April 6, 2018

EMS Operational and Financial Audit

Anderson County Emergency Services
Anderson County, TN

FINAL REPORT

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CONSULTANT REPORT

Anderson County Emergency Services – Anderson County, TN
EMS Operational and Financial Audit
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Table of Contents

Attachments:

A. Expanded Recommendations Matrix
B. Responses to Findings of Fact Questions
C. Comparison to 50 Benchmarks
D. Employee Survey Results
E. GFOA Best Practice – Budget Documents

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INTRODUCTION

In the summer of 2017, Anderson County, Tennessee, engaged Fitch & Associates (FITCH) to conduct an audit of the operational and financial performance of the County's Emergency Medical Services (ACEMS). The overall goal of this study is to identify any operational modifications that would allow ACEMS to operate more efficiently and economically. Additionally, the county's request for proposal further confirms a desire to improve the overall performance and quality of services while improving the use of taxpayer money.

The county established an EMS Audit Advisory Committee to approve the consultants' work plan, and be advised of the project progress. The county also appointed a Project Manager, the Assistant Director of Finance, who has maintained close contact with the consultants during the project.

In July 2009, the Ambulance Service Fund was designated as an enterprise fund/business-type activity. As such, revenues derived from activities were expected to meet and exceed the cost of operations including capital and necessary reserves for cash flow and unexpected events. At that time, the county advanced funds and reclassified assets in a combined total of $1.8 million. Recognizing that ACEMS has not been financially self-sustaining, the county designated the Ambulance Service Fund as a special revenue fund in July 2017.

This report represents an assessment of ACEMS operations, an evaluation of performance throughout the emergency medical system from initial call into E911 through response and possible transport of the patient to the emergency room. ACEMS is the sole ambulance provider in Anderson County and as such, handles both calls for emergency medical assistance, as well as the non-emergent movement of patients throughout the healthcare system when ambulance transport is required. The review/audit, focused on the operational model, revenue generation and expenses. ACEMS is compared to the benchmarks of an optimal EMS system and to similar agencies in the region.

The ACEMS medical and administrative personnel are passionate about patient care. They offered their ideas and opinions to the consultants and we thank them. They answered surveys and participated in numerous interviews. FITCH consultants thank ACEMS personnel, county officials and EMS Audit Advisory Committee members for the time and attention they have given to this project.

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EXECUTIVE SUMMARY

This report provides the framework to compare ACEMS to the optimal EMS system, against other similar agencies, and against 50 specific benchmarks. The report section titled Current Organization and Environment specifically evaluates ACEMS and is organized by functional area, for example, dispatch, operations, and fleet. Separate sections regarding the financial structure and ambulance transport fees follow. Findings are included within the report body, as appropriate.

The sheer number of findings and recommendations can be overwhelming. To provide some level of order, this Executive Summary highlights several overall findings and then details what the consultants see as the most critical findings that require immediate action. More detailed findings are included within the report sections. The Executive Summary also provides a Recommendations Matrix organized by priority levels and includes an estimated first year cost/savings. The county requested that the report include five-year cost/savings estimates. That information is provided in Attachment A titled, Expanded Recommendations Matrix.

On February 22, the consultants provided the EMS Audit Advisory Committee with a presentation of the Findings of Fact. Committee members and others who attended the presentation forwarded questions to the consultants via the Project Manager. The responses to those questions are provided in Attachment B titled, Responses to Findings of Fact Questions.

OVERALL FINDINGS

Anderson County EMS is fighting a valiant, but likely unwinnable battle to remain financially and operationally viable as a self-funding entity, in both the emergency and non-emergency spheres. The decision to change the Ambulance Service Fund to a Special Revenue Fund in 2017 (away from an enterprise fund) was prudent. It is likely that ACEMS will require additional funding from the county for the foreseeable future. There are numerous additional findings throughout the body of the report. Where they occur, they appear under a “findings” heading. The overall summary findings follow below.

ACEMS has not been provided adequate resources, specifically vehicles, personnel, station infrastructure and funds, to fulfill the current emergency and non-emergency missions.

Convalescent care work is deemed necessary for its revenue stream. Current deployment, which co-mingles emergency operations with convalescent care operations, negatively impacts the delivery of 911 emergency services.

The 90th percentile emergency response time of 19 minutes is well beyond that which is deemed acceptable in other communities.

Roughly one-third of the county's land mass is not located within 12 minutes of an ambulance station. When three or fewer ambulances are available for response, roughly 66% of the land mass is not within 12 minutes of an ambulance station.

911 dispatch services do not provide minimally acceptable support for ACEMS operations.

Personnel are difficult to attract and retain due to low salaries, poor working conditions, and high workloads.

Five of the six ACEMS station facilities are inadequate and in some instances unsafe.

Only six of the ACEMS 17 ambulances fall within the life and mileage parameters set by county policy. Necessary ambulance repairs (specifically ambulance module repairs) are not performed due to lack of available funds.

Essential biomedical equipment (cardiac monitors) are badly outdated and function poorly.

The ACEMS reported enterprise fund expenditures are understated, as essential services were paid for by the greater county when ACEMS cash flow was not adequate.

Training for billing compliance must be ongoing for field and administrative personnel. To reduce the risk of another audit, compliance is paramount particularly for certain transport types, such as the movement of dialysis patients.

No one person or decision is responsible for ACEMS's current financial situation and no one person or decision can resolve all of the issues noted in this report. It will take a concerted and long-term effort involving the commitment of county leadership and the community, to develop and agree upon goals and strategies in order to improve Anderson County's EMS system. An overarching recommendation is that the Mayor and EMS Director develop an immediate and long-range strategic plan that can be brought to the County Commission for review, approval, and funding.

CRITICAL FINDINGS

There are two finding that that consultants deem most critical to resolve for the safety and welfare of ACEMS personnel and the community.

1. The ambulance fleet is aging, units have excessive mileage and they do not meet basic operational safeguards and design specifications. Critical ambulance failures, those that happen during response to a call or during patient transport, occur at three times the rate deemed acceptable in the EMS community.
2. Essential medical equipment, such as cardiac monitors, are out of date and do not provide good clinical data to paramedics attending emergency patients.

The remedy for the critical issues requires that the county find the means to fund significant capital investments. With the assumption that credit lines are available and the county takes immediate action, medical equipment deliveries would take at least three months, and it would take up to three to five months for ambulance deliveries, with both intervals beginning after the county completes its procurement and vendor selection process. The consultants must emphasize the public safety and potential liability issues inherent in providing EMS operations with sub-standard equipment.

RECOMMENDATIONS MATRIX

The Recommendations Matrix follows and includes all of the primary recommendations that result from the consultants' evaluation of ACEMS. Immediate cost/savings are provided in this Matrix. An expanded version of the Matrix is provided in Attachment A titled, Expanded Recommendations Matrix. The expanded version includes multi-year funding needs and notes the various entities that will need to work together to accomplish the recommendation.

Recommendations are prioritized as follows:

- Critical Priority — items needing immediate action to be initiated and completed by the end of the fiscal year.
- High Priority — items of importance that should be completed within 12 months.
- Medium Priority —items to be initiated by the first quarter of the next fiscal year and/or that require ongoing attention and funding.
- Lower Priority — items that can be accomplished for relatively low cost but that should not interfere with completion of higher priority recommendations.

Implementation of the critical recommendations regarding replacement of ambulances and medical equipment requires that the county determine the ACEMS future operational/business model. Those models are:

- Current Model — Continue to provide both 911 and convalescent ambulance transport using all-Advanced Life Support (ALS) ambulances and staffing. Requires 20 type 1/3 ambulances at completion and 24 cardiac/physiologic monitors. The immediate cost is $1.97 million as described below in Critical Recommendation #1.
- Two Division Model — Continue to provide both 911 and convalescent ambulance transport using two separate divisions. Requires 15 Type 1/3 ambulances and 5 Type 2 ambulances, 19 cardiac/physiologic monitors and 5 automatic external defibrillators. Convalescent care ambulances will be operated and staffed as basic life support (BLS) units which may provide some personnel savings. The immediate cost is $1.5 million as described below in Critical Recommendation #2.
- 911-Only Model — Discontinue providing convalescent ambulance services and continue providing 911 service using all ALS ambulances. Requires 16 Type 1/3 ambulances and 19 cardiac/physiologic monitors/defibrillators. Arrangements will need to be concluded for a non-emergent transport provider. The immediate cost is $1.8 million as described below in Critical

Recommendation #3. Revenues derived from convalescent care transports will be eliminated. Unit hours could be reduced, but only minimally in order to maintain or improve 911 response performance.

The costs noted for the three business models above and the Critical Recommendations below represent immediate, first year costs. Additional funds should be budgeted annually until all older equipment is replaced and then an ongoing fleet replacement fund should be established.

Figure 1. Recommendations Matrix – Critical Priority

#	Description	Category	Priority	Capital / Operating	Immediate Cost
1	*Current Model* — Replace current fleet and medical equipment with 20 ambulances and 24 cardiac / physiologic monitors that meet current design specifications. Immediate funding is for six ambulances at $200,000 each and associated equipment costs.	Fleet and Biomedical Equipment	1-Critical	Capital	Vehicles: $1,200,000 Equipment: $768,000 Total: $1,968,000
2	*Two Division Model* — Replace current fleet with 15 Type 1/3 ambulances and five Type 2 ambulances; replace medical equipment with 19 cardiac / physiologic monitors and five automatic external defibrillators (AEDs). Immediate funding is for four ambulances at $200,000 each and two convalescent ambulances at $100,000 each and associated equipment.	Fleet and Biomedical Equipment	1-Critical	Capital	Vehicles: $1,000,000 Equipment: $500,000 Total: $1,500,000
3	*911-Only Model* — Replace current fleet and medical equipment with 16 Type 1/3 ambulances and 19 cardiac / physiologic monitor / defibrillators. Immediate funding is for six ambulances at $200,000 each and associated equipment costs; monitor costs are somewhat less than for the Current Model.	Fleet and Biomedical Equipment	1-Critical	Capital	Vehicles: $1,200,000 Equipment: $608,000 Total: $1,808,000

The remaining recommendations (high, medium and lower priorities), assume that convalescent care will continue to be provided by ACEMS.

Figure 2. Recommendations Matrix – High Priority

#	Description	Category	Priority	Capital / Operating	Immediate Cost
1	Regular OIG exclusion lists checks of all personnel performing EMS related functions (including administration and dispatch).	Admin	2-High	Operating	$1,000

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#	Description	Category	Priority	Capital / Operating	Immediate Cost
2	Replace the existing CAD system with a modern, commercial CAD system that integrates data from the 911 telephone system, automatic vehicle location (AVL) system, and provides for computer-driven identification of the closest available ambulance.	Communications	2-High	Capital & Operating	$100,000 to $500,000
3	Explore the appropriateness of interdepartmental charges for motor pool services, dispatch services, and Trustee services. EMS should be assessed interdepartmental fees only if that is the regular practice between Anderson County departments.	Finance	2-High	Capital & Operating	$0
4	Reduction of compliance related error rates, identified in the claims audit, to levels below 5% (requires documentation training for all personnel, at hire and biennially)	Finance	2-High	Operating	$10,000
5	Eliminate purchase of "3 series" ambulances for Type 1 and Type 3 ambulances; specify ambulance chassis to be "4 series"	Fleet	2-High	Capital	$21,000
6	Complete Ambulance Master Level III EVT certification for 2 motor pool employees, OR consider outsourcing EMS fleet maintenance	Fleet	2-High	Operating	$0
7	Replace all future ambulances with 450/4500 chassis to allow sufficient GVWR.	Fleet	2-High	Yes	Future
8	Establish a "low level" beyond which convalescent calls will not be accepted.	Operations	2-High	n/a	Unknown
9	Establish a sound policy framework in which Anderson County EMS can operate. Establish responder performance, clinical and financial performance expectations that BOCC is willing to fund.	Policy	2-High	n/a	$0
10	Accomplish extreme vetting of any contracts for convalescent transports prior to agreement.	Policy	2-High	Operating	$0
11	Separate emergency response and convalescent care operations and deployment; staff convalescent care ambulance with EMTs; transport vehicles and equipment are less costly. Reduce availability of convalescent care transports as opposed to 24/7.	Policy - Operations	2-High	n/a	Could result in reduction of cost and revenue. Detailed study required.
12	Review, assess and make process improvements to billing areas identified in the Sample Billing Audit; provide training in these areas. Could result in savings and avoid Medicare audit.	Policy and Training	2-High	Operating	$0

#	Description	Category	Priority	Capital / Operating	Immediate Cost
13	Screen and correct Patient Care Reports (PCRs) for compliance before forwarding to Digitech. Could result in savings and avoid Medicare audit.	Policy and Training	2-High	n/a	$0

Figure 3. Recommendations Matrix – Medium Priority

#	Description	Category	Priority	Capital / Operating	Immediate Cost
1	Cancel and do not enter in to additional contracts that provide for transport rates below Medicare fee schedule rates.	EMS/ Mayor/ Law Department	3-Medium	n/a	$0
2	Increase the involvement of the Medical Director in field EMS "ride-alongs," in clinical education, and in interaction with field EMS personnel.	Essential Medical	3-Medium	Operating	$10,000
3	Replace existing stretchers with new, comparable equipment, including upgrading stretcher mounts to GVS standards.	Fleet	3-Medium	Capital	Future
4	Develop bariatric ambulance capability. One of the new ambulances purchased should include bariatric equipment.	Fleet	3-Medium	Capital	$0
5	Assign shift lieutenants "off ambulance" to allow for appropriate supervisory span of control.	Operations	3-Medium	Operating	$150,000
6	Maintain the contract with Wakefield for bad debt recovery.	Policy	3-Medium	Operating	$0
7	Conduct a comprehensive salary study. Develop a plan to improve EMS compensation to at least the median range of similar agencies in the locality, including public EMS agencies, fire agencies, and law enforcement agencies.	Policy - Employee Related	3-Medium	Operating	unknown
8	Develop and implement a leadership development program for all levels of the organization.	Policy - Employee related	3-Medium	Operating	$10,000
9	Review existing service agreements with Roane and Union counties to assure they represent good value for all parties. Analyze Methodist Medical former contract and current ambulance usage in order to confirm the operational needs for a new contract.	Policy - Financial	3-Medium	Operating	n/a
10	Discontinue providing dead body transports.	Policy - Operations	3-Medium	Operating	Savings in unit hour time
11	Consider adding or re-allocating an ambulance to serve the Briceville/New River area. Assumes convalescent care is continued.	Policy - Operations	3-Medium	Operating	Future cost

#	Description	Category	Priority	Capital / Operating	Immediate Cost
12	Consider adding or re-allocating an ambulance to serve the Briceville/New River area. Assumes convalescent care is eliminated.	Policy - Operations	3-Medium	Operating	$0
13	Provide E911 Dispatchers with a medical necessity check list for medical necessity confirmation of convalescent care transports when ACEMS Transport Coordinator is not available. Provide training and confirm compliance.	Policy and Training (could result in saving and avoid Medicare audit)	3-Medium	Operating	$0
14	Explore the possibility of obtaining grounds and maintenance services from the Anderson County Buildings and Grounds Department. Discontinue the use of unsupervised prisoner labor at EMS facilities.	Support Services	3-Medium	Operating	Unknown
15	Explore the possibility of obtaining information technology services from the Anderson County Information Technology Department.	Support Services	3-Medium	Operating	Unknown
16	Consider implementing the National EMS Management Assoc. "EMS Field Training and Evaluation Program" to bolster new hire on-boarding.	Training	3-Medium	Operating	$11,000

Figure 4. Recommendations Matrix – Lower Priority

#	Description	Category	Priority	Capital / Operating	Immediate Cost
1	Negotiate contracts for patient transport reimbursements at an amount at or above the Medicare allowable rate. (Ongoing)	Policy	4-Lower	n/a	$0
2	Develop an employee uniform policy that is acceptable to both the Board of County Commissioners, the citizens of Anderson County, and the Anderson County EMS staff.	Policy - Employee related	4-Lower	Operating	$50,000 to $75,000
3	P-Cards - additional documentation	Policy - Financial	4-Lower	n/a	$0
4	The computer-aided dispatch (CAD) system should interface directly with the patient care reporting system to assure that all EMS incidents are properly documented.	Communications	4-Lower	Capital	$10,000
5	Develop and fund a plan to provide adequate stations for Anderson County EMS. Stations should include adequate crew quarters, as well as apparatus bays sufficiently large to clean vehicles inside and out, including removal of the ambulance stretcher without taking the ambulance vehicle out-of-doors.	Facilities	4-Lower	Unknown	Unknown

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#	Description	Category	Priority	Capital / Operating	Immediate Cost
6	Develop individual budget line items for essential services such as the E911 Communications charges, billing and collection services and other material expenses that are now combined under one line-item, Other Contractual Services.	Finance	4-Lower	n/a	$0
7	Mark and equip all staff and support vehicles	Fleet	4-Lower	Operating	$0
8	Conduct a relief or staffing factor study based on at least three years of leave time usage.	Policy - Employee Related	4-Lower	Operating	Unknown

STUDY METHODOLOGY

STAKEHOLDER INTERVIEWS/INPUT

On-Site Visit and Interviews

To initiate the project, FITCH consultants developed a detailed work plan and forwarded to the county an extensive Information Data Request (IDR). The county and ACEMS provided numerous documents including, financial, dispatch, and billing records. FITCH team members were on site in Anderson County for five days in mid-January. During the site visit, the consultants completed visits to all ACEMS facilities, interviewed ACEMS administrative and management personnel, county officials, hospital personnel, various ambulance crews, and 911 personnel.

EMS Audit Advisory Committee

For this project, Anderson County formed an EMS Audit Advisory Committee comprised of elected officials and other stakeholders. The Advisory Committee reviewed and approved the consultants' project work plan and received Situation Reports (SitReps) every two weeks. The consultants' Findings of Fact were presented to the Committee and other interested parties on February 22. The Committee and others submitted questions and comments to the consultants for inclusion in the Draft Report. The Draft report was provided to the Committee on March 9 and Committee members provided feedback to the consultants for inclusion in the Final Report, as appropriate.

Employee Survey

A survey tool was developed by the consultants and reviewed by county officials prior to launch in mid-October. The survey tool was e-mailed from the FITCH offices and responses remain anonymous. Survey invitations were sent to 78 employees and the survey remained available from October 17 through midnight November 10. Of the 78 survey invitations, 42 were completed for a return rate of 54%.

FINANCIAL REVIEW

The financial review included an extensive review of Comprehensive Annual Financial Reports (CAFRs) from FY2010 through the CAFR for the most current year ending June 30, 2017. Trends were tracked for expenditures and revenues at the line item level. Salaries and associated fringe benefits were also tracked and compared to operating expenditures. The county and FITCH agreed to expand the project scope to include a transaction by transaction review of 12 months of purchasing card (P-card) expenditures.

Conversations with county finance officials and EMS management provided an understanding of the budget processes and priorities. The consultants reviewed Government Finance Officers Association (GFOA) Best Practices for the development of budget documents and purchasing card programs.

Likewise, revenues were reviewed on a multi-year basis. This review complimented the revenue analysis completed regarding billing records and reimbursements.

OPERATIONAL DATA ANALYSIS & DATA DEFICIENCIES

ACEMS provided three years EMS incident response and patient care data from its computer-aided dispatch (CAD) and electronic patient care reporting (ePCR) system. This data was examined by the consultants using standard operational analysis methods, including statistical analysis and geo-spatial analysis. The tables and maps used throughout this report are the result of these analyses.

It is important to note data issues that presented challenges. The home-grown CAD system utilized for Anderson County EMS is not electronically interfaced with the 911 telephone system, so temporal data (time stamps) are manually entered. The CAD system records times to the nearest minute, while modern CAD and ePCR systems record times to the nearest second. Accordingly, all times are rounded to the nearest minute, meaning calculated accuracy can be as great as +/- 1 minute.

PATIENT TRANSPORT CLAIMS REVIEW

FITCH reviewed ACEMS billing practices by ACEMS employees and the interface with the contracted billing company. The review included an analysis outcome of the 2014 Medicare audit and subsequent changes in ACEMS billing practices. Transport history was determined from completed and billable trips and forms the basis for projecting transports for FY2018. Collection and payer mix trends as well as projected changes in Medicare and Medicaid reimbursements were used to project revenues going forward. Lastly, the consultants conducted a compliance review of sample billing records on a number of metrics.

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BEST PRACTICES FOR OPTIMAL EMS SYSTEM

Emergency medical services are best viewed as a system with a number of components that contribute to providing the best care for an ill or injured patient. The major components of the optimal system are outlined below and will serve as the framework for the evaluation and assessment of Anderson County EMS and the system, as a whole. Recognizing and striving to meet these benchmarks results in a patient-focused system.

EMS COMMUNICATIONS

- Public has access through a single number, preferably enhanced 911.
- Coordinated 911 Public Safety Access Points (PSAPs) exist for the system.
- Certified personnel provide pre-arrival instructions and emergency medical dispatching (EMD) and this function is fully medically supervised.
- Data collection exists allowing for key service elements to be analyzed.
- Technology supports interface between 911, dispatching and administrative processes.
- Radio linkages between dispatch, field units and medical facilities provide adequate coverage and facilitate communications.

MEDICAL FIRST RESPONSE

- First responders are part of a coordinated response system and medically supervised by a single system medical director.
- Defined response time standards exist for first responders.
- First response agencies report/meet fractile response times.
- Automatic External Defibrillators (AED) capabilities are on all first line apparatus.
- Smooth transition of care is achieved.

MEDICAL TRANSPORTATION

- Defined response time standards exist.
- Agency reports/meets fractile response times.
- Units meet staffing and equipment requirements.
- Resources are efficiently and effectively deployed.
- There is a smooth integration of first response, air, ground and hospital services.
- Develop/maintain coordinated disaster plans.

MEDICAL ACCOUNTABILITY

- Single point of physician medical direction for entire system.
- Specialized medical director training/certification.

- Physician is effective in establishing local care standards that reflect current national standards of practice.
- Proactive, interactive and retroactive medical direction is facilitated by the activities of the medical director.
- Patient Care Report/Quality Improvement (PCR/QI) data transparency for MD review.
- Clinical Education/Development Effectiveness.
- Clinical Education Efficiency.

CUSTOMER/COMMUNITY ACCOUNTABILITY

- Legislative authority to provide service and written service agreements are in place.
- Units and crews have a professional appearance.
- Formal mechanisms exist to address patient and community concerns.
- Independent measurement and reporting of system performance are utilized.
- Internal customer issues are routinely addressed.

PREVENTION AND COMMUNITY EDUCATION

- System personnel provide positive role models.
- Programs are targeted to “at risk” populations.
- Formal and effective programs with defined goals exist.
- Targeted objectives are measured and met.

ENSURING OPTIMAL SYSTEM VALUE

- Clinical outcomes are enhanced by the system.
- Ambulance Response Utilization and transport Utilization (UHU) are measured and hours are deployed in a manner to achieve efficiency and effectiveness.
- Ambulance cost per unit hour and transport document good value.
- Service agreements represent good value.
- Non-emergency ambulance service is effective and efficient
- Non-ambulance but medically necessary (MAV) services are effective and efficient.
- System facilitates appropriate medical access.
- Financial systems accurately reflect system revenues and both direct and indirect costs.
- Revenues are collected professionally and in compliance with regulations.
- Tax subsidies, when required, are minimized.

ORGANIZATIONAL STRUCTURE AND LEADERSHIP

- A lead agency is identified and coordinates system activities.
- Organizational structure and relationships are well defined.

- Human resources are developed and otherwise valued.
- Business planning and measurement processes are defined and utilized.
- Operational and clinical data informs/guides the decision process.
- A structured and effective performance based quality improvement (QI) system exists.

Anderson County's conformance to these benchmarks is summarized in Attachment C, titled Comparison to 50 Benchmarks. The county demonstrates compliance with 10 of 50 benchmarks, partial compliance with 28 of 50 benchmarks, and non-compliance with 12 of 50 benchmarks.

CURRENT ORGANIZATION AND ENVIRONMENT

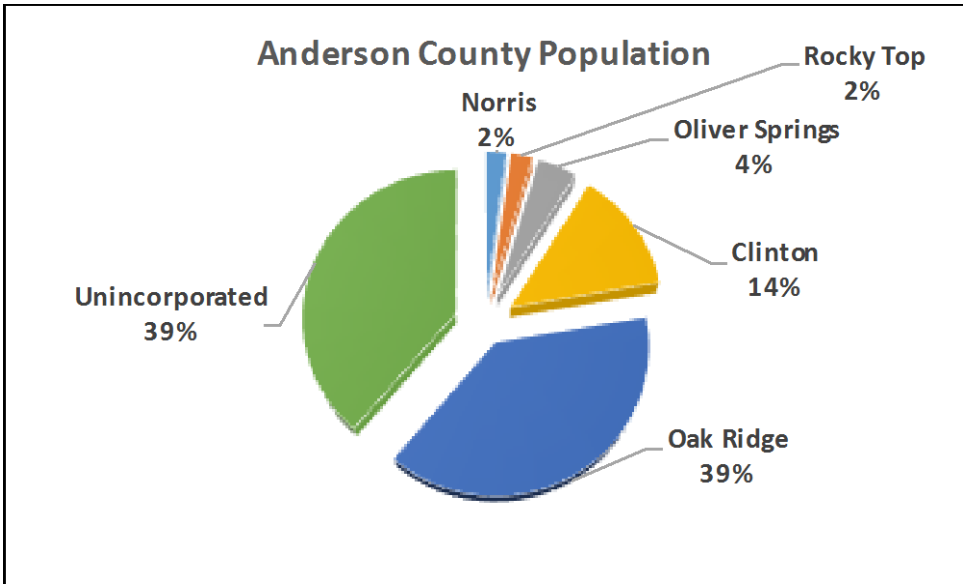
AREA DEMOGRAPHICS AND ECONOMIC CONDITIONS

Anderson County is comprised of 337 square miles and is located in eastern Tennessee. Within the county are the municipalities of Clinton, Norris, Oak Ridge, Oliver Springs and Rocky Top. The county is included as part of the Metropolitan Statistical Area of Knoxville with the nearest county boundary approximately 20 miles from the City of Knoxville. The two figures below indicate the population distribution of the cities and the unincorporated area of the county.

Figure 5. Anderson County Cities and Unincorporated Population Estimates[1]

City/Unincorporated Area	Population
Norris	1,642
Rocky Top	1,800
Oliver Springs	3,253
Clinton	10,106
Oak Ridge	29,350
Unincorporated	29,251
County Total	**75,402**

Figure 6. Anderson County Cities and Unincorporated Populations by Percentage



[1] US Census Bureau, Quick Facts, Anderson County, TN. www.census.gov. Unincorporated estimate is based on County population estimate for 2016. Cities are estimated as of 7/1/17 for 2016. City of Rocky Top was not found in the census and not by its former name of Eastern Tennessee and its population information is from various posted web articles.

The county's largest employer is the Oak Ridge National Laboratory and companies, educational facilities and consultants associated with the Laboratory and the Department of Energy. The East Tennessee Economic Development Agency notes county unemployment at 3.3%, while the FY2017 CAFR indicates an unemployment rate of 4.6% for FY2017. The state's overall unemployment rate is reported as 2.9%.[2]

The median per capita personal income for Anderson County in FY2017 is $38,647, which is approximately 10.7% less than the prior year per capita of $43,251.[3]

Revenues derived from property taxes, the primary revenue source for the county, have improved by a few percentage points over the past five fiscal years. The figure below indicates the changes from year to year for property taxes reported in a modified accrual method in the FY2017 CAFR.

The county's current tax base represents an economic challenge for funding public services. The county Finance Director advised the FITCH team that one cent additional property tax yields approximately $160,000 in additional tax revenue.

Figure 7. Changes in Property Tax Revenues FY2013 to FY2017[4]

	FY2013 to FY2014	FY2014 to FY2015	FY2015 to FY2016	FY2016 to FY2017
Change in Property Tax Revenues	+ 1.0%	+ $2.2%	+ 1.8%	+ $1.9%

The assessed valuation of real property has seen some growth but also some losses in FY2016 as noted in the figure below.

Figure 8. Changes in Real Property Assessed Value FY2013 to FY2017[5]

	FY2013 to FY2014	FY2014 to FY2015	FY2015 to FY2016	FY2016 to FY2017
Change in Real Property Assessed Value	+ 1.1%	+ $0.2%	- 2.5%	+ $1.0%

The East Tennessee Economic Development Agency (ETEDA) compiles demographic data for the several counties in its region that includes Anderson County. The figure below indicates population changes in Anderson beginning with the 2000 Census data and provides a population projection for 2020.

[2] December 2017 Laborshed County Statistics, East Tennessee Economic Development Agency www.eteda.org, accessed February 1, 2018

[3] Comprehensive Annual Financial Report for FY2017, Demographic and Economic Statistics, p. 281.

[4] General Government Tax Revenue by Source (modified accrual basis of accounting), Comprehensive Annual Financial Report for FY2017, p. 271.

[5] Appraised and Assessed Value of Taxable Property, Comprehensive Annual Financial Report for FY2017, p. 272.

Figure 9. Population Demographics for Anderson County, TN[6]

	2000 Census	2010 Census	2015 Estimates	2020 Projections
Total Population	71,330	75,129	75,402	76,727

Although the Anderson's population is projected to grow by 2020, growth is relatively slow. The figure below provides a comparison of the percentage of growth between two five-year periods, as indicated.

Figure 10. Percent Change in Population: Five-Year Periods 2010 to 2015 to 2015 to 2020

	% Change 2010 to 2015	% Change 2015 to 2020
Five-Year Period % Population Change	+0.4%	+1.8%

While overall population growth is important for EMS agencies to estimate future service needs, an increase in the aging of the population can materially increase the demands for emergency medical services. Several studies of EMS systems have shown that older individuals make more demands on the ambulance system than do younger persons. The shift to a larger percentage of persons older than 65 will impact ACEMS's call volume and will likely impact revenues as individuals move off of employer based health insurance and onto Medicare.

Again, the East Tennessee Economic Development Agency compiled data on the changes in the age cohorts by county. That data is summarized below for Anderson County by percentage of total population for three broad age cohorts.

Figure 11: Age Related Census Data Percentage of Total Population

	2000 Census	2010 Census	2015 Estimates	2020 Projections	% Change: 2015 to 2020
Age 0 > 64	59,465	62,065	61,534	60,593	-1.5%
Age 65 > 74	6,062	6,672	7,490	9,185	+22.6%
Age 75 > 85+	5,803	6,392	6,378	6,949	+9.0%

The population group of ages 64 years and younger decreases by 1.5%, while those 65 years and older increases dramatically. By 2020, the individuals over 65 years of age are projected to represent 21% of the total county population. Parenthetically, the growth in the over-65 age group has profound implications for EMS. Those over 65 use EMS at greater rates than the younger population, and that

[6] Demographic Detail Summary for Anderson County, TN, East Tennessee Economic Development Agency. www.eteda.org. Accessed January 2018.

group is also subject to the revenue limitations of the Medicare program. Older Americans[7], and people with limited financial resources, use EMS resources at higher rates than the general population.[8]

COUNTY GOVERNANCE

Anderson County is governed under a Mayor-Commission form of government. The County Mayor's duties include administering the day-to-day activities of county government and serving as the county's official spokesperson. The County Mayor also allocates particular duties to certain department heads within the organization. She is responsible for appointing the individuals to head and staff certain departments and supervises those appointees.

The County Commission is the county legislative body of Anderson County Government. It is composed of sixteen members chosen by nonpartisan election, with two representing each of the county's eight election districts. Tennessee's state constitution provides that counties are an extension of the state. A county's authority is limited to those areas expressly granted to it by the constitution of the state legislature.

Regarding ambulance services, a Tennessee county may, by resolution of the county legislative body, establish a county ambulance service; it may also contract for the provision of this service by private entities or other governmental agencies. Two or more counties or municipalities may enter into joint agreements with each other and with a provider of either emergency or nonemergency ambulance service on a countywide basis, except in Davidson and Shelby counties. T.C.A. § 7-61-101 *et seq*. The Emergency Medical Services Act of 1983, T.C.A. § 68-140-501 *et seq*., establishes a state emergency medical services board to regulate agencies that provide ambulance and emergency medical services. Although counties are not required to provide ambulance services, T.C.A. § 68-140-518, they must comply with this act if they choose to provide them. T.C.A. § 68-140-516. Pursuant to T.C.A. § 5-16-101(b) (2), counties are authorized to operate emergency medical services and charge fees or rates for such service under the urban type public facilities law.

The Anderson County Commission has historically provided little policy or "strategic" guidance to its EMS system in that they have not adopted standards for response performance and clinical measures. The County Commission did adopt legislation that provided for exclusivity and set certain basic EMS standards. In FY2008, the County Commission determined that ACEMS should be characterized as an enterprise fund, which signaled the Commission's intention that EMS become a self-funding operation.

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[7] *Elderly Patients Most Likely to Use Ambulances for Transport to ERs, Critically Ill Latinos Least Likely to Arrive by Ambulance***.** American College of Emergency Physicians 2010. https://www.acep.org/Legislation-and-Advocacy/Practice-Management-Issues/Access-to-Emergency-Care/Elderly-Patients-Most-Likely-to-Use-Ambulances-for-Transport-to-ERs,-Critically-Ill-Latinos-Least-Likely-to-Arrive-by-Ambulance/#sm.00007rqhxy10soe6ssiquweq95k94 (retrieved March 3, 2017).

[8] Zachary, M. *Variations in Ambulance Use in the United States: the Role of Health Insurance*. Acad Emerg Med. 2011 Oct; 18(10): 1036–1044.

In an effort to meet this mandate, the agency cut expenditures year after year. The result is that operations and clinical care suffered at the expense of cost containment.

To put the ACEMS budget in perspective, all funds reported in the county FY2018 budget resolution total $114.8 million; the ACEMS budget for FY2018 is $5.8 million. Looking forward to FY2019, the county's Budget Committee Agenda for January 4, 2018 included draft Guidelines for the 2018/2019 budget process. The guidelines indicate that the county's objective is to prepare a balanced budget without raising the tax levy. The guidelines further note that "the property tax rate will not be increased," and that "proposed budget will not include any increases in employee salaries or compensation."[9]

Business Model Decision

The most significant decision facing the Anderson County Commission and ACEMS is whether or not ACEMS remains in the convalescent transport business, or changes its business model to providing only 911 emergency ambulance service. There are additional policy considerations (acceptable response performance for emergency ambulance service, and others).

For the last decade, ACEMS has struggled to provide both services, without sufficient resources to do either function effectively and efficiently. An ongoing cycle of competing priorities has harmed emergency response performance, while enhancing revenue at the expense of both the emergency service and the quality of the convalescent ambulance service.

Discussions with stakeholders, Advisory Committee questions, employee interviews, etc., suggest that no one is satisfied with the current 19-minute response time for high priority calls. Similarly, hospital and nursing home customers are concerned that convalescent transport services are not always available in a timely manner, which is disruptive to their internal operations. These performances are driven by insufficient available EMS units throughout the county available to handle both aspects of the business. Because convalescent service is a more certain "revenue generator," there is constant pressure to serve the convalescent business, which causes the emergency ambulance service to suffer. ACEMS needs more resources for the emergency component of its mission, but paramedic ambulance unit hours are costly and emergency calls do not generate revenue with the certainty of convalescent ambulance calls.

Emergency ambulance performance is a function of both coverage of a geographic area and of the demand for response (call volume). EMS in a suburban/rural county such as Anderson County is heavily influenced by the need to serve even low-volume areas with less demand – in short, providing emergency ambulance service to rural areas is significantly less efficient than providing emergency ambulance service to cities and suburban communities. This is further compounded by the frequent need to transport patients outside of Anderson County, resulting in extended "time on task" for ambulances.

[9] Draft Budget Guidelines for FY2018/2019, Anderson County Budget Committee Agenda, January 4, 2018.

ACEMS's current business model utilizes the same personnel, vehicles and equipment to serve both emergency ambulance calls and convalescent transports. At the current time, this is an unfortunate necessity, but going forward there are options that could reduce the costs on the convalescent side of the ledger. Should the county elect to remain in the convalescent ambulance business, we would recommend separating the services, so that convalescent transports can be performed using less costly personnel, vehicles, and equipment. Our analysis of the current convalescent call mix is that it is ~98% basic life support (BLS-NE), and less than 2% advanced life support (ALS-1). Thus, almost all of the convalescent transports in Anderson County can be handled by a basic life support ambulance, staffed with basic life support Emergency Medical Technicians (EMT) and Advanced EMTs. The figure below illustrates the potential cost saving between emergency level equipment and personnel and that needed for convalescent care.

Figure 12. Comparison of Emergency vs. Convalescent Equipment and Personnel

Emergency Ambulance	Convalescent Ambulance
Type I or Type III ambulance - $200K	Type II ambulance - $100K
Full service physiologic monitor - $30,000	Automatic defibrillator - $5,000
Paramedic personnel	EMT/AEMT personnel (~25% less cost)

Should ACEMS elect to remain in the convalescent business, they will need to work closely with hospital and nursing customers to keep calls within a limited set of working hours. The county cannot afford to make convalescent transportation available 24 x 7, because overnight hours present few calls and thus are economically inefficient.

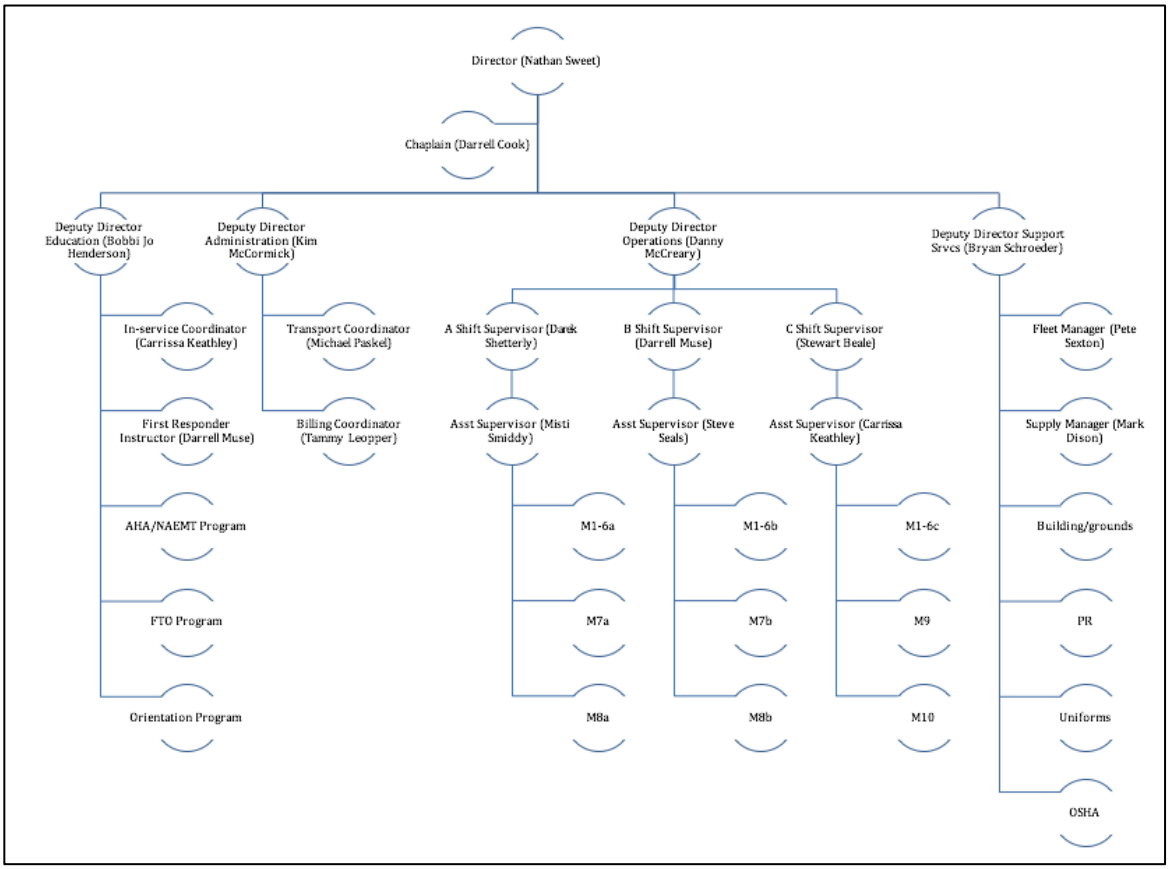
Alternatively, Anderson County EMS may elect to forego the convalescent business and open the county to one or more private ambulance services, who should be allowed to operate only at the basic life support, non-emergency level.

ACEMS Management

ACEMS is led by a Director who reports to the County Mayor. Despite the Mayor's legal status as the chief executive of the county, in practice, there appears to be great involvement in EMS affairs from the Board and several individual commissioners.

Reporting to the Director of EMS are four Deputy Directors – one each responsible for Operations, Education (training and quality improvement), Support Services, and Administration. Also in the headquarters staff are three support personnel – the Convalescent Transport Coordinator, Fleet Manager, and Billing Manager, and a receptionist/secretary. The figure below reflects the organization and functions of ACEMS. The current ACEMS Director has been employed with ACEMS for 15+ years and has served as Director since mid-2009.

Figure 13. ACEMS Organizational Chart



The functional organization of ACEMS is typical for EMS agencies of similar size. Programmatically, most EMS organizations provide more emphasis on community education, but ACEMS's efforts have been hampered by fiscal constraints.

Findings – County Governance

- The decision to characterize ACEMS as an enterprise entity, resulted in a cascade of cost-containment decisions that were counter to providing acceptable emergency medical services. The decision to characterize the ACEMS (Ambulance Service Fund) as a special revenue fund is valid and underscores the fact that the agency is not and cannot be self-funding.
- Co-mingling 911 EMS operations with convalescent care operations in its current form is not an efficient or effective business model.
- ACEMS is organized in a manner similar to other EMS agencies.

E911 DISPATCH/DATA AVAILABILITY AND QUALITY

Anderson County EMS is provided call-taking and dispatch services for emergency operations and for its convalescent transport operations by the Anderson County Emergency (E911) Communications Center. The Center is located in the City of Clinton and the facility houses the Sheriff's Office, E911 Center and other county functions. This portion of the assessment is concerned only with the capabilities and

procedures utilized to serve ACEMS. ACEMS is responsible for the procedures and processes used to dispatch and coordinate EMS activity in Anderson County. The audit did not include a qualitative evaluation of the Sheriff's Office and E911 Communications.

Dispatchers are employees of the County Sheriff's Office. As such, dispatching services for the Sheriff, EMS, the county volunteer fire departments, and the rescue squad are handled by the Sheriff's Department. Anderson County E911 provides the telephone, radio, and other Public Safety Access Point (PSAP) equipment, as well as funding, for training of dispatch personnel. All dispatchers receive specific training and are certified through the Association of Public Safety Communications Officials (APCO) as both public safety telecommunicators and in emergency medical dispatch (EMD). For FY2017, ACEMS was charged $100,000 for dispatch services.[10]

Prior to 2001, the Sheriff's Department operated from a small dispatch center in the courthouse and EMS was dispatched from EMS Station 1. A cooperative venture with Anderson County Government and Anderson County ECD allowed for the building of a 911 center in the county-owned Robert Jolley Building in Clinton. The Sheriff's Department was chosen to operate the center due to the need for the dispatchers to continue handling law enforcement data entries and queries. Seven dispatchers were from the Sheriff's Department and 3 were transferred from EMS. Over the next several years the number of communications personnel was expanded to 16. Upgrades to the 911 center over the years has provided for new radios and communications consoles, computer workstations, and 911 PSAP telephone equipment that is Next Generation 911 capable.

Requests for emergency medical services from the public are received at the E911 Center. Calls are received directly from callers inside the county, including the cities of Lake City, Norris and Oliver Springs. Calls from within the City of Clinton or Oak Ridge are transferred from the respective municipal public safety answering points to County E911.

Requests for convalescent ambulance services are directed to a seven-digit number that is answered by the Transport Coordinator who is located at ACEMS headquarters. The Transport Coordinator receives the necessary information, assures that requirements such as "medical necessity" are met, and enters the call into the CAD for later dispatch. After 5 p.m. or when the Transport Coordinator is not available, those calls are received at the E911 Communications and are entered into the CAD without a check on medical necessity requirements. This is often problematic when ambulance crews arrive at the patient pick up location and the proper paperwork and authorizations are not available. Transports that do not meet medical necessity create multiple billing problems and significantly reduce the opportunity for collection.

Location data from the 911 telephone system is not transferred to the fire/EMS computer aided dispatch (CAD) system. Location information must be manually entered in to the CAD system by the call

[10] The Sheriff's Office reports that it does not actually receive the $100,000; those funds accrue to the county general fund as a revenue item.

taker. This is a significant system deficiency that can result in errors and delayed dispatch of ambulances. The CAD system is a non-commercial program developed by a former county employee. As such, the system has limited capability to upgrade to a modern CAD.

Selection of the ambulance to be dispatched is not automated. The dispatcher must look at a separate computer screen displaying vehicle location via the Street Eagle vehicle location software. Although Street Eagle is available to dispatchers, its full capacity has not been installed and the screen does not provide the geo-location of the 911 call. As a consequence, most dispatchers rely on their personal knowledge of the county to determine which ambulance should be dispatched. The process is further complicated as it also requires the dispatcher to integrate real-time knowledge of which ambulances are busy and where they are located. As a result, the closest available ambulance is not always dispatched to every call, which can lengthen the response time to life-threatening calls. A modern public safety CAD system would provide real-time ambulance locations and prompt the dispatcher with the closet unit for dispatch.

During daytime hours, ambulances are alerted by radio and dispatched by a human dispatcher voice. After 8:00 p.m., ambulances are dispatched by telephone call from E911 to an ambulance station. This unusual practice was explained as being necessary because E911 and ACEMS does not have the necessary tone alerting equipment to reliably notify sleeping ambulance crews working 24-hour shifts. The consoles at the E911 Dispatch Center have the capability of generating alerting tones as needed, should EMS procure the necessary terminal-end equipment. Again, the absence of a modern communication system results in longer dispatch time after 8 p.m. and ultimately a delay in responses to emergencies.

The E911 system records ambulance status times in the CAD, and status times are available for download and analysis. However, because the information lacks geographic references (x-y or latitude-longitude), geographic analysis of call distribution and response performance is limited. The information is recorded accurately only to the nearest minute.

Ambulances do not have integrated in-vehicle navigation, automatic vehicle location, or push-button status reporting. Ambulance vehicles are equipped with the Street Eagle driver monitoring and feedback system, but the capabilities of this tool are not fully utilized. Driver identification devices (fobs) are not provided, so it is ponderous to determine who might be driving a particular vehicle at a particular time.

Radio communications vary widely throughout the Anderson County. Municipal radio systems in Anderson range from low-band (30-50 MHz), to very-high frequency (150-170 MHz), ultra-high frequency (450-470 MHz), and trunked 800 MHz systems.

Ambulances in Anderson County have both UHF and VHF mobile radios. Primary EMS communications are on UHF. Four of the five county volunteer fire departments also operate on UHF as do the cities of Clinton, Rocky Top, Norris, and Oliver Springs. The Claxton Volunteer Fire Department and the Oliver

Springs Fire Department operate on VHF. The Sheriff's Department and police departments in Clinton, Rocky Top, Norris, and Oliver Springs operate on UHF. The City of Oak Ridge currently operates an analog Motorola SmartNet 800 MHz trunking system. They are transitioning to a P25 digital system that will be a part of the Tennessee Valley Regional Communications System which is a part of the statewide radio system. The Oak Ridge Fire Department has provided radios to EMS for use on their system. A short-term solution to radio "dead spots" could be mostly resolved by installing vehicular repeaters in each ambulance similar to those used by the Sheriff's Department. The long-term solution should be a move to the TVRCS and the state digital radio system.

Findings — E911 Dispatch/Data Availability and Quality

- Location/address information is not transferred from the E911 intake console to the EMS CAD system and must be manually keyed in by the dispatcher. This results in additional time, risks for mistakes and a delay in dispatching units.
- The Computer Aided Dispatch system was developed by a former county employee. Overall, the system does not perform to basic public safety standards for an emergency medical system and upgrade capability is limited.
- The CAD system does not automate (provide “recommends” for) the location of the closest ambulance to a call. Dispatchers must guess based on their knowledge of the area and real-time changes in ambulance locations.
- Calls for convalescent patient transports that occur when the ACEMS Transport Coordinator is not available, including weekends, are not screened for medical necessity often resulting in “wasted” ambulance resources with little to no opportunity for reimbursement.
- Dispatch alerts for crew responses are sub-standard after 8 p.m. each night. This contributes to additional response delays.
- Street Eagle vehicle and personnel safety software is not fully implemented to provide geo-location, personnel tracking.
- CAD records do not record geo-location references which results in limited ability to analyze geographic call distribution and response time performance.
- ACEMS personnel do not have convenient, direct communication capability with co-responding fire and police units due to the complex, multi-agency operating environment.

ACEMS PROGRAMS & OPERATIONS

Anderson County Emergency Medical Services (ACEMS) was established in March of 1970, as a county run organization. It is the sole provider of emergent and non-emergent ambulance services in the county, pursuant to a County Commission resolution adopted April 18, 2011. The resolution allows ACEMS to defer calls to other services that have attained Anderson County certification, and sets forth standards for that certification. In addition to responding to 911 calls and transporting patients, as needed, ACEMS performs convalescent care patient transports that are generally requested by hospitals and physicians. ACEMS provides emergency medical services to all of Anderson County including all municipalities with the county. ACEMS has a first responder agreement with all municipal fire departments, including volunteer departments.

Anderson County EMS operates similar to other EMS agencies throughout the US. Field personnel handle calls; support services personnel handle logistics and other support matters; education staff handle training and clinical affairs, and administrative personnel handle billing, office and clerical duties, payroll and human resources issues. The dispatch function is handled by the County Sheriff and vehicle maintenance functions are handled by the County Motor Pool Department. ACEMS does not receive support from the Anderson County Department of Buildings and Grounds and instead handles building repairs, renovations, and maintenance using EMS personnel. This is not a typical practice for EMS agencies.

EMS operations function under the direction of the Deputy Director for Operations ("EMS 2" or "DDO"). This position is currently not filled and the duties are being temporarily assigned to one of the shift operations chiefs, temporarily assigned on a rotating three-month basis. The DDO supervises the three shift supervisors, who are titled either "shift captains" or "assistant chiefs." The shift supervisors are based at EMS Station 1, and are assigned an SUV for travel throughout the county, including incident response. The shift supervisors are responsible for all EMS operations during their 24-hour shift.

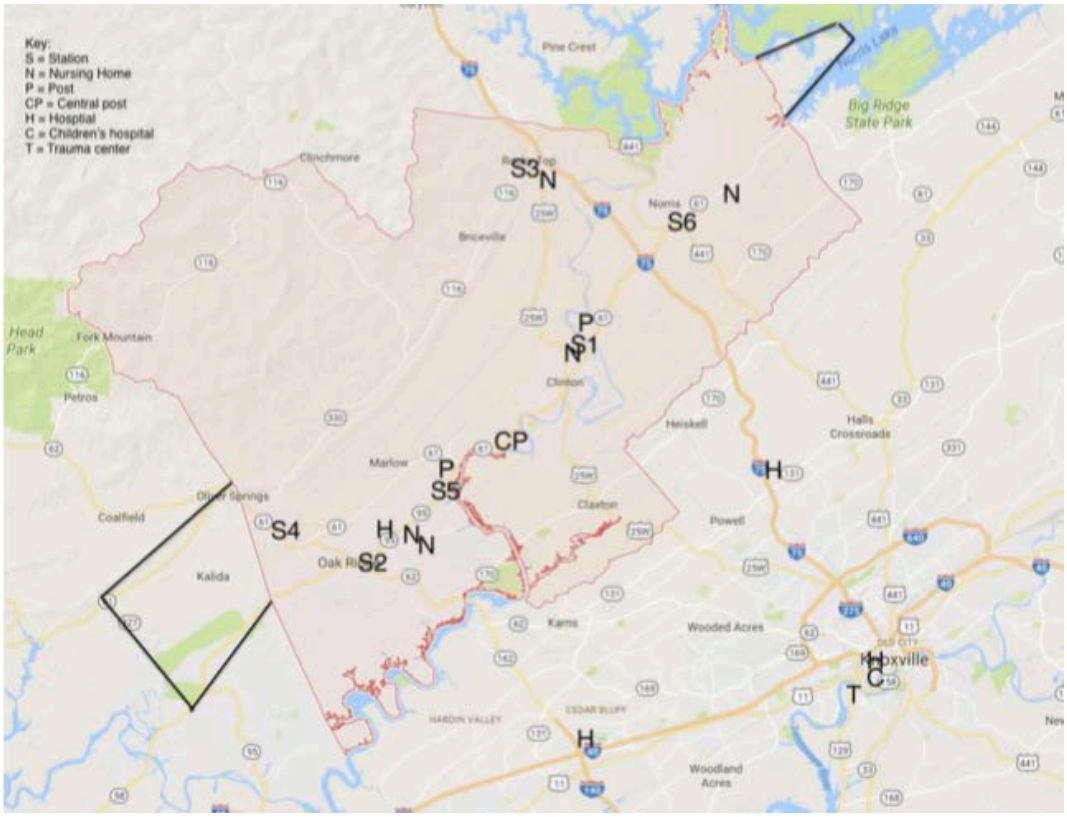
ACEMS operates with 24-hour-a-day shifts. Each shift has one paramedic who holds the rank of Lieutenant. At one point, the Lieutenant operated much like the shift supervisor (based at the other side of the county from the shift supervisor and operating an emergency response SUV), which made the span of control reasonable. But over a year ago, the Lieutenants were re-assigned as primary ambulance staff as a cost control measure. This negated their supervisory and human resources capabilities and extended the span of control for an EMS captain to 20 to 1, which is too high. The lieutenants only work "off ambulance" when the shift supervisor is absent.

ACEMS Ambulances are deployed as follows:

- 6 ambulances are deployed on a 24 hour per day basis.
- 1 ambulance is deployed 12 hours per day, 7 days per week.
- 1 ambulance is deployed 14 hours per day, 6 days per week
- 2 ambulances are deployed 12 hours per day, 3 days per week each (M-W-F).

In general, the ambulance deployment schedule correlates appropriately with the demand for ambulance services in Anderson County. However, the number of staffed ambulance hours are simply insufficient to handle the volume of emergency calls within a reasonable response interval and handle convalescent ambulance transports. The figure below is a map of the 337 square mile area served by ACEMS.

Figure 14. ACEMS Service Area



Station locations are noted on the map. The areas outlined in black to the southeast represents a service contact with Roane County. The area outlined in the northeast represents an area served by ACEMS under a Memorandum of Agreement with Union County. The ACEMS service area is described as a combination of urban and rural.

Findings – ACEMS Programs and Operations

- ACEMS performs building repairs, renovations and maintenance using EMS personnel. ACEMS does not receive support from the county's Building and Grounds Department.
- ACEMS Lieutenants are acting as primary responders on ambulances and have limited availability for human resource duties. This results in a span of control for an ACEMS captain of 20 to 1, which is too high.

Convalescent Care and Other Transport Programs

Convalescent Care transports involve moving patients between medical facilities and/or home. These non-emergency transports are typically scheduled and most often occur during weekdays and daytime. Specific requirements for medical necessity must be met in order to secure reimbursement from insurance, Medicare or Medicaid for use of an ambulance to move patients for these non-emergency events. In other systems, medical facilities may choose to perform these transports so that they are in control of scheduling patient movement throughout their system.

Scheduled, non-emergency transports that meet medical necessity, provide a somewhat secure revenue stream. Staffing and ambulance deployment can be organized in a more efficient manner due to the scheduled nature of convalescent transports. On the other hand, emergency/911 systems must maintain a certain safety net of response resources waiting for the next call. Many 911 systems, both public and private, depend on a certain volume of predictable convalescent calls to provide a solid revenue stream. Deployment to meet convalescent call needs can be closely tailored so as to limit the non-productive staffed unit hours. Often, ALS and/or BLS ambulances are dedicated to convalescent care transports during daytime and weekdays and are not part of the emergency response system. In addition, wheel-chair and stretcher car vans compliment the convalescent transport system operations.

The Anderson County EMS system as a whole, both emergency and non-emergency/convalescent care, is most likely too small for an independent contractor to handle in a financially self-sustaining manner (an on-going county subsidy would be required). It is also unlikely that a provider could operate the convalescent care transports alone without financial subsidy. Should the county elect to vacate the convalescent transport business, it would likely be necessary to open that business for outside entities to serve the market.

ACEMS performs the convalescent care transports but does not dedicate ambulances to that function. Instead, ambulances deployed for 911 responses are also called on to perform convalescent care transports. The county has emphasized revenue-producing activities for ACEMS since FY2010, when ACEMS was deemed an "enterprise fund" activity and operated as a business entity expected to sustain itself. The result is that supervisors and managers generally pursue those activities which are most likely to produce revenue for the service, often times at the performance expense of emergency/public safety functions. Priority is often given to handling a convalescent transport for which payment is reliable, rather than maintaining sufficient ambulances to provide reliable response to 911 calls which may or may not produce revenue. In essence, emergency 911 response and convalescent care transports are two distinct business functions. ACEMS has been charged with integrating them into one operation, but this is a difficult task that incorporates increased costs as more-expensive advanced life support emergency ambulances and personnel are used to handle low-acuity convalescent transports.

ACEMS is tasked with transporting deceased persons to locations specified by the Medical Examiner, usually outside of Anderson County. Some of these deceased are in advanced states of post-mortem decomposition. The practice is detrimental for a variety of reasons:

- Already-insufficient ambulance resources are taken away from emergency response availability; an ambulance and crew is essentially out of service for an average of three hours for a round trip. ACEMS performs approximately 150 deceased person transports annually or approximately three each week.
- The charge is $100, but the average reimbursement is an average of $13.24.
- ACEMS personnel are trained and equipped to care for living patients, but NOT trained and equipped for handling deceased persons, particularly those in a state of decomposition.
- Additional sanitary demands are placed upon an already-taxed EMS organization.

- Ambulances must be taken out of service for decontamination and unpleasant odors often linger in the vehicle.
- EMS personnel find this environment inappropriate for caring for subsequent living patients.

There are inexpensive alternatives to using an expensive advanced life support ambulance and medically certified personnel for transporting deceased persons. A simple van or covered pickup truck and manual stretcher would suffice. In most jurisdictions, the handling of deceased persons is a law enforcement or medical examiner responsibility, or a contracted provider (often a funeral operator). Transporting deceased persons via ambulance is not in keeping with the mission of an EMS system and the revenue stream provided by it is inconsequential. We recommend that Anderson County develop an alternative means to transport deceased persons at the earliest possible moment.

Findings – Convalescent Care and Other Transport Programs

- ACEMS ambulances are deployed for 911 responses and also perform convalescent care transports, often at the performance expense of emergency/public safety functions.
- Convalescent care transports are being performed using more-expensive advanced life support emergency ambulance and personnel.
- ACEMS is paid an average of $13.23 to transport deceased persons; ambulances are not available for emergency calls during the average three-hour deceased person transport trip time.

Ambulance Facilities

Anderson County ambulances respond from six stations. The figure below indicates the location of the stations throughout the county. The map provided in a prior figure denotes the location of the stations. Stations are noted in the figure below along with the ownership status.

Figure 15. ACEMS Ambulance Stations

Station #	Ownership Status	Condition Comments
Station 1	County property	Small mobile home with ambulance building nearby.
Station 2	Occupied without charge	A re-purposed military bunker in the Oak Ridge
Station 3	Occupied without charge	A re-purposed public works garage in Rocky Top
Station 4	Occupied without charge	Facility shared with Oliver Springs VFD and Oliver Springs Municipal Court
Station 5	Leased from private owner	Former Anderson County Rescue Squad building
Station 6	County property	Small mobile home, garage too small for ambulance

Stations 1 and 6 are trailer homes. Station 6 has an attached garage that is too small for an ambulance. Station 2 is not amenable to necessary modifications as its fundamental construction as a bunker (6-8" concrete) does not allow kitchen ventilation or other building penetrations. The garage at Station 2 is too small for an ambulance. Station 3's garage is too small for an ambulance and the plumbing is inappropriate. The kitchen sink drains to a gutter outside of the building, and freezes in cold weather (rendering the kitchen sink unusable). Station 4's garage is too small for an ambulance; the stairway to the upstairs crew quarters is unsafe.

Only Station 5 is suitable for its purpose. However, it is a leased facility and the lease provides that any modifications remain with the building. Therefore, ACEMS is reluctant to make substantial, but necessary investments in this facility.

Findings — Ambulance Facilities

- All but one of the six ACEMS stations provides substandard facilities for equipment and crews.
- Neither the EMS headquarters nor any of the ACEMS stations are equipped with emergency backup generators. In the event of a power outage, all would likely become unserviceable.

Ambulance and Support Vehicle Fleet

Condition of ACEMS Ambulances

Ambulances are essential public safety vehicles, subject to use 24 hours a day, 365 days a year, regardless of weather conditions. They accelerate hard, are subject to "G" forces beyond those normally occurring in van/pickup truck use, and they stop suddenly. They must be well-constructed and properly maintained. Because ambulances are "conversions" of original equipment manufacturers (OEM) chassis, ambulance builders must be mindful of weight considerations.

Anderson County EMS owns a fleet of 17 ambulances. On December 31, 2017, the average mileage of this fleet was, was 243,583 miles.[11] Of these, 10 are classified as "front line ambulances," with an average of 214,353 miles, and four of these have patient care modules that have already been remounted once. Five are classified as "backup ambulances" with an average mileage of 292,797. Two ambulances, both with in excess of 250,000 miles, are undergoing re-mount. Eleven of those ambulances exceed the county's "250,000 mile standard" and 10 exceed the county's "seven years of age" standard.[12]

Gross vehicle weight rating, or GVWR, is an important figure every ambulance operator needs to keep in mind in order to assure vehicle safety during emergency and non-emergency operations. The GVWR figure is the maximum weight a truck or SUV is engineered to safely carry. For ambulances, the GVWR includes the weight of the chassis, the patient care module, medical equipment and supplies (oxygen tanks, etc.), the patient, any riders accompanying the patient, and the EMS crew.
Exceeding the GVWR means that the user is overloading the vehicle. Overloading a truck or SUV chassis can carry severe consequences, including:

- Broken springs and suspension components due to excess weight
- Brakes unable to stop the truck or SUV in a timely manner
- Loss of control during emergency maneuvering
- Transmission and other driveline components may overheat and sustain serious damage
- Unusual suspension behavior, making the vehicle hard to control
- Tire temperatures rising to elevated levels, potentially leading to a blowout.

[11] This average comes from 15 vehicles. Two other vehicles are currently at a vendor being re-mounted.

[12] Established in the county EMS resolution dated April 11, 2011.

ACEMS fleet was weighed at commercial scales for purposes of this study. Historically, ACEMS has purchased and operated ambulances on the Ford 350 series or Chevy 3500 series (vans, E series, or pickup truck, F series). The vehicles were weighed fully equipped, without personnel aboard. A crew/patient/rider load allowance of 600 pounds was then added, to determine a "vehicle operating weight." The vehicle operating weight was then compared to the manufacturer's GVWR. ACEMS ambulances were classified in three groups:

- Six vehicles — "Red" group where the vehicle operating weight is in excess of the vehicle's specified GVWR.
- Three vehicles — "Yellow" group where the vehicle operating weight is close to the GVWR and might be exceeded under certain circumstances.
- Six vehicles — "Green" group where there is at least 900 pounds of capacity remaining between the vehicle operating weight and the GVWR.

The figure below details the information available on all of ACEMS's 17 ambulances.

Figure 16. Load Capacity of ACEMS Ambulances

Unit #	Scale Weight w/o crew	Allow for 2 crew, 1 patient	Operating Weight	GVWR	Available Load	Status
1	11,800	600	12,400	12,300	-100	Box already remounted once
2	12,200	600	12,800	13,200	400	Box already remounted once
3	11,660	600	12,260	13,200	940	Remounted w/ used box by remount vendor
4	12,720	600	13,320	13,200	-120	
5	11,980	600	12,580	13,200	620	Remounted once
6	11,620	600	12,220	13,200	980	Remounted (used box by Peach State)
7	12,220	600	12,820	13,200	380	
8	10,200	600	10,800	12,300	1,500	
11	10,040	600	10,640	12,300	1,660	
12	9,720	600	10,320	12,300	1,980	
13	10,780	600	11,380	12,300	920	
14	n/a	600	n/a	9,600	n/a	Out of service, not available. Box built for single-wheel chassis; cannot be safely remounted
15	9,400	600	10,000	9,600	-400	Box built for single-wheel chassis; cannot be safely remounted
16	9,340	600	9,940	9,600	-340	Box built for single-wheel chassis; cannot be safely remounted
17	9,400	600	10,000	9,600	-400	Box built for single-wheel chassis; cannot be safely remounted

To assure the safety of the fleet going forward, we recommend the following:

- Eliminate the practice of purchasing "3 series" vehicles for type 1 and type 3 emergency ambulances and that ACEMS specify future ambulance chassis to be "4 series" chassis such as Ford E/F450 or Chevy 4500.

- Replace the "red" vehicles as soon as possible, and future ambulance conversion vendors be required to provide at least 1,000 pounds of load capacity beyond the fully equipped and stocked ambulance boxes.

The data clearly illustrates that the current Anderson County EMS fleet is simply "too light" for its intended purpose. This is probably attributable to the installation of relatively heavy patient care modules on light truck chassis.

Vehicle chassis are serviced by the Anderson County's Motor Pool. The staff at the motor pool are well-qualified to service automobile and light truck chassis, with several holding Automotive Service Excellence (ASE) Master Mechanic and other certifications. The work appears to be of good quality, and some interesting innovations were noted (for example, motor pool staff identified a brake rotor/pad combination that lasts significantly longer than OEM brakes). However, none of the motor pool staff are certified Emergency Vehicle Technicians (EVTs),[13] and no maintenance or repair is performed on the patient care module or its supporting equipment at the motor pool. Ambulances must be sent off-site for module repairs, or repairs are conducted ad hoc by EMS personnel.[14]

In general, the fleet is in marginally serviceable condition – most vehicles are simply worn out, or close to it. Ambulance vehicles recorded 121 unit breakdowns (one every three days), with 32 of those categorized as "critical failures" (occurred during the course of a call, thus interfering with emergency patient care) and 29 requiring the towing of the ambulance vehicle. The critical vehicle failure ratio (6.43 per 100,000 miles) is more than three times the industry benchmark for quality fleet maintenance (2.0 per 100,000 miles). We also note that EMS has had some difficulty procuring replacement parts for its older vehicles, and has had to resort to unusual sources for procurement (e.g., the internet parts supplier www.partsguru.com).

Some of the vehicles do not meet industry best practices regarding load height, compartment steps, etc. Employees report that ambulance module decks are too high for some to safely load stretchers. These attributes often contribute to employee injuries (particularly knee and shoulder injuries). We specifically noted that one ambulance vehicle, whose suspension has been modified by Anderson County, had an extremely high street-side door step with no secondary step, such that people had to use both arms to pull themselves up in to the ambulance. This could result in serious injury to persons not familiar with the vehicle who ride in the module, such as hospital personnel or patient families.

[13] EVTs are trained and certified to inspect, maintain, and repair specific emergency vehicle systems. The EVT Certification Commission, Inc. is a nonprofit corporation dedicated to improving the quality of emergency vehicle service and repair throughout the United States and Canada by means of a certification program that will provide technicians recognition for the education, training, and experience they have in the service and repair of emergency vehicles. www.evtcc.org.

[14] This is significant in that given current practices at Anderson County EMS, modules will be "in service" for up to 500,000 miles or 10+ years before they are replaced.

Ambulance manufacturing technology has changed greatly in the last 10 years. Ambulances with "bench seats" and "CPR seats" have fallen in to disfavor, after crash testing conducted by the federal government and independent testing labs showed the devastating injuries that can happen to passengers and crew when ambulances are involved in crashes. Some videos illustrating these crash tests can be seen as noted in the videos listed in the footnote.[15] Ambulance modules should no longer be specified with sideways-mounted "squad benches" or "CPR seats, but should instead utilize forward facing seats or "mobility seats" engineered to survive a 10-g impact. Similarly, stretcher and equipment mounts should survive a 10-g impact. These requirements are recommended in the Commission on Ambulance Services (CAAS) Ground Vehicle Standard 1.0.[16]

Vehicle Replacement Criteria

Below are examples of fleet replacement criteria developed by other US cities and counties that can provide a framework for Anderson County.

WAKE COUNTY (NC) EMS – 2011 STUDY: Budget and order replacements when vehicles reach 90,000 miles; replacements will arrive at 120,000. Later, replace when cost per mile and service costs exceed vehicle value.

DURHAM COUNTY (NC) EMS – 2016 STUDY: When vehicle operating/repair costs approach $1 per mile, replacement is ordered. MB Sprinter T3 ambulances. Prior standard was 150,000 miles for Ford and Chevy 4500 chassis.

ORANGE COUNTY CALIFORNIA: County regulatory standard imposed on all ambulances operating in the county. 10 years or 200,000 miles. Reporting agency also uses cost per mile metrics and replaces closer to 150,000.

FAIRFAX COUNTY (VA) FIRE-RESCUE: Type I Medium-duty ambulances - Freightliner and International chassis (20,000-pound class). Request replacement after 175,000 miles; by time the new rigs go into service the mileage is closer to 200,000. High cost per mile ambulances replaced sooner.

[15] See, for example
https://www.youtube.com/watch?v=5-TWXjDYqCk
https://www.youtube.com/watch?v=AIQosjJsH7g
cont'd:
https://www.youtube.com/watch?v=g2iNQWCI18M
https://www.youtube.com/watch?v=adkJk94X-BY

[16] We note that the Tennessee Bureau of EMS requires compliance with USDOT ambulance specification KKK-A-1822F, through which the federal government specifies ambulances that it purchases for its own use. CAAS GVS 1.0 incorporates more current safety standards and we recommend its use for non-federal purchases. A vehicle which complies with GVS 1.0 will also comply with KKK-A-1822F.

MAURY REGIONAL EMS (TN): Remount one time after 150,000 miles. Type II (5) and Type III (22) ambulances. 10 years or 150,000 miles.

SUNSTAR – PINELLAS COUNTY (FL) EMS: 7 years or 250,000 miles.

PRESBYTERIAN – ALBEQUERQUE (NM) AMBULANCE: 6 years or 250,000 miles.

EAST BATON ROUGE PARISH (LA) EMS: Chassis purchased with 100,000 mile extended warranty. Module remounted one time, as chassis approached 100,000 miles.

LEE COUNTY (FL) EMS: 10-year rotation. The first seven are front line, and the final three are reserve (rarely used). Capital plan is to buy 6 ambulances per year.

Remember: The chassis is only 1/3 of the ambulance. The remaining 2/3 must be considered also.

Engine wear should be analyzed based on engine hours, not mileage (ambulance work involves lots of idle time, particularly under heavy electrical load). All ambulances should have engine hour meters or engine hour data collection capability in addition to odometers. Mileage for remounted modules should also be recorded.

F/E 350/3500 chassis are generally too light for emergency ambulance module GVR. Most agencies are switching to 450/4500, except Sprinter with T3 aluminum body (still on 3500 chassis).

ACEMS Fleet Size

EMS organizations require spare ambulances, in addition to those in daily front-line services. These are necessary to allow for regular vehicle service, in case a vehicle is out of service for a limited period, or for use at special events.

Currently, Anderson County EMS operates a fleet of 17 ambulances. All are supposed to be emergency-response capable, however, the service does not own enough stretchers or cardiac monitor-defibrillators to put all of its ambulances on the road at any given time. Normal daily operations involve 10 ambulances, and the peak special events season such as the fall high school football season, require an additional three ambulances on Friday nights, for a peak operating load of 13 ambulances.

EMS agencies typically operate with spares equal to 1.5 times the peak operating load (rounded up to the nearest whole number), which would be 13 x 1.5 = 19.5 ambulances, rounded up to 20 ambulances. Achieving a fleet of this size, given the need to replace several ambulances as soon as possible, should be a multi-year goal.

We also recognize that Anderson County must make some policy decisions concerning whether or not the county will continue to provide convalescent ambulance service to the community. Should the county decide to do so, we recommend a separate fleet of smaller, less costly ambulances for

convalescent purposes. These can be procured for approximately half the cost of a type 1 or type 3 emergency ambulance. The size of the emergency ambulance fleet can thus be adjusted corresponding to the number of separate convalescent ambulances the county decides to operate.

Ambulance Fleet Management Best Practices

The American Ambulance Association Management Training Institute compiled best practices for fleet maintenance and management. The best practices are provided below.

Employ Quality Control System monitoring system such as a "Drive Cam" or other "black box" technology —

- Driver identity recorded and individual feedback provided
- Reduced accident rates dramatically
- Lowered maintenance costs by as much as 10% to 20%
- Extends the life of parts (i.e., brake pads)

Four essential elements to World Class Maintenance —

- Follow the manufacturers' guidance – chassis AND patient care module
- Detailed maintenance and repair records
- Conduct routine checks, and be sure that staff actually completed them.
- Non-adversarial reporting system – no "work penalty" for moving to a back-up ambulance

Critical Failures should be rare —

- Critical Failure **-** A critical failure is a sudden or unexpected interruption of service to a patient, that interferes with the response or transportation phase (failure occurs from time of dispatch until the call is complete). This includes both 911 emergency and scheduled non-emergency responses
- The benchmark for critical failures for your fleet is no more than 2.0 per 100,000 miles of continual operation

Service center training and experience —

- Emergency vehicles are serviced by EVTs. (NOTE: ASE certification is not equivalent or even comparable. ASE only deals with the OEM chassis, the cheapest 1/3 of the ambulance.)
- EVT – Emergency Vehicle Technician - Being certified as an Emergency Vehicle Technician shows departments, governing boards and apparatus service center customers that the technician has proven to be knowledgeable in diagnosing and repairing emergency vehicle mechanical problems. www.evtcc.org

Preventative Maintenance Inspections —

- Preventative Maintenance Inspection: PMI – A schedule of a group of services and inspections that are performed at a given interval to eliminate unscheduled repairs
- Schedule inspections and service points at one time. Decrease the time vehicle is in shop.

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- Completing the PMI identifies unreported repairs
- One hour of PMI eliminates 3-7 repair hours

Fleet Replacement Policies —

- Include mileage plus engine hours, whichever comes first
- Light Duty Modular (Type I or Type 3) ambulances, five years or 250,000 miles or 10,000 hours
- Medium Duty ambulances (20,000 lb. chassis class), seven years, 350,000 miles or 14,000 hours

What a PM program can't overcome —

- Initial purchase of an inferior product (too light a chassis or poorly constructed module)
- A fleet that has aged beyond acceptable limits

Fleets maintain records on each encounter of every vehicle —

- Duration unit was in repair status
- Detail of every part replaced and price of that part
- Number of hours (minutes) the technician spent in diagnosing, removing and installing part and subsequent testing of part
- Name (agency/mechanic) that performed each encounter on ambulance.
- Commercial fleet software package creates a file for each vehicle

Track monthly "cost per mile" and "cost per engine hour" —

- (Fuel + labor + parts + tires) divided by miles and divided by hours
- Increasing cost per mile/hour is correlated with increased critical failures
- Vehicle type benchmarks:
    - Sprinter van $0.53
    - Type II vans $0.78
    - Type I modular $0.61
    - Type III modular $0.59
    - Type IV Medium Duty $1.03
    - Full-size SUV QRV $0.26

Component part replacement —

- Replace individual parts at particular mileage/hours, based on experience, regardless of failure
- For example – water pumps usually fail at 75,000 miles
- Replace all water pumps at 70,000 miles
- Replace batteries annually
- A good CPM only adds $158 per ambulance per year

Decision to re-mount—

- Remount schedule same as replacing, or less (wear and tear on module).
- Remount costs 75% of new purchase
- Remount at factory of original manufacturer

Track collisions —

- Benchmark standards for ambulance accidents are 1.13 per 100,000 miles
- Ambulance collision every 11 minutes
- Every 20 hours a fatality is recorded from an ambulance accident and is often related to fatigue and use of warning lights/sirens

Tires —

- 100% of load, 100% of the time
- Routinely overloaded (esp. Anderson County ambulances)
- Intermittent Usage (go/sit)
- Poor maintenance practices
- Non-Professional Drivers
- NO ambulance tires rated to exceed 75 mph

Tire Maintenance —

- Replace at 7 years regardless of the tread depth
- Wash Tires with soapy water. Apply no chemicals, dressings or products to the tires
- Check air pressure daily, when cold
- Do not put nitrogen in tires – no effect
- Puncture it - -replace it! No "plugging" of emergency vehicle tires.
- Buy tires in pairs – Best tires on front
- Only rotate front to rear

Module Maintenance —

- An ambulance is more than a truck chassis (the chassis is the cheapest 1/3)
- Patient care module needs attention too
- EVTs trained in module HVAC, electrical, lighting systems, biomedical equipment
- Screws and hinges tightened/PM'd every visit

Support Vehicles

The service also has a fleet of 10 support vehicles, of which two are scheduled to be disposed of as surplus during the coming year. All but one of these vehicles, are nine to 19 years old and of similarly high mileage (60,000 miles on a 2001 vehicle, and up to 205,000 miles on the others). Four of these vehicles are assigned to senior officers, one is the 24-hour shift supervisor's vehicle, and three of them are assigned to various support functions and backup. Several of these vehicles were received as "hand-me-down" vehicles from other county departments. Unusually, most are not marked as Anderson County EMS vehicles. There is a fair bit of consternation amongst EMS department personnel about how support vehicles are assigned and used.

Findings — Ambulance and Support Vehicle Fleet

- The current Anderson County EMS fleet is too light for its intended purpose likely attributable to the installation of relatively heavy patient care modules on light truck chassis.
- Ambulances must be sent off-site for module repairs.
- Ambulances recorded 121 unit breakdowns (one every three days) with 32 categorized as "critical failures" (occurred during the course of a call). This is three times the industry benchmark for quality fleet maintenance.
- ACEMS does not have sufficient functioning and equipped ambulances to meet daily operations during peak special events and maintain an acceptable reserve fleet.
- ACEMS support vehicles and take-home vehicles are not marked as Anderson County EMS vehicles.

Detailed Recommendations – Fleet

- Anderson County should adopt an ambulance replacement standard of 5 years or 150,000 miles for ground ambulances (whichever comes first), with ambulances moved to back-up status for an additional 75,000 miles or three additional years.
- Anderson County should assure adequate GVWR capacity by procuring ambulances built on 14,000-pound class chassis (e.g., Ford 450 or Chev 4500) chassis, OR consider a lighter patient care module that would allow at least 1,500 pounds above "dry" GVWR (ambulance as received from the manufacturer, without equipment or personnel).
- Future ambulance procurements should comply with CAAS GVS 1.0 as well as the current State of Tennessee minimum requirements. Specifications should require compliance with available Society of Automotive Engineers (SAE) standards for ambulance construction, specifically SAE J3026 (Ambulance Patient Compartment Seating Integrity and Occupant Restraint), SAE J3027 (Ambulance Litter Integrity, Retention, and Patient Restraint), SAE J3043 (Ambulance Equipment Mount Device or Systems), and SAE 3044 3044 (Occupant Restraint and Equipment Mounting Integrity—Rear Impact System-Level Ambulance Patient Compartment).
- Future ambulance procurement should consider crew and patient comfort in the ambulance module, by utilizing ambulance-appropriate suspensions including air or liquid springs. External or folding steps should be considered to mitigate injury potential associated with high steps.
- Each vehicle should be periodically maintained by qualified personnel. At the same time that the chassis is inspected and maintained by motor pool ASE technicians, the patient care module and emergency vehicle systems should be inspected and maintained by an emergency vehicle technician trained and certified by the Emergency Vehicle Technician Certification Commission.
- Chassis and suspension components should not be altered without proper supporting engineering studies and insuring that contemplated changes are safe and do not put the vehicle outside of specifications (e.g., load and step height).
- "Cost per vehicle mile" and/or "cost per engine hour" data should be used to determine when ambulances and staff vehicles should be replaced.
- A shift supervisor vehicle is not a support vehicle, but a primary response vehicle. At least two good-condition shift supervisor vehicles should be maintained, with these vehicles being cycled to the "support" fleet after five to seven years. Shift supervisor vehicles should have a complete installation of emergency warning lights, rather than the low-profile lights currently installed.

- Support vehicles should be replaced at the seven to 10-year interval, or when maintenance costs become excessive.
- Anderson County EMS should discontinue the practice of accepting second-hand vehicles from other county departments.
- Support vehicles should be marked as Anderson County EMS vehicles, equipped with appropriate response equipment, and expected to respond in appropriate situations.
- Support vehicles should not be taken home to residences outside of Anderson County, or within a prescribed mile limit. EMS policies on this subject should comply with Anderson County (general) or the Anderson County Sheriff's Office policies.

Medical Equipment and Clinical Quality Measures

Anderson County EMS relies on Zoll E-series® cardiac monitors as its physiologic monitoring platform. This platform was introduced in 2005,[17] and does not include the extensive physiologic monitoring capabilities necessary for today's advanced prehospital medical practice. The E-series was succeeded by the X-series® in 2012. It is extremely difficult to find parts for E-series monitors, and there are few qualified maintenance personnel available. ACEMS personnel report consistent difficulty with obtaining 12-lead ECGs with current equipment, which presents clinical difficulty in life-threatening situations. There are no current plans to replace these monitors, which are well past their reasonable service life. The monitors are serviced annually by Zoll factory technicians. Parts are sometimes difficult to obtain.

Minor biomedical equipment (suction machines, oxygen regulators, and CPAP devices) appear to have been purchased with price as the primary consideration, and is the source of much consternation by clinical personnel.

The system utilizes Stryker PowerPro® stretchers, most of which are 8-10 years old. They have been subject to a decade's worth of wear and tear, and crews report frequent difficulties. There are no current plans to replace these stretchers, which are at or quickly approaching the end of their reasonable service life.

The quality of clinical care is not routinely measured by Anderson County EMS. The agency is not able to report its cardiac arrest survival rate per the Utstein Protocol (the internationally recognized method of evaluating cardiac arrest outcomes) nor are other benchmarks routinely measured. Quality assurance consists of limited chart review, plus resolution of clinical issues as they surface. This effort is performed by the already-busy Deputy Director for Education. The Medical Director indicates that critical patients in particular categories (trauma, stroke, STEMI) are properly categorized and delivered to appropriate facilities.

[17] https://www.zoll.com/about-zoll/corporate-milestones

Findings – Medical Equipment and Clinical Quality Measures

- The cardiac monitor technology used by ACEMS was introduced in 2005. It is difficult to find parts and qualified maintenance personnel for the monitors.
- Personnel report difficulty with achieving 12-lead cardiac monitoring with current equipment.
- Low price appears to have been the prime consideration for the purchase of minor medical equipment.
- Patient stretchers are 8 to 10 years old and are approaching the end of reasonable useful life.

Recommendations — Medical Equipment and Clinical Quality Measures

- ACEMS needs a funded capital replacement plan that addresses its needs for vehicles, biomedical equipment, and ambulance stretchers.
- As a critical priority, a new fleet of physiologic/cardiac monitors must be procured and placed into service. Because of the nature of the services provided, including critical care transports to tertiary care hospitals, the new monitors must include the following capabilities:
    - 12-lead ECG (15-lead preferred)
    - External cardiac pacing
    - "See through" CPR enhancement capabilities
    - Non-invasive blood pressure monitoring
    - Pulse oximetry (SpO2)
    - End-tidal carbon dioxide waveform monitoring (EtCO2)
    - Carbon monoxide (CO) monitoring
    - Other transducer inputs as appropriate for transporting patients with multiple infusions, arterial lines, and other invasive transducers.
- The service must assure that its monitors are serviced periodically by a qualified biomedical equipment technician.
- The current generation of stretchers should be examined and replaced where appropriate.[18]
- ACEMS should designate a clinically-astute EMS officer as the Clinical Quality Management office, responsible for developing a CQI program. The CQM Officer should be formally trained via a program such as the National Fire Academy free-of-charge 6-day course, "Emergency Medical Services Quality Management".
  (R0158) https://apps.usfa.fem.gov/nfacourses/catalog/details/10411
- The CQM officer should regularly report nationally recognized, evidence-based EMS quality measures including the Utstein Protocol and those measures described in Myers, Slovis et al. *Evidence-based performance measures for emergency medical services systems: A model for expanded EMS benchmarking.* Prehosp Emerg Care. 2008;12:141–151.

Training

Anderson County EMS operates a comprehensive training program appropriate for a 911 EMS provider. The Deputy Director for Training is well-credentialed and enthusiastic, and utilizes a group of specialist

[18] One better practice to avoid stretcher wear-out and failure is to procure each new ambulance with a new stretcher installed. This allows for a few stretchers to be replaced each year, avoiding a single large capital expenditure.

training instructors from throughout the agency to assist with course delivery. Training staff monitor employees' licenses and certifications, and provide continuing education courses to meet state licensing requirements and national certification standards. These include advanced cardiac life support, pre-hospital trauma life support, and a variety of others. Recently the department brought the "Escaping Violent Encounters" course to its members, developing in-house instructional capability for this important topic.

The process of on-boarding, orienting, and field training new employees is of concern. Pressure to fill open spots is so great that the organization does not wait for a group of new employees to start together, instead assigning a new employee to "one on one" orientations with senior EMS staff.

This process is not standardized and therefore inefficient, but is necessitated by the absence of relief or floating personnel. The field training program was recently re-booted, as the program had not been properly constructed (individuals assigned as FTOs were not training new employees in accordance with agency standards). It is recommended that the agency consider bringing the National EMS Management Association's "EMS Field Training and Evaluation Program" to Anderson County to provide a sound structure for this important program. EMTs and paramedics should not be assigned to field duties until they have completed a formal field training program

Findings – Training

- ACEMS provides a comprehensive training appropriate for a 911 EMS provider.
- The current new hire training program is not standardized. EMTs and paramedics may be assigned to field duties prior to completion of formal field training.
- Community education programs are limited due to personnel and funding constraints.

OPERATIONAL PERFORMANCE

Deployment Concepts

Ambulance deployment is driven by two considerations – geography and call density. Each are applied differently for emergency (911) or convalescent transfer calls.

To serve emergency ambulance calls, the first consideration is geography. Ambulances must be positioned to be able to respond to the whole jurisdiction, or to specific parts of the jurisdiction, within the time standard established by the governing authority. Some governing authorities require a uniform level of service across an entire jurisdiction (relying on the philosophy that residents pay uniform tax rates, therefore should receive equal service). Others specify different time standards for communities with differing population densities (urban, suburban, and rural), relying on the philosophy that each geographic community or area generates a different aggregate tax dollar amount, and thus "purchases" a different level of service. In either case, stations or posts are established to cover each geographic area within a specified time standard.

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The second consideration for emergency ambulance calls is call density. In addressing call density, the community looks to how many calls are in particular areas, and how many of those calls may overlap one another (in other words, how many calls will occur while the first ambulance is already assigned to another call). If those numbers are significant, a second ambulance will be needed to serve this area. Generally, better performance will be achieved if that second ambulance is not housed at the same station as the base (or "geo") ambulance. In some scenarios, this need may be met by a "peak load" ambulance deployed only certain hours of the day, utilizing a street-corner post or some other available location (fire station, school, library, etc.). Employee satisfaction and retention are improved if street-corner posting involving sitting in an ambulance is minimized.

Many EMS systems utilize a concept called "dynamic deployment," where ambulances move throughout the day to better cover the jurisdiction. However, there is a point of no return, beyond which moving ambulances around becomes a "shell game" that is hard on vehicles and personnel while producing minimal EMS system benefit. One of these situations is where the number of ambulances available throughout the day is simply inadequate, as we see in Anderson County today. In addition, the Anderson County EMS/fire CAD system and software are not capable of effectively managing a dynamic deployment operation.

Serving non-emergency (convalescent) ambulance calls is a different matter. One of the reasons that non-emergency ambulance work is more profitable than emergency ambulance work is that it is highly predictable. Geographically, non-emergency ambulance work involves mostly known venues (hospitals and long-term health care facilities such as nursing homes, assisted living facilities, etc.). With regard to temporal considerations, non-emergency ambulance work occurs at consistent times of the day, with very little activity overnight (e.g., 7 p.m. to 7 a.m.) and peak times corresponding with local practices such as physician and diagnostic center office hours and hospital discharge times.

ACEMS Ambulance Deployment

Anderson County's ambulance deployment decisions appear to have been driven much by the availability of free or low-cost buildings, rather than a detailed deployment analysis. These decisions cannot be attributed to the current EMS administration, as most were made long ago when, as now, the EMS/fire CAD did not geo-reference each call.

Several of the stations are appropriately located to provide reasonable geographic coverage. EMS station #2 does not contribute much to the EMS system's geographic coverage, as its coverage footprint overlaps adjoining stations. Station #2 would probably be better utilized as a peak-load (daytime) station, or as a dynamic deployment post when stations 4 and 5 are not occupied.

At the same time, there is not appropriate geographic coverage to the Briceville or New River communities, although call density is low, response times are very long to these areas. And EMS station #4, while ideally situated to serve the Roane County contract service area, is too close to the county line to contribute meaningful coverage to Anderson County from its current location. There is also a

coverage gap in the Norris community, although call density there is low and response times, while not excellent, are reasonable.

At the present time, Anderson County utilizes its ambulance fleet for both 911 and convalescent call response. This frequently results in the system being depleted to extremely low number of available ambulances levels (2, 1, and 0). This is usually due to a high volume of convalescent ambulance calls, resulting in 911 calls waiting extended periods, or mutual aid ambulances having to be requested from out of county[19] ambulances.

Findings – Ambulance Deployment

- Station location decisions were made many years ago and, today, appear to have been made solely based on available free or low-cost building.
- There does not appear to be appropriate geographic coverage to the Briceville or New River communities.
- The overall system and the capacity to answer emergency calls is severely depleted when there is a high volume of convalescent care responses.

Recommendations — Ambulance Deployment

- Anderson County EMS should establish a "low level", below which it will not accept or handle convalescent calls. We recommend that this level keep a minimum of three, and preferably four, advanced life support ambulances available to adequately serve 911 calls.
- Consideration should be given to locating a 24-hour ambulance to adequately cover the Briceville and New River community.
- Anderson County EMS should carefully consider whether its business and funding model can support continuation of its convalescent transport arm.
- Anderson County EMS should consider a separate "convalescent transport" division that could utilize cheaper (Type 2) ambulances and EMT personnel. Convalescent ambulances could supplement emergency ambulances in certain situations, but paramedic ambulances should not be used for convalescent calls unless at least three to four paramedic ambulances are available in the county.
- Convalescent calls should be accepted only within appropriate hours. It is not reasonable to accept convalescent transports before 0600, or to dispatch a 24-hour emergency ambulance crew for a convalescent call in the middle of the night.

[19] Ambulances staffed by the Oak Ridge Fire Department are frequently called for mutual aid, although there is concern that the relationship is not really "mutual." ORFD staffs ambulances which are contracted to serve portions of the five campuses comprising the Oak Ridge National Laboratory complex. The fire chief has expressed concern that ORFD ambulances are being called to handle EMS calls that are the responsibility of Anderson County, particularly while ACEMS ambulances are involved in convalescent work. This leaves the National Laboratory complex without the level of EMS protection for which it has contracted.

Response Time Performance and Utilization

There are no externally-imposed EMS response time standards nor has the county adopted standards. So, there are no formal standards for comparison purposes. However, analysis of response data reveals the following in the figure below.

Figure 17. ACEMS Response Time Analysis

Call Type	Response Time at 90th Percentile
Priority 1 – 911 calls with lights & sirens responses	19 minutes @ 90%
Priority 2 – 911 calls with lights & sirens responses	19 minutes @ 90%
Combined Priority 1 & Priority 2 - 911 responses	19 minutes @ 90%
Combined cold (no lights & sirens) 911 responses	42 minutes @ 90%

The combined cold response interval number appears to be inaccurate due to inconsistent practices in entering data in the CAD system. As noted previously, some convalescent calls are taken by the EMS scheduler and some are taken direct by E911 dispatch personnel.

An ambulance utilization factor measures the number of hours that an ambulance is responding to and completing a call (from dispatch until the unit is "clear" and available to take another call) as compared to the number of hours that the ambulance is staffed and on duty. It is both a measure of efficiency of use, but also used to measure the potential for crew fatigue. Anderson ambulances have a relatively high utilization factor. For units and personnel that are on a 24 hour a day schedule, utilization ranges from .26 to .37, which means that crews are not in station close to half of the time they are on duty (including time for fueling, re-stocking, etc.). Within the EMS industry, it is generally accepted that 24-hour personnel should not be on units that approach .40 or 40% utilization. The likelihood of interrupted sleep, resulting in impaired driver and attendant performance, becomes excessive at that point. The issue is resolved by some combination of adding more unit hours to the system, changing unit deployment and length of shifts, as well as business practices that involve unnecessary travel.

Figure 18. ACEMS Crew Utilization

Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Avg
Medic 1	0.29	0.36	0.31	0.33	0.33	0.32	0.25	0.37	0.24	0.32	0.34	0.31
Medic 2	0.37	**0.47**	0.43	0.39	0.39	0.36	0.31	0.37	0.28	0.34	**0.38**	0.37
Medic 3	0.29	0.32	0.27	0.27	0.29	0.23	0.25	0.24	0.23	0.25	0.27	0.26
Medic 4	0.29	0.34	0.35	0.38	0.31	0.32	0.25	0.28	0.31	0.31	0.29	0.31
Medic 5	0.34	**0.40**	0.38	0.35	0.35	0.31	0.27	0.31	0.26	0.31	0.36	0.33
Medic 6	0.24	0.30	0.24	0.29	0.27	0.25	0.20	0.25	0.22	0.27	0.34	0.26
Medic 7	0.50	0.61	0.52	0.56	0.56	0.44	0.43	0.51	0.40	0.50	0.50	0.50
Medic 8	0.48	0.54	0.49	0.41	0.60	0.43	0.50	0.69	0.37	0.52	0.57	0.51
Medic 9	0.68	0.62	0.65	0.66	0.60		0.49	0.54	0.49	0.62	0.46	0.58
Medic 10	0.48	0.61	0.60	0.63	0.57	0.65	0.41	0.55	0.51	0.43	0.57	0.55

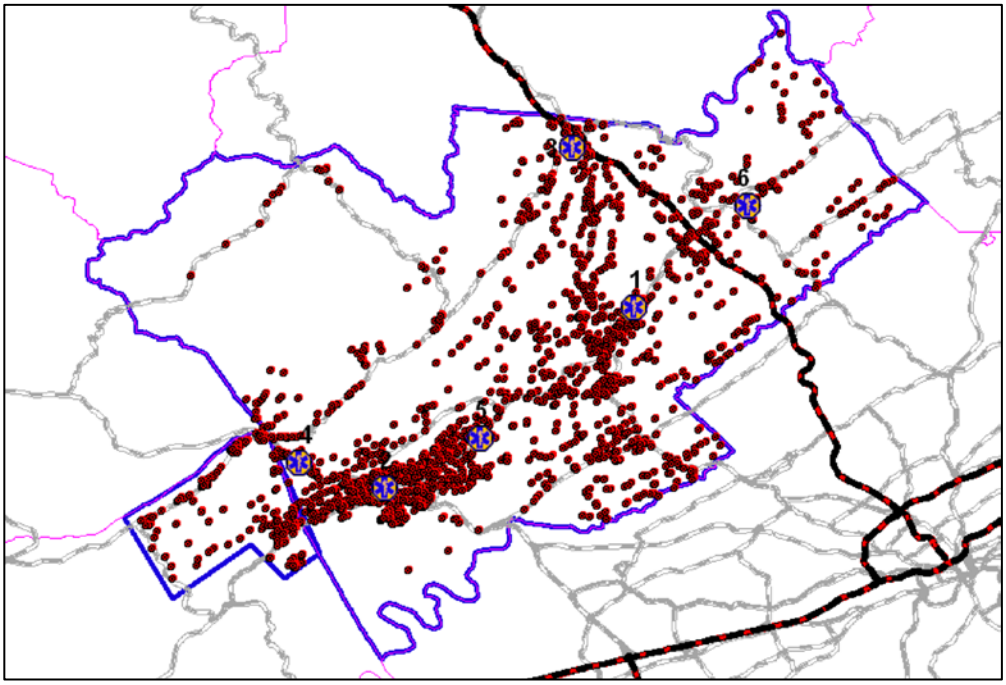
The areas highlighted and in bold font represent crew utilization that approaches or is in excess of recommendations. Medic units 7 through 10 exceed the recommended utilization for 24-hour crew

shifts with a frequency that suggested these units be converted to schedules other than 24-hour shifts. These levels of business are appropriate for units staffed with 12-hour (or in one case, 14 hour) personnel.

System performance standards and unit utilization would typically be part of the analysis to establish coverage areas at certain levels of ambulance availability. However, there are no prescribed standards. Therefore, the limited geographic information system information that was available, forms the basis for this analysis.

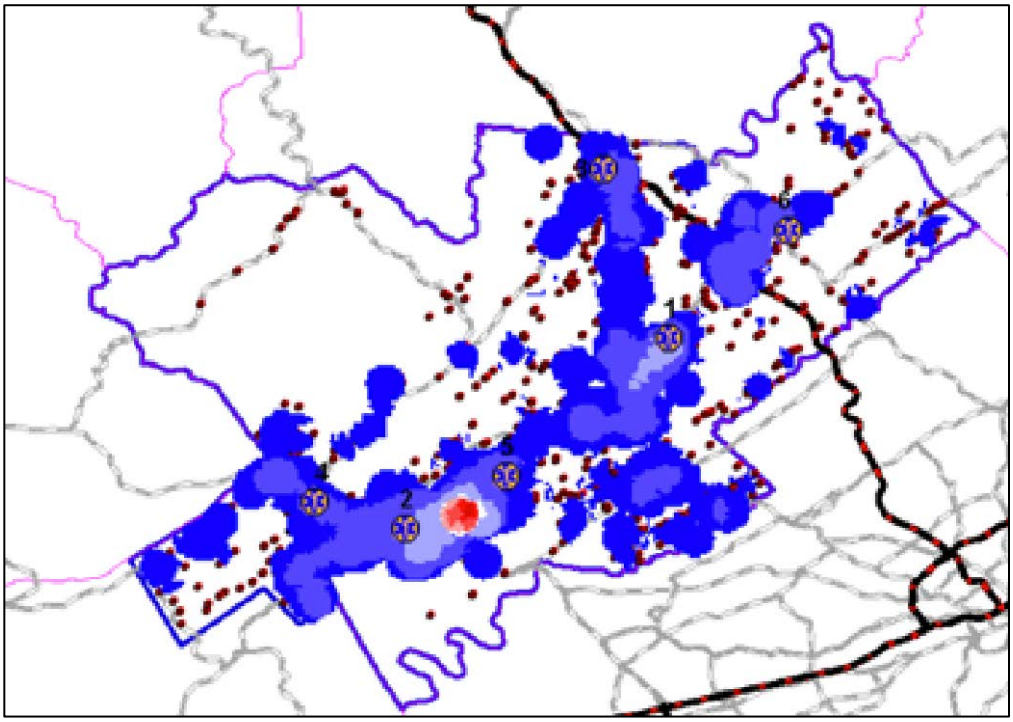
The shapes in the figures below are based on a 12-minute response coverage using standard ambulance average travel speeds. The small dots on the map are the location of ambulance calls in a calendar year. Stations with one year's worth of emergency calls (CY2017) are shown on the map figure below.

Figure 19. Ambulance Station Locations (24-hour units) with Emergency Calls



The map figure below reflects the relative density of calls in each area (blue = less dense, white = moderately dense, red = very dense).

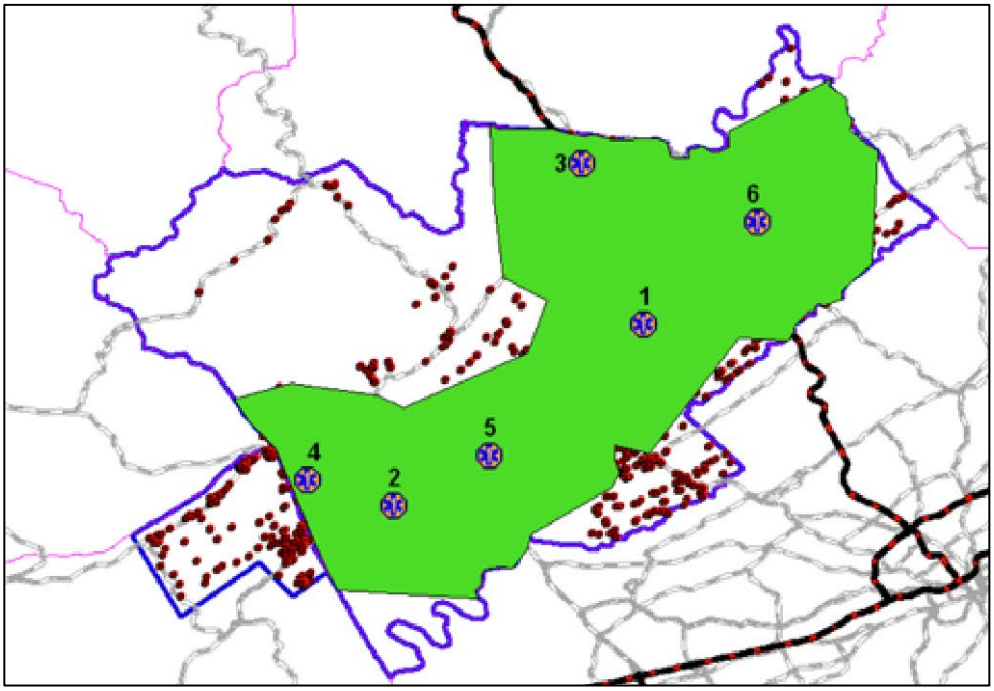
Figure 20. Call Densities in Anderson County (CY2017)



As ambulances were "taken down" for the purpose of this analysis, available ambulances were re-positioned to cover the greatest call density.

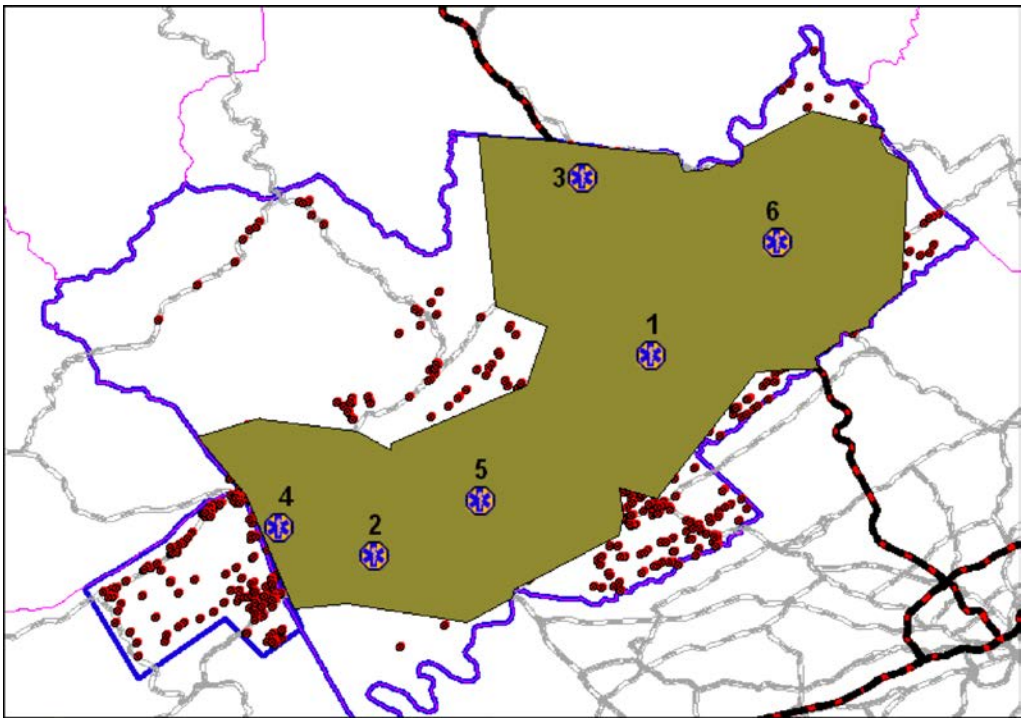
Ambulance coverage is indicated in the figure below when all six 24-hour ambulances are staffed and in station. The southwest quarter of the county is not covered, nor is the southeast-central portion.

Figure 21. Ambulance Coverage — Six 24-hour Ambulances Staffed and In-Station



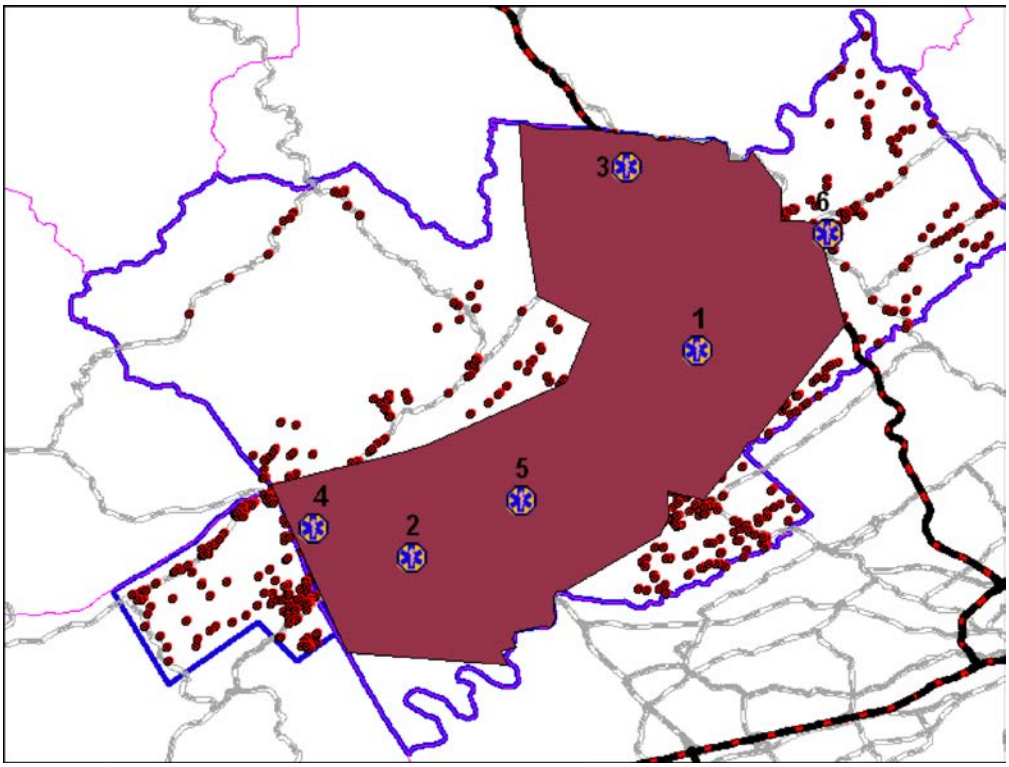
When ambulances drop to five, coverage is as displayed in the figure below.

Figure 22. Ambulance Coverage — Five 24-hour Ambulances Staffed and In-Station



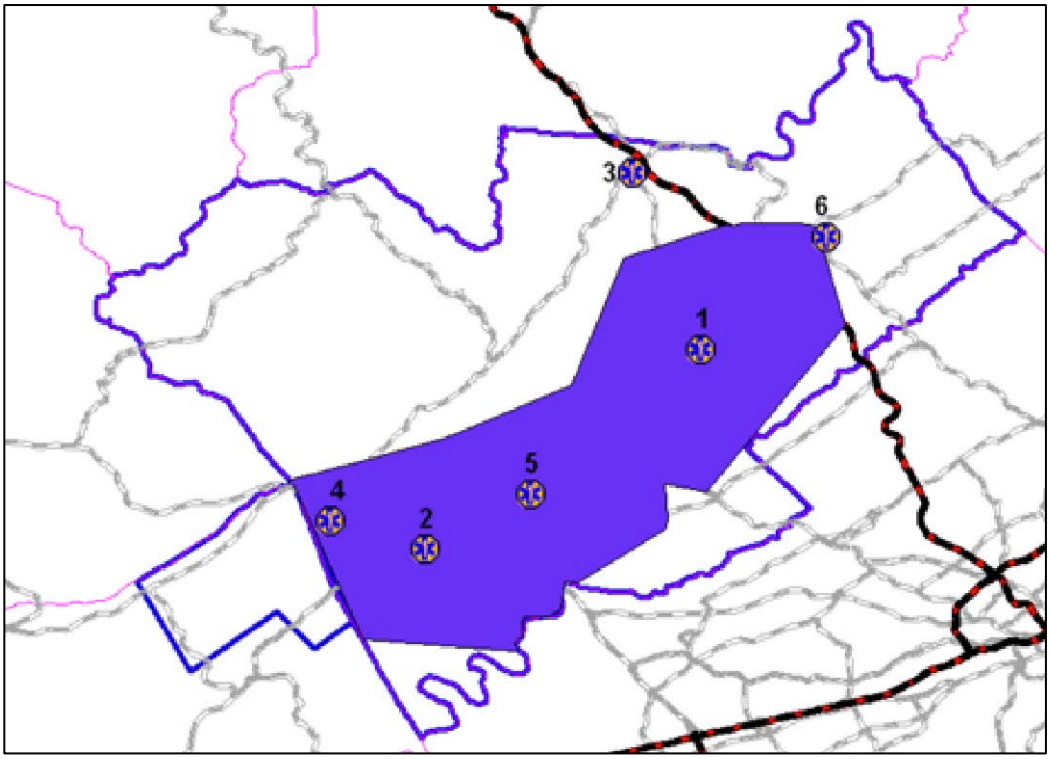
At four available ambulances, coverage is as visualized in the figure below. The similarity of five-ambulance coverage and four-ambulance coverage reflects the suboptimal locations of Stations 2 and 4, whose coverage footprints overlap considerably.

Figure 23. Ambulance Coverage — Four 24-hour Ambulances Staffed and In Station



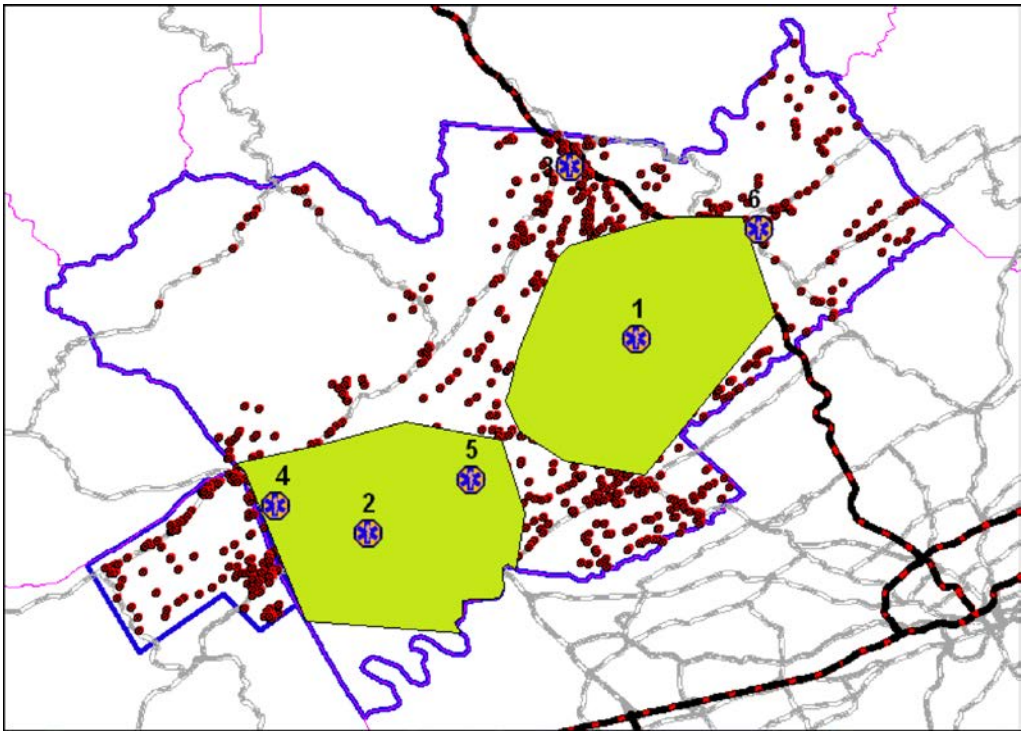
At three available ambulances, coverage becomes very limited as seen in the figure below, with ambulances covering only the populous core of the county.

Figure 24. Ambulance Coverage — Three 24-hour Ambulances Staffed and In Station



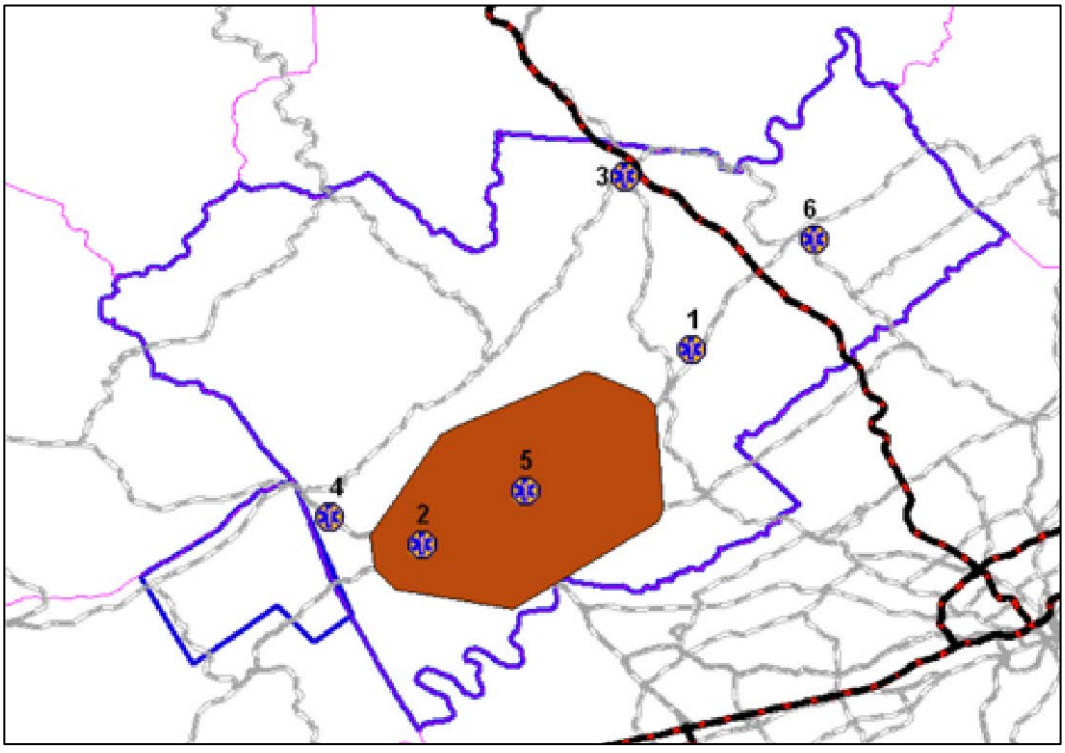
At two available ambulances, coverage is even more limited as shown in the figure below.

Figure 25. Ambulance Coverage — Two 24-hour Ambulances Staffed and In Station



At one available ambulance, the figure below shows that most of the county is unprotected

Figure 26. Ambulance Coverage — One 24-hour Ambulance Staffed and In Station



The proximity of stations 4, 2, and 5 present a large area of coverage overlap. Ordinarily, a station as close to the county line as station 4 would be recommended for re-location. However, the county needs to consider whether it will continue to provide coverage in that portion of Roane County, which in turn incorporates some of the primarily Anderson County municipalities of Oak Ridge and Oliver Springs. Consideration should be given to possible re-location of station 2 to better cover the Claxton area of the county.

The current CAD system does not record ambulance availability. Therefore, we have to rely on manual records kept by EMS staff. These records indicate large numbers of instances when there is only one or no ambulances available for response in the county.[20] The number of instances ranges from 100 to 200 instances per month or total time of up to 12 hours per month. Low availability level means that an emergency ambulance call in the populous or suburban areas of Anderson County could wait 20 to 30 minutes for an ambulance response. Residents in more rural areas could wait even longer. For example, EMS personnel report that responses to the New River area often take 45 minutes or more. While rare, emergency responses of this duration cannot be considered acceptable. Even when all ambulances are available (allegedly a rare happening), some 25% or more of the land mass of Anderson County has no ambulance resources nearby.

Findings — Response Time Performance and Utilization

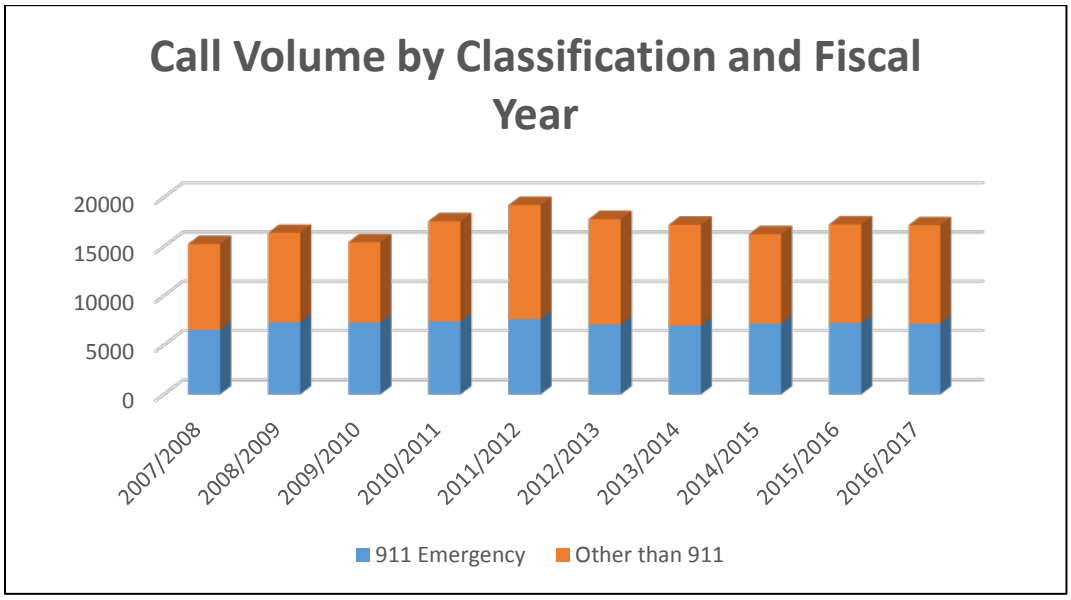
- There are no externally-imposed or county adopted EMS response time standards.
- ACEMS responds to urgent 911 calls in 19 minutes, 90% of the time (19 minutes @ 90%).
- Unit utilization ranges from .26 to .37, which may cause fatigue for 24 hour crews.
- Crew utilization for the 24-hour shift Medic units 7, 8, 9 and 10 is excessive and beyond what is recommended to avoid fatigue.
- Data on the frequency of only one or no ambulances available must rely on manual records as the out-of-date CAD does not log this information.
- Response times to the more rural areas of the county are extremely long (up to 45 minutes).

Call Types and Trends

The call volume served by Anderson County EMS has remained relatively constant over the years. Over 60% of the call volume is reported to be non-emergent in nature. The figure below illustrates call volume over the last decade as per data from the CAD.

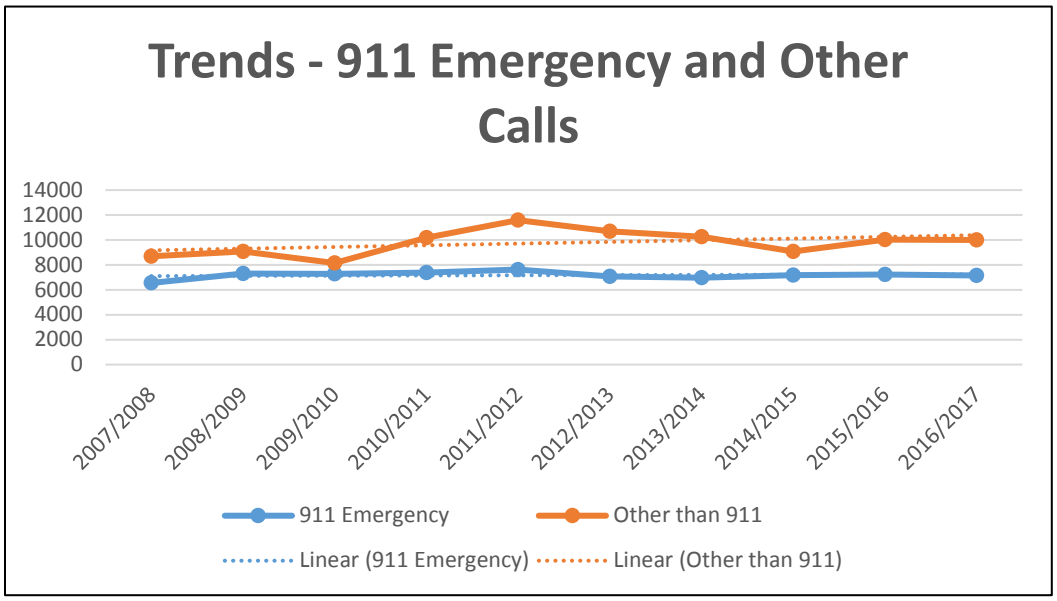
[20] Zero ambulance availability is the result from some combination of the number of ambulances staffed and on duty and the number that are unavailable as they are actively engaged in a call and/or transport.

Figure 27. ACEMS Call Volume by Classification



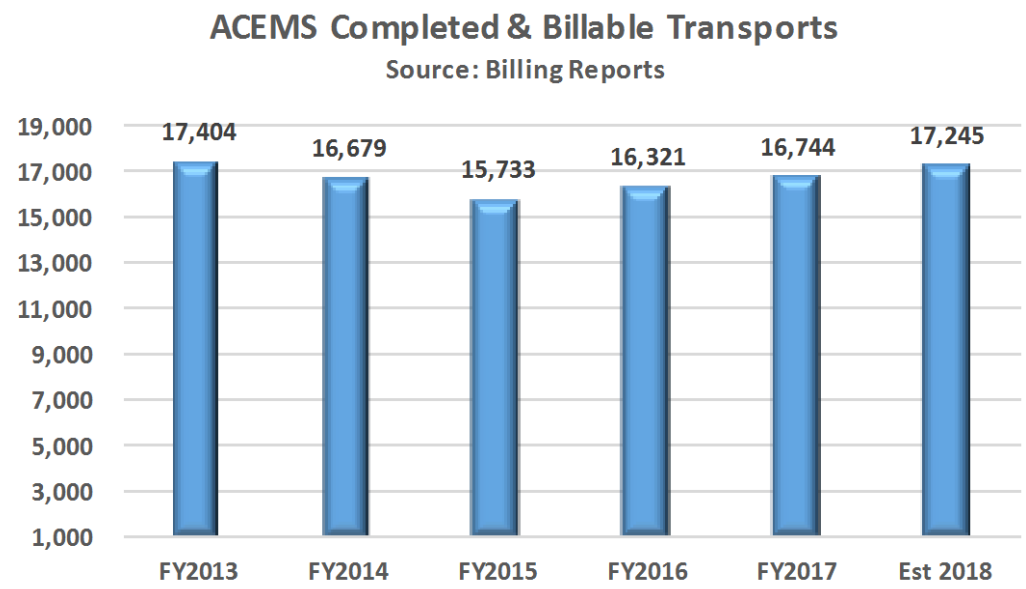
Non-911 calls (mostly convalescent calls) trending slightly upward as illustrated in the figure below.

Figure 28. ACEMS Call Trends



The figure below represents the historical billable transports completed by ACEMS according to billing records.

Figure 29. ACEMS Completed and Billable Transport History



There is little variation in billable transports over the last 5 years, with a slight upward trend in the last three years. This trend can be expected to continue if county population remains constant and the population continues to age.

Findings – Call Types and Trends

- More than 60% of the ACEMS call volume is non-emergent in nature including treat and no transport.
- Emergency call volume is relatively constant year to year, while convalescent calls have trended slightly upward.

How Many Ambulances Are Needed to Staff ACEMS Each Day?

This question must be asked and answered very carefully. When talking about "ambulances," sometimes people are talking about the physical vehicle. Other times, they are talking about a staffed ambulance able to respond to a call for service. Those are not the same thing, and the discussion can be a source of confusion.[21] For this section of the report, "ambulance" means an ambulance fully equipped and staffed with two personnel, ready to respond to a call.

[21] As a rule of thumb, an ambulance service should have a fleet of vehicles equal to 1.5 times the number of ambulances that will be in-service at peak times per day This "peak" should include any regularly recurring events, such as high school football games that occur weekly throughout a particular season. So an ambulance service that staffs 10 units in the operating system at peak hours of the day, which also provides 3 ambulances every Friday night from September through November would need 1.5 x 13 ambulances, or 20 ambulances (19.5, rounded up to the nearest ambulance).

The question does not lend itself to a single answer. There are multiple considerations that must be addressed before the governing body can give policy direction to the staff. In Anderson County, these include the following:

1. Should Anderson County remain in the "convalescent transport" business? This itself is a complex question, because while convalescent calls take ambulances away from availability for response to emergency calls, convalescent calls are more likely to be paid for, generating revenue that is a consideration for the county.

2. What should be the response time expectations of Anderson County EMS to emergency (911) requests for medical assistance? The county currently has no standard, and its current performance (19 minutes or less at the 90th percentile) falls far below the standards adopted in many communities. The standard adopted by the Commission on Accreditation of Ambulance Services (CAAS) utilizes 9 minutes or less at the 90th percentile, which ACEMS meets only 32% of the time. Other communities (including mixed urban-suburban-rural communities) have adopted 12 minutes or less at the 90th percentile. This decision, which is an important matter of policy, must be determined before numbers can seriously be discussed.

3. How many ambulances should remain available in Anderson County at each hour of the day, regardless of system demand? Our analysis suggests that, in order to provide reasonable coverage to most of the residences in Anderson County (and overlooking the remote New River area), there should be three ambulances left as a "safety factor" during overnight hours, and five ambulances left as a safety factor during busier daytime hours. The system should be designed to "bottom out" at ambulance level 3, rather than its current level 0.

4. How often is it acceptable for Anderson County EMS to "run out" of ambulances? No EMS agency can staff for the busiest hour of every day – there will always be events that exceed whatever capacity is provided. Accordingly, we examined a full year's worth of ambulance call data, by hour of day (resulting in a 365 x 24 matrix of ambulance calls per hour). We looked at the 90th percentile (the service will exceed its capacity 36.5 hours in a year, or slightly more than once per month), the 95th percentile (18.5 hours per year, or 1.5 times per month), the 99th percentile (4 hours per year), and the maximum call demand for every hour. These numbers include the "safety factor" discussed in the prior paragraph.

Figure 30. Recommended Ambulances By Hour of Day (911 Emergency and Convalescent Care)

Hour of Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
90th percentile	8	6	6	7	7	7	7	5	11	12	13	13	13	13	13	13	14	13	11	10	8	8	8	8
95th percentile	8	8	8	8	7	8	8	6	13	13	15	15	15	14	14	14	15	14	13	12	8	9	8	8
99th percentile	10	9	8	10	8	10	10	7	15	15	17	17	18	17	18	17	18	17	15	13	11	12	10	9
Maximum	10	10	9	10	9	11	11	8	19	18	20	20	19	20	18	19	23	18	19	15	11	13	11	10

If Anderson County should elect to remain only in the "911-emergency" ambulance business, the number (including the safety factor) are as displayed in the figure below.

Figure 31. Recommended Ambulances By Hour of Day (911 Emergency Only)

Hour of Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
90th percentile	6	5	5	5	5	5	5	3	8	8	9	9	9	9	9	9	9	9	8	8	6	6	6	6
95th percentile	6	6	6	6	5	6	6	3	9	9	10	10	10	9	10	9	10	10	9	9	6	7	6	6
99th percentile	7	7	6	7	6	7	7	4	10	10	11	11	12	11	12	11	11	11	10	10	8	8	7	7
Maximum	7	7	7	7	7	8	8	5	14	12	13	13	12	13	12	12	14	12	13	11	8	9	8	7

In its current configuration (performing both emergency and convalescent ambulance services), ACEMS has just about enough ambulances staffed every day to safely handle only the 911 call load. Every convalescent call reduces the system's 911 capacity below what it ought to be for appropriate 911-response.

The convalescent-only ambulance requirement would thus look like the display in the figure below.

Figure 32. Recommended Ambulances Per Hour of Day (Convalescent Only)

Hour of Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
90th percentile	2	1	1	2	2	2	2	2	3	4	4	4	4	4	4	4	5	4	3	2	2	2	2	2
95th percentile	2	2	2	2	2	2	2	3	5	4	5	5	5	5	4	5	5	4	4	3	2	2	2	2
99th percentile	3	2	2	3	2	3	3	3	5	5	6	6	5	6	6	6	7	6	5	3	3	3	3	3
Maximum	3	3	2	3	2	3	3	3	5	6	7	7	5	7	6	7	9	6	6	4	3	4	3	3

The governing body could adopt a hybrid approach, electing (for example) the 95th percentile staffing level for emergency service, and a lesser level for convalescent service. When the agency does not have an ambulance available, that call should be promptly referred to another authorized convalescent ambulance service (not handled by an emergency ambulance or held to a later hour).

Based on these data, should the Board of County Commissioners determine that ACEMS should remain in the convalescent ambulance business, we would recommend that convalescent services be available 12-13 hours per day (0700 – 2000), with perhaps four ambulances in service each day. This would provide an optimal balance of service and economy.

Finally, in addition to these recommendations, we recommend that if the Board of County Commissioners elect to remain in the convalescent ambulance business, that the two lines of business be run separately – separate vehicles, separate personnel, and separate accounting systems. This way, the true costs of providing these truly different services can be properly accounted for, and good business decisions can be made regarding use of public funds.

Findings — How Many Ambulances Are Needed?

- A number of questions must be answered before the optimal number of ambulances can be determined. Nevertheless, the number of ambulances staffed and on duty should not be calibrated to bottom out at level zero.
- Estimates are provided based on several operational scenarios.

Use of Technology

Anderson County EMS falls well behind other EMS agencies in its use of technology. The lack of up-to-date technology resources presented significant challenges and does not provide ACEMS with available opportunities to improve the efficiency and effectiveness of its operations.

The largest deficit is the fire/EMS computer aided dispatch (CAD) system, which was discussed in detail earlier.

ACEMS does not have a true automated vehicle location (AVL) system in place. The driver feedback system, Street Eagle, is able to provide vehicle location on a separate screen monitor, but cannot be interfaced to CAD.

The CAD system does not interface to tone, voice, or digital paging systems. Accordingly, ambulances are dispatched by voice radio only (daytime), or via a telephone call (night time). Upon the completion of a call, the ambulance crew contacts Dispatch and asks for time information. This information is provided verbally. Crews write it down, then manually enter it in to the Imagetrend program. This costs time and introduces additional possibility of errors to the system's data.

Anderson County EMS utilizes the Street Eagle™ vehicle tracking, control, and monitoring system (https://www.streeteagle-gps.com/). However, it appears that the only application being utilized is as a rudimentary AVL system. Drivers are not individually tracked, and the driver performance monitoring system is not utilized to provide feedback.

ACEMS uses ImageTrend for patient transport documenting; electronic patient care reporting (ePCR). This system provides a reliable platform for documenting, reporting, and storing data related to each patient transport.

Each ambulance is provided with an iPad, which is used for patient care documentation, vehicle checkoffs, and other administrative functions. An ambulance cell phone is also provided.

Findings — Use of Technology

- The absence of up-to-date technology resources does not provide ACEMS with typical opportunities to improve the efficiency and effectiveness of it operations.

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EMPLOYEE DEMOGRAPHICS

Hiring, Staffing, Training and Other Human Resources Issues

Anderson County EMS utilizes a comprehensive hiring process that examines knowledge, skills, and physical abilities, and includes a background of the applicant. The physical abilities test is a variant of the widely-used "MedPAT" process. Background checks include fingerprint-based criminal history checks, which are an industry best practice. The agency does not check each applicant for debarment from the Medicare program, which is a serious omission in the hiring process.[22]

Anderson County does not utilize a position control process managed by the county Human Resources Department. Managers are free to hire people within the limits of their budgetary capability.

All ACEMS ambulances are staffed with two personnel. ALS ambulances require at least one paramedic and BLS ambulances require two EMT level personnel. ACEMS hires emergency medical technicians (EMTs), Advanced EMTs (AEMTs) and paramedics to staff ambulances using a staffing formula described below.

- Units staffed with 24-hour personnel are assigned six personnel (two personnel on each of three shifts), working a 24-on, 48-off schedule.
- Two peak-hours units are staffed with four personnel for each unit that operates seven days a week (one a 12-hour shift and one a 14-hour shift), and two personnel for units that work three days per week (both Monday, Wednesday, and Friday).

This deployment provides a total of 1,248 unit hours per week or 64,896 unit hours per year.

Many agencies utilize a staffing formula that includes a "staffing or relief" factor to anticipate employee sick leave and/or vacation leave. A comprehensive relief factor is based on historical leave time usage and increases the number of personnel hired to compensate. Relief personnel are often floating with no specific unit assignment, but are available to fill in when other personnel are absent. Without sufficient relief personnel, vacant shifts are filled with employees working overtime. The only other alternative is for management to shut down units.

A variety of organizations have performed staffing factor studies that suggest that at least 1.25 people are necessary to constantly staff a 1.0 full time equivalent (FTE) EMS position (e.g., an ambulance or fire truck that must have a fixed number of personnel around the clock). Depending on the on-duty training requirements and leave policies, this number can be as high as 1.7 people per FTE. A determination not to hire "staffing factor" personnel is a decision to fill staffing needs with personnel on voluntary or mandatory overtime. Employers must carefully examine the costs of hiring additional personnel to fill

[22] New and existing employees should be checked for debarment from the Medicare program using the U.S. Department of Health and Human Services Office of the Inspector General web site. Hiring a person debarred from the Medicare program could have catastrophic impact on the Anderson County EMS revenue stream.

anticipated vacancies, versus paying existing employees at the higher overtime rate required by the Fair Labor Standards Act, 29 U.S.C. § 207, and the regulations promulgated thereunder by the U. S. Department of Labor. For additional examples, see the Office of the Washington State Auditor Performance Center, http://portal.sao.wa.gov/PerformanceCenter/Home/, or the City of San Francisco, http://sfbos.org/22-methodologies-determining-staffing-requirements. Anderson County may wish to conduct its own staffing factor analysis.

ACEMS staffing patterns do not contemplate a relief factor and there are no floating, unassigned personnel available to fill in on an as needed basis. Vacant shifts, whether result from sick leave, vacation or other unanticipated events, are filled with by personnel working overtime. Similarly, all training is conducted on an off-duty (paid overtime basis). These factors may contribute to what some perceive as a "high" level of overtime. This perception has been exacerbated recently due to the fact that three employees were absent on extended workers' compensation leave.

Findings — Hiring, Staffing, and Other Human Resource Issues

- The hiring process includes the typical knowledge, skills and abilities testing and background checks.
- Applicants and current employees are not checked for debarment from the Medicare program.
- ACEMS does not use a staffing/relief factor that considers expected and unanticipated leave usage. Analysis of leave usage may be helpful in determining whether overtime usage is within reason.

Compensation and Years in Service

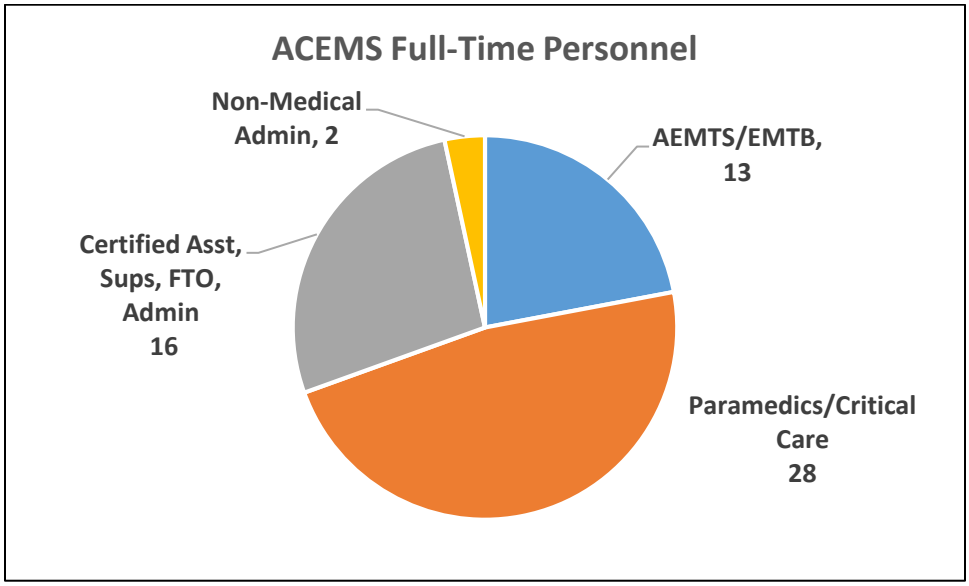
ACEMS employs 59 full-time personnel as of September 2017. Of the total, 57 employees hold medical certifications and two are non-medical administrative personnel. A summary of medical certification positions is provided in the figure below.

Figure 33. ACEMS Employees by Medical Certification and Position

Medical Certification/Position	Number Full-Time
AEMTs and EMTBs	13
Field Training Officers (AEMT)	2
Fleet Mgr and Transportation Coordinator (AEMT)	2
Paramedics	24
Field Training Officers (Paramedics)	3
Critical Care AEMT-Ps	3
Shift Supervisors (Paramedics)	3
Assistant Supervisors (Paramedics and CC)	3
Deputy Directors & Director (AEMT and Paramedics)	4
Total Full-Time Personnel with Medical Certifications	**57**

The figure below reflects the percentages of ACEMS personnel by certification and general position assignment.

Figure 34. ACEMS Personnel by Position Title and Certification



Seventy percent of the full-time workforce are employees whose primary duty is ambulance response. Twenty-seven percent of the total are field training officers, assistant and shift supervisors, deputy directors and other managers. All but two full-time employees hold medical certifications and as such, can respond to medical emergencies, as needed.

Employee years in service range from less than one year for eight recent hires to more than 10 years for 16 employees. The remaining 35 employees average 3.7 years in service. AEMTs, without the extremes, average 2.2 years in service and paramedics range in service from .33 to 19 years. For the budget year FY2018, the average annual gross salary for AEMTs is $35,285 and for paramedics is $44,056.[23] Annual gross salary amounts do not include overtime pay. The lowest annual gross salary is $20,360 and the highest is the Director's salary of $71,054. The FY2018 budget includes part-time pay of $75,000 and a budget for unscheduled overtime of $130,000.

A discussion of overtime utilization inevitably leads to a discussion of EMS compensation. Many EMS personnel rely on overtime, or second jobs, to maintain their personal or family standard of living. EMS personnel will often complain about heavy or "mandatory" overtime demands, only to complain about "lack of available overtime" when full staffing is achieved.

This audit did not encompass a formal salary survey of EMS organizations in the region. However, review of other surveys and data available to the consultants indicated that Anderson County's compensation for EMS personnel in eastern Tennessee is average or slightly below average within the

[23] AEMTS and paramedics with duties other than ambulance response are not included in the averages.

region, but that the workload as quite high. As reflected in the employee survey, the workforce feels quite strongly that compensation is inadequate. As the County Commission has decreed that there will be no employee salary increases this year, we are concerned that ACEMS will see increased turnover in the coming year, as employees move to agencies with perceived higher salary rates.

Employees expressed concern that "the county" was talking about prohibiting outside employment. We would suggest that this possibility be approached with sensitivity. Such a prohibition may or may not be lawful under Tennessee law. Moreover, in an organization already experiencing personnel turnover and difficult employee satisfaction, this prohibition may cause EMS employees to seek employment elsewhere. A quick review of some Tennessee municipal and county employee manuals show that outside employment is typically only regulated or prohibited if "the work is likely to interfere with satisfactory performance of the officer's or employee's duties, or is incompatible with municipal employment, or is likely to cast discredit upon or create embarrassment for the municipality."[24] We encourage the county avoid taking this step, as again it is likely to result in increased turnover.

Findings — Compensation and Years in Service

- Of the 59 ACEMS employees, all but two hold medical certifications and are qualified to respond to emergencies.
- Eight employees have less than one-year tenure, 16 employees have more than 10 years in service and 35 employees average 3.7 years in service.

Working Environment And Employee Survey Results

We interviewed a substantial sample of EMS employees, both those on duty during our visits and those who asked for appointments to meet with us (an offer that was extended to all employees). We also reviewed the results of the employee survey, which are included in this report as Attachment D titled, Employee Survey Results. We found a group of dedicated, enthusiastic employees that are committed to providing the best possible emergency medical care to the citizens of Anderson County. They are frustrated by their working conditions (aging and dysfunctional ambulances; inadequate and aging quarters; and aging biomedical equipment). They project their frustration with these areas on their leadership, although the EMS Director and his senior staff are mostly powerless to address these deficiencies.

Turnover in Anderson County EMS is not very different from that in similarly situated organizations nationwide. Hiring and retaining field employees is a common and significant challenge in EMS agencies across the country. Changing population demographics (resulting in higher call volumes as populations age), as well as differing job expectations among the millennial generation (who are more willing than their predecessors to change employers in search of better compensation and status), coupled with limited career opportunities afforded to field EMTs and paramedics, further encourage younger EMTs and paramedics to look at EMS as a stepping stone to other healthcare or public safety opportunities.

[24] See, for example, Shelby County Personnel Manual, page 19, section H.

Anderson County's hierarchy is typical of many EMS agencies in the United States, with roughly 15% of its positions "promoted" and the rest consigned to the ambulance for the duration of their careers. Healthcare (particularly nursing and the physician-assistant occupations) and public safety (law enforcement and the fire service) offer their employees both promotional opportunities and a variety of work assignments.

Anderson County EMS, again like many EMS agencies, promotes from within, and promotions are perceived to be based on tenure and relationships. Although several staff members reported that there is no formal testing process for promotable positions, the department in fact has formal and well-documented processes for promoting Field Training Officers and Assistant Supervisors (Lieutenants). Most promoted individuals reported that they had little leadership or management training prior to promotion. Accordingly, field employees describe many unpleasant interactions with supervisors – where situations requiring simple coaching or correction are perceived by employees as being "demeaning" or "bullying." Employees report difficulty in taking vacation time, and being "pressured" by supervisors and co-workers not to stay home when sick or injured. Almost every employee reported coming to work rather than endure supervisor "pressure" when they call out. Employees further report inconsistencies among supervisors, with one supervisor regularly coming "to the field" and interacting with field employees, while others remain in their offices for the duration of their assigned tour.

Employees perceive that there are two sets of rules – one for "admin" or day staff and another for field employees. Much of this is perception (e.g., that one group gets pay increases while the other does not), but there are some glaring examples. The most common illustration offered was that two members of the "admin" staff bring pets to work, while field employees are not permitted to do the same. Another was a common discussion about management employees not giving the county a full measure of work; believing that these employees engage in non-county activity on company time. The consultants did not see any hard evidence of this occurring, but our visit was brief and our opportunity to detect such activities was limited. Employees reported supervisors who routinely break rules but are not corrected, and they believe that promotions are based on social and other external factors rather than merit.

The consulting team visited Anderson County EMS during what the community considered a "weather emergency." The courthouse and schools were closed for three days during the week. It was interesting to note that administrative and leadership personnel also "stayed home" or worked reduced hours during this period. In other EMS agencies, it is common for supervisory and management personnel to work in the field, either aboard ambulances or in support vehicles, and for support personnel to staff the office, handle phone calls, and perform support services for working crews (e.g., keeping hot beverages and food available when usual sources, such as restaurants, are closed). Crews do not believe that supervisors and managers "lead by example".

There are also complaints about "communications" within the department. We must acknowledge that there are great challenges in communicating amongst a workforce that works 24x7 and from separated geographic locations, and that such complaints are all too typical in many EMS organizations. This

challenge is exacerbated within Anderson County EMS, where one individual (a shift captain or "assistant chief") is responsible for 20 ambulance personnel. A recent decision to assign the shift lieutenant back to an ambulance further worsened employee perception of lack of management communication and concern for their welfare.

An operational concern of ambulance crews is the use of the "Low Man" system to assign convalescent transports. Under this system, the unit that has run the least number of calls that day may be assigned the convalescent call, regardless of where it is located. Crews believe that this system unfairly takes into account the volume of calls, while it does not consider the longer "time on task" issues presented to rural units. Crews also perceive that assigning a unit from across the county to a distant convalescent call is wasteful of fuel and wearing on the ambulances.

Finally, employees expressed strong concerns about the lack of understanding of, and support for EMS on the part of the County Commission. They attend or watch BOCC meetings on television, and they see EMS issues treated with disdain, and the EMS director treated disrespectfully. This, as much as any other factor, has a negative impact in employee morale, hence employee recruitment and retention.

Findings — Summary of the Employee Survey Process and Results

Like many EMS organizations today, Anderson County EMS faces a variety of human resources challenges. Across the USA, recruitment and retention of EMS personnel, employee engagement, and employee satisfaction all present challenges.

In order to ascertain employee perceptions, Fitch & Associates conducted an on-line survey of all ACEMS employees. In addition, all employees were invited to submit commentary via e-mail, to contact the project team by telephone, and to schedule personal interviews during on-site visits.

In mid-October, an extensive, anonymous survey was e-mailed to 63 full-time and 15 part-time employees, whose contact information was provided by Anderson County's Project Manager. Of these 78 employees, 44 (56%) responded to the survey. An additional 14 employees provided e-mail commentary, and 18 employees were interviewed during the site visit. The Fitch team is pleased with the high rate of response and the quality and quantity of input provided by the employees.

The ACEMS employees expressed strong commitment to the organization, despite its challenges. Over 50% of the survey respondents were residents of Anderson County, and the vast majority of those interviewed were also county residents. During the interviews, employees frequently voiced their commitment to the organization and the county, "….because Anderson County EMS is the agency that will be taking care of my loved ones if they face an emergency." Over 80% of those responding were EMTs, AEMTs, and paramedics – and over 80% described their primary role as "field responder." The majority (74%) agree or strongly agree with the statement, "My work is satisfying to me."

A large majority of employees (77%) believe that they are treated fairly by their first line supervisors (the shift commanders or "EMS 900s"). When it comes to the senior management team and the director,

the responses are a bit less enthusiastic, with 43% agreeing with the statement that EMS Director works to improve the service, 48% disagreeing, and 10% uncertain. With respect to the senior managers, 42% agreed with the same statement, 51% disagreeing, and 7% uncertain. The employees believe that all levels of management listen to their concerns, with substantial majorities either agreeing or strongly agreeing with the statement that the director, senior managers, and supervisors listen to employee opinions about how things should be done. Employees do not feel that they are well-informed about what is going on within the agency.

A substantial majority of EMS employees disagree (28%) or strongly disagree (42%) with the statement, "The Anderson County Commission supports and appropriately provides for EMS."

An alarming message was received in response to the statement, "Our response vehicles (ambulances and QRVs) are reliable and safe." Fifty-three percent strongly disagreed, while 33% disagreed. A similar level of concern was expressed with regard to the agency's biomedical equipment, with 35% disagreeing and 30% expressing strong disagreement. Respondents strongly disagreed (41%) or disagreed (34%) with the statement, "Generally, Anderson County EMS is getting better from year to year." Much of the commentary associated with this question related directly to the deteriorating condition of vehicles, biomedical equipment, and facilities.

Employees believe that they have good contact with their supervisors, but not with the medical director. Fifty-eight percent of employees approve of the agency work schedule. Sixty-six percent of employees do not feel that Anderson County takes good care of its employees, yet 64% plan to work for Anderson County EMS next year. Fewer than half would recommend Anderson County EMS to a friend as a prospective employer.

Employees generally do not believe that departmental funds are spent wisely, and 50% do not believe that they take good care of the equipment and supplies that are provided. Employees believe that there are opportunities to reduce department costs, but examples provided during interviews were not helpful in identifying specific areas where significant costs could be avoided. A substantial majority (68%) believe that ACEMS provides "good" clinical care, but none have seen any data to demonstrate that. A large majority rates the agency's response performance as good, despite numerical evidence to the contrary. Employees are ambivalent about the clinical quality improvement process and medical direction, and are generally dissatisfied (57% versus 30%) with dispatch services.

Employees believe that they are well educated about rules and regulations for documentation, and about other compliance topics, but are generally unaware of the mechanics of the agency's billing process. Employees do not believe (57% versus 25%) that the agency has an adequate community outreach program. Employees strongly indicate that there is a lack of collegiality, 86% disagreeing or strongly disagreeing with the statement that "Everybody at Anderson County EMS has each other's backs." This concern is further supported by a lack of trust in colleagues – only 32% agreed and 2% strongly agreed that "I would not be concerned, no matter who was on duty, if Anderson County EMS were called to care for my family when someone was very sick or badly hurt."

Detailed tables and graphs summarizing employee responses to the scalar questions described above, are provided in Attachment D titled, Employee Survey Results.

Employees' responses to open-ended questions were not atypical of those in many other EMS agencies. There was a distinct bi-polar response to almost every question, with few ambivalent statements.

It is clear that employees are frustrated by the lack of resources available to them, in terms of vehicles, biomedical equipment, and buildings. It is equally clear that the employees hold the department's management responsible for those deficits, even though it was evident to the consultants that none of these areas are within the control of the EMS Department or its director.

There is an employee perception that there are too many supervisory and management personnel in the EMS Department. We did not find that to be the case, although we did note a bit of "title inflation" and a lack of clarity in the responsibilities of several management staff (deputy directors and program managers). A "deputy director" title typically designates an individual who has the authority and responsibility to act for the director in complex or sensitive matter, which is not the case with several of those currently bearing the title.

Employees are frustrated in the belief that their pay has lagged behind that of nearby agencies, and they are particularly distressed at the differing hourly rates paid to "day crews" than to 24-hour crews. This differential, they say, no longer makes sense given the increasing workload on all shifts. However, the hourly rate/schedule differential is not uncommon in other EMS agencies, which believe that all full-time personnel in the same classification should be paid the same annual salary (resulting in an hourly differential).

Employees are also frustrated by the workload. They express the stress of working 24-hour shifts that do not provide much in the way of down time (several 24-hour units have time-on-task adjusted unit hour utilization (UHU) in excess of 40%). Quite a few noted that non-emergency or convalescent transports are scheduled without regard to the demands of shift work, citing convalescent moves scheduled in the 0400-0600 hours that could be moved to other time slots.

A substantial level of mistrust was voiced in the open-ended questions/answers concerning personnel management at Anderson County EMS. Employees repeatedly expressed that supervisors and managers show favoritism in assignments, promotion, and other considerations. Many employees have a long history in Anderson County, and believe that EMS is run like an "old boys club." When asked for specific examples, few were forthcoming, but several examples were provided of non-ambulance staff provided positions based on other influences. There is a widely-held belief that some manager-level employees work reduced work hours on a regular basis, or work on outside business efforts on county time. This may be a perception not supported by reality that has taken on a life of its own.

Many comments, both written and verbal, suggest a lack of empowerment of even senior level employees. When asked how they would respond in particular situations, the most common answer

was, “I’d have to call a (field) supervisor” (who is in fact subordinate to the senior staff member). Further inquiry suggested that employees fear that no matter what decision they make, they will be second-guessed by higher level personnel – so they avoid decisions by using the “upward delegation” technique.

Employees raised a number of operational concerns that bear further investigation:

- Lack of adequate ambulance coverage for the west (particularly the southwest) portion of the county.
- The practice of not sending the closest ambulance to each call. The “low man” effort to balance workload is not considered fair or appropriate. Some supervisors “pull” remote ambulances to run in-city convalescent calls, leaving more distant areas without emergency protection.
- The lack of tone-voice pagers or other mechanism for crew alerting during nighttime hours.
- The lack of integrated technologies (911 telephones, CAD system, vehicle location system), and the inability of crews to see and receive premise alerts in the cab of their vehicles.
- Only one ambulance is sent to a cardiac arrest, even in the face of varying levels of first responder response.
- Poor radio coverage on the county system, and the inability to inter-communicate with police and fire units responding to the same incidents.
- Crews indicate that they are frequently sent on calls without fully equipped ambulances, or without the opportunity to completely check off their ambulance.
- Ambulances are modified without regard to functionality. Two crews described ambulances that were built with “air bag” suspensions, which were removed and replaced with leaf springs. This rendered the ambulance box too high to safely load patients, and changes vehicle handling and ride quality.
- Some employees apparently work with their spouses, or allow non-county employees to “ride along” with them on duty (including supervisors).

Findings — Other Controversies

In this section we attempt to address issues not specifically identified in the county’s request for proposal, but which have been raised by audit committee members, other officials, or employees. Throughout the process of this audit and assessment, individuals have brought a variety of concerns to the audit team members. These include

1. Allegations of “misappropriation of funds.” When the consultant team probed these allegations, they found that in each instance these were minor disagreements about whether a particular small purchase should have been made, or whether it is appropriate for a department head to move funds between budgeted line items. We found no evidence of misappropriation of funds, and we conclude that moving money from budget line to budget line throughout the year is consistent with county policy.

2. Allegations of "misuse of purchasing cards." Although not originally within the scope of this audit and assessment, a full year's worth of purchasing card transactions were audited. Every P-Card purchase was traced from the bank statement (bill) to the individual P-Card user, to the EMS department's documentation, to the original receipt.[25] We did not conduct a forensic or asset audit, meaning we did not trace the item purchased to its ultimate destination in the EMS Department. We found no irregularities, and all transactions are documented in accordance with the county's purchasing card policies. The county's purchasing card policy was also reviewed and benchmarked against the Government Finance Officers' Association (GFOA) Best Practices. A substantial volume of P-Card transactions were related to building maintenance and construction, and to the purchase of information technology (computer) pieces and peripherals, which are ordinarily not part of an EMS department's responsibilities.[26] We found no evidence that Anderson County EMS purchasing cards are being inappropriately used. To avoid future difficulty, we suggest that each P-Card purchase clearly state the "public purpose" of the item purchased (e.g., a food purchase might say, "Public purpose: on-site lunch for EMS continuing education session 6-10-2018, or Public purpose: cleaning supplies for 3 EMS stations")

3. Concerns regarding "frequent changes of uniforms." This concern is common in many EMS agencies. Regardless of the uniform proffered by management, there will be a group of vocal employees who dislike the decision. Over the last few years, Anderson County EMS has moved from "class B" uniforms (a collared shirt with flapped pockets, epaulettes and patches) to a contemporary high-visibility EMS uniform, to now field employees working in tee shirts. There is no single correct answer to this issue. Both the "class B" uniforms and the high visibility polo shirts are generally acceptable in the EMS community. Many EMS employees, as well has hospital personnel and others, feel that t-shirts are unprofessional for EMS employees, making them look like landscaping and maintenance personnel rather than health care and public safety professionals. Many agencies have settled on a quality embroidered polo shirt, but those are not necessarily inexpensive to provide. In any case, we recommend that Anderson County EMS select a single uniform option and stick with it for a period of years before contemplating a change.

4. "Breast Cancer Month" t-shirts. Like many public safety agencies, last year Anderson County EMS procured and distributed t-shirts supporting breast cancer survivors during the month of October. It was widely reported around the community that other public agencies wearing pink during October required their employees to purchase their own pink t-shirts, this report was found to be untrue. Other agencies involved in supporting this effort provided these t-shirts to employees. While some may disagree with the Anderson County EMS decision to support this movement, we believe that to be a matter of managerial discretion. In any case, the amount of money involved is relatively small, and the potential benefit to employee morale is great.

[25] There were a small number of small receipts missing from the record. However, these were appropriately annotated in information provided by the Anderson County Purchasing Department or Finance Department.

[26] As noted elsewhere, the EMS Department does not receive services from the Anderson County Department of Buildings and Grounds, nor from the Anderson County Department of Information Technology. The EMS Department cares for its own buildings and grounds (sometimes with prisoner labor from the jail) and its own information technology needs.

5. Use of prisoner labor for EMS projects. Employees expressed concern about the use of unsupervised prisoner labor on EMS projects. While the consultants have no expertise in the use of prisoner labor, we regard it as unusual for individuals serving a jail sentence to be allowed to work, without corrections officer supervision, in a public safety environment where drugs, medical supplies, and other dangerous instrumentalities are readily accessible. We would encourage the EMS Department to call upon the Anderson County Department of Buildings and Grounds for construction, alteration, and repair of its facilities, and to avoid the use of prisoner labor unless prisoners are appropriately supervised.

Leadership and Leadership Development

One of the ongoing discussions about the current state and future of Anderson County EMS involves leadership and leadership development. Formal processes for leadership development and selection have not been utilized, and individuals who are perceived as "the best" at their level in the organization are promoted to higher levels when vacancies occur. This practice has been demonstrated to be unsuccessful in many EMS organizations, as the competencies necessary for success as a field paramedic are not those necessary to be successful as a first-line supervisor. Similarly, the best first line supervisors do not necessarily have the knowledge and skills to be successful as managers or executives. Good leadership does not happen by accident. It is developed through education, training, and quality experience. Anderson County EMS should develop a robust leadership development program, encouraging those who are interested in advancement to prepare for their next step in the organization.

The National EMS Management Association (NEMSMA, www.nemsma.org) has developed a recognized set of competencies for EMS leaders at the supervisor, manager, and executive levels in EMS. These competencies can be found at https://www.nemsma.org/index.php/competencies/the-seven-pillars-of-national-ems-officer-competencies. These competencies form the basis of the EMS Officer credentialing program developed by NEMSMA and administered through the American College of Paramedic Executives. This program is described at https://www.nemsma.org/index.php/credentialing/credentialing-home.

We offer the following as a blueprint for EMS officer development that should be considered for implementation by Anderson County EMS. It is important to note that many of the courses described are available without charge or for nominal fees. Leadership development opportunities should be afforded to any employee interested in advancement, provided that current job performance is satisfactory. The agency should develop a policy, published and made available to all employees, describing its leadership development program and the processes for involvement in it.

For all EMTs, AEMTs and Paramedics:

- National Association of EMTs *Principles of Ethics and Personal Leadership (PEPL)* course (can be taught in-house or locally by qualified instructors).

For staff paramedics aspiring to serve as EMS Field Training Officers:

- Three years' experience as a field paramedic demonstrating excellent clinical skills and workplace performance.
- Completion of the NEMSMA EMS Field Training and Evaluation Program *Basic Field Training Officer* course.

For EMS Field Training Officers aspiring to serve as first-line supervisors (lieutenant):

- Introductory leadership course such as 21st Century Leadership's on-line *Learn, Grow, Lead* course (http://21stcenturyleaders.com/?page_id=264).
- Basic EMS supervision course such as the National Fire Academy Supervising Emergency Medical Services course (P0146) (https://apps.usfa.fema.gov/nfacourses/catalog/details/10703), or the Tennessee Law Enforcement Innovation Center *First Line Supervision and Management* course (http://leic.tennessee.edu/leadership-training-0).
- EMS Incident Operations (R0147) course. (https://apps.usfa.fema.gov/nfacourses/catalog/details/10431).
- Preparation for credentialing as ACPE Supervising Paramedic Officer.

For first-line EMS supervisors aspiring to shift commander and second line supervisor roles (captain):

- Prior level requirements.
- Leadership development program such as National EMS Leadership Academy Level I and Level II programs (https://safetechsolutions.us/academies/ems-leadership-academy) or the Tennessee LEIC Advanced Leadership course (http://leic.tennessee.edu/leadership-training-0).
- Larger incident command and control course, such as the National Fire Academy Command and Control of Incident Operations course (R0312), (https://apps.usfa.fema.gov/nfacourses/catalog/details/10703).
- Introductory EMS Management course such as the National Fire Academy Management of Emergency Medical Services course (P0260), (https://apps.usfa.fema.gov/nfacourses/catalog/details/10717).
- Associate of Science or Applied Science in EMS.
- Complete credentialing as ACPE Supervising Paramedic Officer.

For second-line supervisors aspiring to senior management positions (deputy director or program manager):

- Prior level requirements.
- Leadership development Program such as National EMS Leadership Academy Level III and IV programs https://safetechsolutions.us/academies/ems-leadership-academy).
- EMS Management Development program such as the Fitch and Associates/American Ambulance Association *Ambulance Service* Manager (ASM) course (http://fitchassoc.com/ambulance-service-manager-asm-program/), or University of North Carolina-Charlotte EMS Management Institute (https://continuinged.uncc.edu/ems).
- Bachelor of Science in Emergency Medical Services or a related field.
- Preparation for credentialing as ACPE Managing Paramedic Officer.
- Completion of subject matter credentialing in area of specialty:
    - Clinical QA/QI: Just Culture, LEAN six-sigma or similar, National Fire Academy EMS Quality Management course (R0835) (https://apps.usfa.fema.gov/nfacourses/catalog/details/10645), or similar.
    - Education and Training: National Association of EMS Educators Level I and Level II courses; complete NEMSEC credentialing (http://naemse.org/page/aboutnemsec).

- Fleet Manager: https://www.nafa.org/f/Home.aspx.
- Advanced Incident Management and Unified Command, such as Texas Engineering Extension Service (TEEX) Enhanced All-Hazards Incident Management/Unified Command course (MGT 314) (https://teex.org/Pages/Class.aspx?course=MGT314&courseTitle=Enhanced+All-Hazards+Incident+Management/Unified+Command).

For senior managers preparing for service as EMS Executives (director, chief, general manager or chief deputies):

- Prior level requirements.
- Municipal/County Government education, such as the *County Officials Certificate Training Program* (COCTP) presented by the Tennessee County Technical Assistance Service http://www.ctas.tennessee.edu/content/training).
- Senior level leadership development programs, such as *Pinnacle EMS Leadership Conference* (www.pinnacle-ems.com), *West Point Leadership Program* (http://www.methodist.edu/wplp), and the Tennessee LEIC Southeastern Leadership Academy (http://leic.tennessee.edu/SELA).
- Master's degree in a related discipline, such as MBA, MHA, MPA, MHS.
- Completion of ACPE executive-level requirements (achievement of FACPE status).

The programs listed here are not meant to be exhaustive or exclusive recommendations – there are many equivalent courses available throughout the nation. At each level, an aspirant should attain appropriate academic, leadership, management, and operational education and training.

BENCHMARKING ACEMS TO OTHER AGENCIES

FITCH has developed 50 benchmarks that are used to assess an EMS agency. Those benchmarks and the assessment of ACEMS are provided in a series of tables in Attachment C titled, Comparison to 50 Benchmarks**.** The tables include specific comments and observations of how well ACEMS achieves against the benchmarks.

To benchmark ACEMS against other EMS agencies, the consultants gathered demographic, operational and financial metrics from eight county EMS agencies. Six of the counties are in Tennessee and two are in North Carolina.

The figure below indicates the counties used in the comparison, sorted by population. The figure also provides the population density as a gross measure of urban versus rural service area.

Figure 35. County Populations and Density for Comparison

County	Population[27]	Persons Per Sq. Mile
Robertson	69,165	145
Anderson	75,936	220
Sevier	95,946	267
Bradley	104,091	314
Sullivan	156,791	365
Sumner	175,990	324
Montgomery	194,000	257
Durham NC	302,000	1,031
Wake NC	1,100,000	1,122

Of the nine county EMS agencies, only Anderson County was reported as an enterprise fund, one is a special revenue fund and the remaining seven are part of their respective county general funds. The benchmarked eight EMS agencies receive subsidies that represent the shortfall between revenues and expenses. The subsidies range from a low of 12% of the operating budget for Bradley County, TN, to a high of 54% in Robertson County, TN. The average subsidy for the either agencies as a percent of the operating budget is 35%. As an enterprise activity until July 1, 2017, ACEMS received a 6% subsidy.

The figure below provides the expenditure amounts and indicates the subsidies as a percent of the operating budgets for the counties agencies reviewed. Data is for FY2017 except for Sullivan County which is for FY2016. The counties are listed in order by population as in the figure above.

[27] US Census QuickFacts, population data is as of July 2, 2017 census estimates.

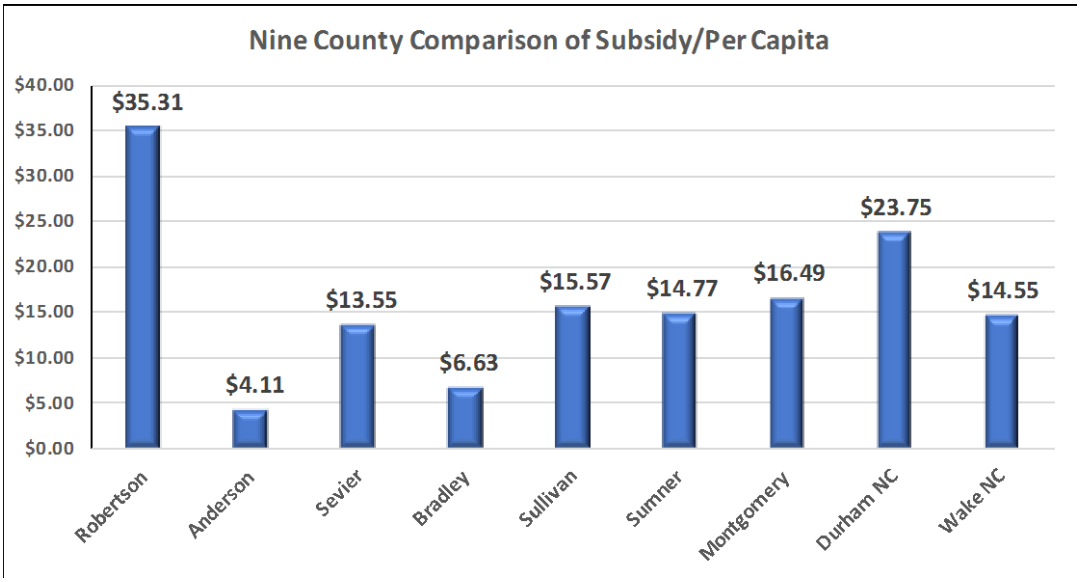
Figure 36. Nine County Comparison of Subsidy to EMS Agencies

County	Population	Budget (in millions)	Subsidy Provided as % of Budget
Robertson	69,165	$4.5	54%
Anderson	75,936	$5.6	6%
Sevier	95,946	$5.5	28%
Bradley	104,091	$5.6	12%
Sullivan	104,091	$6.4	38%
Sumner	175,990	$8.9	29%
Montgomery	194,000	$9.5	34%
Durham NC	302,000	$15.6	46%
Wake NC	1,100,000	442.4	38%

Revenues for the nine comparison counties, as well as most EMS agencies across the U.S. is derived from fees charged for transporting patients. Fees are paid primarily by commercial insurance, Medicare, Medicaid and to a much smaller extent, individuals. The difference between the total cost of the service and patient fees collected is the amount that requires a subsidy from the community.

Taxpayers, therefore, pay for the underlying readiness of and EMS system and for responses to calls that do not result in a transport. A measure of the cost to taxpayers is to compare the subsidy cost per capita. The figure below reflects the subsidy/capita for the nine counties in the comparison.

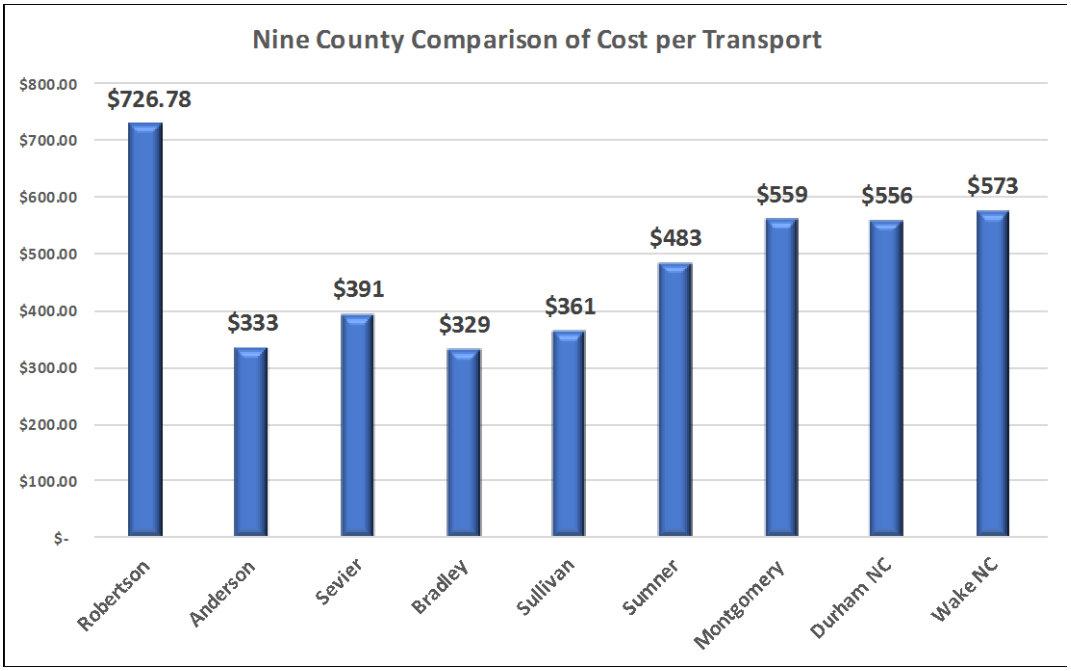
Figure 37. Comparison of Subsidy/Capita



The cost per capita to subsidize the Anderson County emergency medical system is $4.11 and is markedly less than the subsidy/capita of the comparison counties.

Cost per transport is another commonly used comparison metric. The figure below shows the comparison of expenditures per patient transport.

Figure 38. Comparison of Cost/Transport



Again, ACEMS is among the four lowest in cost per transport. The consultants understand that the other county funds have periodically paid operating expenses on behalf ACEMS and that the Ambulance Service Fund uses a portion of its fund balance to balance revenues and expenses. However, even with these adjustments, ACEMS remains a relatively low cost 911 and convalescent care operation. While this could be considered super-efficient, in reality, ACEMS operating and capital replacement costs have not been adequately funded.

FINANCIAL STRUCTURE

BUDGETING PRACTICES AND CONTROLS

At a minimum, a local government budget document provides an outline of programs, service changes from year to year, and any significant issues that could impact services going forward. A descriptive budget document also acts as an historical record of policy decisions regarding services. It is an essential means to communicate with residents and to provide a basis for community input.

The Government Financial Officers Association's best practice guides, "Making the Budget Document Easier to Understand" and "Departmental Presentation in the Operating Budget Document" note that a budget document does not need to be overly detailed. Department presentations should describe programs or services and how their objectives will be met, and focus on accomplishments along with financial schedules. This type of presentation can enhance a reader's understanding of the purpose of funded programs or services, as well as their cost, making the budget document a more effective operational and communications document.[28] Copies of the GFOA Best Practices are provided as Attachment E titled, GFOA Best Practice – Making the Budget Documents Easier to Understand and Attachment F titled, GFOA Best Practices - Departmental Budget Presentation in the Operating Budget Document.

Anderson County's budget documents are bare bones and provide no context within for understanding county services. The Anderson County "FY 2017/2018 Original Budget" includes numerous line item presentations of revenues and expenditures by fund and department, the budget appropriation Resolution #17-6-639, and other necessary resolutions for the year beginning July 1, 2017. Three years of expenditure and revenue information are provided including the approved budget for the coming year.

The county's budget documents do not provide the essential elements that are the minimum acceptable to communicate service decisions and are well below what is considered best practice. The absence of an expanded budget document, means that there is no agreed upon historical description of services, their intended or actual performance and/or the rationale behind key decisions.

Anderson budgetary controls are typical of most local jurisdictions. Monthly financial reports are generated in a timely manner showing budgeted amounts by line item, revenues received, expenditures and encumbrances and remaining balances. County financial records and processes are audited each year and the results are published in the County's Comprehensive Annual Financial Report (CAFR). Final CAFR documents are typically published some four to six months after the close of a fiscal year due to the lengthy audit process. This is typical timing for local government CAFRs. For the year ending June 30, 2017, Anderson County's final CAFR was transmitted to the County Commission on November 29,

[28] Government Finance Officers Association (GFOA) Best Practices, gfoa.org, accessed January 3, 2018.

2017. While CAFRs contain a great deal of detailed financial information and may make note of material changes in the finances of the county, they do not reflect policy changes or describe departmental missions, services, or performance.

Findings — Budgeting Practices and Controls

- County budget books do not include descriptions of county services and therefore miss the opportunity to communicate the framework for decisions regarding services.
- An agreed upon historical narrative does not exist to explain why certain policy decisions were made. In the absence of a written narrative, all versions of events are valid.
- Budgetary controls are typical of most local jurisdictions and the county produces audited Comprehensive Annual Financial Reports (CAFRs) annually.

FINANCIAL POLICIES, PROCEDURES AND TRENDS

Anderson County EMS operated for a number of years as part of the general fund of the county. As such, ACEMS could more readily receive support from the general fund that includes primarily property and sales tax revenues. The consultants assume that at some point, ACEMS patient transport revenues were such that they exceeded operating expenses and financial officials determined that ACEMS should be designated an enterprise fund. As of July 1, 2009, financial reporting for ACEMS was reported as an enterprise fund, part of the county's business–type activities.

It is not clear whether prior to the change to an enterprise fund, the county sought an in-depth study of the changing health care environment that was impacting ambulance fee reimbursements. In the years since 2009, regulation of Medicare and Medicaid fee schedules and a general tightening of restrictions on authorized transports negatively impacted ambulance fee revenues across the U.S. These issues effected the ability of ACEMS to collect sufficient revenue to meet the expectations of the enterprise designation. Over the ensuing years, ACEMS cut capital and infrastructure budgets in order to manage operating costs within its revenue stream.

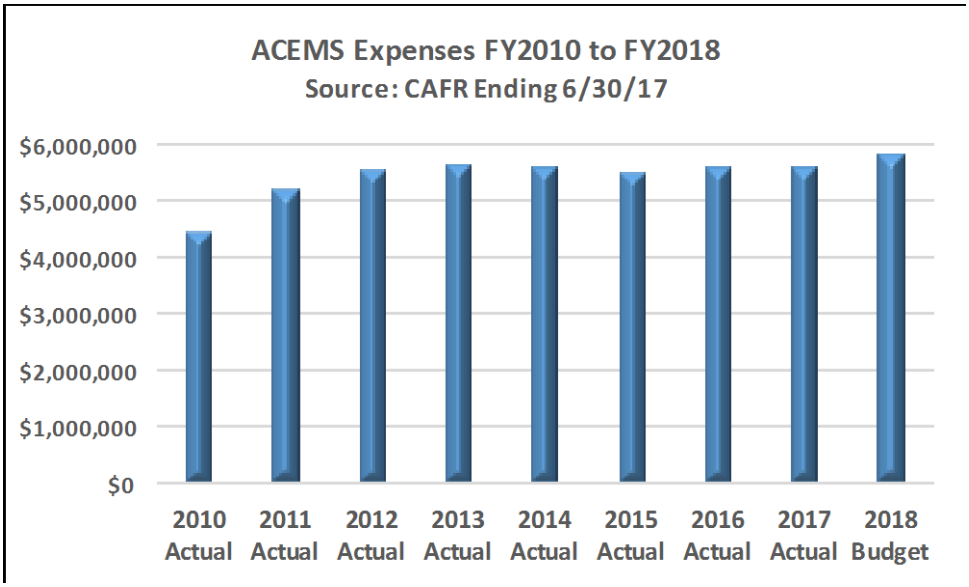
Findings — Financial Policies, Procedures and Trends

- The recent characterization of the Ambulance Services Fund from an enterprise activity to a special revenue fund is a positive recognition of the financial and operational reality of an agency providing emergency services.

Expenditure Trends

The expenditure history for ACESM is shown in the figure below. The source for the expenditure data is the FY2017 CAFR, p. 266 and the amounts include depreciation expense.

Figure 39. ACEMS Expenditure Trends



After the first year that ACEMS was designated an enterprise fund (between FY2010 and FY2011), expenditures increased by 18%. In the years that followed, the percent change from year to year was held at approximately 1%.

Overall the expenditure amounts are understated by the amounts that were paid on behalf of the Ambulance Service Fund by other county funds. This is discussed in the section below, titled Non-Personnel Operating Expenses.

Findings — Expenditures Trends

- For a number of years, capital and infrastructure expenditures budgets were cut in order to manage operating costs with its revenue stream.
- Overall, expenditures have increased slowly, but annual expenditures are understated by the amounts paid on behalf of ACEMS from other funds.

Personnel and Overtime Costs

ACEMS salaries and fringes range from 68% to 70% of the operating budget. The range is due to fact that some operating expenditures are included in the $1.18 million paid on behalf of the Ambulance Service Fund, which, in effect, understates the operating costs of ACEMS. This ratio is very low in consideration that there are no significant capital equipment expenditures. It is more typical for personnel costs to approximate 75% to 80% of an operating budget.

Personnel costs including overtime expenditures have experienced material swings from year to year. The figure below reflects the actual personnel salaries including overtime paid for FY2012 through FY2017 and indicates the changes from year to year.

Figure 40. Salaries + Overtime Expenditures

	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget
Salaries (All)	$2,805,856	$2,880,947	$2,851,651	$3,058,642	$3,066,109	$3,002,806	$3,024,955
Year to Year Change		$75,091	-$29,296	$206,991	$7,467	-$63,303	$22,149

The year to year changes primarily reflect the county's focus on ACEMS achieving self-sustaining status. Our understanding is that the Director creates a budget based on anticipated revenues. Month by month, he will eliminate or delay expenditures (including hiring) in an attempt to maintain expenditures with the revenue budget. Most emergency medical service agencies focus their budget efforts on understanding the system's needs matched with the community's capacity to support the agency. More typically, using policy guidance provided by elected officials (such as desired response performance, level of clinical care, and other considerations), a director develops a budget to achieve a certain level of service. The director and the CEO (mayor, or city or county manager) then negotiate the budget allocation with the elected governing body. Anderson's budget process is revenue driven rather than patient or service focused. There is no basic assessment of the system and no communication of acceptable medical standards to the community.

ACEMS, like many agencies of its size, depends on overtime to maintain ambulance staffing. Normal schedules that include 24 on and 48 off, 12 and 14 hour shifts will always incur overtime. The Fair Labor Standards Act requires that non-exempt employees (most EMTs and paramedics) who work more than 40 hours in a normal work, be paid at a rate no less than time and one-half of their regular rates of pay for hours in excess of 40 per week. Therefore, an EMS agency will incur overtime payments that can be anticipated due to their particular work schedules. Unfortunately, most payroll systems cannot differentiate between anticipated, scheduled overtime versus unanticipated, spontaneous overtime. What appears to be excessive overtime payments are likely to have a significant component of scheduled, built-in overtime.

Daily vacancies will occur due to unanticipated illnesses and absences, as well as training, vacation, occupational health needs, etc., and overtime is used to fill these positions. When personnel are assigned for training, they can either be taken off an active unit and overtime used to backfill to keep the unit in service, or the individual is paid to attend training while off-duty. One way or the other, someone earns overtime assuming the agency wants to make sure the ambulance is staffed and remains in service. If there are not sufficient "relief" personnel — extra individuals on duty and available to fill in vacant spots — the agency will incur overtime costs. Relief personnel cost money and may not be needed each day as they are surplus to the system. It is an operational and financial decision to determine when overtime use (cost) is such that hiring extra personnel is warranted.

ACEMS does not hire relief or "floater" personnel. For example, a 24 hour a day, 7 days a week ambulance is staffed with two persons and three shifts of two for a total of six personnel. If a relief hiring factor was utilized, an historical analysis of vacant positions due to leave and training time would be used to develop a factor to be applied to hiring. A typical relief analysis would result in something like 1.25 persons hired for each position on an ambulance. ACEMS overtime pay has averaged 54% or

$967,647 for the past three fiscal years. While it is understood that some portion of the overtime expenditure is for scheduled overtime, ACEMS may benefit from a detailed relief factor analyses to determine whether hiring additional personnel would be more efficient and effective.

Findings — Personnel and Overtime Costs

- Personnel costs as a percent of expenditures appear to be relatively low compared to other EMS organizations.
- ACEMS overtime costs are approximately 50% of regular salaries. ACEMS does not hire additional relief or floating staff, but fills daily vacancies with overtime. This and the fact that overtime is inherent in certain shift schedules contributes overtime expenses.

Non-Personnel Operating Expenses

A review of expenditures indicates no particular issues with line item expenditures. ACEMS provides drugs and medical supplies and shares the medical director efforts with local fire departments. The largest annual expenditures other than personnel costs are for direct operations (gasoline, medical supplies, dispatch and billing services). In FY2017, annual worker's compensation expenditures were $235,033. It is our understanding that the worker's compensation payments are significantly reduced for FY2018 but remain close to $100,000.

The general fund has supplemented ACEMS operations by paying for essential operating costs including dispatch services, various insurances and even fuel expenses on behalf of the Ambulance Service Fund. The earliest payments the consultants were made aware of are for expenditures that occurred in FY2014. As of June 30, 2017, the total "due to" the General Fund from the Ambulance Service Fund is $1.2 million with an additional $14,034 due to three other county designated funds. The figure below details the amounts due from the Ambulance Services Fund to the various county funds.

Figure 41. Funds Due From the Ambulance Services Fund to Other Funds as of 6/30/17[29]

Due To	Amount
General Fund	$1,171,474
Highway/Public Works	$9,225
Non-major governmental	$418
Internal Service	$4,391
Total	**$1,185,508**

It is clear that for a number of years, ACEMS has not generated enough revenue to cover basic and essential operating costs or to budget for fleet and other equipment replacements. There is no departmental or county "capital fund" to anticipate recurring capital needs such as vehicle replacement or replacement of biomedical technology. The consultants find no evidence that ACEMS has budgeted for reserve funds, which is a typical practice for enterprise activities. Budgeted reserves are expenditure

[29] Anderson County, TN Comprehensive Annual Financial Report (CAFR) for the year ended June 30, 2017, page 88.

line items that designate funds to be held "in reserve" for purposes of cash flow, unanticipated expenditures such as extreme overtime due to floods or unknown increases in insurance costs, etc. Reserves are budgeted with the intention that they not be spent but are available "just in case." At the end of a fiscal year, the unexpended reserve funds add to the fund balance and can be re-budgeted the next year.

As of July 1, 2017, the county designated ACEMS as a special revenue fund. Revenues and expenses will continue to be accounted for separately, but as a special revenue fund, the expectation is that the fund will not necessarily be completely funded from operating revenues.

Findings — Non-Personnel Operating Expenses

- There appear to be no particular expenditure items that are unusual.
- The general fund has paid a number of essential operating expenses on behalf of the Ambulance Services Fund, which understates actual operating needs. At the close of FY2017, $1.2 million of expenses paid on behalf of ACEMS is due to other funds.

Capital Expenditures

The EMS Director advised the consultants that during his tenure, he may budget for capital items (in particular, ambulances and medical equipment) but, these are the first items to be cut when revenues are not projected to exceed expenditures. The last ambulance purchased was in 2012 and in June 2015, the county received a seven-year, 2.25% interest loan from the Tennessee Municipal Bond Fund in the amount of $223,225. As such, the loan is backed by the full faith and credit of the county and is intended to pay for ambulances. The balance owed by the Ambulance Services Fund as of June 30, 2017, is $174,161 for both principal and interest with the final payoff is scheduled for FY2020.

Findings — Capital Expenditures

- ACEMS funding needs for ambulances and medical equipment are significant, require a large infusion of cash and the needs are ongoing.

Purchasing Card (P-Card) Usage

In response to concerns regarding the use of P-Cards by ACEMS employees, the consultants conducted a transaction-by-transaction review using records provided by the Project Manager (Assistant to the Finance Director, Randy Walters) for the period August 2016 through July 2017.

The consultants looked to Government Finance Officers' Association (GFOA) Best Practice guidelines to provide a basis for the review. GFOA provides the following background information.[30]

[30] GFOA Best Practice, Purchasing Card Programs, Government Finance Officers Association, Approved by the GFOA's Executive Board, February 2011, www.gfoa.org, p. 1, accessed December 2017.

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> The purpose of a P-Card program is to provide an efficient, cost-effective method of purchasing and paying for small-dollar as well as high volume purchases. This type of program is used as an alternative to the traditional purchasing process and can result in a significant reduction in the volume of purchase orders, invoices, and checks processed. Purchase cards can be used whenever a purchase order, check request, or petty cash would have been processed and with any vendor that accepts credit cards.

There are a number of benefits that accrue to the card user, the local government and vendors. These are outlined in the GFOA Best Practice document that is provided as Attachment G titled, GFOA Best Practice – Purchasing Card Programs. Likewise, there are disadvantages with the program. Again, citing the GFOA Best Practices the disadvantages include:

1. The potential for duplicate payments to vendors, unless payments are recorded by individual vendor within the accounting system,
2. The perception of the public about issuing "credit cards" to employees may be negative, and
3. The potential for abuse despite the controls available with purchasing cards.

The consultants reviewed all transactions individually for the 12-month period noted above. We found the following:

- Each transaction was thoroughly documented, documents are summarized, reconciled and all balanced.
- Transactions were appropriate to the job responsibilities of the individual card holders. For example, payment for course books and certification fees were charged to the card held by the Deputy Director for Training. Building maintenance and cleaning supplies, auto parts, and technology hardware (replacement keyboards, etc.) were charged to the account of the responsible individuals.
- There were no questionable charges or charges without adequate explanation.

As a result of the P-Card transaction review several issues with the current County Policy were identified:

1. The Anderson County policy, which requires an advanced encumbrance of funds and payment by way of a partial payment order, seems to defeat the purpose of the P-Card program (the reduction of paperwork and the expediting of small transactions).
2. Policy requirements that cardholders "utilize lowest prices based on requirements" again seem to negate or defeat the purposes of a P-Card program. Compliance with this policy is ordinarily accomplished through formal bid or informal requests for quotations. Either process is not reasonable or realistic for P-Card sized purchases.

3. The P-Card policy states that P-Cards are not to be used "to circumvent county purchasing guidelines." However, those guidelines are not specified, nor is any document cited for an employee to reference. Moreover, the very purpose of a P-Card program is to circumvent the ponderous, paper-intensive processes used for larger purchases.

4. Anderson County's P-Card processing system is manual and paper-based. GFOA Best Practices recommend a service that performs all necessary summaries and reconciliations via a web-based interface.
5. The use of county P-Cards for routine, repetitive, large purposes, while acceptable within policy, leaves the impression of greater P-Card use than might otherwise exist. It would be best if certain repetitive purchases such as records and data subscriptions, (VIARKKO and Rackspace) were billed annually by the vendor instead of pay for via P-Card.
6. The age of the ACEMS ambulance fleet, many of which are beyond the point where manufacturers produce and dealers stock parts, requires staff to utilize internet purchases from non-traditional internet vendors, e.g., PartsGeek.com.

The primary factor that contributes to what appears to be excessive use of P-Cards is that ACEMS building repairs and renovations are performed by EMS field and administrative staff, supplemented by jail inmate labor. This means that project work is accomplished in fits and starts, with numerous small and intermittent purchases resulting from irregular workflow. Ordinarily such purchases would be handled as part of a construction project managed by Buildings and Grounds, or via a purchase order to an external contractor. ACEMS would then pay for the completed total job either directly to the contractor order or through an inter-fund charge to Buildings and Grounds Department. This unusual arrangement whereby ACEMS (medical) employees are responsible for maintaining older facilities, understandably, results in a high number of P-Card purchases.

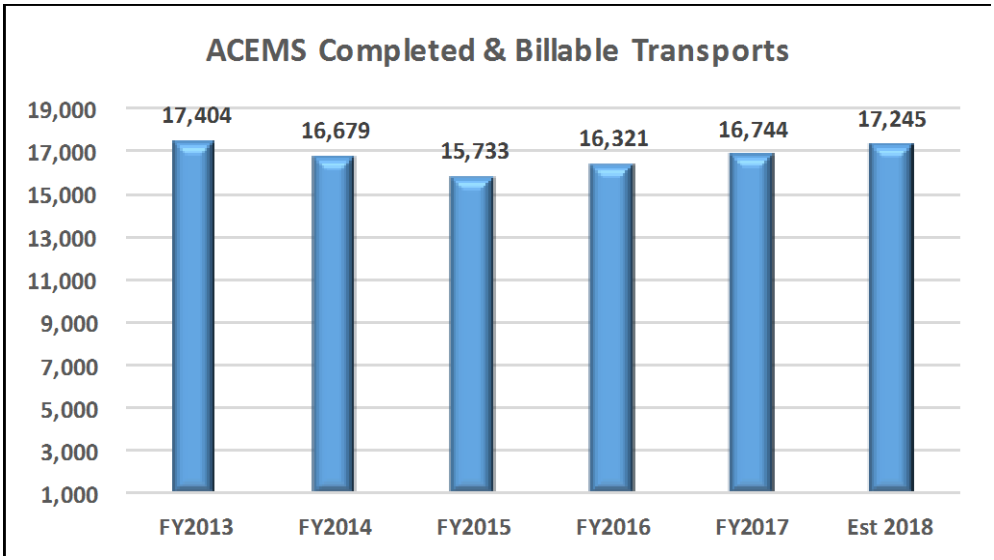
Findings — Purchasing Card (P-Card) Usage

- ACEMS performs its own building renovations, repair and maintenance. This type of work requires smaller, immediate purchases and has increased P-card usage.
- The consultants reviewed each P-card transaction for a twelve-month period. All purchases appeared appropriate and documentation was complete.
- Records are manual and paper-based and do not provide timely reviews and searches by vendor or employee.

Patient Transport Revenues Trends

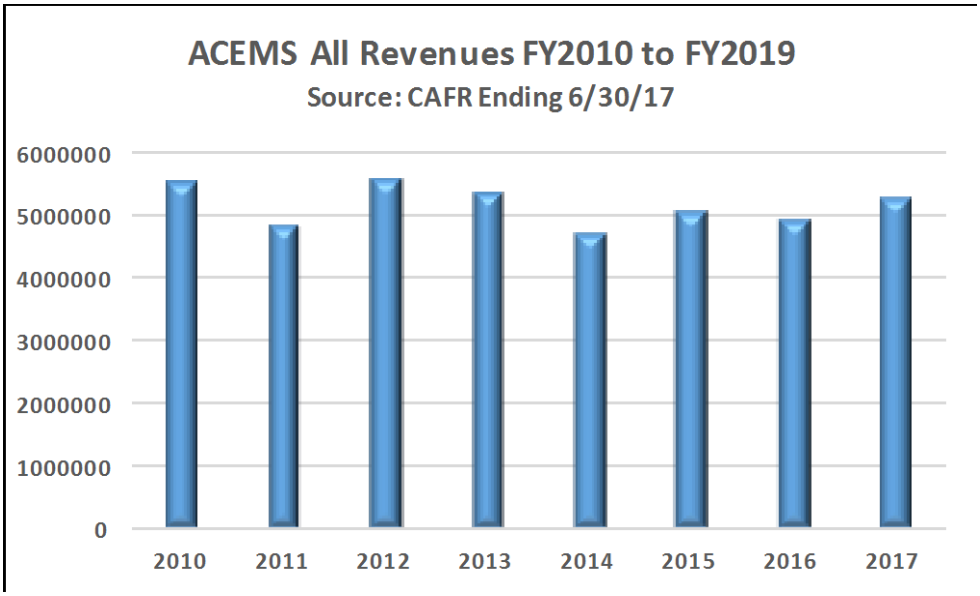
The primary source of ACEMS operating revenues is fees collected for patient transports. It was important to have accurate transport activity data in order to conduct the revenue analysis. The FY2017 CAFR indicates data that, according to ACEMS management, does not represent the true number of completed and billable transports. ACEMS management agrees that the data from the billing company is a more accurate assessment of transport activity than data provided from the CAD and that the activity reported in the CAFR overstates the actual transport activity. The figure below reflects five years of data for completed and billable transports as determined from billing records and includes an estimate for FY2018.

Figure 42. ACEMS Completed and Billable Transport Activity



The figure below indicates a history of all ACEMS revenues including patient transport fees and other general services revenues.

Figure 43. ACEMS All Revenues Trends



Actual revenues for FY2017 were $5,243,281 according to the FY2017 CAFR. Patient transport fees comprise all but less than $150,000 of the total. Revenue changes from year to year have been erratic partially due to the 2014 Medicare audit findings and subsequent slow-down of collections due to required pre-payment claim reviews. Between FY2016 and FY2017, total revenues increased by $330,400 which represents a 7% increase.

The section titled Ambulance Transport Fees provides an in-depth analysis of billable practices, transports and associated collections.

Findings — Revenue Trends

- Transport activity in the county's Comprehensive Annual Financial Report, is overstated and does not represent completed and billable transports. Valid data is essential for providing a number of activity and performance metrics.
- Total revenues for FY2017 were $5.8 million of which all by approximately $150,000 was derived from transport fees.

Other General Service Charges

The other significant revenue stream for ACEMS is based on the provision of EMS services to Roane County, Union County and for transports ordered by Methodist Medical Center located in the City of Oak Ridge. For FY2017, Revenues under the category of Other General Service Charges were approximately $135,800.[31] This amount is fairly consistent from year to year.

Anderson and Roane counties entered into an ambulance services agreement in May 2010. The agreement also covers the City of Oliver Springs that lies within both counties. ACEMS provides both emergency and convalescent services to the area for an annual payment of $59,000. Oliver Springs provides living quarters for the ACEMS crews and a heated garage for the ambulance, known as Station 4. The contract for services continues until April of 2020 with an option to renew for an additional 10 years. The contract termination provision is a six-month notice. Should ACEMS fail "in bad faith" to operate the Oliver Springs station with a 24 hour a day, seven days a week crew, the agreement becomes null and void.

We understand that the Methodist Medical agreement has expired. The annual amount collected from Methodist Medical was approximately $75,000. Additional information about the convalescent transports initiated by Methodist Medical and other transport fee reimbursement issues are detailed in the report section titled Ambulance Transport Fees Review. That section provides an exhaustive review of anticipated revenue trends for the future.

The consultants requested a copy of the Union County agreement. We understand that it is not available at this time.

Findings — Other General Service Charges

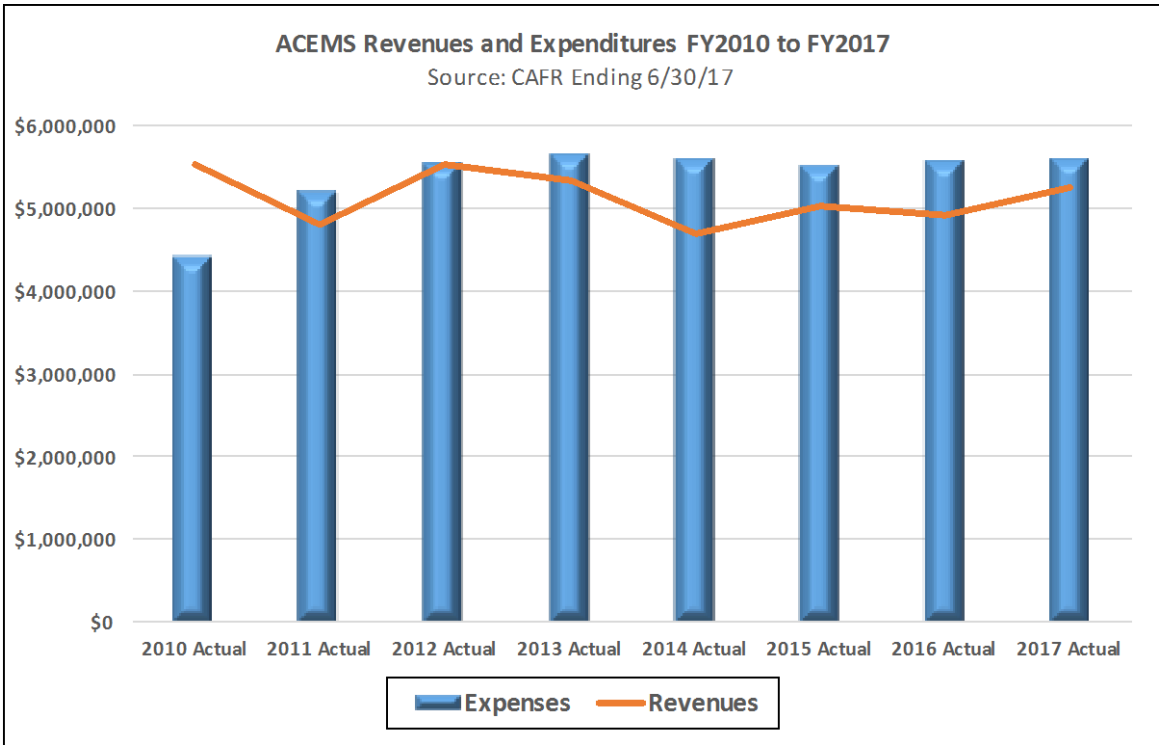
- It is not clear whether the agreement for Roane County represents good value to Anderson County for the effort expended.
- The Methodist Medical service agreement has lapsed and the Union County agreement was not available.

[31] FY2017 preliminary Comprehensive Annual Financial Report detail.

Revenues vs. Expenditures

The figure below is a comparison of ACEMS revenues and expenditures for eight fiscal years. The source of the data is the FY2017 CAFR, page 266.

Figure 44. Comparison of ACEMS Revenues and Expenses



The expenditure amounts include depreciation expense but do not include any payments made by other funds on behalf of the Ambulance Services Fund as discussed in the section titled Non-Personnel Operating Expenses.

AMBULANCE TRANSPORT FEE REVIEW

BILLING PRACTICES

In 2014 ACEMS was audited by Cahaba, the Medicare Administrative Contractor for Medicare services provided in Tennessee. ACEMS and its former contracted billing agent, NRG-AMB, were found to have submitted claims that resulted in inappropriate reimbursement from Medicare. This was for Advanced Life Support Emergent (A0427) claims for which the level of service or medical necessity was not supported in the information provided. This resulted in a substantial amount of Medicare payments being refunded. This was reported to have cost ACEMS approximately $600,000 for fiscal year 2014-2015. Additionally, ACEMS was placed on pre-payment claims review by Cahaba, which resulted in a significant slow-down in claims processing and payment. Processes were reviewed and changed and there was a noticeable decrease in the number of claims classified as ALSE.

Emergent transports have been reported to be 57% of total volume, consistently for the past 3 completed fiscal years. The major shift in Emergent Transports reporting over the past 5 years is the change in the percentage of ALS and BLS. BLS trips were only 2% and 6% respectively for the first two years analyzed. This was obviously found to be an area of error as the organization was found to have billing errors in these areas by Cahaba and was required to refund a substantial amount of those trips billed at ALS level due to information not supporting the medical necessity for those trips. ACEMS made changes to the charting and billing processes after FY 2013/2014 and started reporting a greater percentage of emergent transports at the BLS level. This process change resulted in BLSE equating to an average of 44% for the next 3 reported fiscal years. This is more in line with 2015 study published in the Annals of Internal Medicine that found 65% of emergent Medicare trips were ALS in nature[i], and the most recently published related data by the Centers for Medicare & Medicaid Services (CMS) from 2015 which showed 62% of emergent transports to be ALS and 38% BLS in nature.[ii] The figure below provides year by year detail of these statistics.

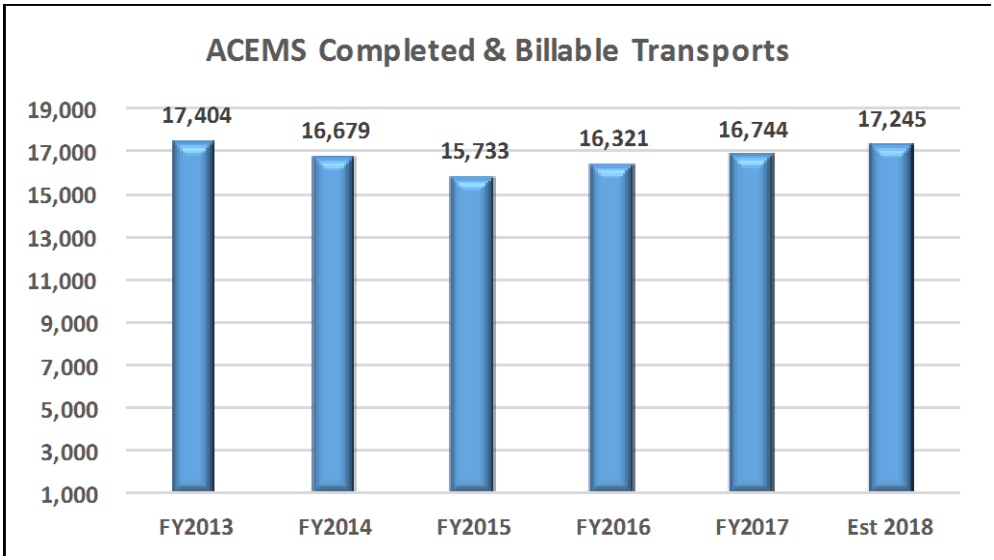
Figure 45. ACEMS Transport Category History FY2013 to Estimated FY2018

	2012/2013			2013/2014			2014/2015			2015/2016			2016/2017			2017/2018*		
Emergent	Trips	% Emerg	% of Total	Trips	% Emerg	% of Total	Trips	% Emerg	% of Total	Trips	% Emerg	% of Total	Trips	% Emerg	% of Total	Trips	% Emerg	% of Total
ALSE	9016	96%	52%	8015	92%	48%	4698	52%	30%	5642	61%	35%	5854	61%	35%	6030	61%	35%
BLSE	204	2%	1%	531	6%	3%	4122	46%	26%	3502	38%	21%	3559	37%	21%	3666	37%	21%
ALS2	64	1%	0.4%	114	1%	0.7%	128	1%	0.8%	129	1%	0.8%	179	2%	1.1%	184.4	2%	1.1%
SCT*	84	1%	0.5%	5	0%	0.0%	27	0%	0.2%	0	0%	0.0%	14	0%	0.1%	14.42	0%	0.1%
Total	9368	100%	54%	8665	100%	52%	8975	100%	57%	9273	100%	57%	9606	100%	57%	9894	100%	57%
Non_Emergent	Trips	% NE	% of Total	Trips	% NE	% of Total	Trips	% NE	% of Total	Trips	% NE	% of Total	Trips	% NE	% of Total	Trips	% NE	% of Total
ALSNE	68	1%	0.4%	132	2%	0.8%	107	2%	0.7%	94	1%	0.6%	127	2%	0.8%	130.8	2%	0.8%
BLSNE	7968	99%	46%	7882	98%	47%	6503	98%	41%	6884	99%	42%	6680	98%	40%	6880	98%	40%
Total	8036	100%	46%	8014	100%	48%	6610	100%	42%	6978	100%	43%	6807	100%	41%	7011	100%	41%
Other	Trips	% Other	% of Total	Trips	% Other	% of Total	Trips	% Other	% of Total	Trips	% Other	% of Total	Trips	% Other	% of Total	Trips	% Other	% of Total
ME/Coroner	0	0	0	0	0	0	105	71%	1%	3	4%	0.02%	148	45%	1%	152.4	45%	1%
Treat No Transport	0	0	0	0	0	0	43	29%	0.3%	67	96%	0.4%	183	55%	1.1%	188.5	55%	1.1%
Total	0	0	0	0	0	0	148	100%	1%	70	100%	0.43%	331	100%	2%	340.9	100%	2%
Grand Total	17404		100%	16679		100%	15733		100%	16321		100%	16744		100%	17246		100%
																*Estimate 3% Increase		

NRG-AMB provided contracted billing services from 2010 until Fiscal Year 2016-2017. At the beginning of Fiscal Year 2016-2017, ACEMS changed contracted billing providers to Digitech Computer, Inc. of Chappaqua, NY. Significant improvements have been made in the processes since this time and ACEMS is no longer on pre-payment review.

Billable transport volume has fluctuated over the past five years. Of the period analyzed, FY 2012/2013 reported the highest volume. There was a steady decrease through FY 2014/2015 and then the trend reversed with transport volume rising. Based on performance it is estimated that the trend could continue in FY 2017/2018 but this is not guaranteed. The figure below provides a visual representation of the transport volume for the past five fiscal years and an estimate for the current fiscal year.

Figure 46. ACEMS Completed and Billable Transport History



ACEMS administrative staff who are county employees perform specific pre-billing functions. These are process elements that are required prior to Digitech performing the actual submittal of the claim, including reconciling the charts submitted against those dispatched to ensure all trips are captured for billing, gathering documents such as physician certification statements and prior authorizations, face sheets, memorandums of transfer, and any other documents that may be required. All contracted billing agencies require the ambulance service to provide personnel to perform these duties and serve as a point of contact for questions, provision of additional documents, etc. This administrative function is performed at ACEMS in conjunction with other duties performed by the designated employee. The processes and duties performed were found to be done in an efficient and effective manner.

ACEMS provides a significant amount of non-emergent/convalescent transports. These are typically from a hospital to home or a lower level of care or to treatments. Many of these require prior authorization or a Physician Certification Statement (PCS). A PCS is required for non-emergent Medicare transports meeting specific requirements, as outlined by the Centers for Medicare and Medicaid Services (CMS). There are two types of PCS forms; one-time/non-recurring and recurrent/60 day. The

latter of these being most frequently associated with dialysis patients requiring transport to and/or from treatments that occur three times per week. This type of transport has been the focus of intense scrutiny by CMS and the Office of Inspector General (OIG) over the past several years, as this is an area wrought with fraud and abuse. So much so that Medicare payments for these services were reduced by 10% in October 2013 and will be reduced by another 13% beginning October 1, 2018. Approximately 28% of ACEMS's BLSNE transports for 2016/2017 were for dialysis patients. ACEMS employs a person who clinically evaluates all patients needing transports to/from dialysis treatment, ensuring the requirements are met initially and continually. 50% of the Medicare transports screened by this position show that the patient does not meet the medical necessity requirement for needing ambulance transport to and from dialysis on a regular basis. Screening these patients is potentially saving the service costs associated with transporting patients that ACEMS would not be able to bill Medicare for. Ineligible transports would become the patient responsibility, which in most cases means that they will not be paid. It is also assisting ACEMS in mitigating risk of having these patients transported and the trips erroneously being billed to Medicare (which could result in audit, payment delays, or penalties). This is a best practice for which ACEMS is commended and should ensure that it continues.

The Transport Coordinator is responsible for setting up other convalescent/non-emergent transports, many of which require prior authorization. This is a county position that works standard work hours Monday through Friday. Any non-emergent transports that are requested and/or conducted outside of regular county business hours go through dispatch without having been reviewed by the Transport Coordinator. Dispatch does not request any prior authorization documentation. This puts ACEMS at risk for lost revenue as many payers require this information be obtained in advance of performing the transport.

Another concern is inaccurate Physicians Certification Statements (PCS). When the crew receives a PCS that does not match the status of the patient encountered they are not addressing the discrepancy. Example: PCS states that "patient is bed confined" but when crew presents to transport the patient, they find them ambulatory or otherwise not meeting the CMS outlined definition of bed confined. The PCS is presented with the patient care report and sent on to the billing company (Digitech). It is up to the billing contractor to address in a manner of ways which include, but may not be limited to, a) not billing to Medicare until an appropriate PCS can be obtained or the requisite documented attempts to do such has been performed, b) bill the agency/organization that requested the transport, c) hold the bill until ACEMS addresses the issue. ACEMS was not able to identify which, if any of these options were being pursued once the item was sent on to the billing contractor (other than it does not appear to be sent back to ACEMS to address). In the event of an audit, any claims billed with an inappropriate or inaccurate PCS could put ACEMS at risk for refund of payments, fines, or worse. It is important to note that under Medicare rules, an EMS agency cannot rely on a PCS to establish medical necessity for a non-emergency transport. Regardless of what the physician says on the form, the EMS agency must independently establish medical necessity for the transport. This is further discussed in the claims review section of this report.

Digitech provides billing services, to include insurance verification, coding of the service level (HCPCS) and signs and symptoms (ICD-10), follow up, appeals, and balance billing to secondary, tertiary, patient, etc. at the rate of 4.5% of net collections. This is a good rate and very competitive by market standards for these services. NRG-AMB was charging 5.5% to provide the same/similar services. In order to provide these services in-house, ACEMS would need to employ several additional persons, computers, specialized software for billing which is proprietary and requires both user and maintenance license fees on an annual basis in excess of the purchase price. Adequate space would also have to be provided to house a billing operation. All of this would cost substantially more than 4.5% of net collections per annum.

Findings — Billing Practices

- For FY2017 and estimated for FY2018, emergent transports are 57% of all billable transports, convalescent care are 41% of total billable transports. The other 2% are patients that are treated but not transported, or transport if deceased patients for the coroner/medical examiner.
- There have been significant improvements in billing practices and processes since ACEMS engaged Digitech to provide contracted billing services.
- ACEMS administrative staff perform pre-billing functions in an efficient and effective manner.
- Approximately 28% of basic life support convalescent care transports are for dialysis patients. This type of transport requires detailed screening for medical necessity and is highly scrutinized by Medicare.
- When the ACEMS Transport Coordinator is not available (weekends and after business hours, Monday through Friday), E911 Dispatch receives the calls for convalescent care transports. There is no confirmation of medical necessity and necessary physician documents conducted, and no prior authorization requested by E911 Dispatchers, which put ACEMS at monetary and audit risk.
- ACEMS receives good value for the Digitech contracted services.

Recommendations — Billing Practices

In the billing arena, ACEMS should seek to make immediate improvements in the areas identified in the Sample Billing Audit for which this report indicates deficiencies greater than 5%. Ongoing training for ACEMS field and administrative personnel is imperative. This includes documentation of medical necessity of the ambulance transport and when no medical necessity can be established. Such should be clearly reported so the claims are not inappropriately billed. This is an area the service should place a large amount of focus on during crew documentation training. In addition, ongoing claims reviews should be conducted to ensure the information is being effectively communicated. The crew members should also focus on the best practice of constantly obtaining the first and last name and credentials of the receiving representative.

REVENUE COLLECTION

Revenue collection for ambulance services, especially 911 emergent transports, is a significantly different process than other areas of healthcare. Transport billing begins at the time of dispatch. This means that information gathered and recorded, or that which should be, can have an impact on the

level of service the organization is able to bill. Limitations of the dispatch system and information that is reported by the current dispatch system is potentially limiting the service's ability to bill for 911 assessments. Many times, very little, if any information related to billing is collected during transport. This requires processes be in place to expediently collect this information post-transport. The personnel at ACEMS are doing a good job of gathering documents and information to assist the contracted billing agent.

In FY 2014/2015, ACEMS substantially reduced the number of ALS E transports being billed. This was the result of the audit by Cahaba showing that transport documents did not support the medical necessity for services billed. The previous billing agency was not billing transports appropriately, as the rules and regulations clearly state that the patient care report must support the level of service billed. While ACEMS was most likely guilty of having poor documentation, the errors were the fault of the billing agency. ACEMS, however, owns the ultimate responsibility of ensuring the integrity and accuracy of the bills being sent out on their behalf. The number of claims billed at the ALS level was far higher than what would reasonably be expected for this service. The result was the reimbursement of Medicare funds and the claims pre-payment review that ensued. Changing billing companies, to Digitech, has considerably improved the quality of bills being sent on behalf of ACEMS, and revenue collections are more accurate. Digitech has provided documentation training, early on in the contract, to ACEMS, and while there was most certainly improvement in the quality of the documents produced, crew documentation skills continue to require development and enhancement for accurate and thorough reporting. First and foremost, this will assist in the mitigation of risk to the organization for sending inappropriate or fraudulent claims. Second, there is the opportunity that some claims may actually be billed at a higher level of services if accurate, thorough, and objective documentation is produced for every transport. It is recommended that ACEMS provide annual documentation training to all crews.

Figure 47. ACEMS Per Trip Collections

FY	Trips	Gross Charges	Cash Collected	Collection per Trip
2012/2013	17404	$11,092,000	$5,336,338	$306.62
2013/2014	16679	$10,448,065	$5,166,906	$309.79
2014/2015	15733	$11,550,507	$4,599,279	$292.33
2015/2016	16321	$13,979,569	$5,150,532	$315.8
2016/2017	16744	$14,621,922	$4,955,833	$295.98

Figure 48. ACEMS Financial Metrics

Description	Metric
Cost Per Unit Hour	$85.71
Cost Per Transport	$333.09
Revenue Collected Per Transport	$295.98
Loss Per Trip	$37.11

The numbers for FY 2016/2017 are lower than what the consultants would expect for ACEMS. This is due to the total volume of transports not being appropriately reimbursed. Specifically, this is in relation to coroner/medical examiner transports that are reimbursing close to nothing, but are included in the overall volume. The hospital contract that is expired also has claims included in the equation. Once a contract is negotiated and these have been reimbursed, it is expected that the collections per transport will improve to a number closer to what was seen in the previous fiscal year, but will still be below the cost of providing service. Additionally, this contract should be at or above the published Medicare Fee Schedule Rates for the year in which the transport is done.

2018 brought a minimal Medicare increase, however, ACEMS can expect some offset of this, with the additional 13% reduction for the BLSNE dialysis transports for its Medicare population. Poor physician certification statement forms are also impacting revenue collection as the billing service should not be sending these to Medicare if the problem, per form, is not appropriately addressed as outlined in the Code of Federal Regulations, §410.40, Coverage of Ambulance Services.

Findings — Revenue Collection

- Billing for ambulance services, based on documentation provided, appears to be more accurate and reliable since moving to Digitech.
- The current CAD system and Dispatch process are not conducive to best practices in billing. Information collected at the time of dispatch does not always provide the information required to support billing for services for ALS assessment that would provide ACEMS the opportunity to bill for such and potentially collect additional revenue in these instances as appropriate.
- Collected Revenue per Transport is low due to coroner/ME transports that do not pay well, if at all, being included in the transport mix.
- PCS forms that are inaccurate or incomplete are putting ACEMS at risk for lost revenue as Medicare cannot be billed and the issue cannot be addressed as required by federal rules.
- ACEMS will benefit from regular documentation training. Provision of such may assist in the improvement of billing, but more importantly will reduce risk factors associated with non-compliance.

Record Keeping

ACEMS uses ImageTrend for patient transport documenting; electronic patient care reporting (ePCR). This system provides a reliable platform for documenting, reporting, and storing data related to each patient transport. The rate for this service is $1.59 per trip and allows the electronic reporting of required transport data elements to the state. Records are stored securely and can be recalled by ACEMS as needed.

Digitech provides billing services for ACEMS and stores all billing related documents, including claim submission, supporting documents, source of payment or denial documents, and accounts receivable records. Monthly reports are provided to ACEMS in a usable format to establish and understand the effectiveness of claim submittals.

Documents related to clinical assessment for medical necessity of ambulance for transport to and from dialysis for Medicare patients, reconciliation of dispatch-to-transport reports, pre-billing documents, and education records are stored internally. No concerns were found related to these items.

No record of regular OIG Exclusion List checks was identified. All persons who have any responsibility with an EMS service, including, but not limited to, all clinical personnel, management, administrative, dispatch, and billing personnel must be in good standing with the OIG if the service participates (bills) with Federal healthcare providers (Medicare and Medicaid). Any person who is on the OIG Exclusion List cannot work for a service participating in these programs. If a person has been excluded and continues to work for the service, the ambulance agency is at risk for having to refund all Federal provider payments for the time the person was excluded but still working for the service. It is recommended that the list be checked on a monthly basis in order to reduce risk to ACEMS. The checks can be performed internally or outsourced to a professional agency who will do them on any basis directed. The fee varies, but .75 per person checked is a reasonable expectation if outsourced. This is a relatively minor charge considering what is at risk for refund if not caught in a timely manner. These records should be maintained by ACEMS and readily accessible if needed.

Collection Trends and Payer Mix

The payer mix of Anderson County EMS is not unlike that of many other county based EMS services across the country. Medicare comprises the highest percentage of the volume of patients transported. The Baby-Boomer generation is retiring at an average of 10,000 persons per day and they are the largest contingent of the population that is 65 and older. The elderly population is the largest consumer of transport services. As is expected, based on other demographics reviewed for Anderson County, Medicaid participants are the second largest users of the EMS system. This group consists of persons who meet qualifications based on income and poverty statistics.

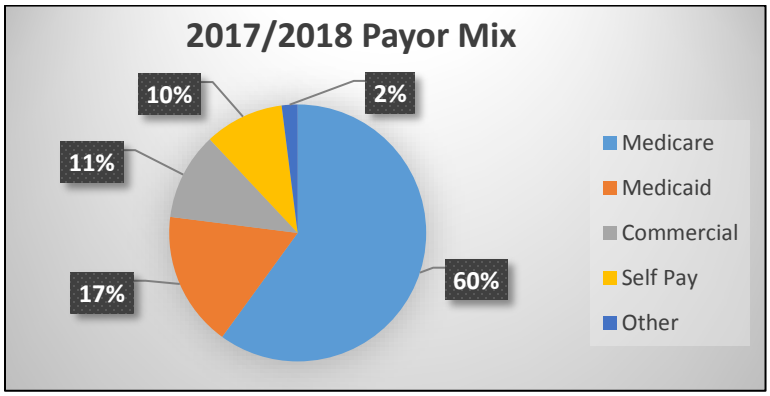
Something unique found in the Sample Billing Audit was that several claims reviewed showed that dialysis patients were utilizing Medicaid benefits. This is because these people met the qualification for Medicaid, but had not worked and paid into the Federal Medicare system long enough to qualify for those benefits.[iii] End Stage Renal Disease is a qualifier for Medicare benefits but since these people do not have those benefits, they are being covered by Medicaid. Medicare currently has reduced the rate for reimbursement of BLSNE benefits, those associated with dialysis transports, by 10%, however, on October 1, 2018 this will reduce another 13% to a total reduction of 23% for those dialysis trips. Even at those reduced rates, the payment would be better than Medicaid. The figure below indicates the historical payer mix based on collections.

Figure 49. ACEMS Transport Collection Payer Mix

	2012/2014	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
Medicare	52%	52%	45%	65%	58%	60%
Medicaid	18%	17%	17%	12%	23%	17%
Commercial	24%	24%	30%	15%	9%	11%
Self-Pay	5%	6%	7%	7%	7%	10%
Other	0%	1%	0%	1%	4%	2%

The figure below indicates the payer mix projected for FY2018.

Figure 50. ACEMS Payer Mix Projected for FY2018



Commercial Insurance volume for ACEMS has taken a significant downturn in the last two years. This is the only area where raising rates may have a positive impact on the potential for collecting additional revenue. Many commercial insurance companies are seeking to establish in-network and other contracts with ambulance service providers. These typically do not have a significant benefit for the ambulance service and in many instances actually do not allow the provider to balance bill the patient for the additional amount above what was covered by insurance or for non-covered services. For this reason, it is *not* recommended that ACEMS enter into any contracts unless they have been extremely well vetted and determined to be in the best interest of the ambulance service.

The *Other* payer category for ACEMS consists of facility contracts with the local hospital, which is currently expired and in negotiation, nursing homes, and transports of deceased patients. Of the latter, ACEMS is tasked with transporting deceased persons for the coroner and medical examiner. As ACEMS does not have a vehicle or crew specifically designated for this purpose, this is accomplished in the normal staff rotation/assignment for transport utilizing an ambulance. This removes the crew and ambulance from the core services of transporting emergent and convalescent patients, delaying these patients and the referring agencies requesting the services. ACEMS bills $100 per trip for the transport of deceased persons, experiencing costs related to personal and equipment. Of concern is that this rate does not fully cover the cost of providing the service. Of greater concern is that findings report that the reimbursement for these services averages less than $15 per trip.

Findings — Collection Trends and Payer Mix

- Not unlike other communities, the highest volume of patients transported are Medicare recipients. Medicaid participants are the second largest users of the EMS system.
- Commercial insurance volume for ACEMS has taken a significant downturn in the last two years.
- Contracts with commercial insurers and medical facilities should not be negotiated for rates less than the Medicare allowable.

Medicare/Medicaid Reimbursement Rates

Medicare and Medicaid, as shown in the table in the previous section, for Fiscal Year 2017-2018 to date comprise 77% of the transports done by ACEMS. Medicare and Medicaid are programs funded by the federal and state government and are set on a fee schedule. This means that no matter what your rate, you can only collect up to the published allowable. In addition, while Medicare "allows" a specific rate, they only pay 80% of that rate. The balance of 20% is the responsibility of secondary insurance or the patient. The billing agency has a responsibility to make a reasonable effort to collect the 20%. The balance between the charged rate and the maximum allowable is a contractual write off required by law. Neither Medicare nor Medicaid pay for Treat No Transport (TNT) or Medical Examiner/Coroner transport of deceased patients. Medicare will pay a BLSE base rate for responding to a patient who is declared deceased after the transport has been dispatched (an unsuccessful cardiac arrest resuscitation). No mileage is paid for these trips and they must include a QL modifier to indicate what is being billed.

The table below reflects the Medicare Fee Schedule for Tennessee for the region in which ACEMS operates for the years analyzed in this report. While Medicare does have rates for both Urban and Rural transports, all ACEMS transports were determined only to qualify as Urban based on the CMS Zip Code File. Medicare adjusts the rate annually, based on information in the Gross Consumer Price Index (GPCI) less agricultural indicators. This adjustment is typically a minimal increase, but occasionally, as seen in 2016, there is a reduction which tends to take place every 4 to 5 years. Additionally, the Federal government enacted automatic spending cuts in 2013, referred to as budget sequestration that places an additional 2% reduction. This means that while the rates published in the table are the allowable, the service is actually reimbursed 2% less than the total calculated allowable for each Medicare ambulance transport. This is expected to remain in place through 2021 and potentially longer.

This has impacted collectable revenue (negatively) since 2013 and will continue to do so until such time sequestration is no longer a factor. For Fiscal Year 2017-2018 the predicted loss to sequestration for ACEMS is anticipated to be in excess of $69,000. The percentage of Medicare patient transports, estimated to be 60% for FY '17-18 is in line with national averages and is expected to continue to grow for the next several years due to the Baby Boomers generation reaching retirement age at the current rate of 10,000 per day on a national level. Retirees are the population contingent that utilizes EMS services with the greatest frequency, so it can be expected that this percentage will continue to increase for the next 5 years or more.

Figure 51. Historical Medicare Fee Schedules for Ambulance

Medicare Fee Schedule Rates							
SERVICE	CODE	2013	2014	2015	2016	2017	2018
Mileage	A0425	$7.09	$7.16	$7.27	$7.24	$7.29	$7.37
ALSNE	A0426	$245.72	$248.18	$251.91	$250.89	$253.04	$256.02
ALSE	A0427	$389.06	$392.95	$398.85	$297.35	$400.64	$405.36
BLSNE	A0428	$204.77	$206.82	$209.92	$209.08	$210.86	$213.35
BLSE	A0429	$327.63	$330.90	$335.87	$334.53	$337.38	$341.36
ALS2	A0433	$563.12	$568.74	$577.28	$574.97	$579.88	$586.71
SCT	A0434	$665.50	$672.15	$682.25	$679.51	$685.31	$693.38
TNT	A0998	$0	$0	$0	$0	$0	$0
CORONER	A0999	$0	$0	$0	$0	$0	$0

As previously mentioned, dialysis transports are paid at a reduced rate of 10% less than the published BLSNE Medicare allowable. This reduction also applies to mileage for these transports.[32] The table below displays the Medicare Allowable rates for dialysis transports for the period reviewed in this report. The additional 13% reduction taking effect October 1, 2018 is included. Approximately 23% of the BLSNE transports for FY '16/17 for ACEMS were dialysis related. 72% of those dialysis trips were Medicare and the remaining 28% were Medicaid. The Medicare trips were impacted by these reduced reimbursement rates. While these rates are below the services average cost of providing the transport, they are still better than Medicaid rates for the same service.

Figure 52. Historical Medicare Dialysis Reduction Rates for Ambulance

Medicare Dialysis Reduction Rates							
	2013	2014	2015	2016	2017	2018	
	10%						23%
Mileage	$6.38	$6.44	$6.54	$6.52	$6.56	$6.63	$5.67
BLSNE	$184.29	$186.14	$188.93	$188.17	$189.77	$192.03	$164.28

Medicaid benefits are extended to over 72 million people including children, pregnant women, parents, senior citizens and disable individuals who are eligible due to low or no income. The reimbursement rates for Tennessee Medicaid are significantly less than the Medicare Allowable, even for the reduced dialysis rates. Tennessee Medicaid rates do not adjust with the regularity of Medicare. The current reimbursement rates have been in effect and unchanged since 2015.

There is no opportunity to collect a balance above the Medicaid allowable, as the entire balance is a contractual write-off. For persons to qualify for *Medicare* benefits they or their spouse must have worked long enough to be eligible. If they have not met these qualifications, they may still be eligible for Medicaid benefits. The claims review done for this report identified several dialysis patients that did

[32] https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/downloads/R2703CP.pdf

not meet the criteria to qualify for Medicare and as a result, were on Medicaid. The table below shows the current Medicaid rates for Anderson County, Tennessee of which equal 17% of the FY '17-18 transports. These rates vary from one MCO program to the next. ACEMS has no control over which program a patient is enrolled in.

Figure 53. Tennessee Medicaid Managed Care Allowable Rates (2015)

Tennessee Medicaid Managed Care Allowable Rates (2015)				
	BlueCare	Amerigroup	UHC	TennSelect
Mileage	$2.05	$3.49	$1.12	$1.91
ALSNE	-	-	$103.71	-
ALSE	$118.29	$191.33	$222.07	$119.48
BLSNE	$161.74	$100.70	$160.54	-
BLSE	$119.48	$161.12	$172.84	$119.48
ALS2	$118.29	-	$294.11	-
SCT	$128.13	-	$351.09	-
TREAT NO TRANSPORT (TNT)	-	-	-	-
CORONER	-	-	-	-

Medicaid Supplemental Payment Program

ACEMS participates in the Medicaid Supplemental Payment Program. The 110th Tennessee General Assembly passed the Ground Ambulance Service Provider Assessment Act that requires all ground ambulance providers in the state to participate by paying a quarterly assessment fee based on the number of transports provided. Each provider then receives a supplemental payment quarterly, paid out of the general fund, based on the number of Medicaid claims submitted during a specified quarter. This equates to paying $9.09 per trip to the general fund for all transports done. The supplement paid is $140.30 for each payable Medicaid transport. For the first two quarters for which ACEMS has participated, the service has paid out $78,100 to the general fund and received $242,622 in supplemental payments. This is good for ACEMS as 17% of the transport volume for FY '17/18 is Medicaid and as shown in the previous table, Medicaid Managed Care Organizations in Tennessee (as with other states) have very low reimbursement compared to other payers and to the cost of providing the service. For example, the average ACEMS ALSE payment per trip for Medicare for 2017 was $460.20. Medicaid ALSE, without the supplement, was $142.78. Adding the supplement brings the average for Medicaid ALSE to $283.08 which, while better, is still well below the average cost per transport of $333.09 for ACEMS.

Findings — Medicare/Medicaid Reimbursement Rates & Medicaid Supplemental

- Medicare and Medicaid transports combined comprise 77% of ACEMS transports.
- No matter what rates ACEMS charge for a transport, Medicare pays only 80% of its declared allowable and the remaining 20% is charged to either secondary insurance or directly to the patient.

- Various federal spending cuts have impacted collectable revenue since 2013 and will continue to do so. The predicted loss for sequestration in FY2018 for ACEMS is anticipated to be in excess of $69,000.
- Medicaid rates in Tennessee have remained in effect and unchanged since 2015 and ACEMS has no control over which MCO a patient participates with.
- ACEMS participates in a Supplemental Payment program that has resulted in increased reimbursements for Medicaid transports. While improved, the amount remains well below the ACEMS average cost per transport.

Outsourced Collections

ACEMS uses Wakefield & Associates for outsourced collection of accounts for which they have billed but received no response. These accounts are primarily uninsured or patient responsibility for the balance owed after insurance processing. Wakefield charges 30% of net collected for their service. While this rate may be higher than what some persons are accustomed to for collection of bad debt, Wakefield is actually a service that specifically specializes in collection of healthcare debt. They have additional abilities that standard debt collectors do not, such as extensive services for identification of insurance and other sources of payment and the ability to bill those directly, whereas most services only try to collect directly from the patient. Wakefield appears to be collecting approximately 4.4% on average of the accounts turned over. This is a good return for their service and not below or above what would be expected. The average for collections from an outsourced agency is 3% to 5%. Anything above that would give concern that the billing office was not doing an effective job prior to writing the accounts off to bad debt. This does not appear to be the case for Digitech and ACEMS. It is recommended that ACEMS continue to utilize the services of Wakefield for bad debt recovery.

SAMPLE BILLING AUDIT

As part of the project, the consultants conducted an in-depth analysis of a sampling of claims billed to the Federal health care programs of Medicare and Medicaid. This sampling was from a population of recent claims billed to and paid by these providers. This review of claims is not provided as legal counsel, rather it is an interpretation of the applicable rules, regulations, and laws governing the billing of medical transport services to Federal health care providers, commercial insurance companies, contracted payers, patients and beneficiaries, and/or other parties identified by *ACEMS* and its contracted billing agent, as responsible parties for reimbursement of services provided. Compliance percentages are provided throughout the subsections based on the items audited.

The Sampling Unit consisted of claims identified in this section of the report as *Items.* For the purposes of this sample audit, an *Item* is defined as an ambulance transport claim filed for payment with a Federal health care program including Medicare and Medicaid, for medical transports provided by ACEMS. Each claim may have had multiple charges including ambulance base rates and mileage but should have had no unbundled supplies or other services. The sampling unit for the claims billed to Federal health care providers was drawn from a total population of claims billed to and paid by these payers and was provided to the consultant by ACEMS and their contracted billing agent, Digitech. The process to

identify the Sampling Frame included a request for ACEMS to provide, in electronic format, a list of all calls for which reimbursement was received from Medicare and Medicaid during the identified period (the Population). A sample size of 20 Medicare and 20 Medicaid claims was pulled from the Population to be the Discovery Sample. Each claim was examined and a Compliance Review *Worksheet* was completed. The completed worksheets for the claims reviews are provided as Attachment H titled, Anderson County Claims Review Worksheets, from a Federal payer (defined as Medicare or Medicaid) during the period of July 1, 2016 to June 30, 2017. The review was based on a population of 5,629 items for Medicare and 3,617 items for Medicaid for which reimbursement was received.

The Discovery Sample of 40 claims was identified using the Office of the Inspector General's (OIG) RAT-STATS statistical sampling software. Five (5) spares were identified from each Medicare and Medicaid sample in order to allow for claims that may have been included in the Claims Review Population, and selected for the Discovery Sample, that were not reimbursed by Medicare, Medicaid, or other Federal health care payers.

Sample Audit Objective and Findings

The specific objective of the sample audit was to determine if claims submitted to Federal health programs for reimbursement are accurate, provided proper documentation, and were correctly billed and paid. Special focus is placed on risk areas identified by the Office of the Inspector General (OIG) in their Compliance Program Guidance for Ambulance Suppliers and in their annual Work Plan (https://oig.hhs.gov/reports-and-publications/workplan/index.asp). The consultants examined all submitted documentation for each ambulance transport. Particular attention was paid, but not limited, to the following risk areas:

- Appropriateness of Destination
- Documentation of Medical Necessity
- Service Level (HCPCS) Coding
- Appropriateness of Patient/Beneficiary Signature
- Mileage
- Modifiers
- ICD-10 Coding
- Alteration of Documentation

The following sections detail the findings of the claims review to include Mileage, Medical Necessity, Use of Modifiers, Physician Certification Statements (PCS), Coding of Charges, Condition Coding, Beneficiary Signatures, Receiving Facility Signatures, and Crew Signatures.

Mileage

Chapter 15 of the Medicare Claims Processing Manual, Sections 30.1.2 and 30.2.1 states that ambulance providers and suppliers must submit mileage to Medicare in fractional units and bill to the nearest 1/10th of a mile for transports up to 100 miles. Medicaid and all other payers continue to allow for

rounding up to the next whole mile. The figure below provides a list of Medicaid claims that did not properly round to the next whole mile.

Figure 54. Medicaid Rounding Inaccuracies

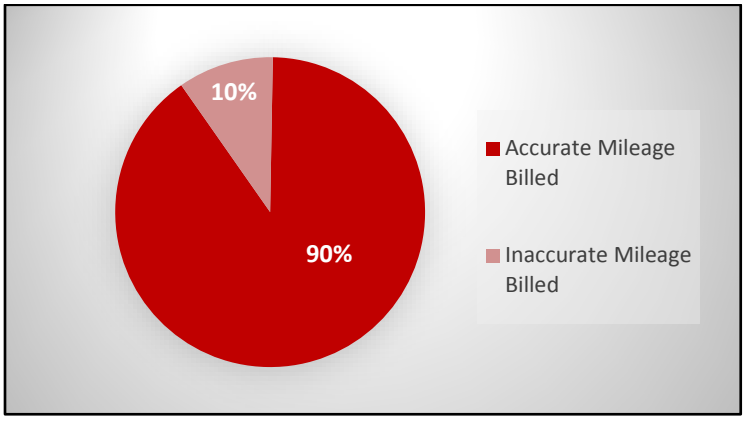
Item #	Account #	PCR	Billed	Comments
7	17-04381	8.4	8.3	Mileage sheet shows 8.3, the CMS-1500 billed 8.4. Medicaid rounding rules apply. Should have been billed to the nearest mile of 9.
13	17-01335	13	13.1	Mileage sheet shows 13, the CMS-1500 billed 13.1. Should have been billed to the nearest mile of 13.
18	16-17665	7.7	8.4	Mileage sheet shows 7.7, the CMS-1500 billed 8.4. Inaccuracy of billed charge. Medicaid rounding rules apply. Should have been billed to the nearest mile 8.

The mileage on the patient care report was compared to the actual miles submitted on the claim form and the consultants utilized Google Maps and MapQuest to verify the shortest distance between the origin and destination for the claims reviewed. Abnormalities from what is determined to be the shortest distance between the origin and destination should be detailed in the patient care report when such occurs. The figurer provides the account number that had deviations from the shortest distance without an explanation. This is followed by a graphical representation of the error rate associated with Medicare mileage billed.

Figure 55. Medicare Mileage Inaccuracies

Item #	Account #	PCR	Billed	Comments
7	16-17534	7.9	7.9	Google Maps shows distance from origin to destination to be 2.7, 2.6 or 3.5 miles. MapQuest indicates 2.3 miles. 7.9 miles was billed to Medicare without an explanation for the additional miles.

Figure 56. Mileage Accuracy Percentage



Medical Necessity

Medicare covers transports in both emergent and non-emergent situations to facilities that are capable of treating the beneficiary's illness or injury, when a beneficiary's medical condition is such that other means of transportation are contraindicated. Chapter 10, Section 10.4.1 (Necessity for the Service) of the Medicare Benefit Policy Manual outlines medical necessity for ambulance services. In any case in

which some means of transportation other than an ambulance could be used without posing a danger to the patient's survival or seriously jeopardizing the patient's health, then no reimbursement will be made for the ambulance services.

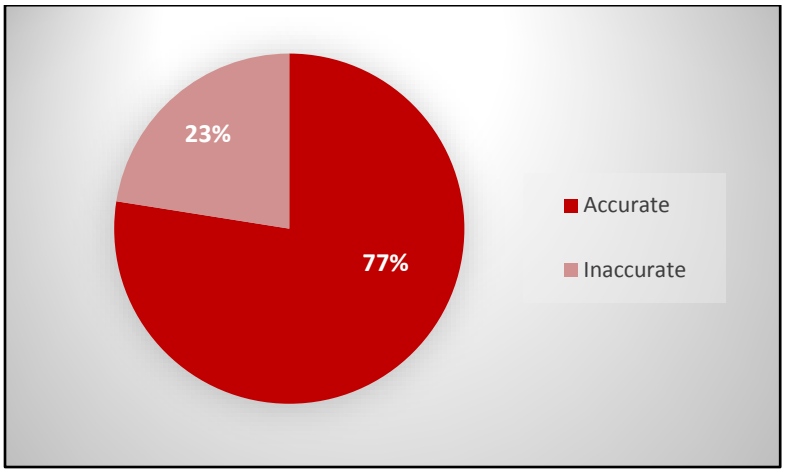
Documentation to support the medical necessity of an ambulance transport needs to provide a detailed description of the patient's condition at the time of transport, along with descriptions of interventions and the patient's responses to those interventions. Any additional documentation to support medical necessity and to validate that the patient could not be safely transported by any other means of transportation would be appropriate for inclusion in the patient care report and is recommended as a best practice to ensure accuracy and mitigate risk. This information should be contained in the patient care report completed by the transporting crew. Additional documents may be presented as support, but the crew's document should provide the information for billing purposes.

Of the 40 claims reviewed, 32 met the medical necessity guidelines. The figures below provide a list of the claims that did not meet medical necessity for the claims that did not provide medical necessity in the patient care report.

Figure 57. Medical Necessity

Item #	Account #	Billed	Comment
6	16-19225	Medicaid	Chart states patient moved to wheel chair by 2-man lift. No information was provided to support why the patient could not have been transported by wheel chair van or other means of transportation.
7	17-04381	Medicaid	Chart provided no reason why the patient needed to go by ambulance and not by wheel chair van.
8	16-10379	Medicaid	The chart did not provide evidence as to why the patient could not go by wheel chair van or other means of transportation.
13	17-01335	Medicaid	The patient was being picked up at the eye doctor and transported back to nursing home. No medical need for an ambulance was documented.
16	16-19644	Medicaid	Chart provided no reason why the patient needed to go by ambulance and not by other means of transportation.
18	16-17665	Medicaid	Chart provided no reason why the patient needed to go by ambulance and not by other means of transportation.
20	16-20422	Medicaid	Chart provided no reason why the patient needed to go by ambulance and not by other means of transportation.

Figure 58. Medical Necessity Percentage



Modifiers

Claims filed for reimbursement by most all insurers, including Medicare and Medicaid, require that they be filed with specific modifiers to identify both the point of origin and the destination of the ambulance transport. The first single digit (letter) modifier indicates the point of origin and the second single digit (letter) modifier indicates the destination. NH for example identifies that the patient was picked up at a nursing home (N) and taken to a hospital (H). It is a requirement of both Medicare and Medicaid that transports be from and to a covered destination in order to be eligible for reimbursement. As an example, transports "to" a physician's office are not considered a covered destination (with limited exception as outlined in the CMS rules and regulations), however, a transport "from" a physician's office "to" a hospital may be covered if other conditions and requirements are met for the purposes of identifying the medical necessity of transport by ambulance to that destination and that the services to be received at the hospital are also medically necessary.

Modifiers may not directly influence payment of a claim, however, they should be used to accurately support the origin and destination documented in the patient care report. Inaccuracy in the use of modifiers can be an identifier of other documentation problems or errors that could cause billing errors and/or put the service at risk.

The figure below provides a breakdown of the original modifiers provided on the CMS 1500 forms.

Figure 59. Original Modifiers

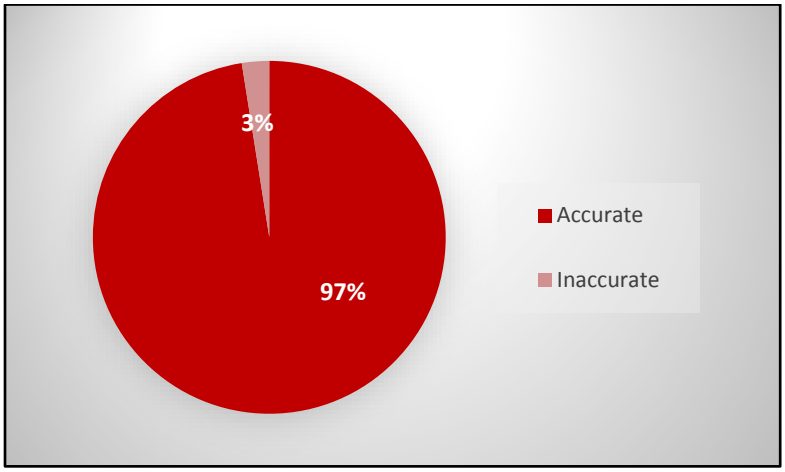
Modifier	Quantity	Modifier	Quantity	Modifier	Quantity
HE	1	HR	2	EH	1
JN	3	JR	8	NH	2
RH	14	RJ	1	SH	5
HN	1	PH	1	JH	1

Of the 40 claims reviewed, one claim was found to have incorrect modifiers. The claim submitted for Medicaid Item 9 provided an original modifier of SH (Scene to Hospital), however, the PCR indicated that the pickup location was a hospital. The correct modifier would have been HH.

Medicare Item 14 and Medicaid Item numbers 6, 7, 8, 13, 16, 18 and 20, were deemed not medically necessary transports as outlined in the medical necessity section of this report, therefore, the GY modifier should have accompanied the origin and destination modifier to indicate that the services were non-covered by Medicare and Medicaid and were being billed for denial.

The figure below, graphically illustrates the percentage of correct modifiers verses the percentage of claims having incorrect modifiers for this claims review. The not medically necessary transports are not counted in the below error rate, as they are calculated into the Medical Necessity section of this report.

Figure 60. Modifiers Accuracy Percentage



Physician Certification Statements

Physician certification statements are required for all Medicare non-emergency transports, when the patient is under the direct care of a physician. The pertinent trips are non-emergencies where the patient is being transported to a skilled nursing facility, nursing home and repetitive for transports for radiation treatment, dialysis, wound care, etc.

Of the 20 Medicare claims reviewed, 7 required a PCS form. 6 forms did not meet the requirements and are detailed in the figure below.

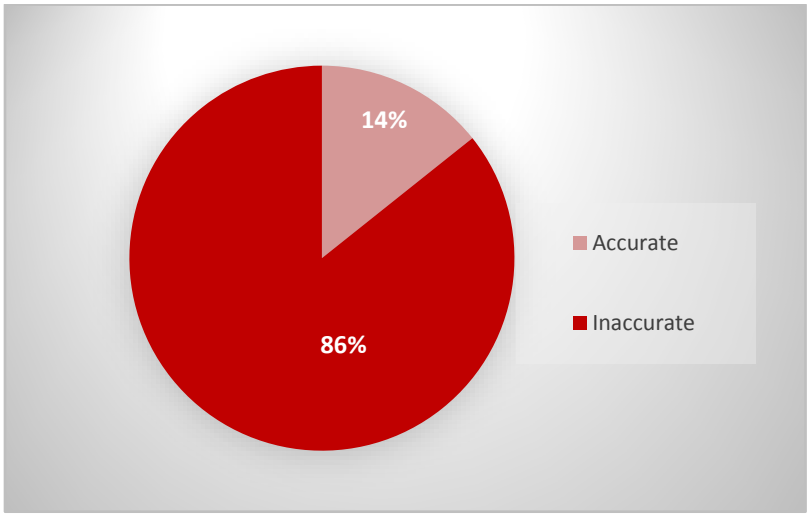
Figure 61. Physician Certification Statement Inaccuracies

Item #	Account #	Comments
6	16-15437	The bed confine question is not answered.
8	17-04998	PCS is incomplete. No date on the form, the bed confined question is not answered, and the level of authorized signer is not circled.

Item #	Account #	Comments
13	16-19723	The bed confined question is not answered.
14	16-13149	The bed confined question is not answered.
17	17-02681	The bed confined question is not answered.
19	17-10094	No PCS was provided for the non-emergent transport.

It would be considered best practice to get physician certification statements on all non-emergent transfers, not just Medicare. That being said, the documentation associated to the patient account should be accurate and complete regardless of the payer. The figure below shows the percentage of accurate PCS forms.

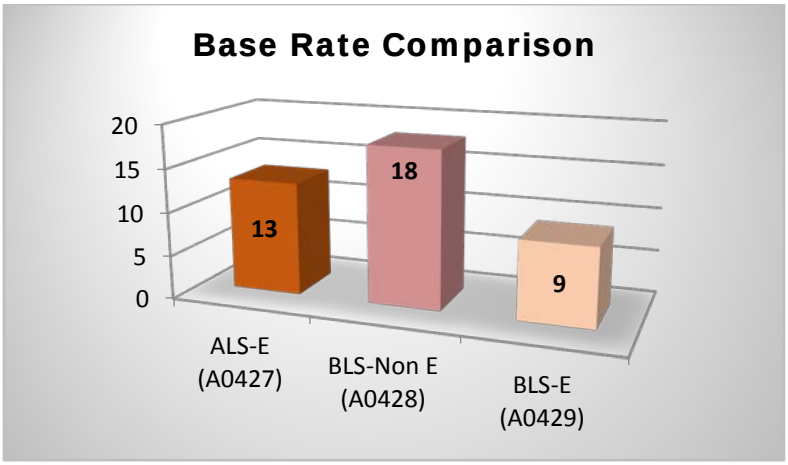
Figure 62. Physician Certification Statement Percentage



Coding of Charges

The claims reviewed for this report provided 80 charges associated with the 40 transports. The breakdown of charges were 40 base rates, and 40 mileage rates. The figure below, graphically illustrates the original base rates.

Figure 63. Original Base Rate Comparison



CMS and the Office of the Inspector General (OIG) have placed special focus on claims that are billed for reimbursement at levels of service higher than that required by the patient at the time of transport and/or are contradictory to the information provided in the Patient Care Report and the supporting documents. Additionally, if transports are not billed at the appropriate higher level of service, the agency could be missing out on revenue that they are due for services provided.

While there are 4 claims with errors, which would indicate an error rate of 10%, 2 errors cost the service money in lost revenue due to billing at a lower level of service than allowable. This would not be looked upon negatively in a Federal payer audit, however, it may be a sign of acuity coding problems. While these may be instances where the billing agent erred on the side of caution, this could indicate a need for additional training of the person (s) responsible for this aspect of coding and charge assignment.

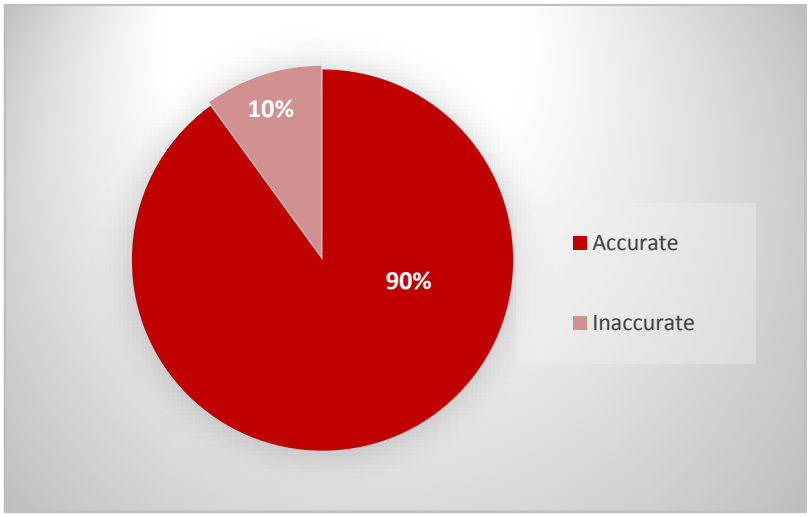
The figure below provides the claims that did not provide adequate documentation to support the level of service billed.

Figure 64. Inaccurate Base Rates

Item #	Account #	Payer	HCPCS Billed	Correct HCPCS	Comments
9	16-10990	Medicare	A0429 BLS-E	A0428 BLS-Non	The PCS shows as a non-emergent transport. Call times are extremely long for an urgent transport. This could be associated with other issues discussed in this report that are diverting ambulance from emergent calls.
4	16-16599	Medicaid	A0427 ALS-E	A0429 BLS-E	Animal bite or sting, fever and allergic reactions are all BLS services.
10	16-18044	Medicaid	A0428 BLS-Non	A0427 ALS-E	Primary symptom was shortness of breath, difficult breathing is an ALS service.
12	17-02978	Medicaid	A0429 BLS-E	A0427 ALS-E	The service level for Seizures is ALS Emergent.

The figure below provides the coding of charges percentage out of the 40 codes provided.

Figure 65. Coding of Charges Percentage



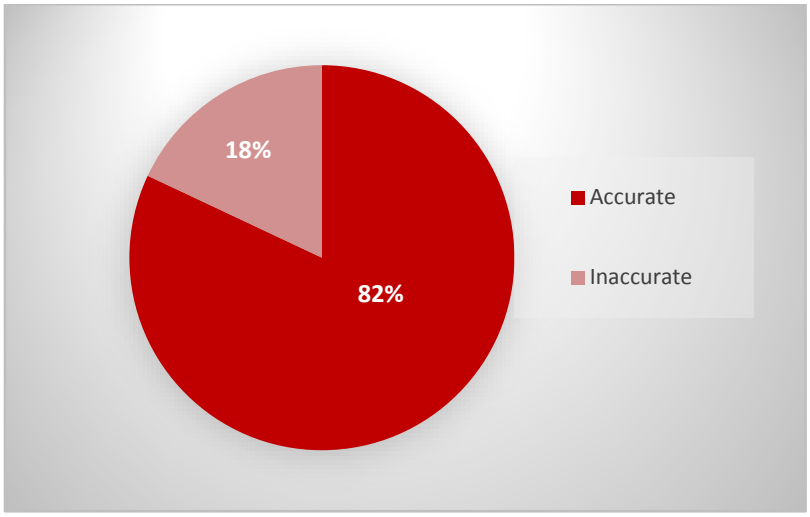
Condition Coding

Effective October 1, 2015 all Medicare ambulance transports require dual diagnosis codes. The primary diagnosis code should reflect the patient's condition at the time of transport and the secondary code must report the patient's need for the ambulance service and personnel at the time of transport.

Medical necessity and coverage of ambulance transport is not based merely on the presence of a specific diagnosis. When billing, the code (ICD10) that best describes the patient's condition at the time of transport, should be selected based on information provided in the patient care report. It is important to report specific codes related to a *diagnosis* only when provided by a physician, otherwise signs/symptoms as observed and recorded by the transport crew at the time of transport or unspecified codes are the best choice to accurately reflect the health care encounter. The patient care report should be reviewed and the claim coded based on each health care encounter and the level of certainty of the patient's condition for that transport. Information received at the time of dispatch (reason for response) is also important and may be relevant in support of the billing of claims.

A total of 29 condition/diagnoses codes were utilized in the billing of the 20 claims for Medicare and a total of 21 condition/diagnoses codes were used for the 20 Medicaid claims billed in this review. The use of appropriate diagnosis/condition coding is demonstrated for 41 of those 50 codes. As shown in the figure below, based on the population of codes used, this is an 18% error rate in the assignment of those condition codes for the claims examined for this report.

Figure 66. Diagnosis and Condition Coding Percentage



The figure below summarizes the claim with incorrect primary diagnosis and condition codes.

Figure 67. Inaccurate Diagnosis and Condition Coding

Item #	Account #	Payer	Comments
6	16-15437	Medicare	Z74.01 (Bed confinement status) should not be the primary code. The chart specifies the need for continuous supervision due to medication, Z74.3.
10	17-09920	Medicare	T78.40XA (Allergy, unspecified initial encounter) was selected for primary code, which is generic. The chart specified a bee sting. T63.441A (Toxic effect of venom of bees, accidental (unintentional), initial encounter would be a more specific code which was supported by the information in the chart.
11	17-00837	Medicare	Primary code of Z99.919A (unspecified injury of unspecified ankle) a more specific code supported in the chart would be S99.911 (Unspecified injury of right ankle).
14	16-13149	Medicare	Z99.81 (Dependence on supplemental oxygen) was used as the primary code, but the chart states patient was on room air. A more appropriate code would be RR26.8 (other abnormalities of gait and mobility).
18	16-14202	Medicare	Z74.09 (Problem related to care provider dependency, unspecified) was coded as a secondary code. The code is not supported in the chart.
4	16-16599	Medicaid	T78.40XA (Allergy, unspecified) coded as primary. A more specific code of S80.869A (Insect bit left leg) would be more appropriate as a primary code.
10	16-18044	Medicaid	Chart states primary symptom is R06.02 (shortness of breath), which would be an appropriate primary code.

Item #	Account #	Payer	Comments
11	17-00590	Medicaid	T88.7XXA (Unspecified adverse effect of drug or medication) was coded from primary. A more appropriate code would be the symptom of shortness of breath (R06.02).
14	17-07452	Medicaid	R06.02 (Shortness of breath), R06.2 (Wheezing) and R05 (Cough) would be appropriate primary, secondary and tertiary codes.

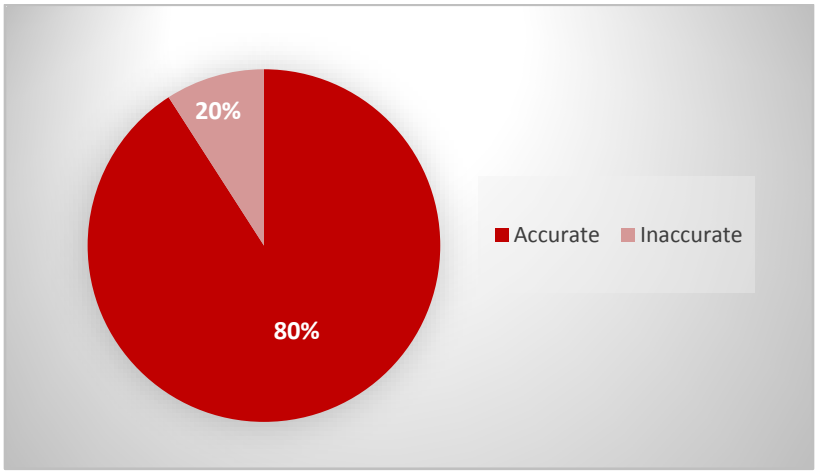
Beneficiary Signatures

Chapter 10, Section 20.1.2 (Beneficiary Signature Requirements) of the Medicare Benefit Policy Manual outlines the specific requirements that must be met for obtaining appropriate patient signatures for billing ambulance claims to Medicare. The signature of the beneficiary is required for Medicare for the purposes of accepting assignment and for submitting claims for transport services. If the patient is unable to sign, the specific mental or physical reason must be documented in the Patient Care Report, or on the Signature Form, specifically stating that the condition prevented the patient from signing, and an appropriate alternate signature must be obtained.

Twenty (20) claims in this review were for transport of Medicare beneficiaries, and 18 contained appropriate patient or acceptable alternate signatures. However, Items 3 and 20, although having acceptable alternate signatures, had no specifically stated reason that the patient was unable to sign. This is a total of 4 claims with an error or missing signature. Medicaid claims do not technically have the same signature requirements, as participation in the Medicaid program constitutes the agreement of assignment and allowance for claims submittal for services. However, as a best practice, and the consultants recommend getting a signature for all claims, no matter the payer source.

The figure below provides the error percentage for the beneficiary signatures required for Medicare claims.

Figure 68. Beneficiary Signature Error Percentage



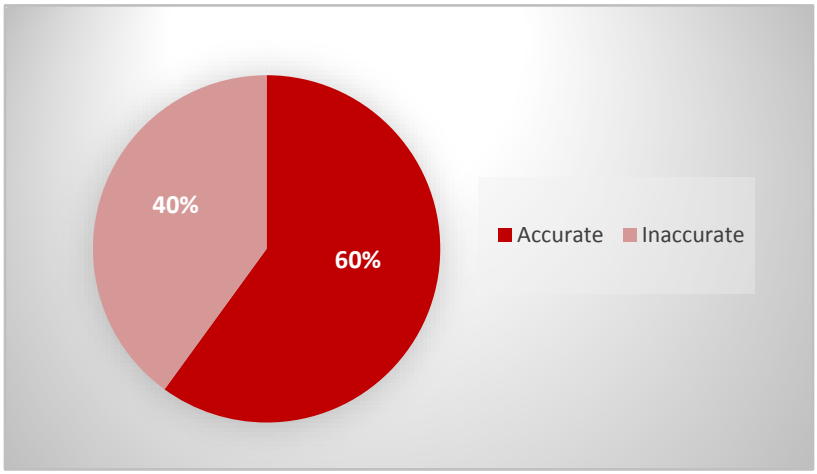
Receiving Facility Signatures

Medicare has implemented the legibility rule which requires that all signatures be legible or have an accompanying printed version of the signors name and any applicable credentials. The Patient Care Report provides a signature section for the hospital/receiving agent to verify the transfer of care from the ambulance provider to the facility. The claim reviewed showed a consistent error in this process for obtaining credentials from receiving facilities personnel.

Of the 40 claims reviewed, 16 claims did not provide all three items for the person signing or that delivered the information. It is best practice to constantly obtain the first and last name and credentials of the receiving representative.

While this does not impact claim reimbursement, as a best practice, additional training is recommended to the crew members concerning the significance of getting complete documentation, including first and last names with credentials. The figure below emphasizes the error percentage for receiving facility signatures.

Figure 69. Receiving Facility Signature Error Percentage



Crew Signatures

Medicare requires that services provided be authenticated by the author, the methods allowed are hand written or an electronic signature. All signatures must be legible, if not a typed or printed signature log must be available, in this case, the printed name section of the patient care report would determine the identity of the author of the medical record. This log or the printed name section of the patient care report should also include the signer's credentials. The claims provided by ACEMS for this sample audit provided crew members signatures on the patient care reports but the credentials were not provided in the printed section of the form. Best practice, to meet the requirements of the rule, is to include the credentials in the printed name section of the patient care report. CMS Publication Medicare Program Integrity Manual, Chapter Three – Section 3.3.2.4 provides additional information concerning signature requirements.

Overall Sample Billing Audit Quantified Results

Figure 70. Error Rate Quantification

Claims Review Findings	Error Percentages
Mileage	10%
Medical Necessity and Coverage	23%
Physician Certification Statement	86%
Modifiers	3%
Coding of Charges	10%
Diagnoses and Condition Coding	18%
Beneficiary Signature	20%
Receiving Facility Signature	40%

Findings —Sample Billing Audit

- In the event of an actual audit the regulating agencies focus on areas with greater than 5% error rates, as well multiple error rates across the various areas reviewed.
- Of the items reviewed *modifiers* were the only area with less than the 5% error rate. All other areas reviewed, however, had higher than 5% error rates.
- ACEMS could be at risk for making errors that could result in inappropriate billing of claims to Federal health care providers.

It is recommended that ACEMS management review, assess, and make process improvements to the areas identified in this report discussed below. These areas may require additional training of staff to improve and ensure compliance with Federal health care provider guidelines.

AMBULANCE FEE COMPARISONS

ACEMS rates were below the levels the consultant would have advised until FY 2017/2018. The adjusted rates are now comparable to other agencies providing both emergent and convalescent services. It is recommended that ACEMS evaluate costs and rates annually, and adjust accordingly. It is important, however, to remember that adjustment of rates does not necessarily mean additional collected revenue. Medicare and Medicaid are reimbursed on fee schedules set by the federal and state governments. ACEMS rates are appropriately above these schedules but they can only collect up to those allowable amounts for these payers. Commercial insurance companies typically do not publish reimbursement rates, therefore the service has little ability to set rates based on such. It is suggested that ACEMS regularly track payments from the major commercial insurance carriers in its service area to develop a solid understanding of the reimbursements from these companies. Trending this data will

assist in budgeting net revenue collections for this segment of the payer mix and will provide ACEMS with an understanding of the anticipated amount to be billed to patients as the balance after insurance.

Coroner rates are not only low, but the service is not even collecting the posted amount. ACEMS should consider not providing this service or should raise the rates significantly and require a guarantee of payment in advance. Treat No Transport rates at $100 are very reasonable. ACEMS may even consider a modest increase, as some insurance companies (and Medicaid programs) are starting to pay for these services, as they have seen the benefit to treating the patient in the home/field and reducing the burden on emergency departments and reducing the associated costs.

ACEMS must ensure that any negotiated contracts are at or above the published Medicare Fee Schedule for the year in which the transports are performed, and adjusted appropriately on an annual basis, if needed, to stay at or above these rates.

Figure 71. ACEMS Charge Master

ACEMS CHARGE MASTER								
Code		2012/2013	2013/2014	2014*	2015*	2015/2016	2016/2017	2017/2018
A0425	MILEAGE	$ 10.00	$ 10.00	$ 10.00	$14.50	$14.50	$14.50	$21.64
A0426	ALSNE	$ 600.00	$ 600.00	$ 600.00	$650.00	$650.00	$650.00	$743.94
A0427	ALSE	$ 605.00	$ 605.00	$ 605.00	$850.00	$850.00	$850.00	$1,177.88
A0428	BLSNE	$ 400.00	$ 400.00	$ 400.00	$550.00	$550.00	$550.00	$619.93
A0429	BLSE	$ 495.00	$ 495.00	$ 495.00	$750.00	$750.00	$750.00	$991.90
A0433	ALS2	$ 715.00	$ 715.00	$ 715.00	$1,100.00	$1,100.00	$1,100.00	$1,704.85
A0434	SCT	$ 825.00	$ 825.00	$ 825.00	$1,300.00	$1,300.00	$1,300.00	$2,055.93
A0998	TNT	$ -	$ -	$ -	$75.00	$75.00	$75.00	$100.00
A0999	CORONER				$100.00	$100.00	$100.00	$100.00

Findings — Ambulance Fee Comparisons

- Evaluate and adjust rates accordingly on an annual basis.
- Eliminate Coroner/ME services or increase rates significantly and require advance guarantee of payment.
- A modest increase to Treat No Transport would be supported by the consultants.
- All contracts with facilities should be at or above the published Medicare Fee Schedule.

ATTACHMENT A

Expanded Recommendations Matrix

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Figure 72. Expanded Recommendations Matrix – Critical Priority

#	Description	Category	Responsible	Priority	Capital / Operating	Immediate Cost	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
1	*Current Model* — Replace current fleet and medical equipment with 20 ambulances and 24 cardiac / physiologic monitors that meet current design specifications. Immediate funding is for six ambulances at $200,000 each and associated equipment costs.	Fleet and Biomedical Equipment	BOCC/ EMS/ Finance	1-Critical	Capital	Vehicles: $1,200,000 Equip: $768,000 Total: $1,968,000	$1,968,000	$1,968,000	$328,000	$328,000	$328,000	$328,000
2	*Two Division Model* — Replace current fleet with 15 Type 1/3 ambulances and five Type 2 ambulances; replace medical equipment with 19 cardiac / physiologic monitors and five automatic external defibrillators (AEDs). Immediate funding is for four ambulances at $200,000 each and two convalescent ambulances at $100,000 each and associated equipment.	Fleet and Biomedical Equipment	BOCC/ EMS/ Finance	1-Critical	Capital	Vehicles $1,000,000 Equip: $500,000 Total: $1,500,000	$1,500,000	$1,500,000	$250,000	$250,000	$250,000	$250,000
3	*911-Only Model* — Replace current fleet and medical equipment with 16 Type 1/3 ambulances and 19 cardiac / physiologic monitor / defibrillators. Immediate funding is for six ambulances at $200,000 each and associated equipment costs; monitor costs are somewhat less than for the Current Model.	Fleet and Biomedical Equipment	BOCC/ EMS/ Finance	1-Critical	Capital	Vehicles: $1,200,000 Equip: $608,000 Total: $1,808,000	$1,808,000	$1,808,000	$301,333	$301,333	$301,333	$301,333

Figure 73. Expanded Recommendations Matrix – High Priority

#	Description	Category	Responsible	Priority	Capital / Operating	Immediate Cost	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
1	Regular OIG exclusion lists checks of all personnel performing EMS related functions (including administration and dispatch).	Admin	EMS	2-High	Operating	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
2	Replace the existing CAD system with a modern, commercial CAD system that integrates data from the 911 telephone system, automatic vehicle location (AVL) system, and provides for computer-driven identification of the closest available ambulance.	Communic ations	BOCC/ EMS/ Sheriff/ 911	2-High	Capital & Operating	$100,000 to $500,000	$0 Mainten - ance only	$0 Mainten - ance only	$0 Mainten - ance only	$0 Mainten - ance only	$0 Mainten - ance only	$0 Mainten - ance only
3	Explore the appropriateness of interdepartmental charges for motor pool services, dispatch services, and Trustee services. EMS should be assessed interdepartmental fees only if that is the regular practice between Anderson County departments.	Finance	EMS/Mayor /Finance	2-High	Operating	$0	$0	$0	$0	$0	$0	$0
4	Reduction of compliance related error rates, identified in the claims audit, to levels below 5% (requires documentation training for all personnel, at hire and biennially)	Finance	EMS	2-High	Operating	$10,000	$10,000	$0	$10,000	$0	$10,000	$0
5	Eliminate purchase of "3 series" ambulances for Type 1 and Type 3 ambulances; specify ambulance chassis to be "4 series"	Fleet	EMS/ Mayor	2-High	Capital	$21,000	$21,000	$21,000	$21,000	$21,000	$21,000	$21,000
6	Complete Ambulance Master Level III EVT certification for 2 motor pool employees, OR consider outsourcing EMS fleet maintenance	Fleet	EMS/ Motor Pool	2-High	Operating	$0	$10,000	$0	$0	$0	$0	$0
7	Replace all future ambulances with 450/4500 chassis to allow sufficient GVWR.	Fleet	BOCC/ EMS/ Finance	2-High	Yes	Capital	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
8	Establish a "low level" beyond which convalescent calls will not be accepted.	Operations	EMS	2-High	n/a	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
9	Establish a sound policy framework in which Anderson County EMS can operate. Establish responder performance, clinical and financial performance expectations that BOCC is wiling to fund.	Policy	BOCC/ Mayor/EMS	2-High	n/a	$0	$0	$0	$0	$0	$0	$0

Figure 74. Expanded Recommendations Matrix – High Priority (continued)

10	Accomplish extreme vetting of any contracts for convalescent transports prior to agreement.	Policy	EMS/ Law	2-High	Operating	$0	$0	$0	$0	$0	$0	$0
11	Separate emergency response and convalescent care operations and deployment; staff convalescent care ambulance with EMTs; transport vehicles and equipment are less costly. Reduce availability of convalescent care transports as opposed to 24/7.	Policy - Operations	BOCC/ Mayor/ MS	2-High	n/a	Could result in reduction of cost and revenue. Detailed study required.						
12	Review, assess and make process improvements to billing areas identified in the Sample Billing Audit; provide training in these areas. Could result in savings and avoid Medicare audit.	Policy and Training	EMS	2-High	Operating	$0	$0	$0	$0	$0	$0	$0
13	Screen and correct Patient Care Reports (PCRs) for compliance before forwarding to Digitech. Could result in savings and avoid Medicare audit.	Policy and Training	EMS	2-High	n/a	$0	$0	$0	$0	$0	$0	$0

Figure 75. Expanded Recommendations Matrix – Medium Priority

#	Description	Category	Responsible	Priority	Capital / Operating	Immediate Cost	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
1	Cancel and do not enter in to additional contracts that provide for transport rates below Medicare fee schedule rates.	EMS / Mayor /Law Dept	EMS/ Mayor Law	3-Medium	Yes	Operating	$0	$0	$0	$0	$0	$0
2	Increase the involvement of the Medical Director in field EMS "ride alongs," in clinical education, and in interaction with field EMS personnel.	Essential medical	EMS	3-Medium	Operating	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
3	Replace existing stretchers with new, comparable equipment, including upgrading stretcher mounts to GVS standards.	Fleet	BOCC/ EMS/ Finance	3-Medium	Capital	$0	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
4	Develop bariatric ambulance capability. One of the new ambulances purchased should include bariatric equipment.	Fleet	BOCC/ EMS	3-Medium	Capital	$0	$10,000	$0	$0	$0	$0	$0
5	Assign shift lieutenants "off ambulance" to allow for appropriate supervisory span of control.	Operations	EMS	3-Medium	Operating	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000
6	Maintain the contract with Wakefield for bad debt recovery.	Policy	EMS	3-Medium	Operating	$0	$0	$0	$0	$0	$0	$0
7	Conduct a comprehensive salary study. Develop a plan to improve EMS compensation to at least the median range of similar agencies in the locality, including public EMS agencies, fire agencies, and law enforcement agencies.	Policy - Employee related	EMS/ Motor Pool	3-Medium	Operating	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
8	Develop and implement a leadership development program for all levels of the organization.	Policy - Employee related	EMS	3-Medium	Operating	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
9	Review existing service agreements with Roane and Union counties to assure they represent good value for all parties. Analyze Methodist Medical former contract and current ambulance usage in order to confirm the operational needs for a new contract.	Policy - Financial	EMS/ Finance/ Mayor	3-Medium	n/a	Operating	$0	$0	$0	$0	$0	$0
10	Discontinue providing dead body transports.	Policy - Operations	EMS/ Mayor	3-Medium	Operating	Savings: time & wear	($10,000)	($10,000)	($10,000)	($10,000)	($10,000)	($10,000)
11	Consider adding or re-allocating an ambulance to serve the Briceville/New River area. Assumes convalescent care is continued.	Policy - Operations	BOCC/ EMS	3-Medium	Operating	$0	$750,000	$750,000	$750,000	$750,000	$750,000	$750,000

Figure 76 Expanded Recommendations Matrix – Medium Priority (continued)

12	Consider adding or re-allocating an ambulance to serve the Briceville/New River area. Assumes convalescent care is eliminated.	Policy - Operations	BOCC/ EMS	3-Medium	Operating	$0	$0	$0	$0	$0	$0	$0
13	Provide E911 Dispatchers with a medical necessity check list for medical necessity confirmation of convalescent care transports when ACEMS Transport Coordinator is not available. Provide training and confirm compliance.	Policy and Training (could result in saving and avoid Medicare audit	EMS	3-Medium	Operating	$0	$0	$0	$0	$0	$0	$0
14	Explore the possibility of obtaining grounds and maintenance services from the Anderson County Buildings and Grounds Department. Discontinue the use of unsupervised prisoner labor at EMS facilities.	Support Services	EMS/ Mayor	3-Medium	Operating	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
15	Explore the possibility of obtaining information technology services from the Anderson County Information Technology Department.	Support Services	EMS/Mayor	3-Medium	Operating	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
16	Consider implementing the National EMS Management Assoc. "EMS Field Training and Evaluation Program" to bolster new hire on-boarding.	Training	EMS	3-Medium	Operating	$11,000	$0	$7,000	$0	$7,000	$0	$7,000

Figure 77. Expanded Recommendations Matrix – Lower Priority

#	Description	Category	Responsible	Priority	Capital / Operating	Immediate Cost	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
1	Negotiate contracts for patient transport reimbursements at an amount at or above the Medicare allowable rate. (Ongoing)	Policy	EMS/ Law	4-Lower	n/a	$0	$0	$0	$0	$0	$0	$0
2	Develop an employee uniform policy that is acceptable to both the Board of County Commissioners, the citizens of Anderson County, and the Anderson County EMS staff.	Policy - Employee related	BOCC/ EMS/ Hospital	4-Lower	Operating	$50,000 to $75,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000
3	P-Cards - additional documentation	Policy - Financial	EMS	4-Lower	n/a	$0	$0	$0	$0	$0	$0	$0
4	The computer-aided dispatch (CAD) system should interface directly with the patient care reporting system to assure that all EMS incidents are properly documented,.	Communications	EMS/ Sheriff/ 911	Yes	$ 10,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
5	Develop and fund a plan to provide adequate stations for Anderson County EMS. Stations should include adequate crew quarters, as well as apparatus bays sufficiently large to clean vehicles inside and out, including removal of the ambulance stretcher without taking the ambulance vehicle out-of-doors.	Facilities	BOCC/EMS/ Engineer/ Finance	Yes	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
6	Develop individual budget line items for essential services such as the E911 Communications charges, billing and collection services and other material expenses that are now combined under one line item, Other Contractural Services.	Finance	EMS/ Mayor/ Finance	4-Lower	n/a	$0	$0	$0	$0	$0	$0	$0
7	Mark and equip all staff and support vehicles	Fleet	EMS	4-Lower	Operating	$0	$20,000	$0	$0	$0	$0	$0
8	Conduct a relief or staffing factor study based on at least three years of leave time usage.	Policy - Employee related	EMS/ HR Outside HR consultant	4-Lower	Operating	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

ATTACHMENT B

Responses to Findings of Fact Questions

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CONSULTANT RESPONSES TO QUESTIONS AND COMMENTS RAISED AFTER THE FEBRUARY 22, 2018 FINDINGS OF FACT PRESENTATION

Questions are provided in bolded text and consultant answers are provided in un-bolded italics.

Can we stop transporting the non–emergency (Convalescent) runs? If so, who would provide those transport services?

Yes, the county could vacate the convalescent transport business. Legislative action would be required to "open up" the county to private providers (currently not allowed by the county EMS resolution). This service is not a responsibility of county government, but the county could chose to regulate convalescent ambulance service through licensing of convalescent providers.

It was reported that all but 1 station is too small. Do we need them? Can we close down all stations but 1, put the EMS employees on 12 hour shifts instead of 24 (they don't have to have a place to sleep this way) and post the ambulances in certain areas of the county such as Fire Halls, etc. This would also help with employee fatigue as reported during the meeting. This would also help with building materials being purchased for remodeling the stations. Would this also increase response times?

The model suggested is possible to implement, and could be considered by the Board of County Commissioners as a matter of policy. While there might be benefits to adoption of this model, there are also costs to consider, both tangible and intangible. Tangible costs include the greater number of employees required to staff 12-hour shifts (9.84 FTE per unit versus 6.5 FTE on 24 hour shifts), greater wear and tear on vehicles, increased fuel costs (vehicles that are posted often require engines to remain on to keep the crew cab and patient area at even temperatures). Intangible costs include harm to employee morale and the county being perceived as a less-desirable employer. Response times are not impacted by the use of stations or not; they are a factor of having a sufficient number of ambulances in service at the proper times of the day.

Request bodies for transport to autopsies be performed by law enforcement (or another agency)?

Transporting dead bodies is simply not an EMS function. An alternative arrangement needs to be developed. No matter which county agency (or contractor) provides this service, the agency needs to be properly compensated for the cost of providing the service.

Possibly re-assign employees to insure (newer employees) are placed with veteran employees instead of having a shift full of new employees.

A "best practice" involves placing new employees with specially-selected and trained "field training officers" (not necessarily long-tenured employees or supervisors) for a period, using standardized evaluation guidelines and a formal recruit training task book. The National EMS Management Association's "EMS Field Training and Evaluation Program" is the gold standard for this process. Parenthetically, the consultants did not note that any shift was fully staffed with new employees.

Do unmarked vehicles need to be marked or removed?

Most commonly, staff vehicles operated by credentialed EMS personnel are marked and equipped to serve as emergency response vehicles (EMS agency markings, warning lights and sirens, medical equipment, and communications equipment). Vehicles operated by non-credentialed staff (supply delivery and fleet service) are also usually marked. Take home vehicle policies are based on a number of issues such as response availability and at times, a means to provide benefits in lieu of salary increases. The consultants have no opinion regarding the county's policy other than the issue of marking the support vehicles appropriately and according to policy.

Can all billing be conducted in – house and not contracted? What is the financial benefit?

There is no financial benefit to performing the billing functions in-house. Moreover, there is greatly increased legal risk. Competent billing companies not only provide the best chance for maximum revenue recovery, but they have the expertise to keep their clients safe from rule violations, regulatory problems, and entanglement with audits. A small billing operation is particularly challenging, as an agency like ACEMS would likely only employ 1-2 billing staff. Turnover of any sort or vacations, etc. would negatively impact cash flow and ongoing training is significant. Moreover, an in-house billing operation would incur high initial costs for billing software, plus annual licensing fees. The consultants would never recommend taking the EMS billing function in-house from a competent contractor. There was also a question from a committee member about keeping up with changes from CMS. That is another benefit of a billing company. They have people whose job it is to do precisely that.

From Committee Member

% cash collected compared to claims billed total (old billing firm)
% cash collected compared to claims billed total (new billing firm)
This is a good judge of how well the new billing firm is doing. This would assume the billing charges have remained the same, since "billed charges" is nothing except a number on paper. If they raised the rates it would only affect private pay billing. If they did raise the rates we would expect the cash collected % to be lower since reimbursement has not gone up very much. I think Medicare did go up a little but not much.

Has the audit firm had any experience with ambulance services that provide a sliding fee schedule based on the patient's income level? Charges would be the same but then a reduction applied based on income.

Generally, this practice is not permitted. The majority of ambulance payments are made by governmental agencies that pay on their own fee schedule, and the ambulance service has no choice about what it gets. Also, federal law requires that Medicare be billed the lowest rate that any other customers receive, so if a service were to bill some patients below the Medicare fee schedule rate, the agency would be required to refund the difference for each Medicare call.

We are averaging collecting $295 but some customers are billed $1,500. That does not make sense to me.

This is a normal circumstance. Commercial insurance carriers (and a few self-pay patients) are the only ones impacted by the ambulance service's published rates. If an agency wishes to increase revenue, it raises rates – but still only gets what Medicare and Medicaid pay.

Charges MUST be same to ALL customers...Very Old CMS rules. So that needs to be explained to the coroner's office.

...as CMS issues regulations that limit reimbursement, the Medicare Advantage Plans (those that elect to leave Medicare and switch to a commercial plan) those plans follow, then the commercial insurance (under 65) plans pick up on a way to limit disbursing funds and they follow...using CMS as guidance. Some are slow to react but some a quicker to react to follow what traditional Medicare does (CMS).

It is a good idea to get a monthly report to review the Accounts Receivable Aging Report BY Insurance Plan and see the % of charges each plan is reimbursing, ask the billing company

questions....it keeps them on their toes. Paying any billing company based on the % of reimbursement rate (NOT % of charges) is always a good thing to do. In health care the initial charge is nothing except a starting point. WHY? Medicare rules since beginning "Pay the LESSOR of charges or fee schedule". That is why health care always keeps their charges higher than they expect to be paid. Also, as far back as I can remember. CMS dictates you cannot charge a Medicare patient any more than the charge to any other patient. The starting point is to charge everyone the same charge.

However, there is no reason you cannot apply a "discount" but only after you post that initial standard charge to ALL...It is just a game we are required to play to satisfy CMS basic rules. If we are charging the coroner or anyone else less, we must start the initial charge as the same as Medicare charge, then apply a discount to the contracted rate. Let me know if I need to clarify this or print those rules off CMS website.

Transporting a dead body is not an AMBULANCE service, even though Anderson County has elected to provide this service using ambulances and paramedics. It falls completely outside of ambulance billing and transport regulations. Medicare and Medicaid are not involved in the payment for these transports.

Services must make a reasonable effort to collect the Medicare deductible and coinsurance amounts. This is true with other payers as well (with the exception of Medicaid, as there is no balance after insurance.) It is highly recommended that rates, IE the Charge Master, be the same for all payers. There are limited exceptions that may be entertained for non-residents, but this is not the norm. As the questioner pointed out, discounts are applicable and legal. There are many instances in which a discount would be applicable and appropriate and these discounts do not need to be the same across the board. There should be written policies outlining specific instances, such as prompt payment, charity, contractual, etc. It is not advisable to provided discounts below the published Medicare Fee Schedule Allowable. The organization can offer charity discounts and write off of balances, but this should be a written policy developed using the Federal Poverty Guidelines. Standards should also be put in place for determining if a patient/family meets the definition of Medically Indigent which would allow for discounted payments and/or write offs.

From EMS employees

“The EMS audit presentation brought out a lot of information that was surprising and even shocking for me. Many of the issues seem almost impossible to fix without major changes.

However, I would like to submit some questions for the Audit Team from Fitch if that's possible.
Specifically, my questions have to do with the response time issue. It seemed that the "19 minute" number made a major impression on everyone on the committee.

Would it be possible to have a map of the county created that shows the location of each station? I have seen maps generated that show the response time from each station in different colors. For example up to 8 minutes might be green, with the 8-12 minutes response time area being orange and the 12 minute + response area being red or something similar. This would give us a visual tool to discuss this critical subject with the committee members and others.

We have performed a comprehensive operational analysis and many maps are included in the report. The challenge faced in Anderson County is that the ambulances are so busy that they often do not (a) respond from their home station, and (b) often respond outside of their first (or second or third) due areas. Unlike a fire department (which protects buildings that do not move throughout the day), EMS units protect people, whose needs change by location and time of day (for example, many Anderson County residents commute to workplaces outside the county each day). So EMS coverage needs are determined somewhat by geography and somewhat by population density (which changes throughout the day).

I would also recommend asking for a map showing suggested locations for station relocation or additional stations. It would be interesting to see what they would recommend for the number of stations and locations.

The report contains information about the need for both EMS units and stations.

I would also like to hear their recommendations on shifts vs. more units, etc. In other words, is the answer more units or changing the shifts?

There are no single correct answers for these questions. It is clear that if Anderson County is going to provide both emergency and convalescent ambulance service as an exclusive provider, more resources are needed.

Finally, I'd like to hear what they consider a reasonable UHU for 12 hour and 24 hour trucks. I'm not sure how we monitor that unless we add an additional time on the PCR for back at the station and/or back in the county. When a crew transports to Oneida or Rhea County, etc. they are only half way through the call even though the patient has been unloaded.

Time on task is starts from unit dispatch and end when the ambulance is clear/available for the next call (not necessarily back at their station or post, but available for a call). If the ambulance is out of county, then when it comes back into the agency service area and can take the next call, the time on task measure ends. Industry best practices dictate that units with total time on task greater than .40 should not be staffed on a 24-hour schedule, because crews are not likely to get the 5 uninterrupted hours of sleep necessary for safe operation on a 24-hour shift. A 12-hour ambulance unit can safely be on task up to 90% of the time. Please note that we are aware of the long time-on-task of Anderson County's EMS units. Unfortunately, the CAD currently used for ambulance dispatch does not capture the information needed to completely analyze this issue.

As for the work load and cost per response, I'm wondering if going to a different type of deployment might help out. We had looked at the BLS truck with ALS chase car type response before. I don't recall why we did not look any further into it, but it might warrant another look. A BLS response would certainly be cheaper.

A two-tiered system generally costs more than a single tier system, because there will always be some inefficiencies where an ALS unit is needed and only a BLS unit is needed, and vice versa. "Chase cars" similarly add cost while providing only a limited value, as an ambulance must also come to transport the patient. Chase cars (also termed quick response vehicles) can be effective in larger systems with higher call volumes. We will discuss the inclusion of BLS units into the system, IF the county decides to remain the convalescent ambulance provider.

Losing money on every single response is really devastating news. With our pay being sub-par regionally and our work load higher than most, if not all, county funding seems to be the only answer. We cannot do things much cheaper than we are right now.

It appears to us that some public funding (beyond transport revenue) will be required to support adequate EMS in Anderson County. This is typical in the counties in Tennessee and North Carolina that we looked at as benchmarks.

Well, just a few questions and thoughts. I have a lot more of both however I'll keep them to myself for now. Thanks for your consideration. It's certainly a stressful, but exciting time to be here." "If we do go to ALS only, that is with same amount of trucks or more?"

We did not divide service "ALS/BLS" because most of ACEMS' emergency calls are BLS. We looked at 911 versus convalescent. To achieve an improved response performance, ACEMS could do 911 only, with about the same number of unit hours (perhaps a few less).

From Committee Member/Commissioner

Was there any analysis completed on the expenses of the organization and if they are in line with a service of our size?

Yes. Generally speaking, Anderson County EMS is a very low-cost operation compared to similar services, particularly considering that it does not receive many typical services from the county (buildings and grounds, information technology, or capital funding).

Will we receive any additional information regarding the feedback gathered from the employee surveys?

Yes. The survey is discussed and information about the responses provided in the report.

Any feedback regarding the direction and effectiveness of the director Mr. Sweet and leadership?

Because of a lack of funding, ACEMS has not invested in leadership development in any meaningful way. Few lieutenants, captains, managers, and deputy directors have participated in significant leadership development programs. Director Sweet has, in our estimation, been placed in an impossible situation (expected to maintain a busy service without adequate funding, capital replacement, aged equipment, low staff salaries, etc.). Leadership has been required to make many "no win" decisions, which personnel attribute to the Director individually, when in fact those decisions are controlled by others. Accordingly, he is held accountable by his staff for many challenges that he cannot fix (poor vehicles, equipment, and stations, low pay and high workload), which reflects in their unhappiness. While there is surely room for improvement at all levels of ACEMS leadership, this cannot happen in a vacuum. We are of the opinion that another experienced, competent EMS director, even assisted by an experienced and educated leadership team, placed at the head of this system would be unlikely to achieve any different results in the leadership and employee engagement arena.

Are there suggestions on ways to increase revenue and/or decrease expenses?

Please see the body of the text. It is our conclusion that the revenue stream has been close to maximized. While it is possible to change EMS system models and thus alter the expense pattern, it is clear that Anderson County EMS cannot be a "positive cash flow enterprise" while delivering an acceptable level of 911 emergency medical service.

From Committee

I hope they can highlight that the EMS spending over revenue issues, as noted in their charts and attached, have been around for 5 years. Plus, when you add to this the funds normally used to buy two ambulances that have been used for operating costs, the shortfalls are even more significant. The Mayor and Department have still not proposed a plan for dealing with this. They need to take the lead in developing a multi-year plan and budget with funding needs for County Commission to consider. To me after seeing the presentation, this is the one major conclusion this audit needs to point out.

The revenue and spending issues are thoroughly discussed in the report. The EMS Department has been placed in a very difficult position, given the County Commission's historical insistence on a "pay for yourself" approach to this important public safety function. The Commission has been unwilling to fund even the minimum policy requirements that it has established (maximum vehicle age and mileage), leading to a widespread belief that a "strategic plan" will not be a meaningful document. We hope that, using the results of this study, the County Commission will propose a reasonable EMS plan and will commit to providing the necessary funds to capitalize and operate the system and serve the community.

Forwarded (no author/party noted)

Please ask the Medicare reimbursement person at the audit firm to give us DETAIL of what this means in the way of (hope for) extra payment to the ambulance service. I am sure they should have this information and will save me a lot of time trying to pull the rates for our area.
From CMS: Feb 9, 2018 extended Medicare "expired" provisions: "add-on payments for ambulance services....." How does that help us? Was it a true increase add-on or just extending the amount we were getting before it expired. CMS and IRS often has laws that "sunset" or "expire", then congress extends them. This could just be an extension of what we were already receiving. The word "add-on" just alerted me to ask if that could possibly include an increase for inflation. We need to have someone stay on top of these governmental fee schedules. It would be nice if the audit firm would have someone there send us routine announcements that CMS sends out if it is related to ambulance services....since we are their client they should not charge us to do that.

This is just an extension of what you were already getting. It has been going on for some time. There was a 33-month extension (the one that expired 12/31/17) previously. The original adjustment was from 2010. Had the expiration remained in effect, it would have meant that ACEMS (whose transports are Urban in nature) would have lost 2% of their Medicare Allowable reimbursement. As the extenders were passed for five years (through 2022) they will not be "losing" any revenue related to that. Over the course of a year, had they lost it, 2% would have been a significant amount of collectable revenue for a cash-strapped service.

ATTACHMENT C

Comparison to 50 Benchmarks

FITCH
& ASSOCIATES

Comparison to 50 Benchmarks for the Optimal System

The figures that follow provide notations based on consultant observations and information reviews that they could document, partially document, or not document various aspects of the optimal EMS system against ACEMS. Comments are provided for clarification as needed. The symbols used are as follows. D: Documented, **PD:** Partially documented, **ND**: Not documented.

Of the 50 benchmarks detailed below, the consultants were able to document only 10 benchmarks, 28 were partially documented and 12 were not evident to the consultants. Policy direction and funding support by the County Commission is needed so that the agency can even attempt to meet any number of optimal system benchmarks.

911 COMMUNICATIONS		COMMENTS
Public access through a single number, preferably enhanced 911	D	Citizen access to EMS is via 911. There are multiple PSAPs in the county.
Coordinated PSAPs exist for the system.	D	The Sheriff's Office is the primary PSAP for unincorporated areas. Several municipalities also receive 911 calls. ANI/ALI information is transferred between all PSAPs except Norris.
Certified personnel provide pre-arrival instructions and priority dispatching (EMD) and this function is fully medically supervised	PD	The Sheriff's office 911 staff are trained in and utilize the APCO card system. EMS callers to other 911 centers are not afforded pre-arrival instructions.
Data collection which allows for key service elements to be analyzed	PD	The CAD system is outdated and of a "homemade" nature. Time data is captured. ANI/ALI, phase 2 geo-information is not captured. CAD, Street Eagle, and E911 telephones are not and cannot be inter-connected.
Technology supports interface between 911, dispatching & administrative processes	ND	There are no inter-connections between systems (CAD, 911, AVL, and ePCR).
Radio linkages between dispatch, field units & medical facilities provide adequate coverage and facilitate communications	ND	The county is served by multiple radio systems across 4 different radio bands. EMS does not have access to all of these systems, and there is no cross-patching capabilities. There are "dead spots" where EMS unit are unable to communicate by radio. Allied agencies generally do not attempt to communicate with one another via radio at incident scenes.

Key D=Documented, PD= Partially Documented ND=Not Documented

MEDICAL FIRST RESPONSE		COMMENTS
First responders are part of a coordinated response system and medically supervised by a single system medical director.	PD	First response services vary widely. The City of Oak Ridge provides paramedic-level first response. At the other extreme, some of the volunteer fire departments provide limited first response at the EMR level. Al first responder agencies fall under the medical director's authority per state rule, but there is little involvement.
Defined response time standards exist for first responders.	ND	
First response agencies report/meet fractile response times.	ND	
AED capabilities on all first line apparatus.	PD	
Smooth transition of care is achieved.	D	EMS is clearly the lead agency for EMS interactions, with the possible exception of the City of Oak Ridge. No difficulties in patient care transitions were reported.

MEDICAL TRANSPORTATION		COMMENTS
Defined response time standards exist.	ND	There are no response time standards for any component of the EMS system
Agency reports/meets fractile response times.	D	The EMS agency regularly analyzes and reports its response performance in a number of venues. There are no enforced response time standards and current response times are quite long.
Units meet staffing and equipment requirements	D	Vehicles and equipment meet relevant state standards. However ambulances and cardiac monitors are well beyond their expected service life.
Resources are efficiently and effectively deployed	PD	ACEMS utilizes a combination of station-based 24-hour units and peak activity units (12 and 14 hour). Units are re-located in accordance with demand, with limited street-corner posting at very low system levels. The number of ambulances available is often insufficient, due to competing demands from emergency and convalescent calls.
There is a smooth integration of first response, air, ground and hospital services	PD	Responses appear to be reasonably well integrated. The lack of common radio channels and inter-agency communication practices is less than optimal, but municipal independence appears to overcome efforts to coordinate.
Develop/maintain coordinated disaster plans	PD	ACEMS has policies and procedures available for disasters and multiple casualty incidents. However, the system has zero "surge capacity"

MEDICAL TRANSPORTATION		COMMENTS
		and would be totally dependent on outside resources if a significant MCI were to occur. The MCI hazard level is medium to high, with several major highway transportation corridors passing through the county. ACEMS has a converted ambulance bus, but few members of the service are trained to operate it.

MEDICAL ACCOUNTABILITY		COMMENTS
Single point of physician medical direction for entire system.	PD	There is a single medical director for the entire system. She has limited involvement in EMS. She does develop and amend protocols and conducts chart review for specific call types. She does not engage in field response or teaching of EMS continuing education.
Written agreement (job description) for medical direction exists.	D	
Specialized medical director training/certification.	PD	The medical director is an emergency physician at Methodist Hospital. She is not a graduate of an EMS fellowship program.
Physician is effective in establishing local care standards that reflect current national standards of practice.	PD	Tennessee is a “state protocol” state. The medical director has some input and has taken steps to advance local protocols.
Proactive, interactive and retroactive medical direction is facilitated by the activities of the medical director	PD	Most medical direction is administrative in nature, with retrospective chart reviews regularly occurring. The medical director does not engage in field “ride alongs” and does not teach in the EMS continuing education program.
PCR/QI data transparency for MD review	D	The medical director has full access to the ImageTrend ePCR reporting system and can review any chart at will.
Clinical Education/Development Effectiveness	D	The EMS Department offers a full program of EMS continuing education, including respected national certifications. Employees identify the deputy director responsible for training as the “clinical go to” person for the organization.
Clinical Education Efficiency	D	The clinical education program appears to meet the needs of the staff, and staff members described being very satisfied with the program.

CUSTOMER/COMMUNITY ACCOUNTABILITY		COMMENTS
Legislative authority to provide service and written service agreements are in place.	PD	EMS operates under a BOCC resolution that addresses some important areas but ignores others. The BOCC has not funded EMS sufficiently to meet the county's own prescribed standards.
Units and crews have a professional appearance.	PD	Units and crews observed and surveyed appear to be reasonably professional in appearance, except that t-shirts are worn as a daily uniform. Units seem to be in reasonable condition, but are outdated. Many are beyond their useful service lives.
Formal mechanisms exist to address patient and community concerns.	PD	The department handles customer concerns appropriately. Many of the frequent complaints cannot be addressed by EMS because of conditions beyond their control.
Independent measurement and reporting of system performance are utilized.	ND	There is no independent oversight of the EMS Department. The director reports to the County Mayor, but receives heavy input from individual county commissioners. The BOCC as a whole does not seem to be concerned with clinical or operational performance, focusing only on the minimization of expenditures.
Internal customer issues are routinely addressed	PD	Internal customer (employee) issues are of great concern to department management. However, these concerns cannot be effectively addressed because of a lack of adequate funding. Employees identify top needs as (a) adequate ambulance vehicles; (b) modern bio-medical equipment; (c) appropriate EMS facilities. These all require funding from the County Commission.

PREVENTION & COMMUNITY EDUCATION		COMMENTS
System personnel provide positive role models.	ND	The level of fitness of some staff members does not present a good example to the community. Members were observed smoking and chewing tobacco in uniform and in public.
Programs are targeted to “at risk” populations.	ND	ACEMS engages in very limited public education/awareness programs. Resources are not provided for this purpose.
Formal and effective programs with defined goals exist.	ND	ACEMS engages in very limited public education/awareness programs. Resources are not provided for this purpose.
Targeted objectives are measured and met.	ND	ACEMS engages in very limited public education/awareness programs. Resources are not provided for this purpose.

ENSURING OPTIMAL SYSTEM VALUE		COMMENTS
Clinical outcomes are enhanced by the system.	PD	Limited outcome data and medical director feedback suggest that critical call types, such as STEMI and STROKE are enhanced by system performance. Code STEMI patients go directly to the interventional (cardiac cath) laboratory. Accurate identification of STEMI patients is difficult due to the condition of the cardiac monitors.
Ambulance Response Utilization and transport Utilization (UHU) is measured and hours are deployed in a manner to achieve efficiency and effectiveness.	PD	There are insufficient unit hours available to meet the emergent and the convalescent needs of the system.
Ambulance cost per unit hour & transport document good value.	PD	Costs are well below expectation, in part due to the lack of adequate capital funding (“free” buildings, aged ambulances and biomedical equipment).
Service agreements represent good value	PD	Contracts with nursing homes are standard in nature.
Non-emergency ambulance effective & efficient	ND	ACEMS by county resolution is the sole provider of emergent and convalescent ambulance in the county. However, resources (ambulance and personnel) are not adequate to handling both areas. EMS is continually in pursuit of all possible revenue, often at the expense of availability of ambulances for emergency calls. “Mutual aid” is often utilized. The City of Oak Ridge has voiced its desire to not provide so much mutual aid, because the city is left unprotected while their ambulances run 911 calls throughout the county – because,

ENSURING OPTIMAL SYSTEM VALUE		COMMENTS
		in turn, county ambulances are tied up on convalescent transports.
Non-Ambulance but medically necessary (MAV) services are effective and efficient	ND	The county does not provide non-ambulance services.
System facilitates appropriate medical access	D	
Financial systems accurately reflect system revenues and both direct and indirect costs.	PD	Some expenses were paid on behalf of ACEMS by other funds. This is readily clear only with access to year end CAFRs.
Revenues are collected professionally and in compliance with regulations.	PD	Claims reviewed showed need for improvement in several area. Service levels are appropriate. Documentation and PCS needs significant improvement to mitigate compliance risk.
Tax subsidies when required are minimized.	PD	Tax subsidies, particularly capital funding, are inadequate to meet the needs of the EMS department. Anderson County's "pay for yourself" philosophy cannot sustain an emergency/non-emergency ambulance service at a level sufficient to adequately serve the county.

ORGANIZATIONAL STRUCTURE & LEADERSHIP		COMMENTS
A lead agency is identified and coordinates system activities.	PD	*Tennessee statutes and administrative rules provide that ACEMS is the lead agency for EMS in the county. The county EMS resolution further reinforces the exclusivity of ACEMS.*
Organizational structure and relationships are well defined.	PD	*The organization has appropriate administrative staff for its organizational size and function. There appears to have been some "title inflation," with administrative staff performing ministerial functions accorded a "Deputy Director" title without the authority and responsibility typically associated with a deputy department head. The span of control of the single field supervisor not assigned to an ambulance is high compared to similar services.*
Human resources are developed and otherwise valued.	PD	*Human resources are developed to a limited level, commensurate with available resources. Some first-line supervisors have attended the National EMS Leadership Academy Level I program.*
Business planning and measurement processes are defined and utilized.	PD	*ACEMS operates in what is clearly a "survival mode." Leadership and staff focus their*

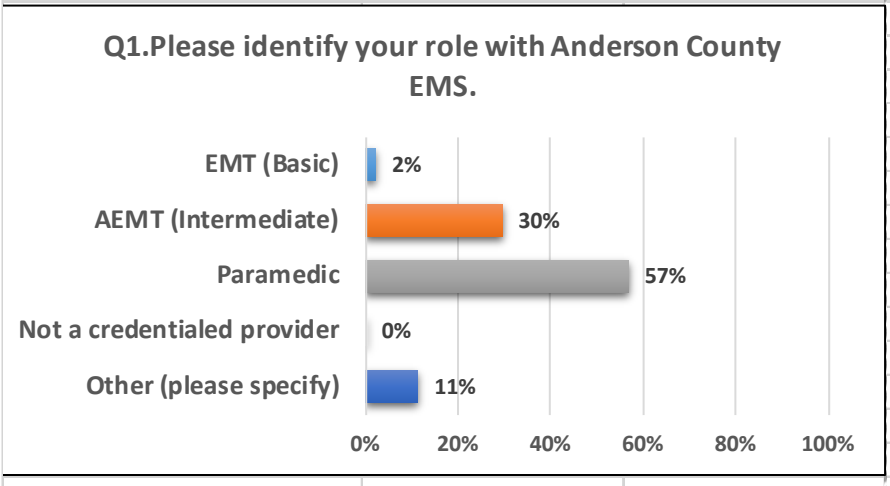
ORGANIZATIONAL STRUCTURE & LEADERSHIP		COMMENTS
		energies on getting through the day, with little left for future planning. County processes do not provide for the commitment of resources for future years.
Operational and clinical data informs/guides the decision process.	PD	*To the extent permitted by technology (which is limited), data is used to inform managerial decisions.*
A structured and effective performance based quality improvement (QI) system exists.	PD	*QI efforts are limited and focused on a few critical clinical performance measures. Resources do not permit response location QI or other more advanced measures that rely on technology.*

ATTACHMENT D

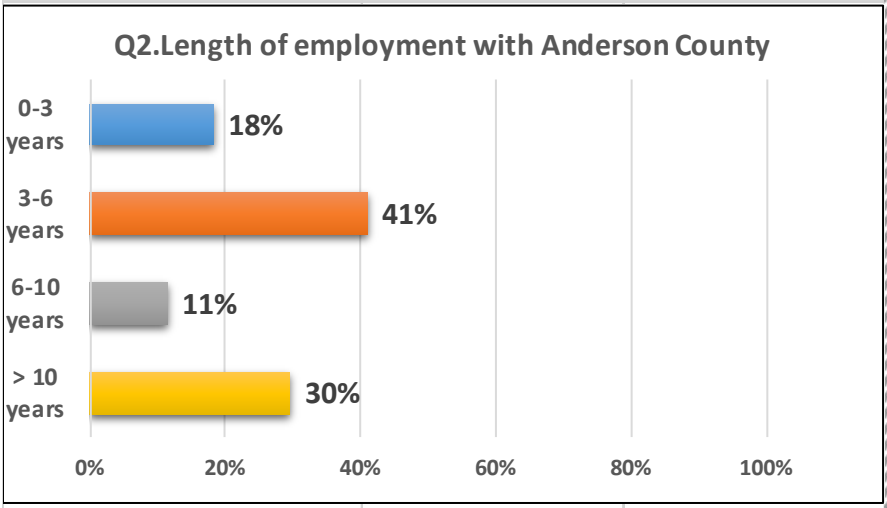
Employee Survey Results

FITCH
& ASSOCIATES

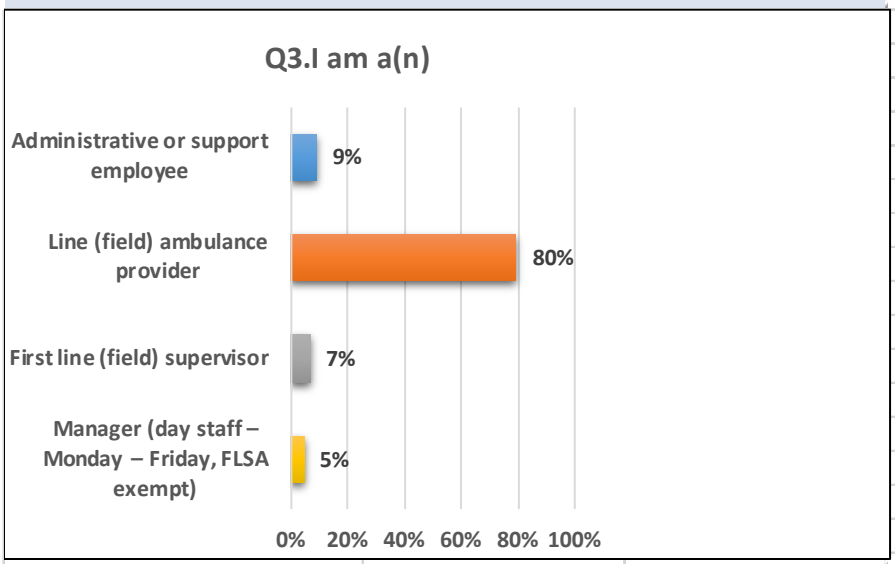
Q1.Please identify your role with Anderson County EMS.		
Responses	Count	Percentage
EMT (Basic)	1	2%
AEMT (Intermediate)	13	30%
Paramedic	25	57%
Not a credentialed provider	0	0%
Other (please specify)	5	11%
Total	44	



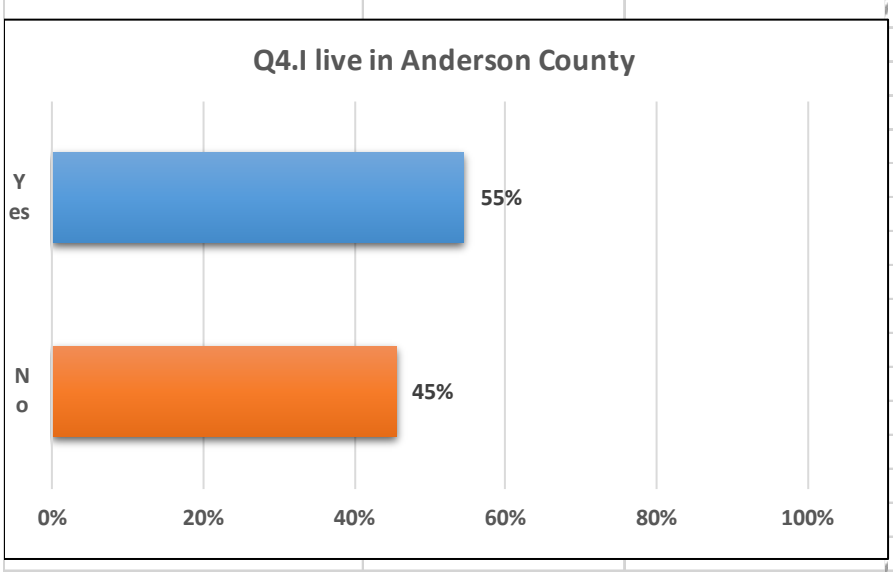
Q2.Length of employment with Anderson County.		
Responses	Count	Percentage
0-3 years	8	18%
3-6 years	18	41%
6-10 years	5	11%
> 10 years	13	30%
Total	44	



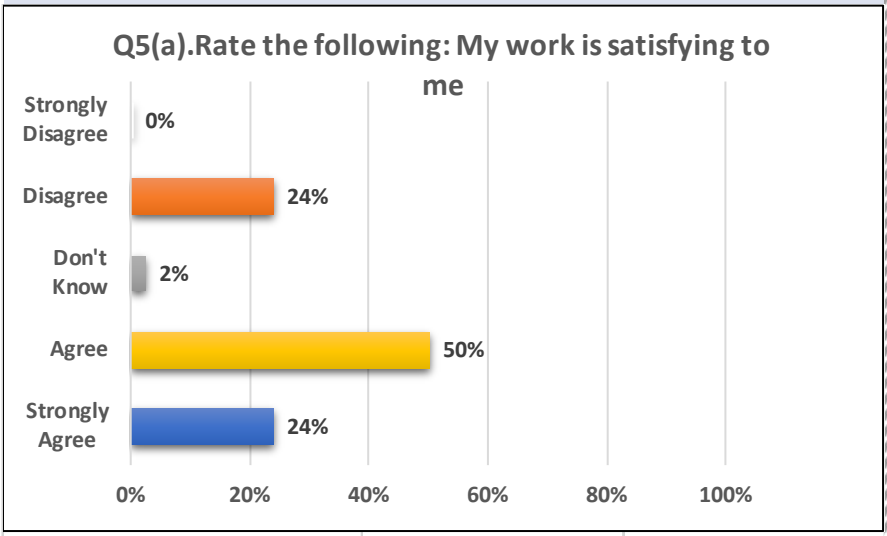
Q3.I am a(n):		
Responses	Count	Percentage
Administrative or support	4	9%
Line (field) ambulance provider	35	80%
First line (field) supervisor	3	7%
Manager (day staff – Monday	2	5%
Total	44	



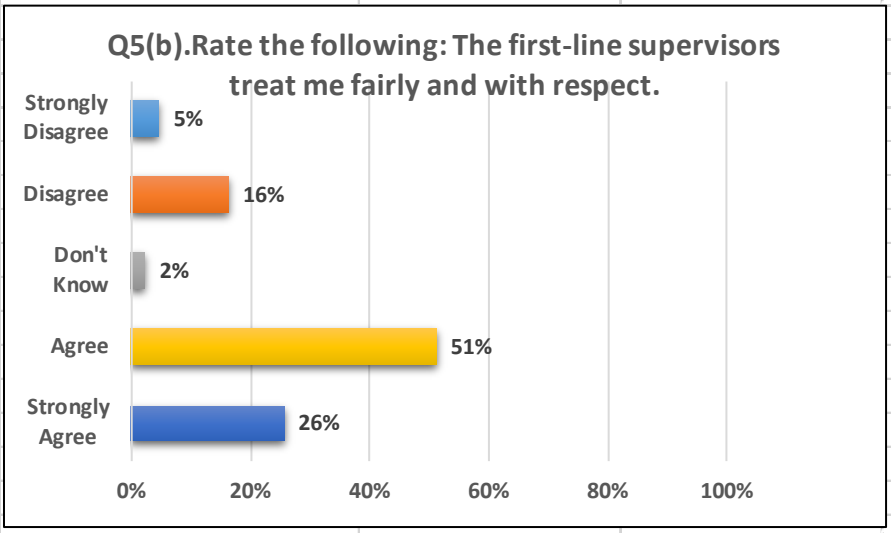
Q4.I live in Anderson County.		
Responses	Count	Percentage
Yes	24	55%
No	20	45%
Total	44	



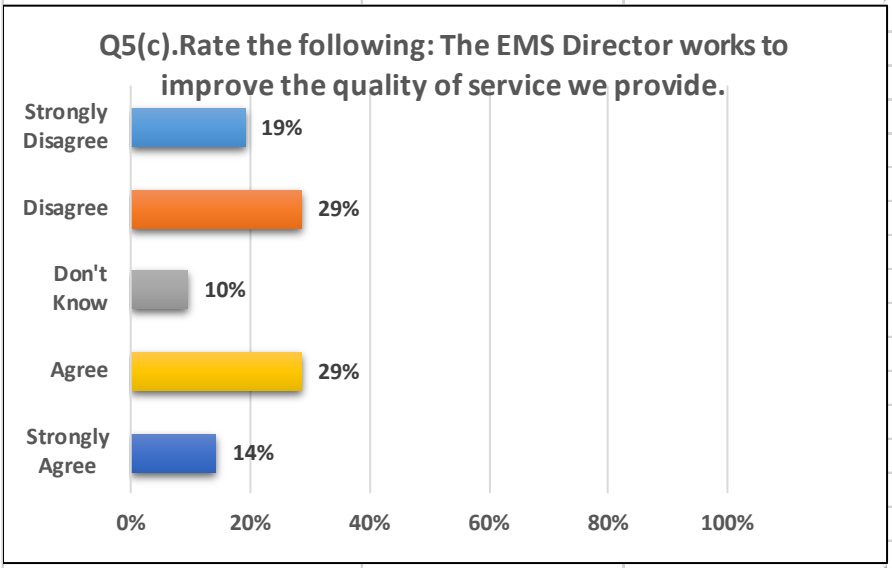
Please provide your feedback.		
Q5(a).Rate the following::My work is satisfying to me.		
Response	Count	Percentage
Strongly Disagree	0	0%
Disagree	10	24%
Don't Know	1	2%
Agree	21	50%
Strongly Agree	10	24%
Total Responses	42	



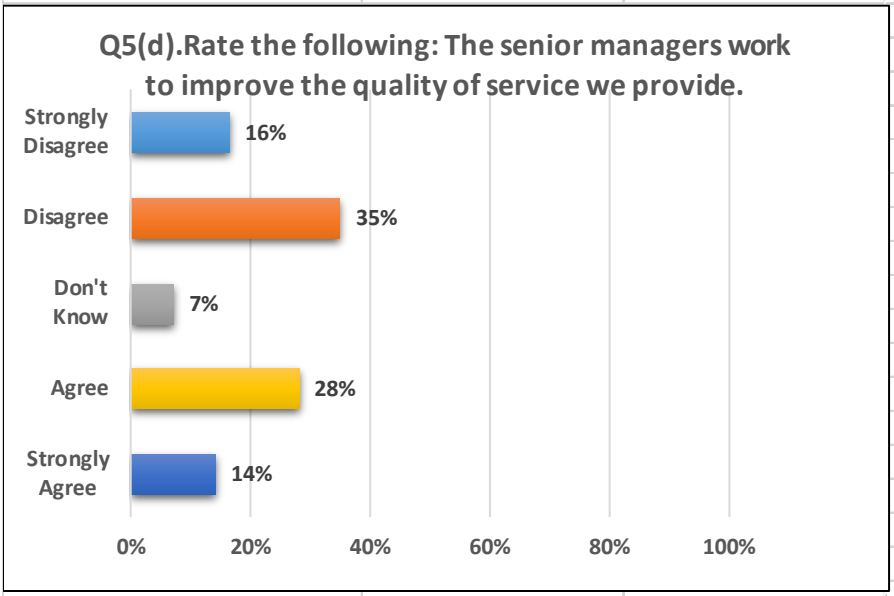
Q5(b).Rate the following::The first-line supervisors treat me fairly and with		
Response	Count	Percentage
Strongly Disagree	2	5%
Disagree	7	16%
Don't Know	1	2%
Agree	22	51%
Strongly Agree	11	26%
Total Responses	43	



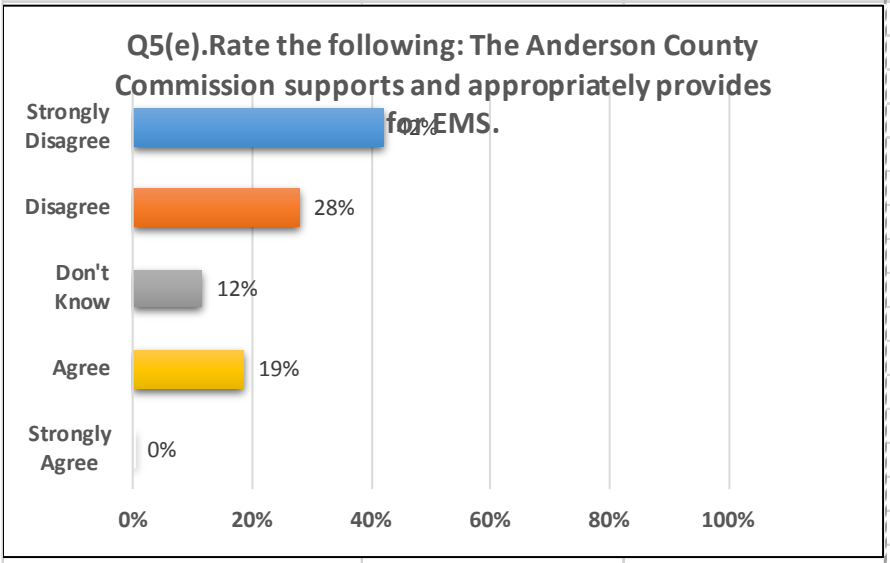
Q5(c).Rate the following::The EMS Director works to improve the quality of		
Response	Count	Percentage
Strongly Disagree	8	19%
Disagree	12	29%
Don't Know	4	10%
Agree	12	29%
Strongly Agree	6	14%
Total Responses	42	



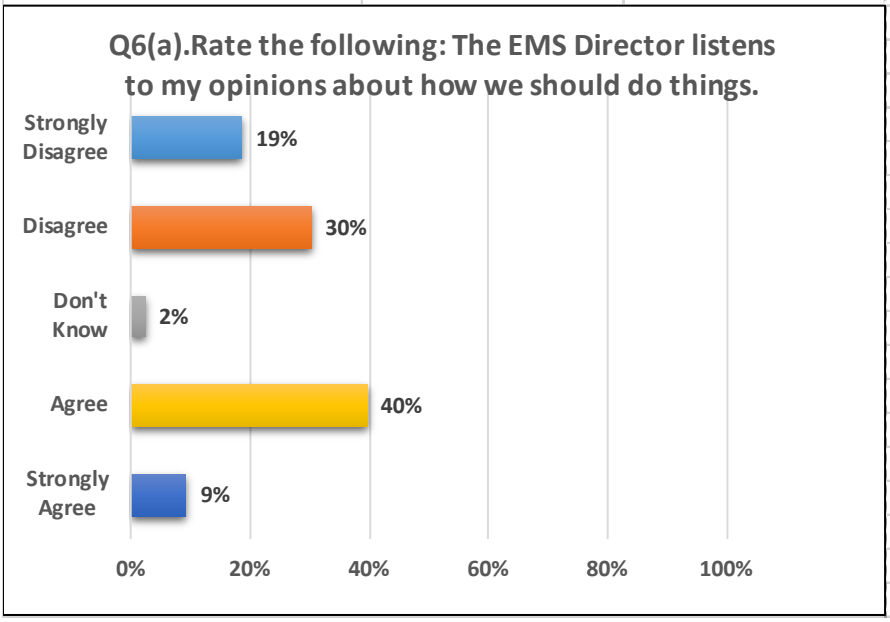
Q5(d).Rate the following::The senior managers work to improve the quality		
Response	Count	Percentage
Strongly Disagree	7	16%
Disagree	15	35%
Don't Know	3	7%
Agree	12	28%
Strongly Agree	6	14%
Total Responses	43	



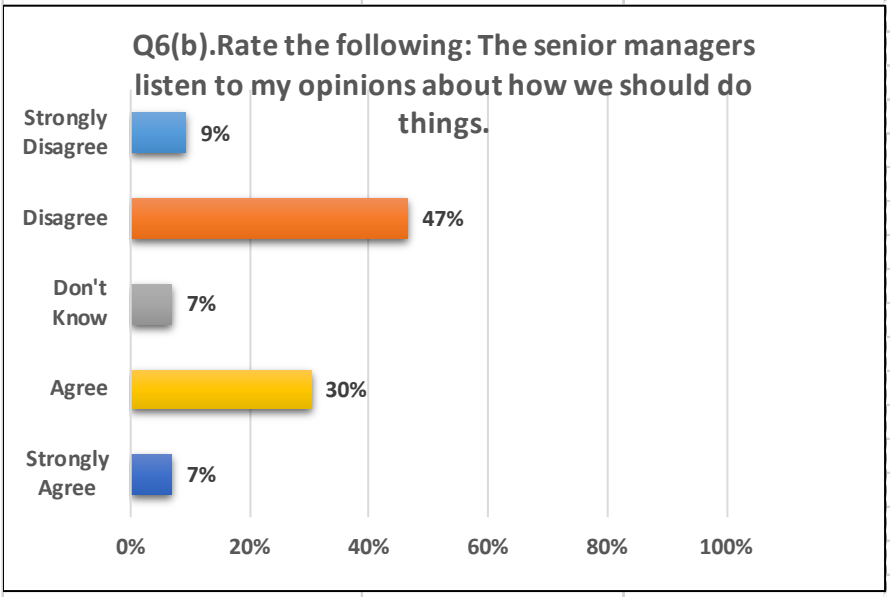
Q5(e).Rate the following::The Anderson County Commission supports and		
Response	Count	Percentage
Strongly Disagree	18	42%
Disagree	12	28%
Don't Know	5	12%
Agree	8	19%
Strongly Agree	0	0%
Total Responses	43	



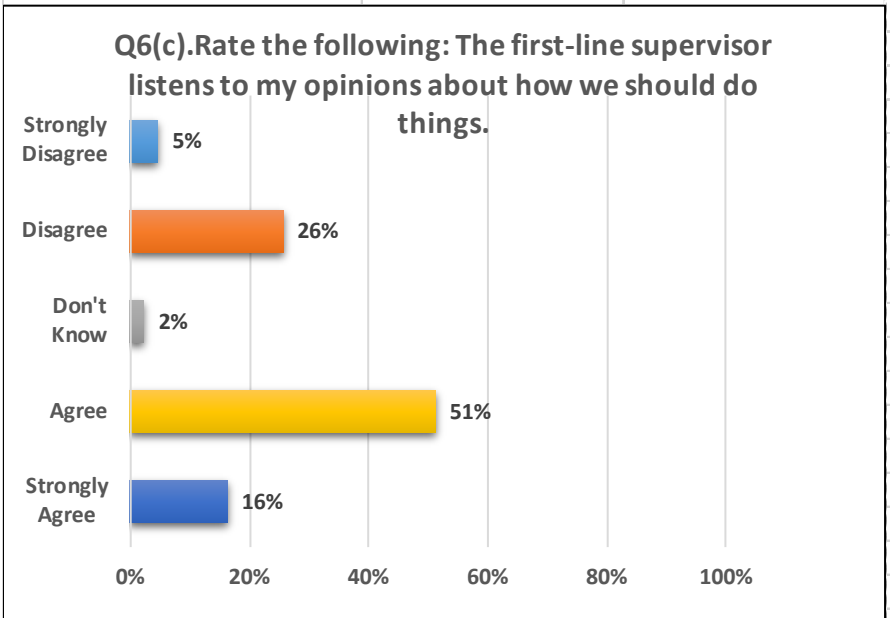
Please provide your feedback.		
Q6(a).Rate the following::The EMS Director listens to my opinions about		
Response	Count	Percentage
Strongly Disagree	8	19%
Disagree	13	30%
Don't Know	1	2%
Agree	17	40%
Strongly Agree	4	9%
Total Responses	43	



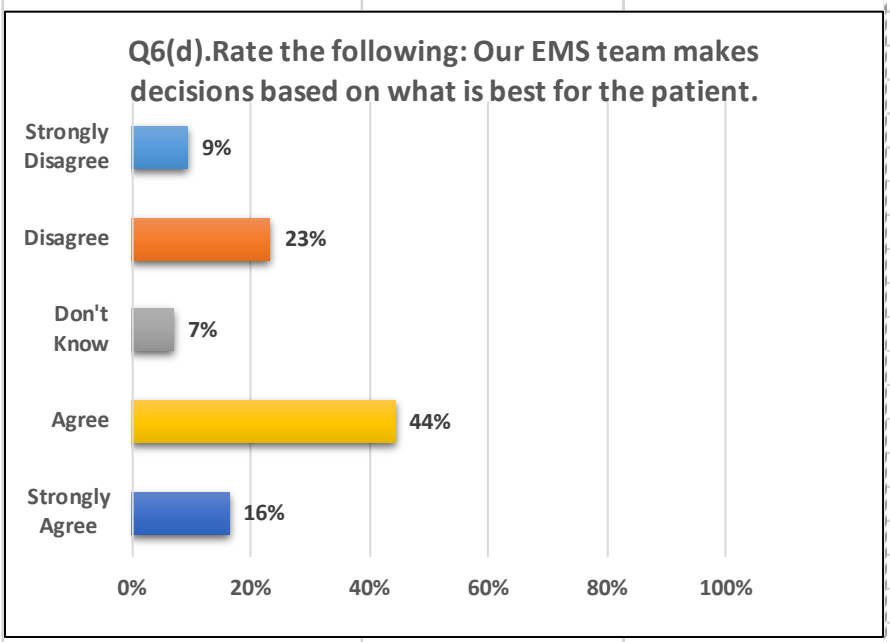
Q6(b).Rate the following::The senior managers listen to my opinions about		
Response	Count	Percentage
Strongly Disagree	4	9%
Disagree	20	47%
Don't Know	3	7%
Agree	13	30%
Strongly Agree	3	7%
Total Responses	43	



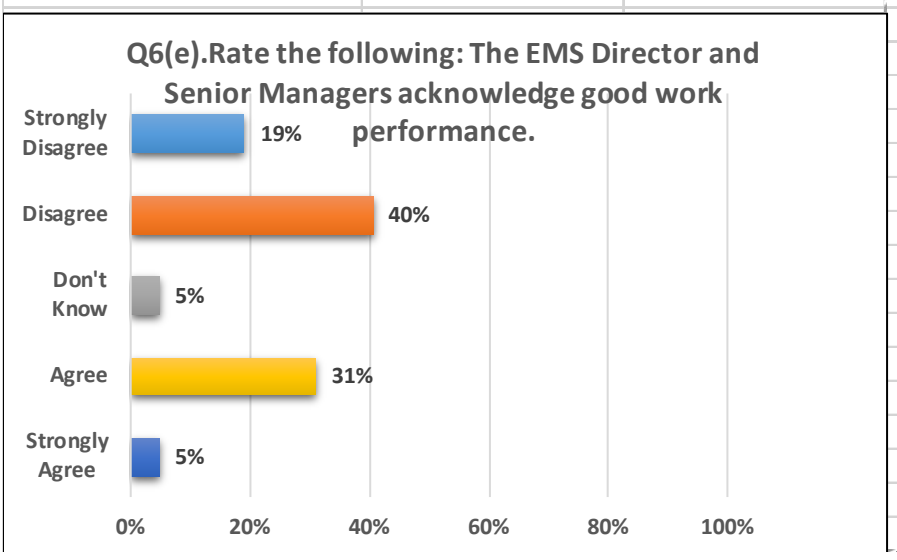
Q6(c).Rate the following::The first-line supervisor listens to my opinions		
Response	Count	Percentage
Strongly Disagree	2	5%
Disagree	11	26%
Don't Know	1	2%
Agree	22	51%
Strongly Agree	7	16%
Total Responses	43	



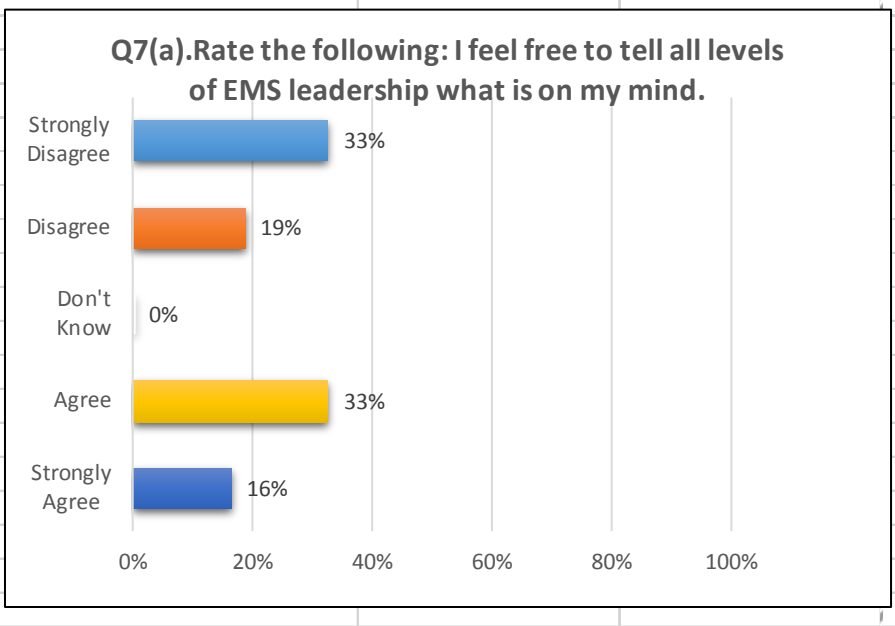
Q6(d).Rate the following::Our EMS team makes decisions based on what is		
Response	Count	Percentage
Strongly Disagree	4	9%
Disagree	10	23%
Don't Know	3	7%
Agree	19	44%
Strongly Agree	7	16%
Total Responses	43	



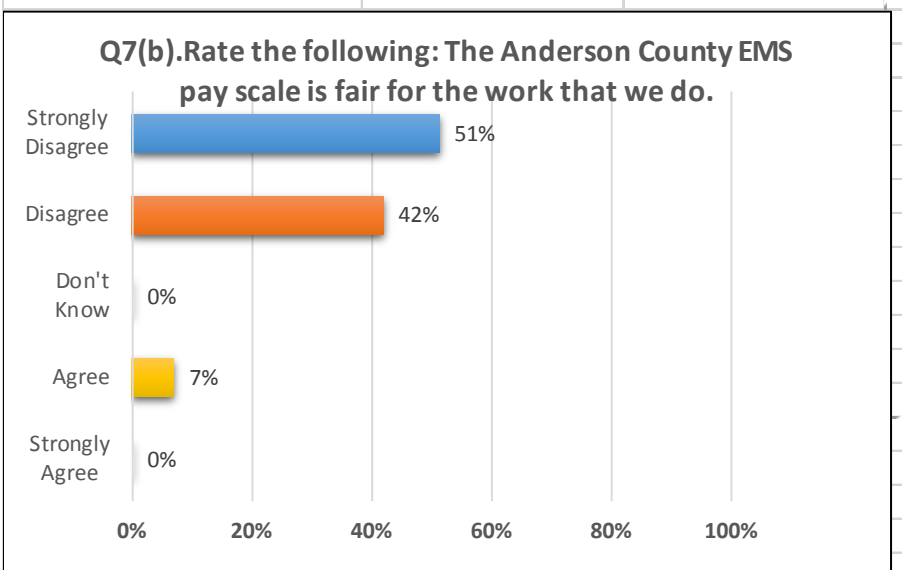
Q6(e).Rate the following::The EMS Director and Senior Managers		
Response	Count	Percentage
Strongly Disagree	8	19%
Disagree	17	40%
Don't Know	2	5%
Agree	13	31%
Strongly Agree	2	5%
Total Responses	42	



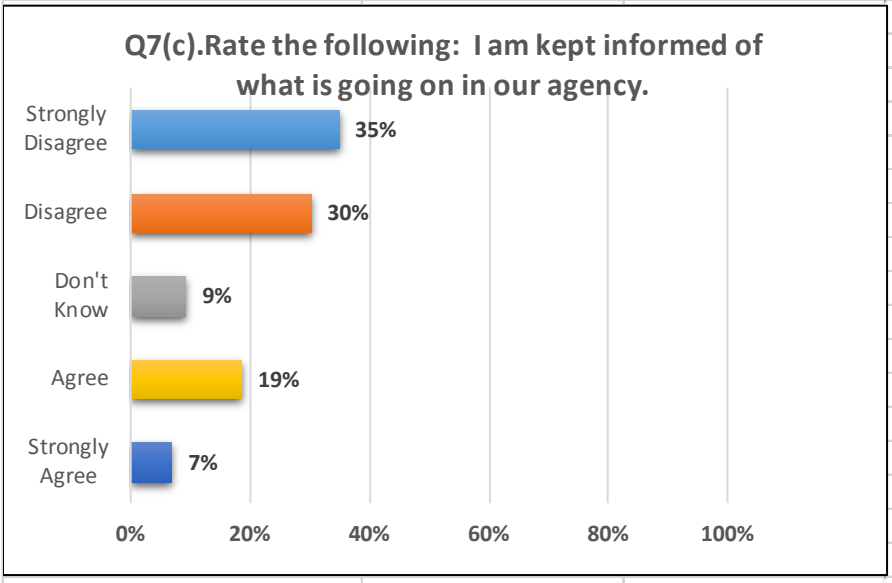
Please provide your feedback.		
Q7(a).Rate the following::I feel free to tell all levels of EMS leadership what		
Response	Count	Percentage
Strongly Disagree	14	33%
Disagree	8	19%
Don't Know	0	0%
Agree	14	33%
Strongly Agree	7	16%
Total Responses	43	



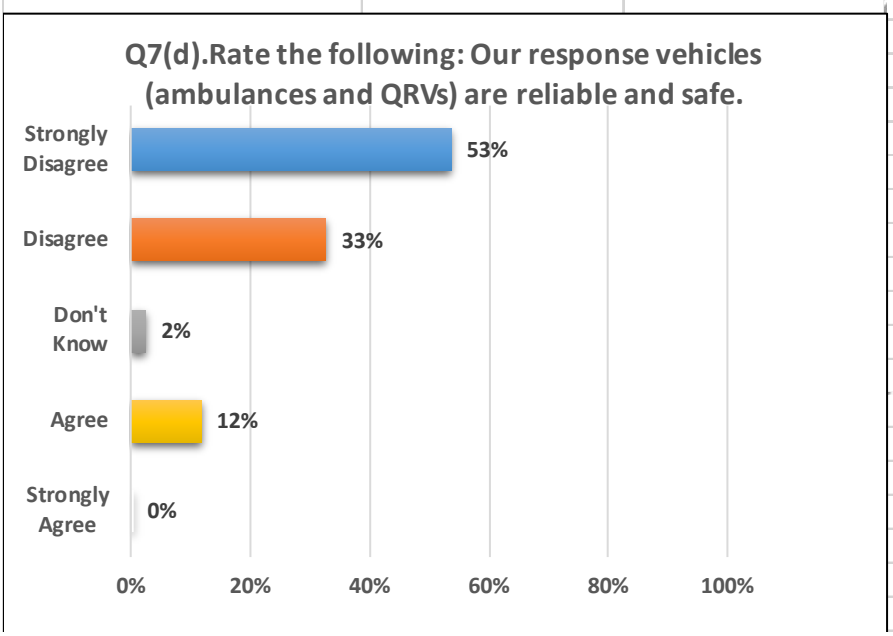
Q7(b).Rate the following::The Anderson County EMS pay scale is fair for		
Response	Count	Percentage
Strongly Disagree	22	51%
Disagree	18	42%
Don't Know	0	0%
Agree	3	7%
Strongly Agree	0	0%
Total Responses	43	



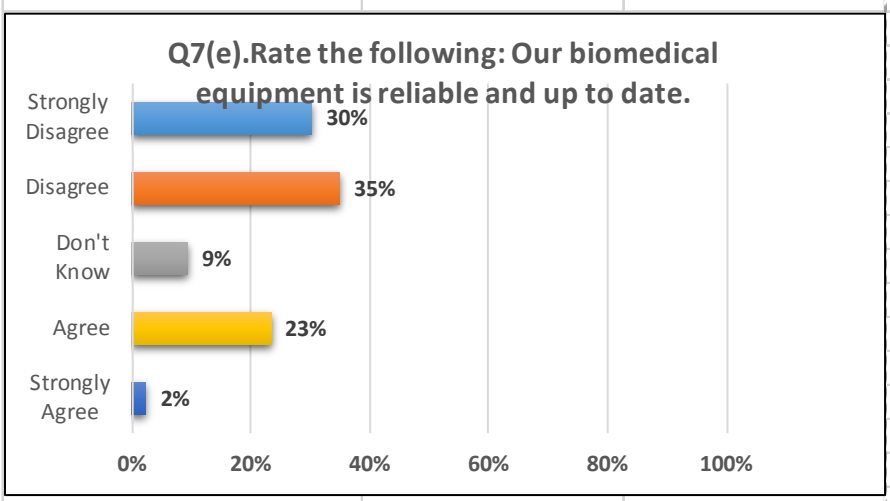
Q7(c).Rate the following::I am kept informed of what is going on in our		
Response	Count	Percentage
Strongly Disagree	15	35%
Disagree	13	30%
Don't Know	4	9%
Agree	8	19%
Strongly Agree	3	7%
Total Responses	43	



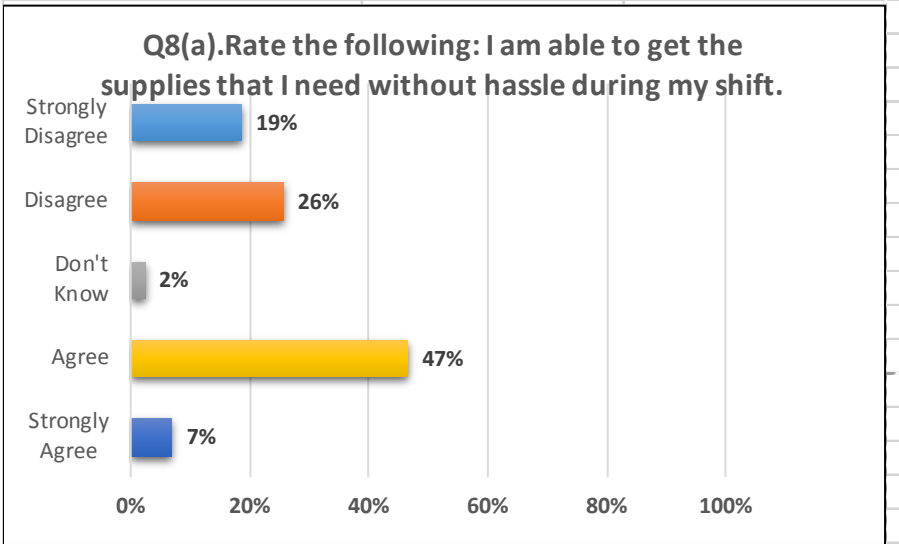
Q7(d).Rate the following::Our response vehicles (ambulances and QRVs)		
Response	Count	Percentage
Strongly Disagree	23	53%
Disagree	14	33%
Don't Know	1	2%
Agree	5	12%
Strongly Agree	0	0%
Total Responses	43	



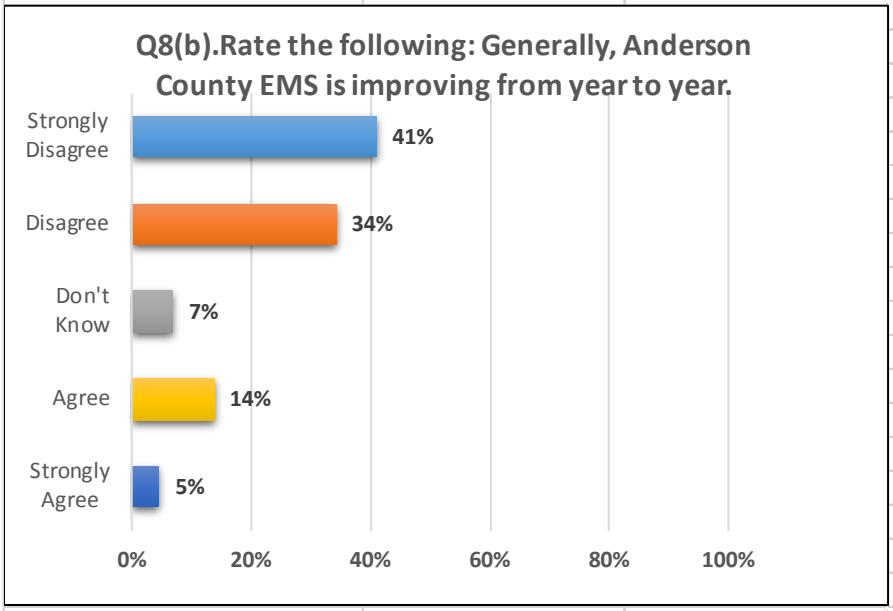
Q7(e).Rate the following::Our biomedical equipment is reliable and up to		
Response	Count	Percentage
Strongly Disagree	13	30%
Disagree	15	35%
Don't Know	4	9%
Agree	10	23%
Strongly Agree	1	2%
Total Responses	43	



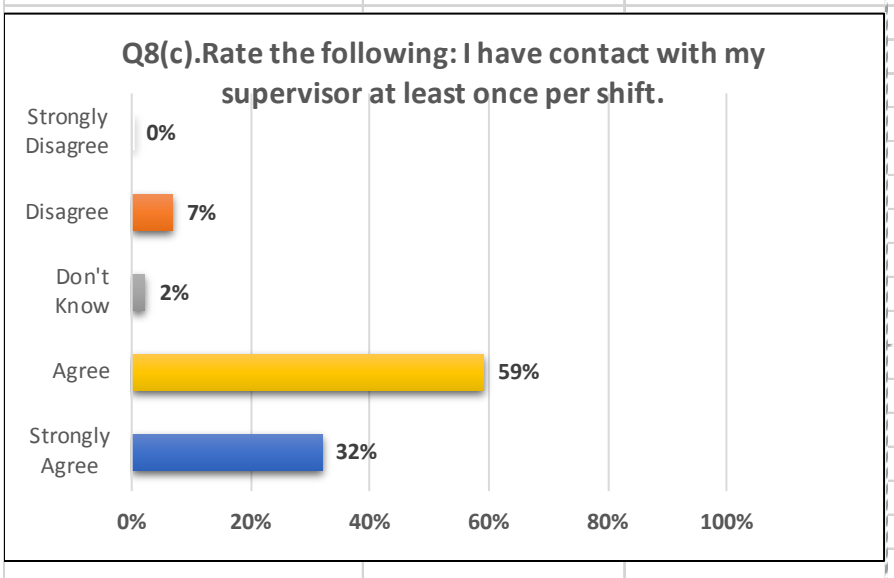
Please provide your feedback.		
Q8(a).Rate the following::I am able to get the supplies that I need without		
Response	Count	Percentage
Strongly Disagree	8	19%
Disagree	11	26%
Don't Know	1	2%
Agree	20	47%
Strongly Agree	3	7%
Total Responses	43	



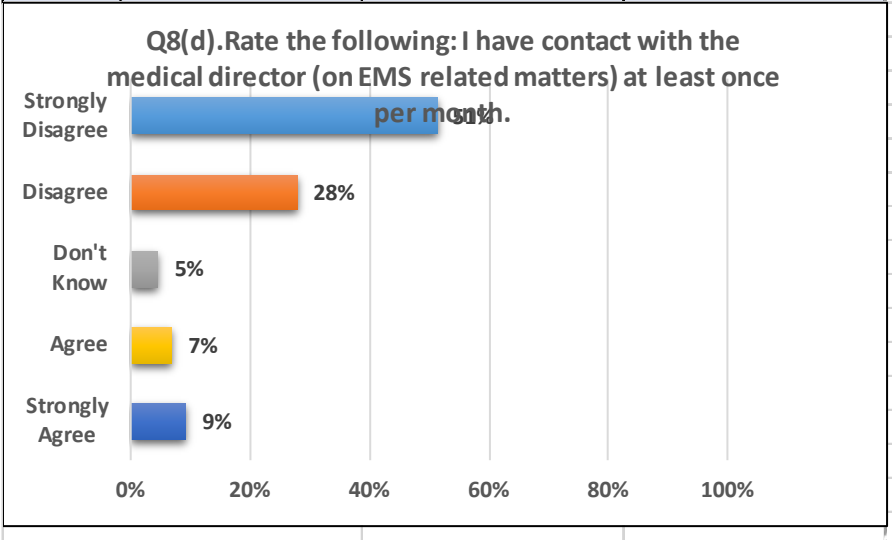
Q8(b).Rate the following::Generally, Anderson County EMS is improving		
Response	Count	Percentage
Strongly Disagree	18	41%
Disagree	15	34%
Don't Know	3	7%
Agree	6	14%
Strongly Agree	2	5%
Total Responses	44	



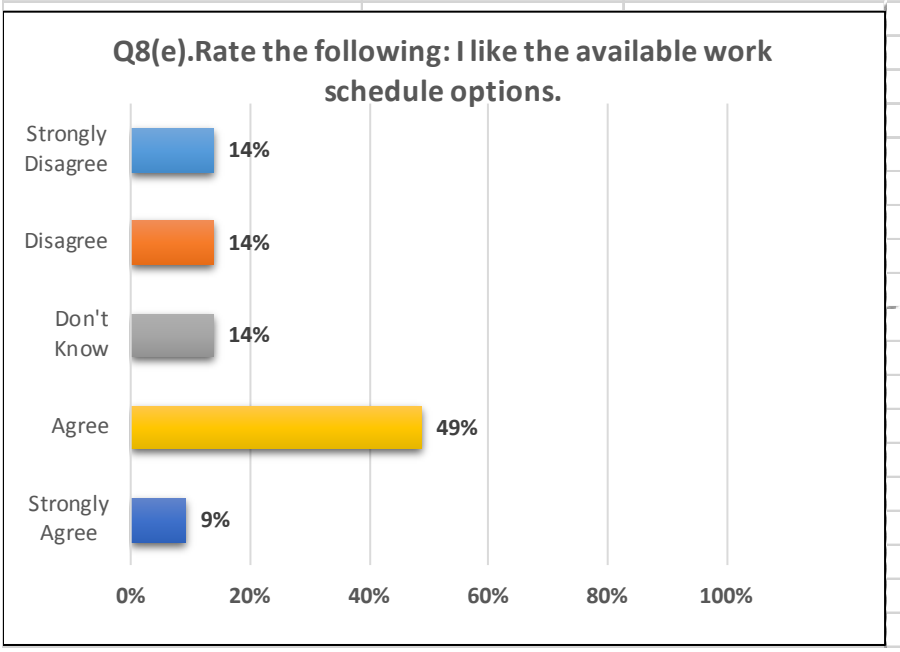
Q8(c).Rate the following::I have contact with my supervisor at least once		
Response	Count	Percentage
Strongly Disagree	0	0%
Disagree	3	7%
Don't Know	1	2%
Agree	26	59%
Strongly Agree	14	32%
Total Responses	44	



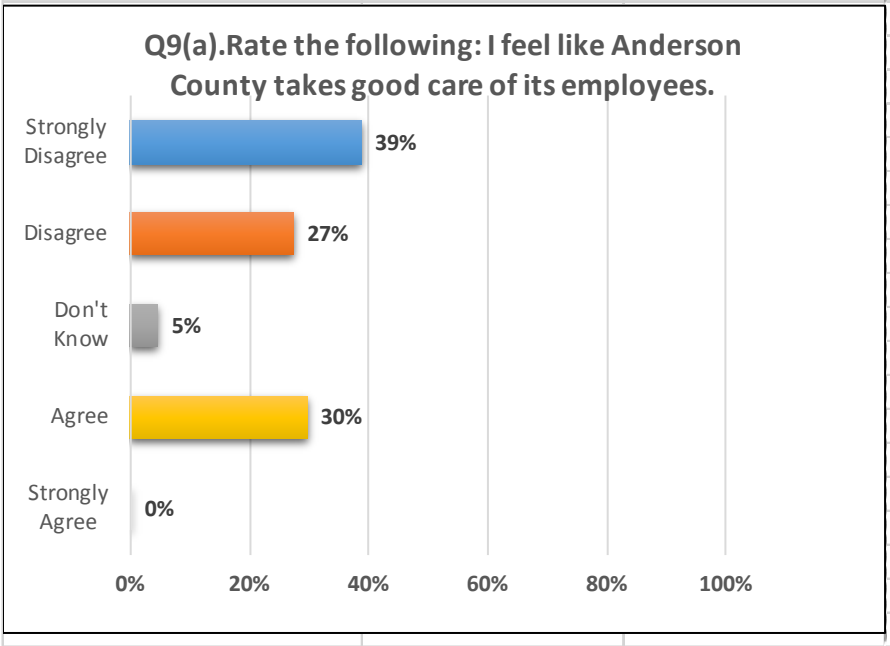
Q8(d).Rate the following::I have contact with the medical director (on EMS		
Response	Count	Percentage
Strongly Disagree	22	51%
Disagree	12	28%
Don't Know	2	5%
Agree	3	7%
Strongly Agree	4	9%
Total Responses	43	



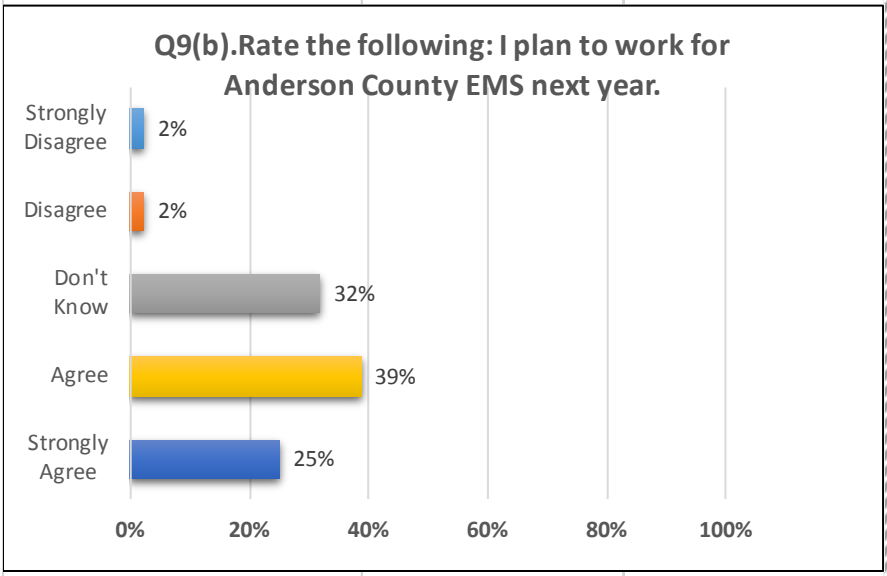
Q8(e).Rate the following::I like the available work schedule options.		
Response	Count	Percentage
Strongly Disagree	6	14%
Disagree	6	14%
Don't Know	6	14%
Agree	21	49%
Strongly Agree	4	9%
Total Responses	43	



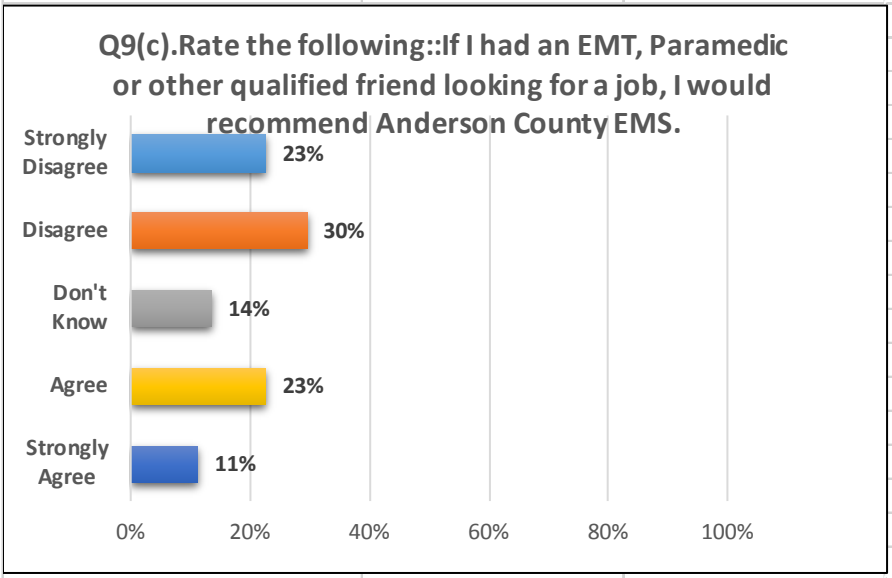
Please provide your feedback.		
Q9(a).Rate the following::I feel like Anderson County takes good care of its		
Response	Count	Percentage
Strongly Disagree	17	39%
Disagree	12	27%
Don't Know	2	5%
Agree	13	30%
Strongly Agree	0	0%
Total Responses	44	



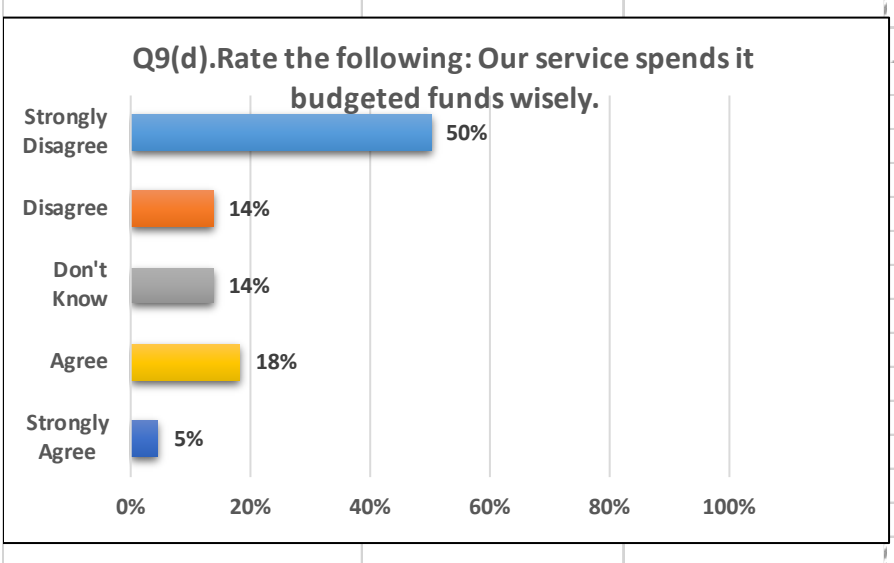
Q9(b).Rate the following::I plan to work for Anderson County EMS next		
Response	Count	Percentage
Strongly Disagree	1	2%
Disagree	1	2%
Don't Know	14	32%
Agree	17	39%
Strongly Agree	11	25%
Total Responses	44	



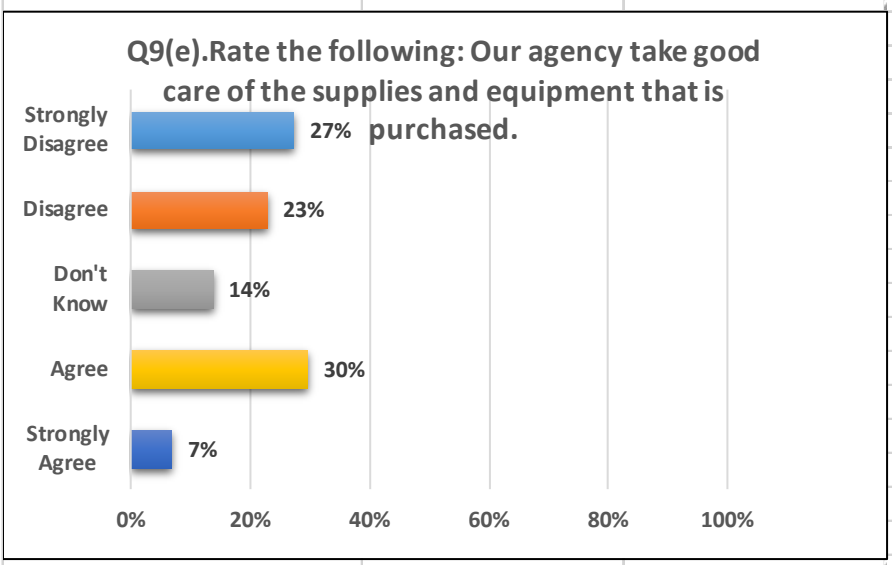
Q9(c).Rate the following::If I had an EMT, Paramedic or other qualified friend looking for a job, I would recommend Anderson County EMS.		
Response	Count	Percentage
Strongly Disagree	10	23%
Disagree	13	30%
Don't Know	6	14%
Agree	10	23%
Strongly Agree	5	11%
Total Responses	44	



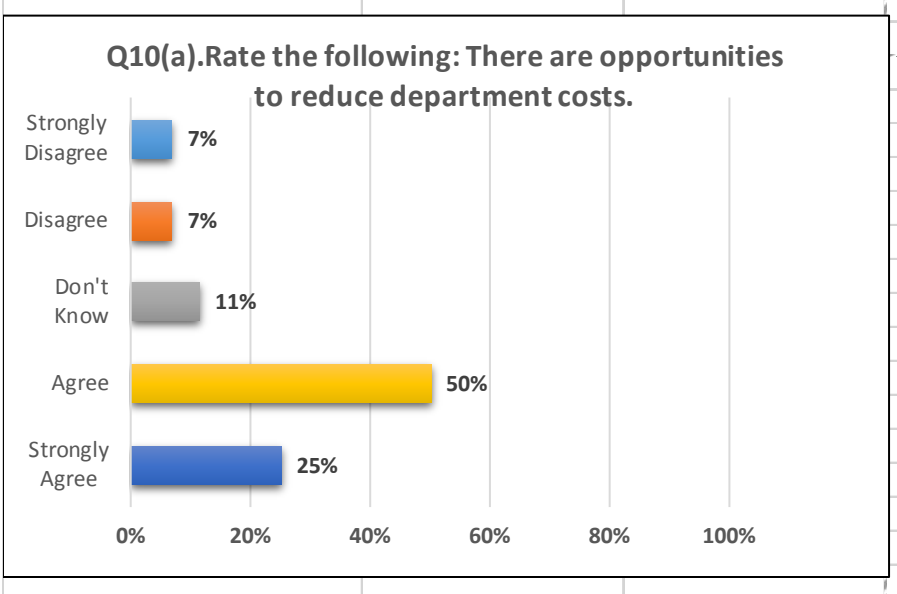
Q9(d).Rate the following::Our service spends it budgeted funds wisely.		
Response	Count	Percentage
Strongly Disagree	22	50%
Disagree	6	14%
Don't Know	6	14%
Agree	8	18%
Strongly Agree	2	5%
Total Responses	44	



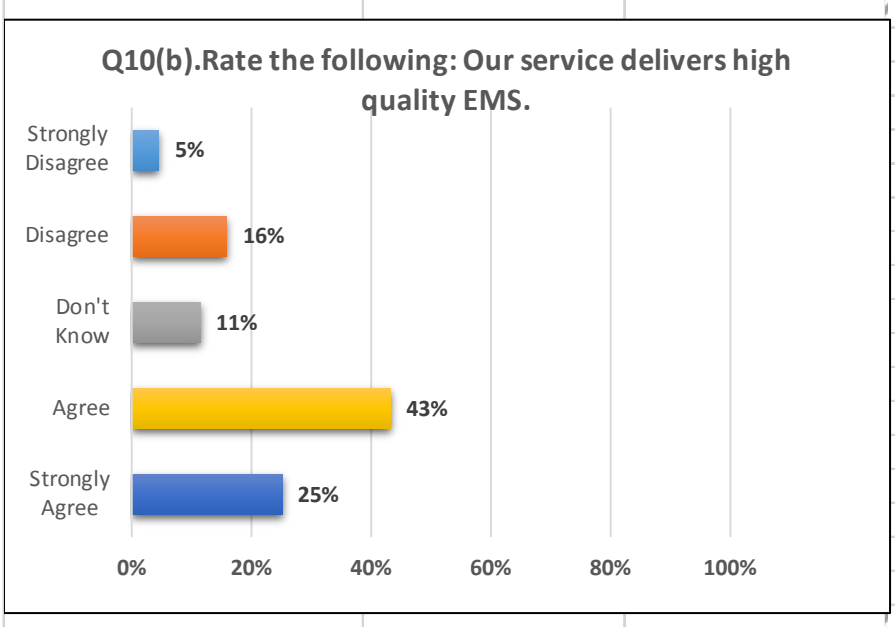
Q9(e).Rate the following::Our agency take good care of the supplies and		
Response	Count	Percentage
Strongly Disagree	12	27%
Disagree	10	23%
Don't Know	6	14%
Agree	13	30%
Strongly Agree	3	7%
Total Responses	44	



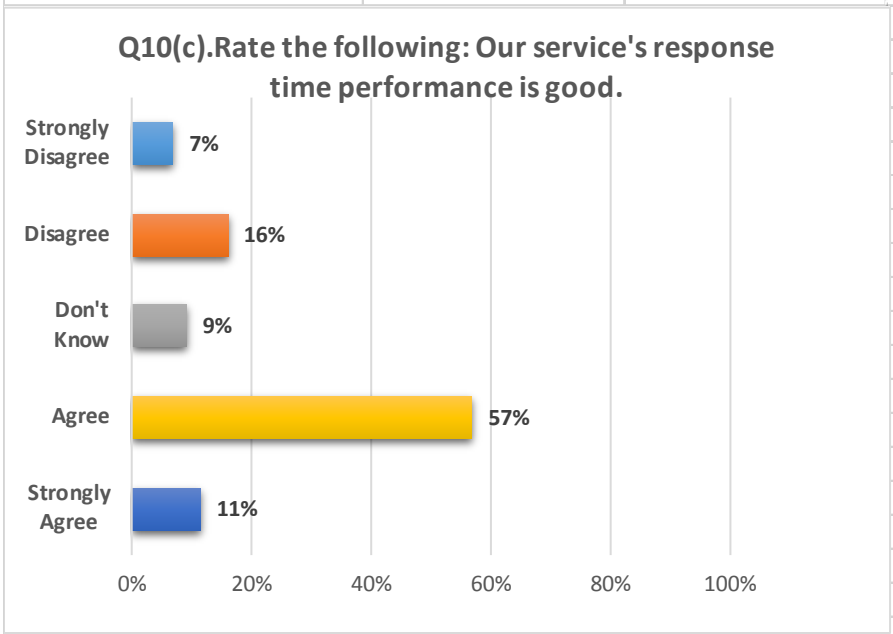
Please provide your feedback.		
Q10(a).Rate the following::There are opportunities to reduce department		
Response	Count	Percentage
Strongly Disagree	3	7%
Disagree	3	7%
Don't Know	5	11%
Agree	22	50%
Strongly Agree	11	25%
Total Responses	44	



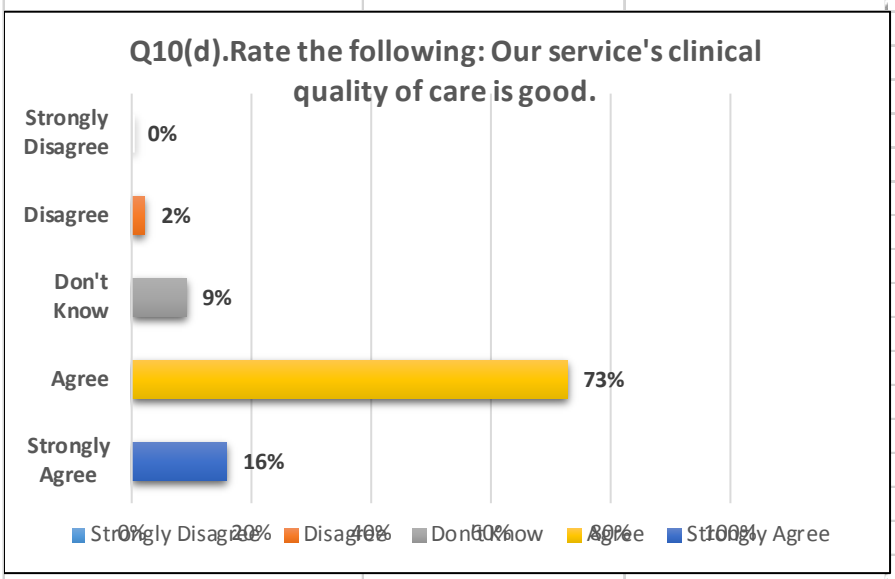
Q10(b).Rate the following::Our service delivers high quality EMS.		
Response	Count	Percentage
Strongly Disagree	2	5%
Disagree	7	16%
Don't Know	5	11%
Agree	19	43%
Strongly Agree	11	25%
Total Responses	44	



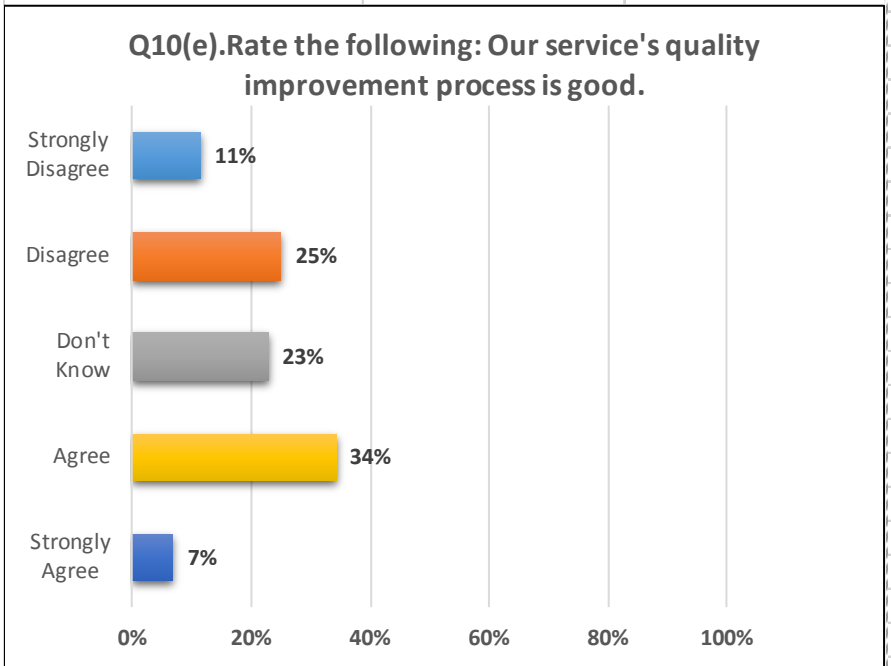
Q10(c).Rate the following::Our service's response time performance is		
Response	Count	Percentage
Strongly Disagree	3	7%
Disagree	7	16%
Don't Know	4	9%
Agree	25	57%
Strongly Agree	5	11%
Total Responses	44	



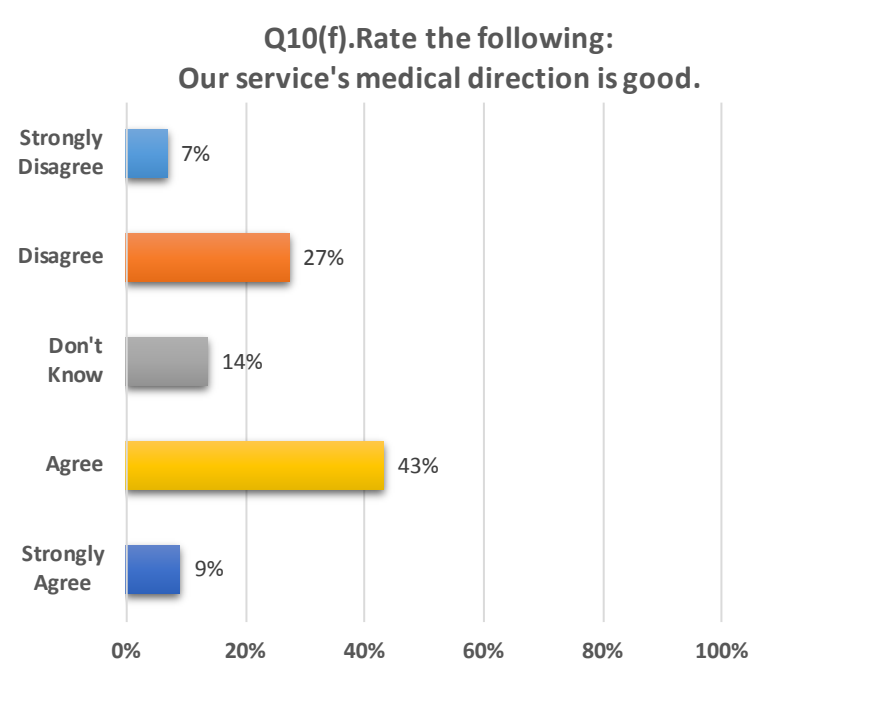
Q10(d).Rate the following::Our service's clinical quality of care is good.		
Response	Count	Percentage
Strongly Disagree	0	0%
Disagree	1	2%
Don't Know	4	9%
Agree	32	73%
Strongly Agree	7	16%
Total Responses	44	



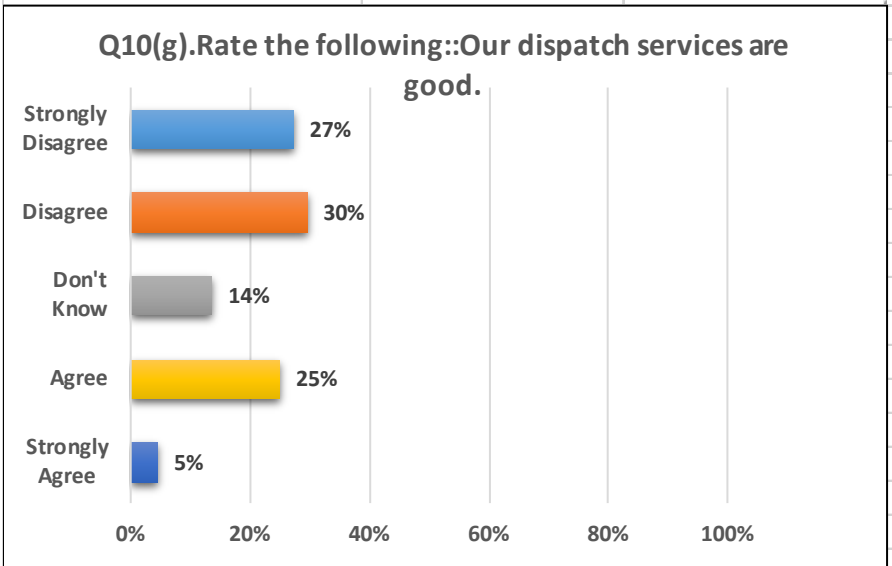
Q10(e).Rate the following::Our service's quality improvement process is		
Response	Count	Percentage
Strongly Disagree	5	11%
Disagree	11	25%
Don't Know	10	23%
Agree	15	34%
Strongly Agree	3	7%
Total Responses	44	



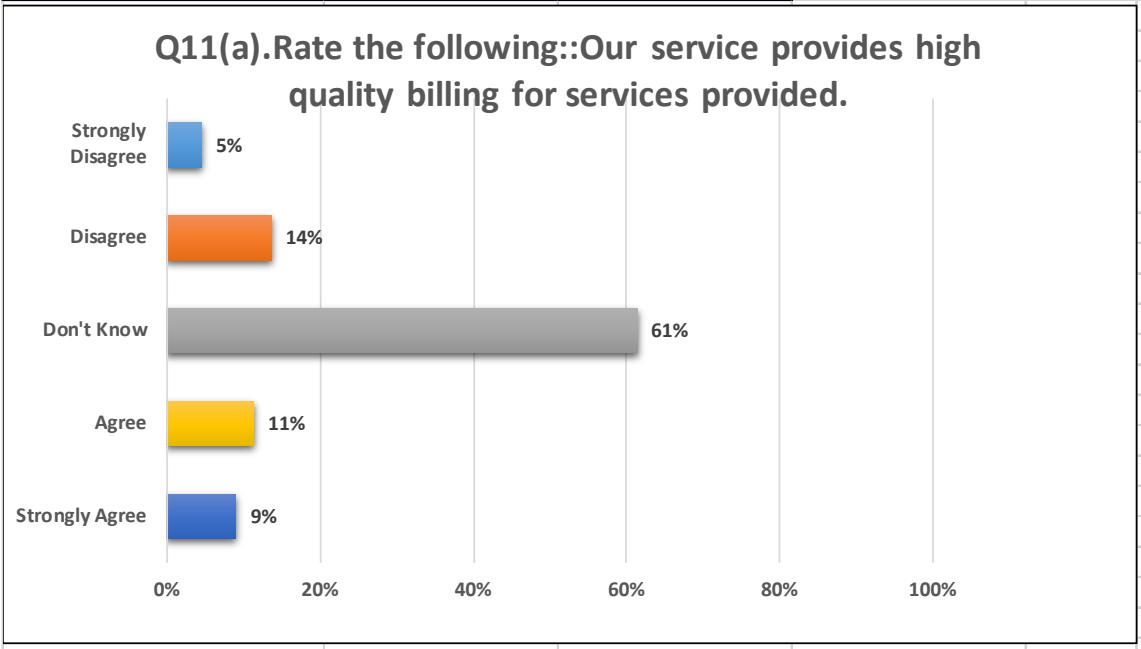
Q10(f).Rate the following::Our service's medical direction is good.		
Response	Count	Percentage
Strongly Disagree	3	7%
Disagree	12	27%
Don't Know	6	14%
Agree	19	43%
Strongly Agree	4	9%
Total Responses	44	



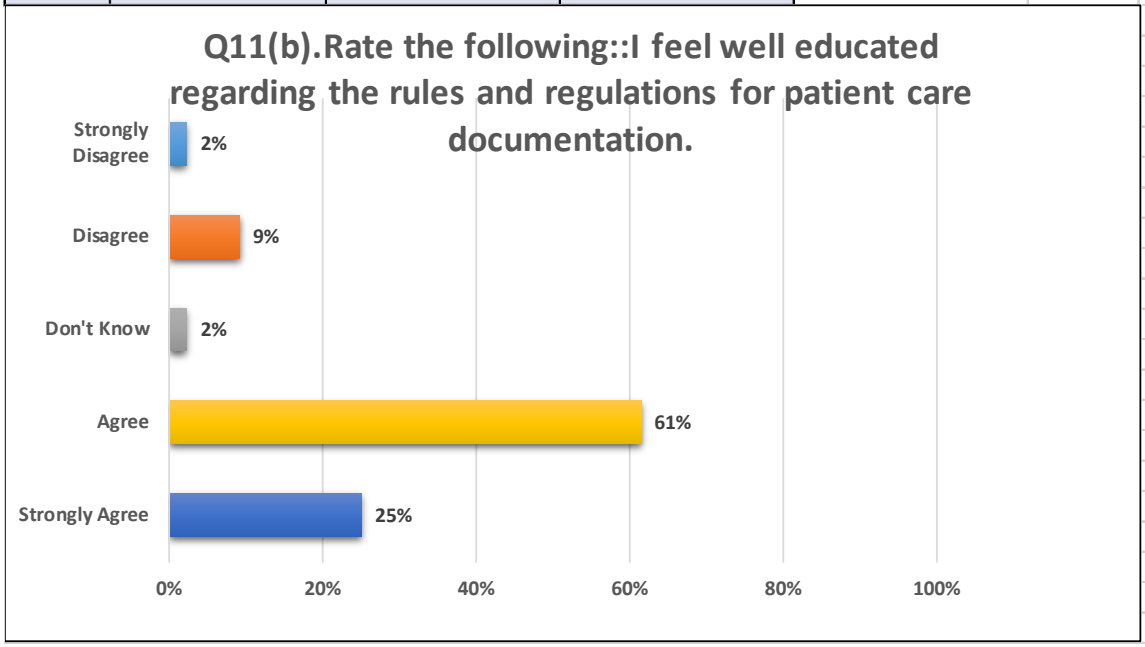
Q10(g).Rate the following::Our dispatch services are good.		
Response	Count	Percentage
Strongly Disagree	12	27%
Disagree	13	30%
Don't Know	6	14%
Agree	11	25%
Strongly Agree	2	5%
Total Responses	44	



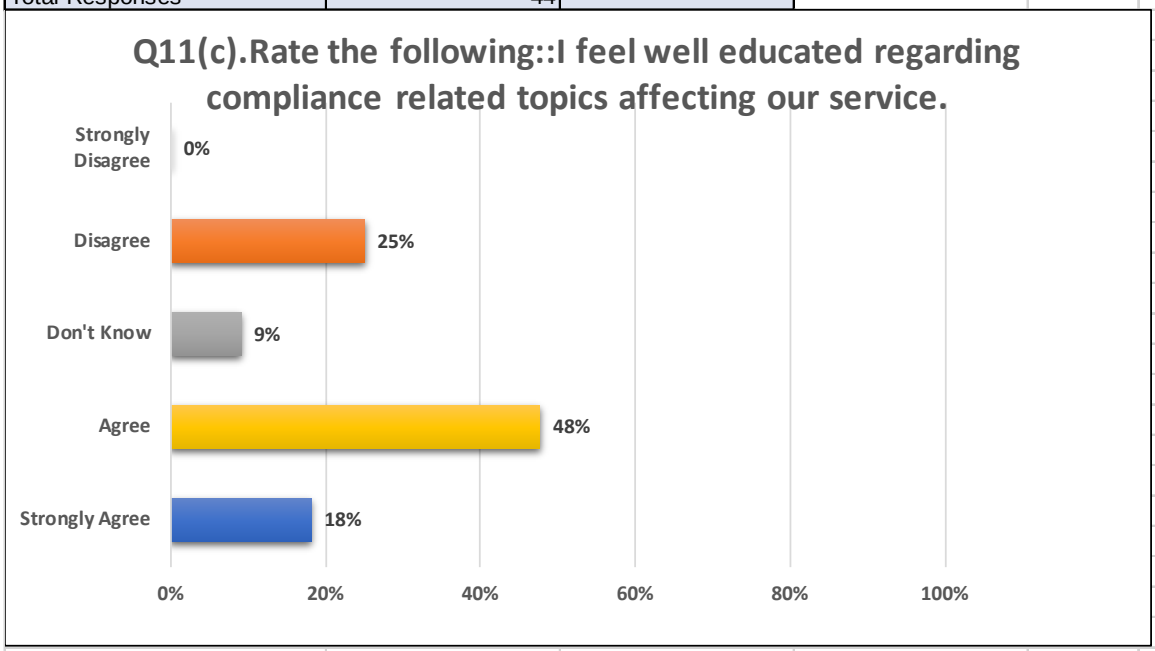
Please provide your feedback.		
Q11(a).Rate the following::Our service provides high quality billing for		
Response	Count	Percentage
Strongly Disagree	2	5%
Disagree	6	14%
Don't Know	27	61%
Agree	5	11%
Strongly Agree	4	9%
Total Responses	44	



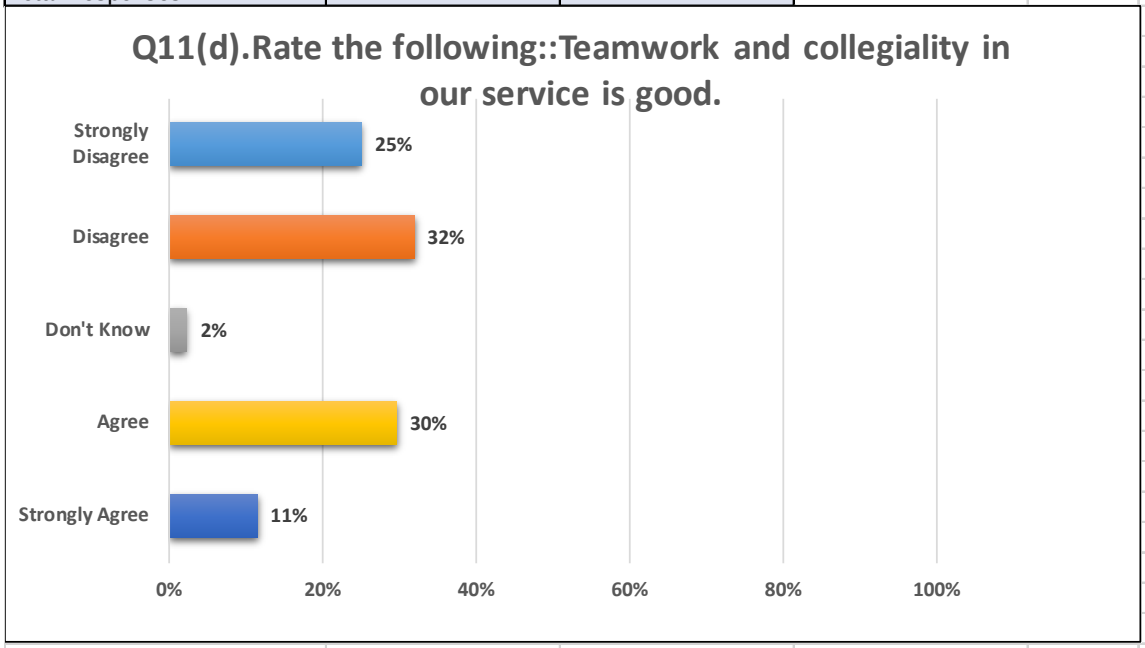
Q11(b).Rate the following::I feel well educated regarding the rules and		
Response	Count	Percentage
Strongly Disagree	1	2%
Disagree	4	9%
Don't Know	1	2%
Agree	27	61%
Strongly Agree	11	25%
Total Responses	44	



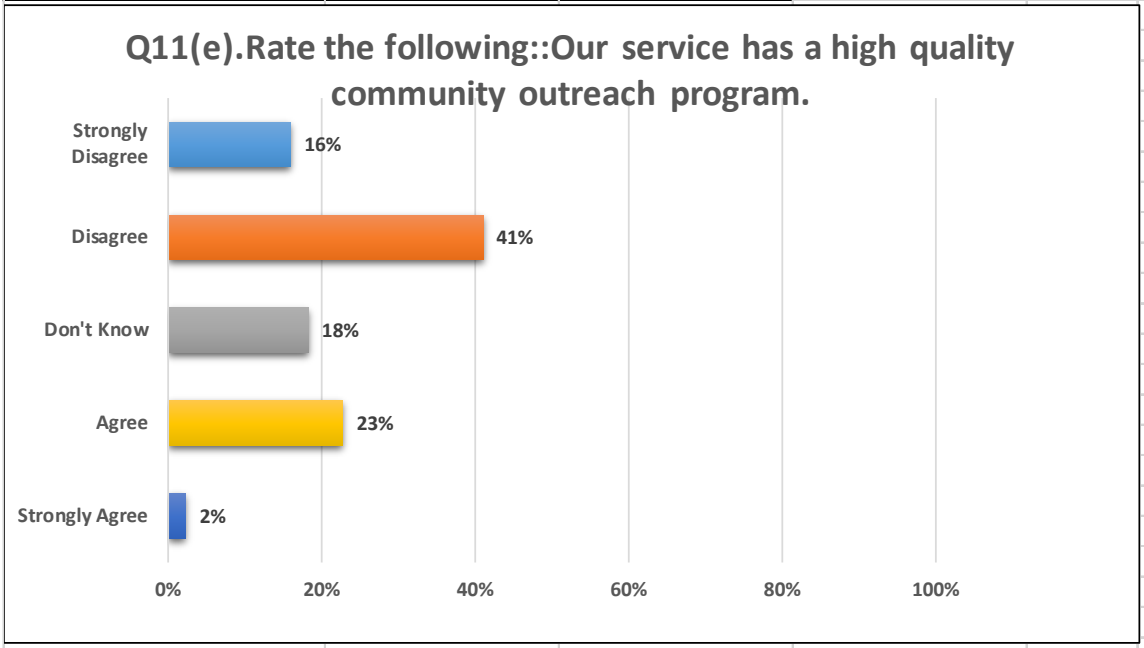
Q11(c).Rate the following::I feel well educated regarding compliance related		
Response	Count	Percentage
Strongly Disagree	0	0%
Disagree	11	25%
Don't Know	4	9%
Agree	21	48%
Strongly Agree	8	18%
Total Responses	44	



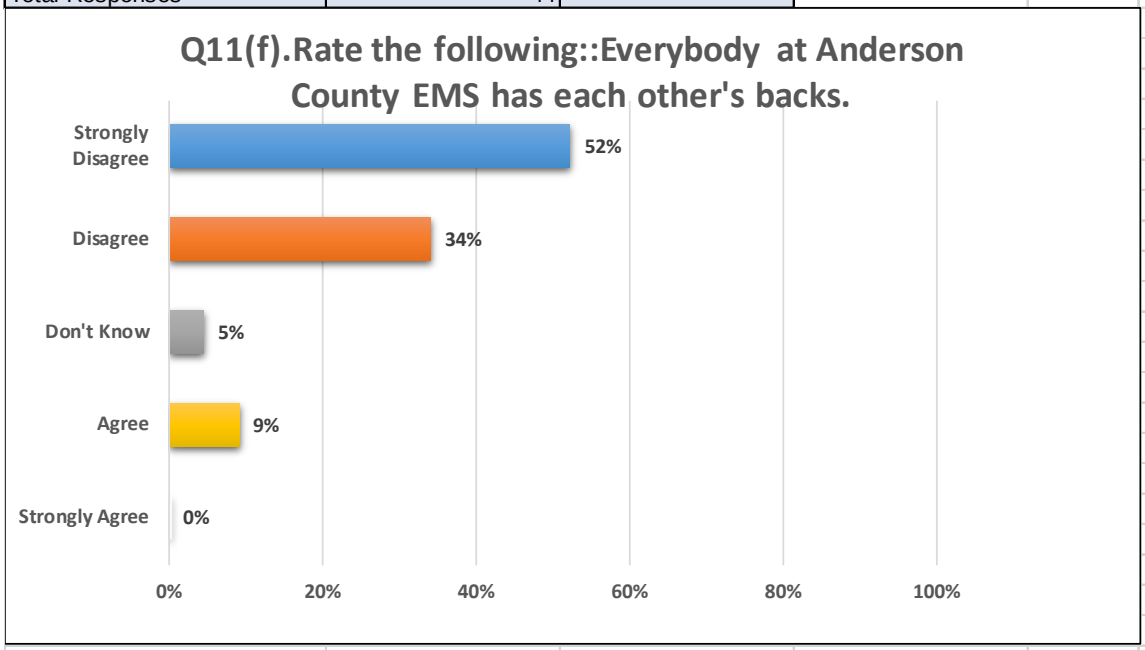
Q11(d).Rate the following::Teamwork and collegiality in our service is good.		
Response	Count	Percentage
Strongly Disagree	11	25%
Disagree	14	32%
Don't Know	1	2%
Agree	13	30%
Strongly Agree	5	11%
Total Responses	44	



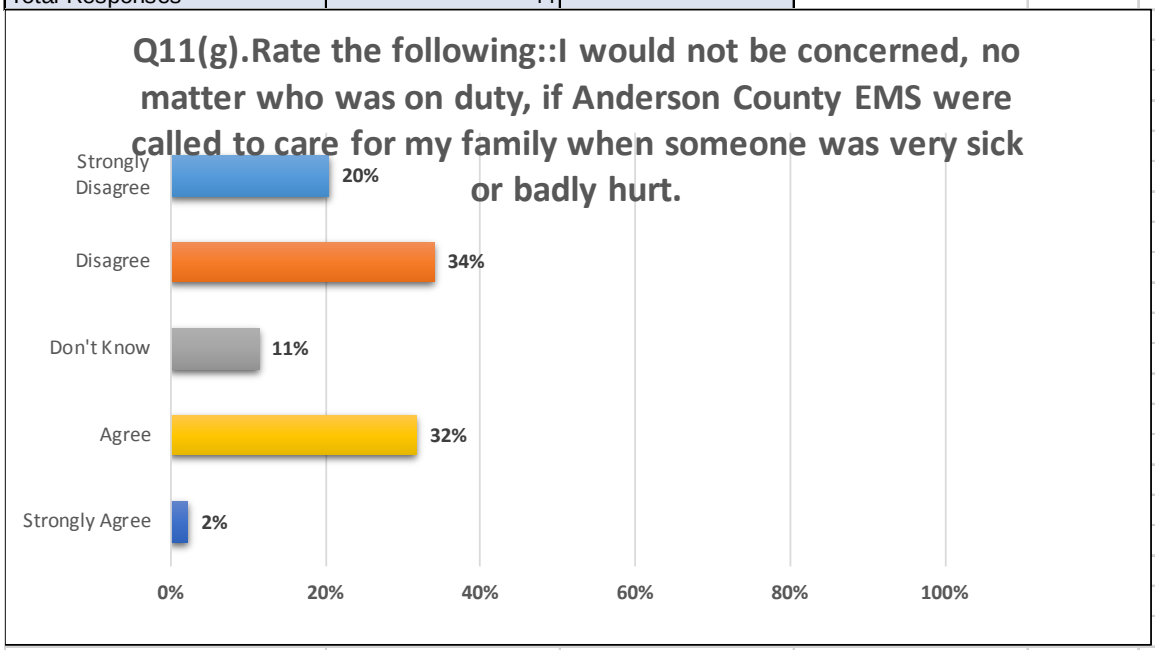
Q11(e).Rate the following::Our service has a high quality community		
Response	Count	Percentage
Strongly Disagree	7	16%
Disagree	18	41%
Don't Know	8	18%
Agree	10	23%
Strongly Agree	1	2%
Total Responses	44	



Q11(f).Rate the following::Everybody at Anderson County EMS has each		
Response	Count	Percentage
Strongly Disagree	23	52%
Disagree	15	34%
Don't Know	2	5%
Agree	4	9%
Strongly Agree	0	0%
Total Responses	44	



Q11(g).Rate the following::I would not be concerned, no matter who was on		
Response	Count	Percentage
Strongly Disagree	9	20%
Disagree	15	34%
Don't Know	5	11%
Agree	14	32%
Strongly Agree	1	2%
Total Responses	44	



ATTACHMENT E

GFOA Best Practices
Budget Documents

FITCH
& ASSOCIATES

Government Finance Officers Association

BEST PRACTICE

Making the Budget Document Easier to Understand

BACKGROUND:

The budget document is very important, since it identifies the services to be provided (along with the funding), and the rationale behind key decisions. Because of the time required to read and understand the entire budget document, a concise summary that captures these elements is essential. Users of the budget document will benefit from a high quality report that promotes better communication, which makes it easier to comprehend the information presented.

RECOMMENDATION:

The Government Finance Officers Association (GFOA) recommends that governments incorporate the following guidelines to facilitate broader consumption and greater comprehension of the budget document

Organization. Improving the organization of a budget document lessens redundancy and allows for a better flow of information through a more logical sequence. While governments may develop their own organizing principles, the twenty-seven criteria in the GFOAs Distinguished Budget Presentation Awards Program are arranged in a sequence that may be used to organize a budget document. There are six major sections within the criteria including:

1. introduction and overview,
2. financial structure, policy and process,
3. financial summaries,
4. capital and debt,
5. departmental information, and
6. document-wide criteria (glossary and statistical/supplemental section). Similar topics should be placed in the same section.

Detail. Excessive detail can prove a hindrance to the understanding of a governments budget document. Limit the number of financial schedules, text, and supplemental data to what is necessary in conveying key information. Rounding dollars to thousands or millions in the financial schedules is an effective way to present data. Showing headcount/position data without decimal points is easier to follow. An inordinate amount of account detail can distract from the primary points presented in the budget document. Eliminating numerical errors and typos improves the credibility of the budget document, so proof the content.

Design. The design of the budget document should be simple and easy to use, but attractive. Hard copy budget documents should have an appealing front cover with tabs and dividers to differentiate

major sections. An electronic document should use such options as bookmarks and hyperlinks between the table of contents and specific pages. The use of color (especially in charts) and pictures can be a good design tool and make information easier to understand. The growing use of electronic document formats makes this an affordable and effective option. However, be aware of large file sizes that can hinder the ability to read the budget document.

Consistency. Since different individuals usually contribute to the content of the budget document, make sure that information is presented in a way that the work of one individual does not overlap or contradict that of another. For instance, departmental presentations within a budget document should be consistent between departments.

Highlights. A budget-in-brief can be presented as an internal or external feature that highlights major points from the budget document. Governments frequently use budget-in-briefs as a supplement to their main budget document. Whether presenting information in a budget-in-brief or the main budget document, the effective use of tables, charts, and graphs can help in communicating information, which then saves narrative for analysis/interpretation.

Format. The usefulness of a document is enhanced when a government observes the following formatting conventions. ?If a document is issued in hardcopy form, the web site version should be identical. Font size, page layout (i.e., portrait versus landscape), and direction should be consistent throughout the report. Pages should be numbered sequentially, avoiding special characters. Also, page numbering should be synchronized between electronic and printed versions. GFOAs best practice on Website Presentation of Official Financial Documents goes into more detail on how to present an electronic document.

References:

- Best Practice: A Framework for Improved State and Local Government Budgeting, NACSLB, 1998.
- Best Practice: Statistical/Supplemental Section of the Budget Document, 2005.
- Best Practice: Presentation of the Capital Budget in the Operating Budget Document, 2008.
- Best Practice: Website Presentation of Official Financial Documents, 2009.
- Best Practice: Presentation of the Departmental Section in the Operating Budget Document, 2012.
- *Budget Awards Program: Building a Better Budget Document*, John Fishbein, GFOA, 2013.
- GFOA Website: Budget Awards Program Home Page.

ATTACHMENT F

GFOA Best Practice Departmental Budget Presentations

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Government Finance Officers Association

BEST PRACTICE

Departmental Presentation in the Operating Budget Document

BACKGROUND:

The departmental section of a budget document traditionally has focused on accomplishments and detailed financial schedules. Recently, however, emphasis is also being placed more and more on describing programs or services and how their objectives will be met. A well-designed departmental section can enhance a readers understanding (assuming the reader is the general public or a decision-maker) of the purpose of funded programs or services, as well as their cost, making the budget document a more effective operational and communications document.

RECOMMENDATION:

GFOA recommends that governments consider the following guidelines when presenting information in the departmental section of the operating budget document:

1. *Design.*

The formatting can be enhanced as follows:

- Use a standard format for all departments (e.g., font size and type, margins, paragraph alignment and spacing, bullet points, indentation, and the consistent use of a single format (i.e., portrait or landscape);
- Use pictures, graphs, charts, borders, tabs, and dividers to enhance the presentation of information, taking care to place them in the section to which they relate;
- Include interesting facts or employ a did you know? format to attract interest; and
- Use hyperlinks that allow the reader to obtain additional information not included in the budget document.

2. *Brevity.*

Avoiding excessive detail is important, especially in financial schedules and text:

- Consider summarizing financial information rather than presenting each account in whole dollars (rounding may be beneficial);
- Keep discussions focused and concise; and
- Avoid excessive detail (consider the possibility of a separate supplemental departmental document for those desiring more detail).

A description of services or functional responsibilities must be included:

- Consider including hours of operation, address, phone number, email

3. *Services.*

address, brief departmental historical recap, linking department to fund structure, and contact information (e.g., head of the department);

- Identify any changes in service levels (increase or reduction). This may include the dollar impact and the potential effect on the public;
- Discuss whether services are performed in-house or privatized; and
- Activities required by law always need to be covered.

4. *Issues*.

Discuss challenges, issues, and opportunities:

- Go beyond a mere listing of functional responsibilities to discuss challenges, issues, and opportunities. The discussion needs to focus on the future and key decision points, with an emphasis on solutions.

5. *Revenues*.

Revenues may include any fees or charges that the department generates:

- While many departments do not generate revenues, some do. If so, discuss the major type of revenues and the potential recovery rate.

6. *Expenditures*.

The analysis of expenditures should be done in a broad manner:

- Consider identifying major categories (rather than identifying, discussing, and analyzing every expenditure account) and note any significant changes. For example, major categories may include wages and benefits, supplies, etc. Some governments include budget highlights for each department.

7. *Staffing*.

Staffing information is usually presented in one of two manners:

- A departmental organization chart may be provided to supplement the main organization chart of the government and
- A brief schedule may summarize the departmental headcount over a period of time (including the upcoming budget year), which would have the advantage of identifying trends.

8. *Prioritization/Goals and Objectives*.

It has becoming increasingly common to explain how services are prioritized:

- A brief recap of any citizen surveys that a department has undertaken may be presented and
- Linking departmental goals and objectives to overall entity goals can be done through the use of a matrix. The use of timeframes and quantifying goals is encouraged.

9. *Measures*.

Performance measures typically are included in the respective departmental section of the budget document:

- Each department is encouraged to present performance measures that link with the goals of both the overall entity and the department;
- Performance measures should include input, output, efficiency, and effectiveness measures and their relationship to achieving desired outcomes;
- Include measures for the prior, current, and upcoming budget year; and
- A discussion of key measures is becoming increasingly common.

References:

- GFOA Best Practice: Posting Budget Documents and Financial Reports Online to Improve Access (2003).
- GFOA Best Practice: Using Trend Data and Comparative Data for Financial Analysis (2003).
- GFOA Best Practice: Performance Management: Using Performance Measurement for Decision Making (2002, 2007).

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ATTACHMENT G

GFOA Best Practice
Purchasing Card Program

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GFOA Best Practice

Purchasing Card Programs

Background. The purpose of a purchasing card (also known as a procurement card or P-Card) program is to provide an efficient, cost-effective method of purchasing and paying for small-dollar as well as high-volume purchases. This type of program is used as an alternative to the traditional purchasing process and can result in a significant reduction in the volume of purchase orders, invoices, and checks processed. Purchasing cards can be used whenever a purchase order, check request, or petty cash would have been processed and with any vendor that accepts credit cards.

There are numerous benefits to a purchasing card program. Benefits to the cardholder can include:

1. convenience of purchasing without a purchase order,
2. expedited delivery of goods,
3. better pricing on goods,
4. expanded list of merchants from whom purchases can be made, and
5. reduced paperwork.

Benefits to the government can include:

1. simplified purchasing and payment process,
2. lower overall transaction processing costs per purchase,
3. increased management information on purchasing histories,
4. reduced paperwork,
5. decentralized procurement function,
6. the ability to set and control purchasing dollar limits,
7. the ability to control purchases to specific merchant categories and vendors, and
8. receipt of rebates from the bank based upon dollar volume of total purchases.

Benefits to the vendor include:

1. expedited payments,
2. reduced paperwork, and
3. lowered risk of nonpayment.

Purchasing cards may be issued in a designated individual's name and/or the government's name clearly indicated on the card as the buyer of goods and services.

The purchasing card and any transactions made with the card may become a liability of the governmental entity. For this reason, it is important that governments be aware of the risks related to the use of purchasing cards and establish controls to address those risks.

Disadvantages of purchasing cards include:

1. the potential for duplicate payments to vendors, unless payments are recorded by individual vendor within the accounting system,
2. the perception in the public about issuing "credit cards" to employees may be negative, and
3. the potential for abuse despite the controls available with purchasing cards.

Recommendation. GFOA recommends that governments explore the use of purchasing cards to improve the efficiency of their purchasing procedures. A competitive process should be used to select a purchasing card provider.

Consideration should be given to vendors who can provide:

- automated approval and reconciliation software. This software should provide for the ability to integrate to the entity's accounting records in a timely fashion;
- a program that is simple and easy to use;
- comprehensive control restrictions for single transactions, the number and amounts authorized per day and per cycle; and restrictions on the types of vendors and merchant category codes with which the card may be used;
- provisions for handling questioned items and chargebacks;
- a broad selection of reports or ad hoc reporting ability;
- training materials;
- customer support; and
- program rebates.

Governments need to maintain appropriate controls, in accordance with their purchasing policy, to ensure the ongoing success of a purchasing card program. These controls should include: written agreements with banks, which include fee schedules, processing procedures, and security requirements;

1. written policies and procedures for internal staff, including:

    a. instructions on employee responsibility and written acknowledgments signed by the employee
    b. ongoing training of cardholders and supervisors
    c. spending and transaction limits for each cardholder both per transaction and on a monthly basis
    d. written requests for higher spending limits
    e. recordkeeping requirements, including review and approval processes

f. clear guidelines on the appropriate uses of purchasing cards, including approved and unapproved Merchant Category Codes (MCC)
g. guidelines for making purchases by telephone and fax or over the Internet
h. periodic audits for card activity and retention of sales receipts and documentation of purchases
i. timely reconciliation by cardholders and supervisors
j. procedures for handling disputes and unauthorized purchases
k. procedures for card issuance and cancellation, lost or stolen cards, and employee termination
l. segregation of duties for payment approvals, accounting, and reconciliations
m. regular review of spending per vendor and merchant category codes

2. systems to ensure compliance with IRS 1099 reporting regulations.

References.

Banking Services: A Guide for Governments, Nicholas Greifer, GFOA, 2004.

An Elected Official's Guide to Procurement, GFOA, 1995.

Approved by the GFOA's Executive Board, February, 2011.

ATTACHMENT H

Anderson County Claims Review Worksheets

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Assigned #	Run #	Program Billed	D.O.S.	Mileage Billed	Mileage Correct per Docs?	Reason for Transport Doc'd?	Filed HCPCS Codes	Description	Charges supported by docs?	Meets Medicare Med Necessity?	Covered by CAID?	Modifiers	Modifiers Correct?	PCS	Receiving Section/Signature	Pt Signature	Crew Signature	Total Charges	Allowed Amount	Overpayment / (Underpayment) Allowed Amount	Primary Payments	Primary Payer	Diagnosis Supported by Docs?	ICD-10 Code
1	17-03998	CARE	3/9/2017	1.5	Y	Y	A0427	ALS 1 Emerg	Y	Y	NA	RH	Y	NA	B	Y	Y	$850.00	$394.23	394.23	$314.10	CARE	Y	R07.9
							A0425	Ground Mileage										$21.75	$10.76	10.76	$8.57		Y	R06.02
2	16-14115	CARE	9/5/2016	1.1	Y	Y	A0427	ALS 1 Emerg	Y	Y	NA	RH	Y	NA	B	U	Y	$850.00	$390.89	390.89	$311.44	CARE	Y	R40.4
							A0425	Ground Mileage										$15.95	$7.83	7.83	$6.24			
3	17-06530	CARE	4/22/2017	13.0	Y	Y	A0427	ALS 1 Emerg	Y	Y	NA	NH	Y	NA	B	Error	Y	$850.00	$394.23	394.23	$314.10	CARE	Y	R06.02
							A0425	Ground Mileage										$188.50	$93.25	93.25	$74.30			
4	17-03683	CARE	3/4/2017	1.0	Y	Y	A0429	BLS Emerg	Y	Y	NA	RH	Y	NA	Error	U	Y	$750.00	$331.98	331.98	$264.50	CARE	Y	R40.4
							A0425	Ground Mileage										$14.50	$7.17	7.17	$5.71			
5	16-16280	CARE	10/13/2016	11.1	Y	Y	A0429	BLS Emerg	Y	Y	NA	SH	Y	NA	B	Y	Y	$750.00	$329.18	329.18	$262.27	CARE	Y	R11.0
							A0425	Ground Mileage										$160.95	$79.07	79.07	$63.00		Y	R42
6	16-15437	CARE	9/28/2016	20.6	Y	Y	A0428	BLS Non E	Y	Y	NA	HR	Y	Error	N	U	Y	$550.00	$205.73	205.73	$163.91	CARE	Y	R53.1
							A0425	Ground Mileage										$298.70	$146.75	146.75	$116.92		N	Z74.01
7	16-17534	CARE	1/4/2016	7.9	N	Y	A0427	ALS 1 Emerg	Y	Y	NA	RH	Y	NA	B	Y	Y	$850.00	$390.89	390.89	$311.44	CARE	Y	M79.609
							A0425	Ground Mileage										$114.55	$56.28	56.28	$11.44			
8	17-04998	CARE	3/27/2017	2.9	Y	Y	A0428	BLS Non E	Y	Y	NA	RJ	Y	Error	Error	Y	Y	$550.00	$186.73	186.73	$148.78	CARE	Y	Z74.01
							A0425	Ground Mileage										$42.05	$18.73	18.73	$14.92		Y	N28.9
9	16-10990	CARE	7/12/2016	1.6	Y	Y	A0429	BLS Emerg	N	Y	NA	NH	Y	NA	B	B	Y	$750.00	$329.18	329.18	$262.27	CARE	Y	K94.23
							A0425	Ground Mileage										$23.20	$11.39	11.39	$9.07			
10	17-09920	CARE	6/24/2017	13.7	Y	Y	A0427	ALS 1 Emerg	Y	Y	NA	RH	Y	NA	B	B	Y	$850.00	$394.23	394.23	$314.10	CARE	N	T78.40XA
							A0425	Ground Mileage										$198.65	$98.27	98.27	$78.30			

Assigned #	Run #	Program Billed	D.O.S.	Mileage Billed	Mileage Correct per Docs?	Reason for Transport Doc'd?	Filed HCPCS Codes	Description	Charges supported by docs?	Meets Medicare Med Necessity?	Covered by CAID?	Modifiers	Modifiers Correct?	PCS	Receiving Section/Signature	Pt Signature	Crew Signature	Total Charges	Allowed Amount	Overpayment / (Underpayment) Allowed Amount	Primary Payments	Primary Payer	Diagnosis Supported by Docs?	ICD-10 Code
11	17-08837	CARE	6/3/2017	1.5	Y	Y	A0429	BLS Emerg	Y	Y	NA	RH	Y	NA	Error	Y	Y	$750.00	$331.98	331.98	$264.50	CARE	N	S99.919A
							A0425	Ground Mileage										$21.75	$10.76	10.76	$8.57			
12	16-11027	CARE	7/12/2016	12.4	Y	Y	A0429	BLS Emerg	Y	Y	NA	RH	Y	NA	B	Y	Y	$750.00	$329.18	329.18	$262.27	CARE	Y	T14.90
							A0425	Ground Mileage										$179.80	$88.34	88.34	$70.38		Y	T14.8
13	16-19723	CARE	12/15/2016	7.1	Y	Y	A0428	BLS Non E	Y	Y	NA	JR	Y	Error	Y	Y	Y	$550.00	$185.16	185.16	$147.53	CARE	Y	N28.9
							A0425	Ground Mileage										$102.95	$45.52	45.52	$36.27			
14	16-13149	CARE	8/18/2016	2.9	Y	Y	A0428	BLS Non E	Y	N	NA	HR	Y	Error	Error	Y	Y	$550.00	$205.73	205.73	$163.91	CARE	N	Z99.81
							A0425	Ground Mileage										$42.05	$20.66	20.66	$16.46			
15	17-02257	CARE	2/9/2017	1.0	Y	Y	A0429	BLS Emerg	Y	Y	NA	EH	Y	NA	Y	U	Y	$750.00	$331.98	331.98	$264.50	CARE	Y	S69.90XA
							A0425	Ground Mileage										$14.50	$7.17	7.17	$5.71			
16	17-04498	CARE	3/17/2017	10.5	Y	NA	A0429	BLS Emerg	Y	Y	NA	JH	Y	NA	Y	Y	Y	$750.00	$331.98	331.98	$264.50	CARE	Y	R58
							A0425	Ground Mileage										$152.25	$152.25	152.25	$60.02			
17	17-02681	CARE	2/16/2017	7.1	Y	Y	A0428	BLS Non E	Y	Y	NA	JR	Y	Error	Y	Y	Y	$550.00	$186.73	186.73	$148.78	CARE	Y	N28.9
							A0425	Ground Mileage										$102.95	$45.83	45.83	$36.51		Y	Z74.01
18	16-14202	CARE	9/7/2016	4.1	Y	Y	A0427	ALS 1 Emerg	Y	Y	NA	RH	Y	NA	B	U	Y	$850.00	$390.89	390.89	$311.44	CARE	Y	M54.9
							A0425	Ground Mileage										$59.45	$29.21	29.21	$23.27		N	Z74.09
19	17-10094	CARE	6/27/2017	18.2	Y	Y	A0428	BLS Non E	Y	Y	NA	HE	Y	N	B	U	Y	$550.00	$207.49	207.49	$165.32	CARE	Y	Z74.09
							A0425	Ground Mileage										$263.90	$130.56	130.56	$104.02		Y	S79.919A

Assigned #	Run #	Program Billed	D.O.S.	Mileage Billed	Mileage Correct per Docs?	Reason for Transport Doc'd?	Filed HCPCS Codes	Description	Charges supported by docs?	Meets Medicare Med Necessity?	Covered by CAID?	Modifiers	Modifiers Correct?	PCS	Receiving Section/Signature	Pt Signature	Crew Signature	Total Charges	Allowed Amount	Overpayment / (Underpayment) Allowed Amount	Primary Payments	Primary Payer	Diagnosis Supported by Docs?	ICD-10 Code
20	17-06934	CARE	4/29/2017	27.0	Y	Y	A0428	BLS Non E	Y	Y	NA	JN	Y	Y	B	Error	Y	$550.00	$186.73	186.73	$148.78	CARE	Y	N28.9
							A0425	Ground Mileage										$391.50	$174.32	174.32	$138.89		Y	Z74.01

Assigned #	Run #	Program Billed	D.O.S.	Mileage Billed	Mileage Correct per Docs?	Reason for Transport Doc'd?	Filed HCPCS Codes	Description	Charges supported by docs?	Meets Medicare Med Necessity?	Covered by CAID?	Modifiers	Modifiers Correct?	PCS	Receiving Section/Signature	Pt Signature	Crew Signature	Total Charges	Primary Payments	Primary Payer	Diagnosis Supported by Docs?	ICD-10 Code
1	17-05662	CAID-HMO	4/7/2017	10.0	Y	Y	A0427	ALS 1 Emerg	Y	Y	Y	RH	Y	NA	B	Y	Y	$850.00	$118.29	CAID-HMC	Y	R42
							A0425	Ground Mileage										$145.00	$18.90		Y	S09.90XA
2	17-06836	CAID-HMO	4/28/2017	22.0	Y	Y	A0427	ALS 1 Emerg	Y	Y	Y	RH	Y	NA	B	Y	Y	$850.00	$118.29	CAID-HMC	Y	R06.02
							A0425	Ground Mileage										$319.00	$41.58			
3	17-07283	CAID-HMO	5/5/2017	21.0	Y	Y	A0428	BLS Non E	Y	Y	Y	HN	Y	Error	Error	U	Y	$550.00	$161.74	CAID-HMC	Y	Z74.09
							A0425	Ground Mileage										$304.00	$20.28			
4	16-16599	CAID-HMO	10/19/2016	6.0	Y	Y	A0427	ALS 1 Emerg	N	Y	Y	SH	Y	NA	Error	Error	Y	$850.00	$203.20	CAID-HMC	N	T78.40XA
							A0425	Ground Mileage										$87.00	$6.66			
5	16-17648	CAID-HMO	11/7/2016	2.0	Y	Y	A0428	BLS Non E	Y	Y	Y	JN	Y	Y	Y	U	Y	$550.00	$85.55	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$29.00	$2.22			
6	16-19225	CAID-HMO	12/6/2016	1.0	Y	Y	A0428	BLS Non E	Y	N	Y	JN	Y	N	B	Y	Y	$550.00	$161.74	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$14.50	$0.74			
7	17-04381	CAID-HMO	3/15/2017	8.3	N	Y	A0428	BLS Non E	Y	N	Y	JR	Y	N	NA	Y	Y	$550.00	$97.92	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$120.64	$34.37			
8	16-10379	CAID-HMO	7/1/2016	9.0	Y	Y	A0428	BLS Non E	Y	N	Y	JR	Y	Error	NA	Error	Error	$550.00	$97.92	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$130.50	$15.61			
9	16-18916	CAID-HMO	11/30/2016	36.0	Y	N	A0427	ALS 1 Emerg	Y	Y	Y	SH	N	N	Error	Y	Y	$850.00	$118.29	CAID-HMC	Y	T14.90
							A0425	Ground Mileage										$522.00	$68.04			
10	16-18044	CAID-HMO	11/14/2016	29.0	Y	Y	A0428	BLS Non E	N	Y	Y	RH	Y	NA	Error	Y	Y	$850.00	$118.29	CAID-HMC	N	B96.89

Assigned #	Run #	Program Billed	D.O.S.	Mileage Billed	Mileage Correct per Docs?	Reason for Transport Doc'd?	Filed HCPCS Codes	Description	Charges supported by docs?	Meets Medicare Med Necessity?	Covered by CAID?	Modifiers	Modifiers Correct?	PCS	Receiving Section/Signature	Pt Signature	Crew Signature	Total Charges	Primary Payments	Primary Payer	Diagnosis Supported by Docs?	ICD-10 Code
							A0425	Ground Mileage										$420.50	$54.81			
11	17-00590	CAID-HMO	1/10/2017	17.0	Y	Y	A0427	ALS 1 Emerg	Y	Y	Y	SH	Y	NA	Error	Y	Y	$850.00	$118.29	CAID-HMC	N	T88.7XXA
							A0425	Ground Mileage										$246.50	$32.13			
12	17-02978	CAID-HMO	2/21/2017	16.0	Y	Y	A0429	BLS Emerg	N	Y	Y	SH	Y	NA	Y	Y	Y	$750.00	$118.29	CAID-HMC	Y	R56.9
							A0425	Ground Mileage										$232.00	$30.24			
13	17-01335	CAID-HMO	1/24/2017	13.1	N	Y	A0428	BLS Non E	Y	N	N	PN	Y	N	Error	Y	Y	$550.00	$97.92	CAID-HMC	Y	Z74.09
							A0425	Ground Mileage										$189.95	$25.08			
14	17-07452	CAID-HMO	5/9/2017	25.0	Y	Y	A0427	ALS 1 Emerg	Y	Y	Y	RH	Y	NA	Y	Y	Y	$850.00	$118.29	CAID-HMC	N	I49.9
							A0425	Ground Mileage										$362.50	$47.25			
15	17-06272	CAID-HMO	4/17/2017	8.4	N	Y	A0428	BLS Non E	Y	Y	Y	JR	Y	NA	NA	Error	Y	$550.00	$97.92	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$121.80	$15.61			
16	16-19644	CAID-HMO	12/14/2016	23.0	Y	Y	A0428	BLS Non E	Y	N	N	JR	Y	NA	NA	Y	Y	$550.00	$209.08	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$333.50	$166.52			
17	16-14372	CAID-HMO	9/9/2016	1.0	Y	Y	A0429	BLS Emerg	Y	N	N	RH	Y	NA	Error	U	Y	$750.00	$118.29	CAID-HMC	Y	R13.10
							A0425	Ground Mileage										$14.50	$14.50			
18	16-17665	CAID-HMO	11/7/2016	8.4	N	Y	A0428	BLS Non E	Y	N	N	JR	Y	NA	NA	U	Y	$550.00	$97.92	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$121.80	$15.60			
19	16-15302	CAID-HMO	9/26/2017	13.0	Y	Y	A0427	ALS 1 Emerg	Y	Y	Y	RH	Y	NA	Error	Y	Y	$850.00	$203.20	CAID-HMC	Y	R73.09
							A0425	Ground Mileage										$188.50	$14.43			

Assigned #	Run #	Program Billed	D.O.S.	Mileage Billed	Mileage Correct per Docs?	Reason for Transport Doc'd?	Filed HCPCS Codes	Description	Charges supported by docs?	Meets Medicare Med Necessity?	Covered by CAID?	Modifiers	Modifiers Correct?	PCS	Receiving Section/Signature	Pt Signature	Crew Signature	Total Charges	Primary Payments	Primary Payer	Diagnosis Supported by Docs?	ICD-10 Code
20	16-20422	CAID-HMO	12/28/2016	24.0	Y		A0428	BLS Non E	Y	N	N	JR	Y	NA	NA	Y	Y	$550.00	$209.08	CAID-HMC	Y	N28.9
							A0425	Ground Mileage										$348.00	$173.76			


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