

January 2020

**EMERGENCY MEDICAL SERVICES STUDY APPENDIX**

*Prepared for:*



*Prepared by:*



2901 Williamsburg Terrace ▪ Suite G ▪ Platte City ▪ Missouri ▪ 64079  
816.431.2600 ▪ [www.fitchassoc.com](http://www.fitchassoc.com)

**APPENDIX**

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## I. DEFINITIONS

### A. Advanced Life Support

- Ground transport by ambulance in which the patient's condition requires the need for ALS assessment or ALS interventions, in accordance with State and Local laws. Ambulances must be staffed by at least one advanced level provider. An ALS provider is defined as a provider trained to the level of the EMT-Intermediate or Paramedic.

### B. Basic Life Support (BLS)

- Ground transport by ambulance in which the patient's condition requires the need for BLS treatment and interventions, in accordance with State and Local laws. Ambulances must be staffed by at least two people who are certified at a minimum, as an emergency medical technician-basic (EMT-Basic).

### C. EMS Agency

- A basic life support service or advanced life support service that possesses requisite licenses pursuant to local provisions and engages in the business of providing emergency and non-emergency medical transport services.

### D. EMS Provider

- A person certified by the appropriate state agency who is authorized to perform basic life support and/or advanced life support, pursuant to local provisions.

### E. Emergency Medical Services Advisory Board

- A board comprised of physicians whose mission is to review and recommend standards of care for the transportation system.

### F. Facility

- Hospitals, skilled nursing facilities, comprehensive outpatient rehabilitation facilities and end-stage renal disease facilities providing medical services to beneficiaries.

### G. Unit Hour

- One hour of service by a fully staffed and equipped emergency medical services vehicle assigned to a call, or available for dispatch.

### H. Unit Hour Utilization (UHU)

- A measurement of the efficient use of ambulance and emergency medical services resources. UHU is calculated by dividing the number of patient transports or responses initiated during a given period of time by the number of unit hours produced during the same time period.

### I. Vehicle

- A vehicle that is designed, constructed, maintained, equipped, and is used for, or intended to be used for, ground transportation of sick or injured persons requiring or likely to require medical attention during transport.

## II. DATA SOURCES

### A. 2018 EMS Response Data

- Collected by the Floyd County Dispatch Center CAD System  
January 2018 – December 2018

### B. Floyd County Geographic Information System Data

- Collected by Floyd County GIS

### C. 2019 EMS Response Data

- Collected by the Floyd County Commissioners  
July 2019 – December 2019

### III. BENCHMARKS OVERVIEW

KEY: D=Documented, ND=Not Documented PD= Partially Documented

Communications Benchmarks		Comments
Public access through a single number, preferably enhanced 911	D	Single number utilized
Coordinated PSAPs exist for the system	PD	The City and County use different CAD systems and there are no CAD to CAD links across the PSAPs making it difficult to analyze the entirety of a call
Certified personnel provide pre-arrival instructions and priority dispatching (EMD) and this function is fully medically supervised	D	9-1-1 center staff are EMD certified and provide pre-arrival instructions
Data collection which allows for key service elements to be analyzed	D	The 9-1-1 center has made significant investments to maintain equipment and technology and data collection is easily achieved
Technology supports interface between 911, dispatching & administrative processes	PD	A Computer Aided Dispatch (CAD) to electronic Patient Care Report (ePCR) interface is not used
Radio linkages between dispatch, field units & medical facilities provide adequate coverage and facilitate communications	D	The communications center and EMS agencies have a coordinated approach for response and documentation and no concerns were expressed by providers regarding radio linkages

Medical First Response Benchmarks		Comments
First responders are part of a coordinated response system and medically supervised by a single system medical director	ND	Coordination and oversight vary depending on the agency.
Defined response time standards exist for first responders	ND	None of the first responder agencies have defined response time standards
First response agencies report/meet fractile response times.	ND	None of the first responder agencies have defined response time standards
AED capabilities on all first line apparatus	D	Automated External Defibrillator (AED) capabilities are present on all first-line apparatuses
Smooth transition of care is achieved	D	Care transition reported to be patient-focused and non-problematic

Medical Transportation Benchmarks		Comments
Defined response time standards exist	ND	Defined response time standards do not exist
Agency reports/meets fractile response times	ND	No uniform fractal reports are submitted to the County
Units meet staffing and equipment requirements	D	Units meet equipment requirements however; unit staffing was expressed as a concern by system stakeholders
Resources are efficiently and effectively deployed	D	Ambulance deployment is static, and ambulances respond from fixed locations
There is a smooth integration of first response, air, ground and hospital services	D	No issues noted regarding integration of first response, air, ground and hospital services
Develop/maintain coordinated disaster plans	D	Coordinated disaster plans are developed and maintained by the County Emergency Management department

<b>Medical Accountability Benchmarks</b>		<b>Comments</b>
Single point of physician medical direction for entire system	ND	<i>There are multiple medical directors in the system, which can result in inconsistent application of policy and practices</i>
Written agreement (job description) for medical direction exists	PD	<i>Physician medical director job descriptions detailing essential duties and responsibilities vary by provider</i>
Specialized medical director training/certification	PD	<i>Medical director training and certification varies depending on the provider</i>
Physician is effective in establishing local care standards that reflect current national standards of practice	PD	<i>Care standards are reported to vary depending on provider due to different protocols used by each agency</i>
Proactive, interactive and retroactive medical direction is facilitated by the activities of the medical director	PD	<i>Medical director engagement reported to vary depending on the agency. Additionally, there is a need to develop process outcomes (the link between care protocols and appropriate treatment methods with measurable performance) and system outcomes (link between hospital outcomes and EMS treatments with measurable performance)</i>
PCR/QI data transparency for MD review	PD	<i>Multiple ePCR software is utilized, some with more visibility for chart review than others. A county-wide ePCR software and third-party QI software such as FirstPass by FirstWatch would create a transparent workflow. This software would help automate the evaluation of process and system outcome measures</i>
Clinical Education/Development Effectiveness	D	<i>Clinical education development reported to vary depending on the agency. A county-wide Continuing Medical Education Program would ensure all EMS staff receive evidence-based and updated CE</i>
Clinical Education Efficiency	PD	<i>Clinical education efficacy reported to vary depending on the agency</i>

<b>Customer &amp; Community Accountability Benchmarks</b>		<b>Comments</b>
Legislative authority to provide service and written service agreements are in place	PD	<i>Legislative authority is limited however; a written agreement is in place</i>
Units and crews have a professional appearance	D	<i>Appearance varies by agency however, staff exhibited professionalism</i>
Formal mechanisms exist to address patient and community concerns	ND	<i>Formal system-wide mechanism to document and address patient, community or provider issues does not exist</i>
Independent measurement and reporting of system performance are utilized	ND	<i>No independent measurement or reporting of system performance or patient experience</i>
Internal customer issues are routinely addressed	PD	<i>Self-reporting-based system, however, no formal tracking mechanism or documented process to address concerns exists.</i>

<b>Prevention &amp; Community Education Benchmarks</b>		<b>Comments</b>
System personnel provide positive role models	D	<i>System personnel presented themselves as positive role models</i>
Programs are targeted to “at risk” populations	ND	<i>Currently there are not programs targeted to "at-risk" patients</i>
Formal and effective programs with defined goals exist	ND	<i>Formal programs with defined specific, measurable, achievable, reliable and timely goals do not exist consistently throughout the system</i>
Targeted objectives are measured and met	PD	<i>Targeted established objectives vary by agency</i>

<b>Organizational Structure &amp; Leadership Benchmarks</b>		<b>Comments</b>
A lead agency is identified and coordinates system activities	PD	<i>The County is the lead agency however, coordination of activities does not exist, and oversight of the system is limited</i>
Organizational structure and relationships are well defined	PD	<i>Relationships with individual agencies reported to be good however, organizational structure is not defined and there is no single point of oversight for all system activities</i>
Human resources are developed and otherwise valued	PD	<i>Human resources vary by agency</i>
Business planning and measurement processes are defined and utilized	PD	<i>Business planning and measurement processes vary by agency but are utilized and valued</i>
Operational and clinical data informs/guides the decision process	PD	<i>Varies by agency. A clinical and operational scorecard are needed county-wide once a single data repository is set up and metrics that EMS controls can be defined</i>
A structured and effective performance-based quality improvement (QI) system exists	PD	<i>Current QI practice is not proactive and depends heavily on internal practices within each agency</i>

<b>Ensuring Optimal System Value Benchmarks</b>		<b>Comments</b>
Clinical outcomes are enhanced by the system	ND	<i>Clinical outcomes not currently uniformly measured and reported throughout the system</i>
Ambulance Response Utilization and transport Utilization (UHU) is measured and hours are deployed in a manner to achieve efficiency and effectiveness	PD	<i>Ambulances are station based, however; unit hour utilization data was not reported</i>
Ambulance cost per unit hour & transport document good value	ND	<i>Ambulance cost per unit hour data was not reported so it could not be determined</i>
Service agreements represent good value	PD	<i>The service agreement is weak and could be improved, no alternatives for amount subsidized annually could be identified</i>
Non-emergency ambulance effective & efficient	D	<i>No issues were noted, and area hospital staff reported effective non-emergency transport activities</i>
Non-Ambulance but medically necessary (MAV) services are effective and efficient	NA	
System facilitates appropriate medical access	D	<i>The system facilitates appropriate medical access</i>
Financial systems accurately reflect system revenues and both direct and indirect costs	ND	<i>Financial systems information was not reported and could not be determined</i>
Revenues are collected professionally and in compliance with regulations	ND	<i>Revenue collection integrity could not be determined due to lack of data reported</i>
Tax subsidies when required are minimized	D	<i>Tax subsidies are minimized</i>

<b>Summary —</b>	
<i>Documented</i>	15
<i>Partially Documented</i>	19
<i>Not Documented</i>	15
<i>N/A</i>	1



## IV. RECOMMENDATIONS SUMMARY

The following is a summary of the recommendations detailed in the Emergency Medical Services Study Report. Additional information and/or examples are provided where applicable.

- A. Recommendation # 1 - Implement the use of Automatic vehicle location (AVL) technology for all ambulances and EMS first response vehicles.
  - Automatic Vehicle Location (AVL) for this purpose, describes the tracking of vehicles via GPS to determine their geographic location. In addition to the location, the speed and heading of a vehicle can be viewed, tracked and recorded. Many EMS systems use feedback from the vehicles, provided wirelessly through modems to enhance street data for varying road and traffic conditions.
- B. Recommendation # 2 - Implement a Computer Aided Dispatch (CAD) to electronic Patient Care Report (ePCR) interface.
  - These interfaces transfer 9-1-1 call information such as call, dispatch, en route, on scene and transport times, call nature, address and other details directly from the CAD system where data is entered, into the electronic patient care reporting software used by EMS providers in the field. In addition to saving time by reducing the need for call sheets from dispatch, they also reduce errors resulting from manual entry.
- C. Recommendation # 3 – Establish, manage and report EMS and first responder response times for life-threatening, non-life-threatening and non-life-threatening/non-urgent responses, at the 90th percentile.
  - EMS Systems once operational and routinely validated from a clinical perspective, establish density-based response times with varying levels of response based on the prospective priority assigned at dispatch such as life-threatening responses, non-life-threatening responses and non-life-threatening/non-urgent responses. Local governments customarily set response time standards contingent on operational, clinical and political factors. Urban areas typically utilize 8 minutes, 59 seconds at the 90<sup>th</sup> percentile for life-threatening emergencies; 11 minutes, 59 seconds at the 90<sup>th</sup> percentile for non-life-threatening emergencies and 14 minutes, 59 seconds for non-life-threatening/non-urgent responses.
  - Common practice is to establish response time performance requirements in low call density areas three to four minutes longer than those in urban areas. Additional elements to consider are agency capacities such as staffing levels and level of service capabilities. The National Fire Protection Association Standard 1720: “standard for effective organization and deployment of fire suppression

operations, emergency medical operations, and special operations to the public by volunteer and combination fire departments to protect citizens and the occupational safety and health of fire department employees” organizes response time standards based on the density of the coverage area. The Standard also addresses functions and outcomes of fire department emergency service delivery, response capabilities and resources and contains minimum requirements for managing resources and systems.<sup>1</sup>

**Table 4.3.2 Staffing and Response Time**

Demand Zone <sup>a</sup>	Demographics	Minimum Staff to Respond <sup>b</sup>	Response Time (minutes) <sup>c</sup>	Meets Objective (%)
Urban area	>1000 people/mi <sup>2</sup>	15	9	90
Suburban area	500–1000 people/mi <sup>2</sup>	10	10	80
Rural area	<500 people/mi <sup>2</sup>	6	14	80
Remote area	Travel distance ≥ 8 mi	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

<sup>a</sup>A jurisdiction can have more than one demand zone.  
<sup>b</sup>Minimum staffing includes members responding from the AHJs department and automatic aid  
<sup>c</sup>Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

- Establishing response time performance requirements requires taking into consideration the appropriate response performance with the cost of providing appropriate service levels. Additionally, the expectations of the citizens in the community must also be considered. In rural areas, the amount of calls per square mile is usually very low, this results in high costs for ambulance agencies to provide resources that will handle a low number of calls, simply put – the supply often does not meet the demand.
- D. Recommendation # 4 – Establish, manage and report EMS chute times: daytime - 60 seconds and nighttime - 90 seconds, at the 90th percentile.
- Chute time is measured from the time the unit is notified of a call until unit establishes a continuous state of travel to the call location.
- E. Recommendation # 5 – Establish, manage and report Emergency Department turnaround times: less than 20 minutes, at the 90th percentile.
- Emergency Department turnaround time is measured from the unit’s arrival at the hospital ED until the time it is available for another assignment.

<sup>1</sup> National Fire Protection Association Standard 1720: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments  
 Emergency Medical Services Study Appendix  
 Floyd County, Indiana

- F. Recommendation # 6 - Select a physician to be the medical director for the entire EMS system. Having a single medical director can help with continuity of care, protocol development and systematic continuing medical education.
- The medical director should be responsible for all EMS clinical activity and involved in the development of as well as adjustments to the system. The role of the medical director in a modern EMS system is defined by the American Board of Emergency Medicine as follows: As part of their clinical practice, EMS physicians are responsible for medical oversight of the whole EMS team. EMS physician practice combines direct patient care in the field with supervisory and other functions that ensure an effectively functioning response system. This includes daily direct medical decision-making and control of care provided by EMS personnel. Some examples of this include verbal medical treatment orders based on clinical information provided by allied health personnel, transport modality and destination appropriate patient care decisions, developing and deploying written patient treatment guidelines for the EMS team, and ensuring procedural competency training of allied health personnel. EMS physicians also lead quality management activities relating to medical care delivered by the entire EMS system.
- G. Recommendation # 7 - Establish a comprehensive written job description for the medical director.
- The American College of Emergency Physicians (ACEP) considers Emergency Medical Services (EMS) a practice of medicine requiring physician oversight, and the medical director an integral position. ACEP details that roles fulfilled by EMS physician medical directors, including responsibilities, authority, and reporting hierarchies, are to be formally established in writing in contractual agreements between EMS physician medical directors and EMS systems and/or applicable legal parties. While EMS systems have ethical responsibilities to provide EMS physician medical directors with the tangible resources and remuneration commensurate with the responsibilities and authorities fulfilled by EMS physician medical directors. ACEP supports the following principles outlined briefly. The full list can be reviewed <https://www.acep.org/patient-care/policy-statements/the-role-of-the-physician-medical-director-in-emergency-medical-services-leadership/><sup>2</sup> EMS physician medical directors should:
    - Be intricately familiar and conversant with all relevant aspects of affiliated EMS systems that relate to patient safety and outcomes.
    - Direct and lead the clinical performance in an EMS system, serving with recognized ultimate clinical authority.
    - Guide and direct EMS system design that is based on evidence-supported clinical practices and outcomes.

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<sup>2</sup> *The Role of the Physician Medical Director in Emergency Medical Services Leadership*  
Emergency Medical Services Study Appendix  
Floyd County, Indiana

- Direct and oversee the operation of EMS systems communications, establishing or modifying dispatch training, protocols, and credentialing programs that serve in determining initial and ongoing dispatch privileges for communications specialists.
  - Direct and oversee credentialing programs that serve in determining initial and ongoing clinical privileges for individual providers in an EMS system.
  - Direct and oversee continuous quality improvement programs based on evidence-supported practices and outcomes, so as to critically appraise and advance the quality of clinical performance in an EMS system.
  - Participate and advocate in development of engaging, evidence-supported education for EMS providers, including communication specialists.
  - Promote research initiatives involving EMS systems and providers, recognizing that pre-hospital research is an essential element in advancing evidence-based medicine within the practice of EMS medicine.
  - Be an integral part of pre-hospital research; thus, ACEP supports the further development of federal EMS grants that link distribution of funds for any EMS purpose with the end goal of enhancing the quality of care provided by an EMS system.
- H. Recommendation # 8 – Encourage the medical director to complete the medical director’s course offered by the National Association of EMS Physicians or alternatively be sub-specialty certified as an EMS Physician.
- EMS fellowship opportunities exist to help prepare interested physicians with the knowledge and leadership skills that are needed to become an effective medical director. The National Association of EMS Physicians maintains a list of Accredited programs nationwide.<sup>3</sup> <https://naemsp.org/career-development/fellowship-programs/>
  - American Board of Emergency Medicine (ABEM) and American Osteopathic Board of Emergency Medicine (AOBEM) certified physicians attain subspecialty certification in EMS by meeting the eligibility criteria, fulfilling specific credential requirements, and passing the EMS Certification Examination. ABEM develops and administers the subspecialty certification examination in EMS and is responsible for credentialing all candidates. EMS certification is available to all physicians certified by a member Board of the American Board of Medical Specialties (ABMS). <https://www.abem.org/public/become-certified/subspecialties/emergency-medical-services>

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<sup>3</sup> NAEMSP EMS Fellowship Programs  
Emergency Medical Services Study Appendix  
Floyd County, Indiana

- I. Recommendation # 9 - Establish a process to provide interactive and proactive clinical feedback to all EMS clinical providers.
- Critical to the success of an EMS system is the ability to fully utilize clinical performance data from technology and information systems to improve prehospital care and patient outcomes. Improvements can only be made if data is available in a timely and reliable manner. Software to facilitate 100% review of call taker, dispatcher, first responder and transport caregivers' actions are commonly utilized by sophisticated systems to guide medical quality improvement efforts. These include commercially available products such as Academy Analytics, FirstWatch/FirstPass and ESO. Brief descriptions of each product are provided below.<sup>4</sup>
  - Academy Analytics powered by FirstWatch is the result of a collaboration between FirstWatch and the International Academies of Emergency Dispatch to provide near-real-time web-based dashboards and analytics for ProQA users. <https://www.firstwatch.net/what-we-do/academy-analytics/>
  - FirstWatch turns raw data into meaningful information, helping agencies improve situational awareness, operational performance and clinical patient outcomes. FirstWatch does this by securely capturing, translating and transmitting information about their 9-1-1 callers, patients and systems via FirstWatch triggers all in real-time. <https://www.firstwatch.net/what-we-do/>
  - FirstPass is a clinical quality measurement and protocol monitoring tool designed to alert users to deviations in expected treatments to medical protocols. FirstPass provides continuous monitoring of ePCR and other data to quickly identify and provide real-time alerts related to protocol deviations, incomplete "care bundles" (which include scientifically validated patient care protocols), missing data elements or urgent patient safety issues. <https://www.firstwatch.net/what-we-do/enhancement-modules/firstpass/>
  - The ESO Suite is designed to facilitate bidirectional data sharing with EMS. It can perform comparative analysis of hospital and EMS data, increase operational efficiency, measure and improve patient outcomes. It's Health Data Exchange module provides a secure, auditable method of data sharing to support operational and quality process needs. ESO recently acquired Firehouse software. <https://www.eso.com/ems/ehr/>
- J. Recommendation # 10 - Work with the selected medical director to establish a set of patient care protocols to be used by all first responder agencies and the EMS agency system-wide.

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<sup>4</sup> Software products listed are for illustration only. FITCH owns no stock in any software entities nor endorses any specific products.

K. Recommendation # 11 - Quality management practices that measure and report critical aspects of the organization provide detailed insight. Monthly scorecards with Key Performance Indicators (KPI) ensure agencies are tracking performance and monitoring clinical and operational compliance. Develop quality goals to include protocol adherence and outcome measures for 911 transport activities.

- Nationwide there is effort to change the way EMS success is measured to achieve the best results for a condition or illness. Accurate assessment of quality indicators and patient outcomes requires the use of a standard language permitting comparisons among programs. The long-term goal is to be able to determine and report outcomes based on scientific evidence for a wide variety of patient interactions to demonstrate the empirical value of EMS Agencies. Efforts to move from process measures to more meaningful benchmarking involves establishing strict definitions for quality metrics, a database and the infrastructure for programs to track, report, and analyze a service’s performance by comparing it to other programs.

L. Recommendation # 12 – Consider implementing a continuing medical education program to be used by all first responder agencies and the EMS agency system-wide.

- In order to provide the highest possible standard of patient care it is essential to require that all personnel also have the highest standard of education, training and medical knowledge. This is accomplished via a comprehensive continuing medical education program. Scope, Governance, Department Structure, Self-Structured Education, Outreach Learning Activities, Criteria for Continuing Education Courses, Skill Involvement and Recordkeeping must be defined if the program is managed internally. If an internal program is not possible, several commercial products are available.

M. Recommendation # 13 - The system lacks a central depository or formal process for patients to register complaints, provide compliments or suggestions. Complaints should be logged, with timelines formalized for acknowledgment, further response, resolution and feedback.

- An example of a simple tracking mechanism with timelines formalized for acknowledgment, further response, resolution and feedback:

Date Received	Agency Involved	Personnel Involved	Complaint Type
1/1/20	ABC EMS	John Doe	Professionalism
Complaint Details	Findings	Resolution	Date Resolved
John Doe was rude to a patient while performing an assessment	Upon investigation, determined John Doe acted unprofessionally	John was counseled on maintaining professionalism	1/2/20

N. Recommendation # 14 - Consider using a third-party organization to measure, validate and report EMS system performance.

- O. Recommendation # 15 - Develop a report detailing first responder and EMS key system performance metrics for community leaders and the public.
- P. Recommendation # 16 - Develop linkages with health department initiatives to improve population health e.g. fall prevention, CPR and social services/addiction education.

- Many EMS agencies offer community outreach in the form of American Heart Association Hands-Only CPR training. This training is typically offered to churches, colleges, high schools, civic organizations and businesses throughout the community.



The goal of this course is to increase a bystander’s ability and willingness to help a person having a heart attack by initiating hand only CPR until help arrives.<sup>5</sup>

- Another form of community outreach used is bleeding control training. Uncontrolled bleeding is the number one cause of preventable death from trauma. The more non-healthcare trained citizens who know how to control bleeding in an injured person, the greater chances citizens have of surviving injury. In this community outreach and education, participants learn how to properly control bleeding using their hands, dressings, and tourniquets.



The course is heavily promoted by the American College of Surgeons™ and several federal agencies to guide non-healthcare providers into the role of medical first responders during these time-sensitive emergencies.<sup>6</sup>

- Q. Recommendation # 17 - Work with first responder and EMS staff to develop a program aimed enhancing the community's awareness of EMS system activities.
- R. Recommendation # 18 - Consider selecting a third-party organization to proactively survey patients regarding their experience with dispatch, first responders and EMS providers.

- Best practice techniques produce and sustain customer loyalty and serve as the expectation of conduct for EMS Agency staff. Leading EMS agencies provide staff with evidence-based tools such as patient experience surveying and feedback. To ensure appropriate patient care and patient experience, patients are offered an opportunity to evaluate the service agencies provide. These organizations allow for timely access to surveys for patients as well as benchmarking and reporting across various areas of patient engagement; at the clinician and department level. In addition to these reporting elements, most EMS specific survey organizations provide a comparison summary that provides a ranking for your agency compared against transport agencies nationwide as well as agencies that are comparable in size in the database.

<sup>5</sup> AHA Hands-Only CPR

<sup>6</sup> American College of Surgeons Stop The Bleed

- S. Recommendation # 19 - Develop a quarterly report for the community that demonstrates current EMS system activities and accomplishments as well as any public education initiatives that are being offered.
- T. Recommendation # 20 - Fortify the County's role as the lead agency and ensure departments and associated administrative staff responsible for contract enforcement are empowered to carry out their duties.
- U. Recommendation # 21 - Support first responder agencies in developing short- and long-term operational plans.
- Implement quality management practices focused on system performance to establish and measure targeted objectives and Specific, Measurable, Achievable, Reliable and Timely (SMART) goals. Leading agencies use these processes to measure and report critical aspects of performance and compliance to targets.
- V. Recommendation # 22 - A more comprehensive approach to system Quality Improvement and Quality Assurance is needed to advance efforts to achieve the clinical and patient satisfaction goals. Implement a Continuous Quality Improvement Plan that will position the EMS system to provide high quality care now and in the future.
- Leading EMS agencies are committed to ensuring field providers deliver clinically sophisticated, evidence-based, quality clinical care to each patient. The QA/QI process establishes specific, measurable and achievable clinical performance goals and ensures a strict Quality Assurance / Quality Improvement process will be maintained with appropriate medical direction. Examples of quality metrics used by EMS agencies include:
  - GAMUT QI Collaborative Consensus Quality Metrics – A resource for transport teams to track, report and analyze their performance on transport-specific quality metrics.<sup>7</sup>  
[http://gamutqi.org/GAMUT%20Metrics\\_version%205.16.2016.pdf](http://gamutqi.org/GAMUT%20Metrics_version%205.16.2016.pdf)
  - National Association of State EMS Officials (NAEMSO) National Model EMS Clinical Guidelines - Model guidelines and protocols developed by the NASEMSO Medical Directors Council with representation from national EMS physician organizations.<sup>8</sup> <https://nasemso.org/wp-content/uploads/National-Model-EMS-Clinical-Guidelines-2017-PDF-Version-2.2.pdf>
  - National EMS Quality Alliance (NEMSQA) – An initiative supported by the National Highway Traffic Safety Administration (NHTSA and the American College of Emergency Physicians (ACEP) to develop EMS quality measures.<sup>9</sup>  
<http://www.nemsqa.org/>

<sup>7</sup> *GAMUT QI Collaborative Consensus Quality Metrics (v. 05/16/2016)*

<sup>8</sup> *National Model EMS Clinical Guidelines Version 2.2*

<sup>9</sup> *National EMS Quality Alliance (NEMSQA) EMS Compass 2.0 Measure Set*



- W. Recommendation # 23 - Evaluate recommended service delivery models as detailed in the report.
- X. Recommendation # 24 - Consider establishing an Emergency Medical Services Advisory Board to review and recommend standards of care in the EMS system.
- These advisory boards are typically comprised of physicians from various disciplines as well as EMS transport and first responder agency leadership. The board typically reviews and recommends standards of care for the EMS system.
- Y. Recommendation # 25 - Establish a plan to objectively reevaluate the EMS system at regular intervals.

## V. EXPLANATION OF COST ESTIMATE

To determine a reasonable operating cost estimate, area wages and other operating expenses for comparable size systems were utilized. Capital equipment cost at current per unit market prices were utilized for the purpose of initial capital equipment necessary.

<i>Capital Equipment</i>	<i>Quantity</i>	<i>Per Unit Cost</i>	<i>Total</i>
Ambulance	4	\$ 200,000	\$ 800,000
Response Vehicle	1	\$ 50,000	\$ 50,000
Cardiac Monitor	4	\$ 32,000	\$ 128,000
Stretcher	4	\$ 20,000	\$ 80,000
Stair Chair	4	\$ 3,000	\$ 12,000
Power Load	3	\$ 22,000	\$ 66,000
Radio Equipment	4	\$ 2,500	\$ 10,000
Computers	4	\$ 2,500	\$ 10,000
			\$ 1,156,000.00

<i>Operating Expenses</i>	<i>Total</i>
Medical Supplies	\$ 56,000
Billing Services	\$ 45,000
Vehicle Maintenance	\$ 20,000
Internet & Data	\$ 5,000
Equipment Maintenance	\$ 10,000
Fuel	\$ 25,000
	\$ 161,000



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