Totals	**2,975**	**100.0%**

SOURCE: OKEMSIS, Oklahoma State Department of Health, 2010.
NOTE: All call types are included in this table.
* Categories are not represented individually due to privacy concerns; the "All Other Calls" are summed together and included in aggregate total only. The categories that are included in "All Other Calls" include Fayetteville, AR; Summers, AR; Colcord, OK; Claremore, OK; Evansville, AR; Fort Smith, AR; Gore, OK; Idabel, OK; Lincoln, AR; Little Rock, AR; Marble City, OK; Nacogdoches, TX; Oaks, OK; Oklahoma City, OK; Pea Ridge, AR; Roland, OK; Springdale, AR; Twin Oaks, OK; and Wagoner, OK.

Table 4
Destination Locations for Adair County, 2010

Destination of Call	Number of Calls	Percent of Calls
Memorial Hospital Stilwell	798	46.6%
Siloam Springs Memorial Hospital	314	18.3%
Hastings Indian Hospital (IHS)	132	7.7%
Tahlequah City Hospital	93	5.4%
Saint Francis Hospital Inc. – Tulsa	71	4.1%
Washington Regional Hospital - Fayetteville	54	3.2%
Hillcrest Medical Center Tulsa	46	2.7%
Sparks Regional Medical Center - Fort Smith	30	1.8%
NW Med Center/Springdale Memorial Hospital	13	0.8%
Saint John Medical Center Inc.	12	0.7%
Saint Edward Mercy Medical Center - Fort Smith	9	0.5%
Sequoyah Memorial Hospital	6	0.4%
Out of State Facility Not Listed	22	1.3%
Unknown	74	4.3%
All Other Categories*	40	2.3%
Total	**1,714**	**100.0%**

SOURCE: OKEMSIS, Oklahoma State Department of Health, 2010.
NOTE: All EMS calls that were transported are included in this table.
* Categories are not represented individually due to privacy concerns; the "All Other Categories" are summed together and included in aggregate total only. The categories that are included in "All Other Calls" include VA Hospital – Fayetteville, OU Medical Center University Hospital (all), Stroud Regional Medical Center, Muskogee Regional Medical Center, TReC- Trauma Transfer Referral Center-Tulsa/OKC, OSU Medical Center formerly Tulsa RMC, Saint Anthony Hospital, Wagoner Community Hospital, Saint Francis South – Tulsa, Muskogee VA Medical Center, USPHS Indian Hospital at Claremore (IHS), SouthCrest Hospital, Integris Baptist Medical Center Inc OKC, Unity Health Center – Shawnee, Clinic or Doctor's Office, Solara Hospital Muskogee, Claremore Regional Hospital, Memorial Hospital Collinsville, Oklahoma Heart Hospital - OKC North, Healdton Municipal Hospital, Midwest Regional Medical Center, Nursing Home/Rest Home/Long Term Care, Clinics or Doctors' Offices, Arkansas Children's Hospital - Little Rock, Wesley Medical Center - Wichita.

Table 5
Receiving Facilities for Inter-Facility Transfers for Adair County, 2010

Receiving Facility	Frequency	Percent
Saint Francis Hospital Inc.	10	27.0%
Hillcrest Medical Center Tulsa	9	24.3%
All Other Categories*	18	48.6%
Totals	**37**	**100.0%**

SOURCE: OKEMSIS, Oklahoma State Department of Health, 2010.
NOTE: Only EMS calls for patients transferred between facilities are included in this table.
* Categories are not represented individually due to privacy concerns; the "All Other Categories" are summed together and included in aggregate total only. The categories that are included in "All Other Categories" include Unknown, Saint John Medical Center Inc., Tahlequah City Hospital, Muskogee VA Medical Center, Sparks Regional Medical Center - Fort Smith, Washington Regional Hospital – Fayetteville, NW Medical Center/Springdale Memorial Hospital, and Wesley Medical Center – Wichita.

Table 6
EMS Calls by Age Group and Gender for Adair County, 2010

	Gender					
	Male		Female		Total	
Age Group	Number	Percent	Number	Percent	Number	Percent
19 & Under	155	13.6%	99	8.8%	254	11.2%
20-29	139	12.2%	129	11.5%	268	11.9%
30-39	108	9.5%	90	8.0%	198	8.8%
40-49	190	16.7%	186	16.6%	376	16.6%
50-59	146	12.8%	152	13.6%	298	13.2%
60-69	204	17.9%	152	13.6%	356	15.7%
70-79	125	11.0%	149	13.3%	274	12.1%
80+	74	6.5%	163	14.6%	237	10.5%
Total	**1,141**	**100.0%**	**1,120**	**100.0%**	**2,261**	**100.0%**
Percent	**50.5%**		**49.5%**			

SOURCE: OKEMSIS, Oklahoma State Department of Health, 2010.

NOTE: All EMS calls are included in this table except for cancelled calls and calls with no patient found.

Table 7
Medical Conditions for EMS Calls in Adair County, 2010

Medical Condition	Number of Calls	Percent of Calls
Pain	132	5.8%
Chest pain/discomfort	125	5.5%
Palpitations	118	5.2%
Wound	106	4.7%
Breathing Problem	100	4.4%
Traumatic injury	88	3.9%
Respiratory distress	86	3.8%
Change in responsiveness	69	3.1%
Other	59	2.6%
Abdominal pain/problem	57	2.5%
Diabetic symptoms (hypoglycemia)	50	2.2%
Altered level of consciousness	50	2.2%
Weakness	39	1.7%
Seizure	37	1.6%
Nausea/Vomiting	33	1.5%
Transport Only	25	1.1%
Syncope/fainting	22	1.0%
Behavioral/psychiatric disorder	19	0.8%
Stroke/CVA	17	0.8%
Rash/Itching	16	0.7%
Poisoning/drug ingestion	14	0.6%
Cardiac rhythm disturbance	12	0.5%
Respiratory arrest	10	0.4%
Bleeding	9	0.4%
Cardiac arrest	7	0.3%
Mental/Psych	6	0.3%
Swelling	5	0.2%
Allergic reaction	5	0.2%
None	691	30.5%
Not Applicable	218	9.6%
All Other Categories*	41	1.8%
Total	**2,266**	**100.0%**

SOURCE: OKEMSIS, Oklahoma State Department of Health, 2010.
NOTE: All EMS calls are included in this table except for cancelled calls and calls with no patient found.
* Categories are not represented individually due to privacy concerns; the "All Other Categories" are summed together and included in aggregate total only. The categories that are included in "All Other Categories" include Not Available, Diarrhea, Hypothermia, Abdominal pain/problem, Not Known, Vaginal hemorrhage, Obvious death, COPD, Smoke inhalation, Pregnancy/OB delivery, Fever, CHF, Airway obstruction, Choking, Hypovolemia/shock, Device/Equipment problem, Malaise, Sexual assault/rape, and Hyperthermia.