

Lake County Colorado



COLORADO

Health Facilities & Emergency
Medical Services Division

Department of Public Health & Environment

**Emergency Medical & Trauma Services System
Consultation
April 21 - 24, 2019**



COLORADO

Department of Public
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

June 21, 2019

Lake County
Board of County Commissioners
505 Harrison Avenue
Leadville, CO 80461

Dear Commissioners,

On behalf of the Colorado Department of Public Health and Environment, we are attaching the Lake County emergency medical and trauma services system consultative review report. Pursuant to your invitation and support of this project, a group of consultants worked under the general coordination of the department to review the current status of the emergency medical and trauma services system in Lake County. The Lake County Board of County Commissioners and the local emergency medical and trauma services community are to be commended for the dedication and foresight you demonstrated by undertaking this important activity. We hope this report will provide the basis from which the community can move forward to ensure that quality patient care and transportation continue to be provided throughout the county.

The department is pleased to have provided the funding for this project and wishes to thank Central Mountains RETAC for its willingness to provide additional resources and support to this effort. Understanding that Colorado statute vests each county with the authority to develop, design and implement local emergency medical services systems, this consultative review is intended to provide insight and information from which the Board of County Commissioners, and local emergency medical and trauma services providers can make the policy decisions necessary to support the development of improved services to patients throughout your jurisdiction. The report itself has been authored by members of the contracted review team and represents their perspectives and recommendations. Understanding that the department has limited regulatory authority regarding services that provide prehospital care and transportation, this report nonetheless represents our commitment to work with local governments to ensure quality health care for all Coloradans.

As Lake County considers its next steps, if our office can be of further assistance, please reach out and we will look forward to the opportunity to assist any way we can.

Respectfully,

D. Randy Kuykendall, MLS
Director, Health Facilities and EMS Division
Colorado Department of Public Health and Environment

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Introduction and Project Overview

The Central Mountains Regional Emergency Medical and Trauma Services Advisory Council (CMRETAC) requested a consultative visit from the department on behalf of Lake County to ensure high-quality emergency services continue to be provided to its citizens and visitors. The Emergency Medical and Trauma Services Branch of the Health Facilities and Emergency Medical Services Division, pursuant its authority to assist local jurisdictions provided in C.R.S. § 25-3.5-102 and 603 respectively, recruited a consultative visit team to evaluate the emergency medical and trauma services system in Lake County and make recommendations for system improvement. CMRETAC provided invaluable assistance to coordinate with local emergency medical and trauma services stakeholders and the department in this consultation process.

Under Colorado law, the Board of County Commissioners is the ground ambulance licensing authority as defined by C.R.S. § 25-3.5-301. Dispatch and public safety communication services are provided by the Lake County Sheriff's Office Communication Center. Leadville-Lake County Fire Rescue provides EMS first response, rescue and fire services in the more accessible areas. Lake County Search and Rescue provides the initial EMS response and rescue services in the backcountry while Ski Cooper Ski Patrol provides medical care and evacuates patients from the ski slopes. St. Vincent General Hospital Ambulance Service is the only ground ambulance service licensed in Lake County and provides 911 emergency response as well as interfacility transports. St. Vincent General Hospital is the only licensed acute care hospital in Lake County and is a designated critical access hospital but is not currently designated as a trauma center. There are no air medical providers based in Lake County but three services are based nearby. Mutual aid resources are also available from neighboring counties when requested. The next closest critical care ground transport resources are based in Summit County.



Analysis of the current system involved a survey, interviews with primary stakeholders and a review of available system data. The state of the current system was analyzed using elements derived from the 14 EMS system components identified in the 1996 EMS Agenda for the Future, published by the National Highway Traffic Safety Administration, with the addition of a Colorado-specific component. These attributes serve as the basis for a number of statewide and regional planning activities and are further referenced in 6 CCR 1015-4, Chapter Four. A list of short-, medium- and long-term recommendations with guidance for implementation is provided in this report for consideration to improve the overall Lake County emergency medical and trauma services system, including the treatment, transportation, communication and documentation subsystems addressed in C.R.S. § 25-3.5-101 et seq.

The survey showed that stakeholders rated the overall effectiveness of the Lake County emergency medical and trauma services system as above average. During the on-site visit, the members of the various emergency medical and trauma services organizations demonstrated their commitment to provide outstanding service for this rural community and it was evident that the community recognizes this dedication with its support of the medical facilities and emergency response agencies serving the area.

Lake County Geography and Demographics

Lake County is located in north-central Colorado and is neighbored by five other counties including Chaffee, Eagle, Park, Pitkin and Summit. Lake County is the fourth smallest county in the state, encompassing approximately 384 square miles, with a mean elevation of 10,790 feet. The summit of Mount Elbert, in southwestern Lake County, reaches an elevation of 14,440 feet, the highest point in Colorado. The estimated 2018 population provided by the U.S. Census Bureau is 7,824 residents and a population density of 21 people per square mile. According to 2018 estimates, the population of Lake County had increased seven percent from 2010 while county populations in Colorado increased an average of 13.2 percent during this period. The over-65 age group in Lake County is 13.4 percent compared to an over-65 population of 13.8 percent for the state. The median household income within Lake County is \$46,176, compared to \$65,458 for the state, with an estimated percentage in poverty of 12.2 percent, higher than the state poverty rate of 10.3 percent. The median home price is estimated at \$197,600 compared to a state median price of \$286,100. The county lags behind the state in the area of health insurance, with an estimated 11.7 percent uninsured compared to 8.6 percent for the state. The assessed valuation for Lake County in 2017 was \$196,256,504 compared to the average assessed valuation of \$1,744,216,735 for the 64 counties in Colorado. Lake County has a mill levy of 38.192 on assessed valuation and a sales tax of four percent. Eligible transactions are also subject to sales taxes imposed by the state governments.

Lake County was created in 1861 as one of the 17 original counties when Colorado became a territory. The county was named for Twin Lakes. Lake County originally stretched from the Fremont Pass to the Utah border. By the time Colorado achieved statehood in 1876, the creation of Saguache, Hinsdale, La Plata and San Juan Counties had nibbled away at Lake County's southern border. The large expanse west of the Continental Divide was ceded when Gunnison and Ouray Counties were established the following year. On February 8, 1879, the Colorado Legislature created Carbonate County by renaming what was left of Lake County, but renamed the area and split it into two different counties on February 10. The northern portion of Carbonate County became the current Lake County and the southern part became Chaffee County. Leadville is the county seat and the only incorporated municipality in Lake County. Situated at an altitude of 10,152 feet, it is also the highest city in the United States. Present day Lake County is bordered by Eagle County to the north, Summit County to the northeast, Park County to the east, Chaffee County to the south and Pitkin County to the west.

Lake County is characterized by high mountains and large valleys that are part of the vast ancestral lands originally inhabited by the Ute people. Trappers and others of European descent passed through the area that is prime habitat for wildlife and continue to be accessed today for hunting and fishing. Mining played the key role in growth of the area after 1859 when gold was discovered in California Gulch. The area later became one of the world's richest sites for silver-production until the bottom fell out of the silver market in 1893. Zinc and copper provided much of the income from mining until World War II when the demand for molybdenum increased. At one point, the Climax mine was the largest and most efficient producer of molybdenum in the world. As the extractive industries have declined, their legacy created a foundation for year-round tourism and outdoor recreation. Lake County is

crisscrossed with old mining roads and an expansive system of trails that provide endless opportunities for four-wheel-drive and all-terrain vehicles, mountain bikes and trail running. When the snow flies, they are used for snowmobiling, Nordic skiing and fat biking. Lake County is a mecca for extreme athletes and hosts prestigious events such as a 100-mile ultramarathon and a 100-mile mountain bike race.

There are only a few highway transportation corridors in Lake County. US Highway 24 transects the county from north to south, entering the county at Tennessee Pass in the north and leaving near the small town of Granite in the south. State Highway 91 enters the county near Fremont Pass in the northeast and connects to US 24 near Leadville. US 24 and SH 91 north of Leadville are heavily traveled by workers commuting to jobs at the resorts in Eagle and Summit Counties and serve as an alternative route between Copper Mountain and Minturn when I-70 is closed at Vail Pass. State Highway 82 enters the county from the west at Independence Pass and connects to US 24 east of Twin Lakes. The summit of Independence Pass reaches an elevation of 12,095 feet and is subject to seasonal closure due to snow during much of the year.

Emergency Medical and Trauma Service Providers

Lake County Sheriff's Office Dispatch



The Lake County Sheriff's Office Dispatch provides dispatch services for the fire, police, sheriff, EMS and other public safety agencies in the county. The dispatch center is crammed into a small space at the county courthouse and is typically staffed by one dispatcher per shift. A second dispatch position is available but there is no reliable means to secure an additional dispatcher during periods of peak demand. The dispatchers are not currently credentialed and do not have protocols to provide prearrival instructions for calls requesting emergency medical services. The dispatch center is equipped with an archaic computer-aided dispatch

system and radios that are at end-of-life status. Parts for the system are no longer available and the manufacturer will no longer be able to maintain the system so the need for replacement is critical. Paging is conducted on a VHF frequency and the statewide digital-trunked-radio system is used for voice communications.

Leadville-Lake County Fire Rescue

Leadville-Lake County Fire Rescue is an all-hazards emergency services agency serving the



residents and visitors of Leadville and Lake County. The department is operated by the City of Leadville but is funded through an intergovernmental agreement with Lake County funding 70 percent of the department's \$1.2 million annual operating budget and the city paying the remainder. Leadville-Lake County Fire Rescue responds in tandem with the ambulance service to all scene requests for emergency

medical services. These calls account for 58 percent of the 793 total incidents reported by the department in 2018. Leadville-Lake County Fire Rescue responds from a single station located in the heart of Leadville by a staff of 11 full-time firefighters and nine part-time/resident firefighters. All full-time personnel hold an EMT certification and provide care in accordance with the Denver Metro EMS protocols. The department has modern apparatus including an engine, a ladder, a tactical tender, two brush trucks and a hazardous materials response trailer. Leadville-Lake County Fire Rescue is well equipped to meet their firefighting, emergency medical, rescue and hazardous materials objectives. Construction is underway of an additional station and training facility located near Twin Lakes in the southern portion of Lake County. This new facility is scheduled to be open by August 2019 and have room for conducting didactic and practical training, house additional part-time/resident firefighters, and affords the opportunity for future collaboration with the ambulance service.

St. Vincent General Hospital Ambulance Service

St. Vincent General Hospital Ambulance Service is a hospital-based ambulance that provides 911 response and interfacility transport services at the paramedic level for Lake County. The ambulance is operated by the St. Vincent General Hospital and is funded primarily through user fees and a \$750,000 tax subsidy from Lake County through an intergovernmental agreement. The ambulance service has always been closely tied to the hospital and its support was part of the hospital's commitment to the community when the district was formed. The ambulance service reported 894 requests for service in 2018 including 357 patients transported for 911 calls and 165 interfacility transports. St. Vincent General Hospital Ambulance Service responds from a single station located at the hospital with a staff of paramedics and EMTs who provide care in accordance with medical direction from a board-certified emergency physician from Heart of the Rockies Regional Medical Center in Salida. The department has three Type I four-wheel-drive ambulances equipped at the advanced-life-support level and typically staffs two units, one with a crew whose primary duty is to provide emergency response to 911 calls and another with duties in the hospital that can be called away if a second unit is needed. The ambulance service is collaborating with Leadville-Lake County Fire Rescue to construct an additional station and training facility located near Twin Lakes in the southern portion of Lake County.



St. Vincent General Hospital

In 1879, the Sisters of Charity of Leavenworth moved to Leadville and established a community hospital with two wings, four wards and 12 private rooms. At that time the population was growing rapidly due to the activity related to gold and silver mining and was estimated to be around 39,000, making Leadville the second-largest city in the state. During the first year, the Sisters treated about one thousand patients at St. Vincent's Hospital. The current facility was built in 1959 and the Sisters sold the hospital in 1972 to the community hospital district that had been formed. The community has undergone radical changes in the interim and, faced with closing in 2014, the hospital went to the voters asking for a tax increase to bring the deteriorating facility into regulatory compliance. The measure was defeated, leaving the board with the decision whether or not to close the hospital after 135 years of service. The hospital chose to make one last effort in November 2015 and placed another question on the ballot to increase the taxes by up to 3.625 mills. The increased mill levy was approved and generated an additional \$350,000 to help defray operating expenses and other hospital funding needs. The hospital also refocused its inpatient services, began



providing swing beds and re-established physical therapy services. The changes have been successful, with inpatient days increasing from 3 in 2017 to 244 in 2018, and the hospital has made a remarkable financial turnaround. Today, St. Vincent General Hospital District is a Critical Access Hospital with inpatient services, swing bed services, and other ancillary services such as laboratory, radiology, physical therapy and emergency room services. The hospital currently is non-designated but had been designated as a Level IV trauma center in the past. Although it has been a difficult road, the hospital is now considering a new construction project, which will result in a state-of-the-art facility and new services for the community. St. Vincent General Hospital District will embark on this \$23 million project with help from a USDA Rural Development loan and other private funders.

Lake County Office of Emergency Management

Lake County has an active Office of Emergency Management and commits adequate resources to support the program. The emergency manager position is full time and has additional support from a 0.5 FTE from public health and a 0.3 FTE from public works. The county also participates in the emergency management performance grant which helps defray some of the costs of the program. Emergency management is responsible for threat and risk analysis for the county as well as reporting on the capabilities to respond to those threats. Lake County adopted a new comprehensive emergency operations plan at the end of last year and is in the midst of a thorough update of the hazard mitigation plan. Emergency management also maintains robust resources for members of the public including emergency alerts by voicemail, text, email, Facebook or Twitter, as well as a detailed Emergency Preparedness Guide for the community. The Office of Emergency Management also provides administrative support for bi-monthly meetings of the Lake County Emergency Services Council. The council serves as the Local Emergency Planning committee for the county as well.

Lake County Search and Rescue

Lake County is a mecca for outdoor recreation and it is no surprise that Lake County Search and Rescue is an integral part of the county's emergency response system. Services provided include finding lost parties, access and extrication, specifically in austere environments, and basic medical care to the ill and injured. The search and rescue team responds to approximately 30 call outs per year and is staffed with dedicated volunteers who respond from home or work into the backcountry areas of Lake County using a mixture of personal and team equipment to access and extricate patients. Although a few members are advanced medical providers, the team operates at the wilderness first responder level under medical direction from Dr. Peter Vellman. Lake County Search and Rescue is a private, not-for-profit organization funded through donations and support from the state search and rescue fund. Lake County Search and Rescue functions at the direction of the Sheriff but they have historically managed their operations independently. While Lake County SAR is not currently a Mountain Rescue Association certified organization, they aspire to reach that milestone, along with plans to collaborate with EMS to provide advanced life support during their missions. Their primary challenge is one of attrition, finding it complicated to train and retain qualified

responders. With approximately 30 team members, and only a dozen regular participants, this challenge is a high priority.

Ski Cooper Ski Patrol

Ski Cooper is located on Tennessee Pass, a short 15-minute drive from downtown Leadville. Ski Cooper's origins can be traced back to Camp Hale, the training facility of the U.S. Army's famous 10th Mountain Division, established in 1942.



Today, Ski Cooper boasts 400 skiable acres divided into 41 primarily beginner and intermediate trails. With 83,000 skier visits throughout their approximately 120-day ski season, Ski Cooper saw a six percent increase in skier visits in the last two seasons but still maintains the

character of a neighborhood ski hill. The ski patrol is comprised of roughly 25 members, half being paid and the remaining working in a volunteer capacity. Providing basic life support at the Outdoor Emergency Care level, the patrol managed 330 incidents in the 2018-19 season which resulted in 19 ambulance transports, about one transport per week on average. While there is no terrain requiring avalanche control within Ski Cooper's boundaries and the patrol does not provide snow safety or control services, they are occasionally tasked with supporting their associated business, Chicago Ridge Snowcat Skiing. The snowcat operation is owned by Ski Cooper and operates on Chicago Ridge, adjacent to the ski area but outside its boundaries. The patrol is funded as a department of Ski Cooper which is county owned but operated by a not-for-profit organization. The ski patrol is well supported by the resort in both its operations and capital replacement. Communications occurs through a closed radio system and in addition to their primary duties of providing medical care, the ski patrol also leads the lift evacuation program. With entirely fix gripped chairs, rope guns and lowering systems are used in the event of a lift failure. The primary challenge within the department is one of attrition, with the transient nature of the community the patrol struggles to manage turnover.

Air Medical

Air medical is a critical link in the chain of survival because of the distance to tertiary care centers on the Front Range. There are no air medical providers based in Lake County but air medical support is still quite robust with three rotor-wing air ambulances based in nearby communities and a local airport readily accessible to fixed-wing air ambulances. There is also a marked heli-stop directly adjacent to St. Vincent General Hospital. All three air medical providers in the area are typically staffed by a medical crew consisting of a registered nurse and a paramedic capable of providing care for critical patients.

[Flight for Life-Colorado](#)

Flight for Life-Colorado has the longest and closest relationship with the emergency medical and trauma services providers in Lake County. Flight for Life is part of the Centura Health system and has a rotor-wing air ambulance based at St. Anthony Summit Medical Center in Frisco, about 25 miles northeast of Leadville. There is also a ground ambulance at the base in

Frisco that can be staffed by the air medical crew if weather conditions do not allow the helicopter to respond. Flight for Life is cognizant of the high cost to transport patients by air and actively works to reduce the number of patients transported by air who are discharged from the emergency department or transported to a second facility for a higher level of care.

REACH Air Medical

REACH Air Medical is an air ambulance provider headquartered in California and has a rotor-wing air ambulance based near Buena Vista, about 35 miles south of Leadville. REACH opened this base in 2016 and St. Vincent General Hospital has been making greater use of this provider recently. The hospital has also purchased a membership for all employees to cover the cost of an air medical transport provided by REACH.

Classic Air Medical

Classic Air Medical is an air ambulance provider headquartered in Utah and has a rotor-wing air ambulance based at Valley View Hospital in Glenwood Springs, about 60 miles northwest of Leadville.

Colorado Mountain College

Colorado Mountain College is a state-recognized education program authorized to provide initial training and continuing education for all levels of EMS providers. The college has 11 campuses throughout a service area encompassing 12,000 square mile in seven counties across the central mountains of Colorado. EMS education at the campus in Leadville is focused on initial EMT courses that complement Fire Science, Ski Area Operations and the other degree or certificate programs. Affordable tuition rates, on-campus housing and proximity to the most prominent ski areas in the nation draw a significant cohort of traditional students to the Leadville campus.

Central Mountains RETAC

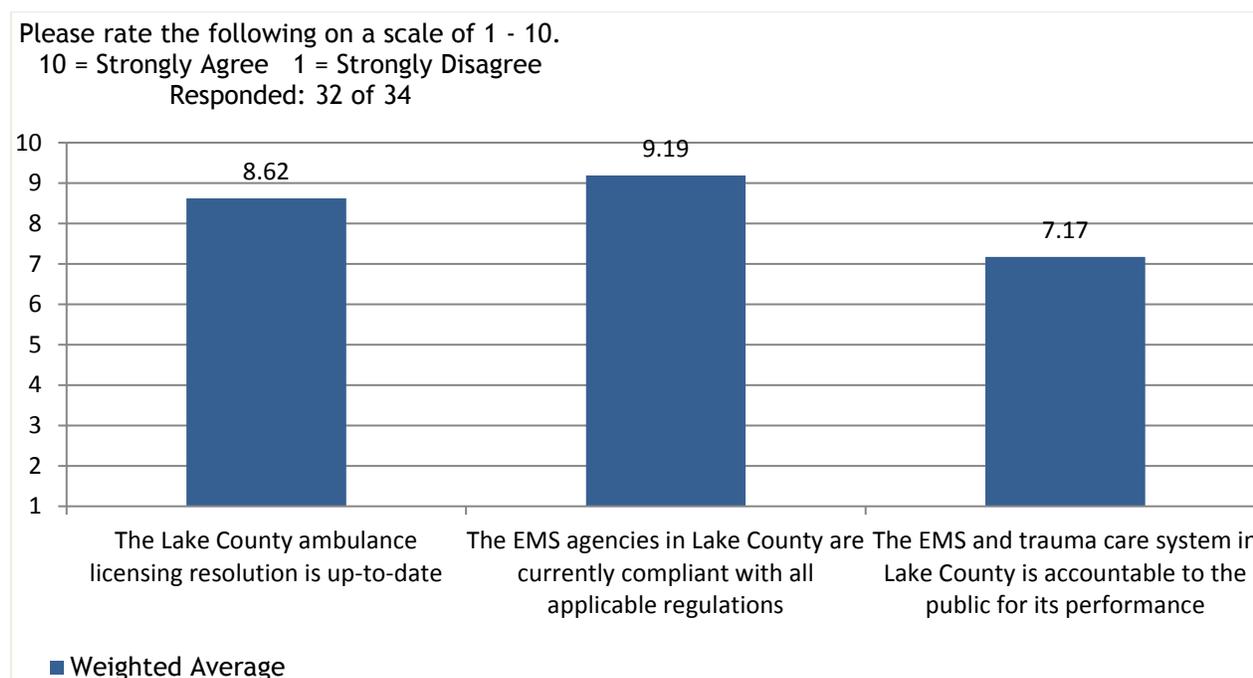
The Central Mountains Regional Emergency Medical and Trauma Services Advisory Council is a not-for-profit organization created to provide a coordinated approach to emergency medical and trauma services in a six-county region that includes Chaffee, Eagle, Lake, Park, Pitkin and Summit Counties. The region encompasses 6,882 square miles, an area almost the size of Connecticut and Rhode Island combined. The region provides support and works collaboratively with the emergency medical and trauma services agencies to reduce morbidity and mortality through fall prevention, occupant protection, skier safety and improved survival of cardiac arrest patients. The Central Mountains RETAC is predominately rural with rugged mountains and high elevations. Medical services in the region are limited while weather and the large influx of tourists inhibit the ability to quickly transport critical patients to tertiary care centers along the Front Range.



Analysis of Lake County EMTS System Components

Participants from the emergency response system and local health care facilities were asked to complete an anonymous survey rating the current emergency medical and trauma services and relationships in the county. In addition, elected officials and emergency medical and trauma services system stakeholders were interviewed during the on-site consultative visit. The following sections consider survey results, interviews and factual data from a variety of sources.

Legislation and Regulation



Regulatory Overview

The state of Colorado has full regulatory authority for licensing and regulation of hospitals, skilled nursing facilities, air ambulances and most healthcare agencies. Regulatory oversight for ground ambulances is divided between state and county levels. The state has sole authority to set forth rules regulating individual EMS provider education, medical direction and scope of practice, while counties are required by statute to license and regulate ground ambulance services and issue ambulance vehicle permits. Most counties establish their ambulance licensing requirements through resolution or ordinance. Given the continual increase in clinical sophistication and complexity of EMS systems, many counties also formally establish a local, multidisciplinary council to advise the Board of County Commissioners on EMS issues.

Lake County Ambulance Resolution

The Lake County ground ambulance licensing resolution currently in effect was adopted Nov. 18, 1991. The resolution addresses ambulance equipment, qualifications for response

personnel and medical direction as was common in similar documents enacted around that time, but is unique in that it directly contradicts statute with a provision that exempts the ambulance service from the requirement to submit information about the treatment and transportation of patients. It appears the resolution has not been updated to comply with several substantial revisions to governing law enacted over the last 28 years.

The Board of County Commissioners is clearly supportive of the emergency medical and trauma services providers in Lake County and recognizes the importance of medical services to maintain the vitality of the community. They have a long history of working to preserve local access to services and view the continued improvement of medical services as essential to promote economic growth. The Board of County Commissioners noted the collaborative efforts to enhance emergency services in the south end of the county as an example of enhanced interagency relationships that will have a positive effect on access to services throughout the county.

Special Districts

St. Vincent General Hospital District is the only special district governed by Title 32 of the Colorado Revised Statutes that provides emergency medical and trauma services in Lake County. As a political subdivision of the state of Colorado, the citizens elect a governing board that is responsible for collecting taxes and providing services as defined in the district's service plan. Functionally, the service plan is an agreement between the special district and the community it serves. Special district service plans and other foundational documents are routinely reviewed as part of the consultative visit, but the hospital district was formed so long ago that it was unable to provide a copy of their service plan and the Colorado Department of Local Affairs did not have the service plan on file. The importance of a current service plan became more significant recently when the Federal Emergency Management Agency used special district service plans to document legal authorization to provide services and determine eligibility for federal disaster reimbursement.

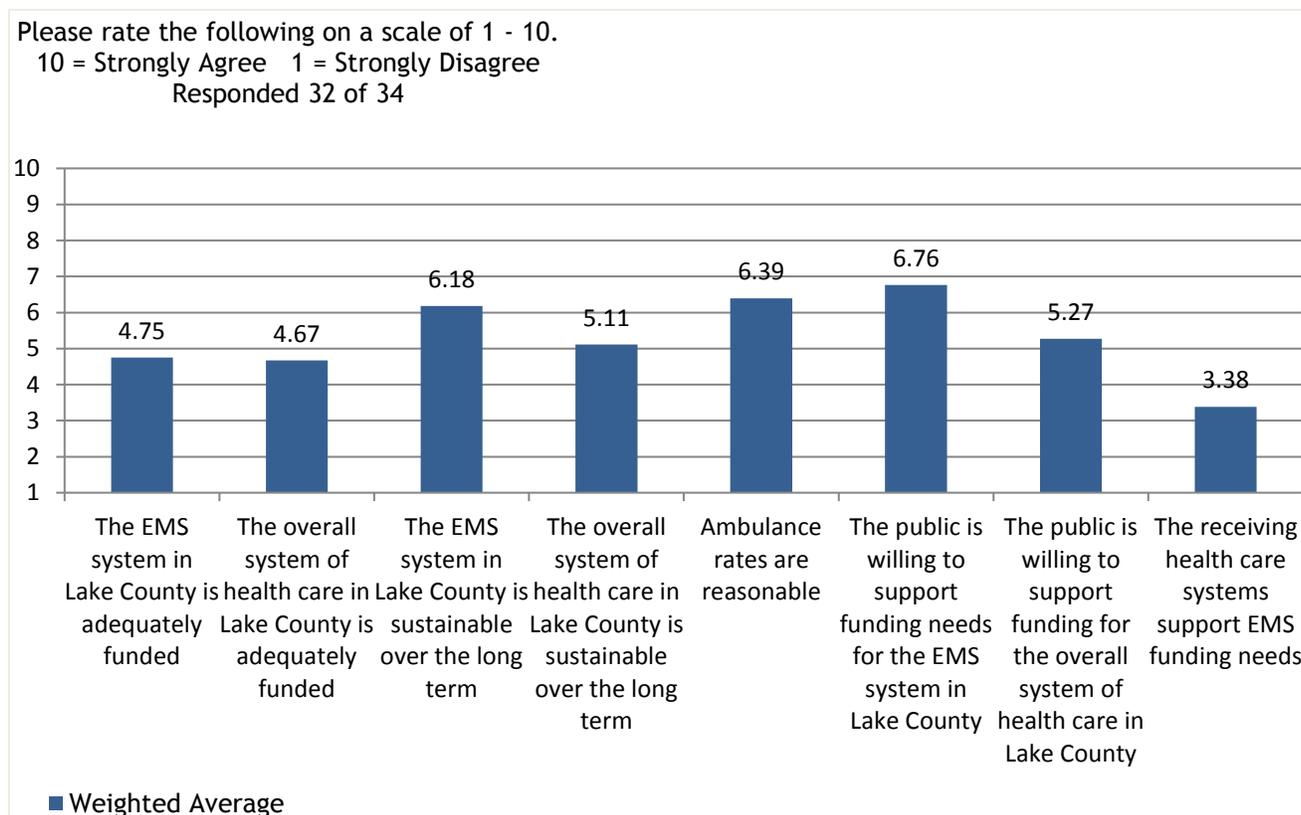
Regional Emergency Medical and Trauma Services Advisory Council

Colorado has 11 regional emergency medical and trauma services advisory councils (RETACs) to help provide a coordinated approach to emergency medical and trauma care. Each RETAC consists of five or more counties that participate through an advisory council and is responsible for creating a regional plan to improve the quality and coordination of emergency medical and trauma services in the region. Each RETAC determines the services it will provide based on the priorities established by the council. The Central Mountains RETAC offers education, program resources and other support for facility trauma coordinators and EMS medical directors as well as robust programs for injury prevention and cardiac arrest survival throughout the six-county area. Lake County has appointed representatives to the Central Mountains RETAC and they actively participate in council activities.

Recommendations

- Update the Lake County ambulance licensing resolution to comply with governing law and current practices including the rule revisions that established additional minimum requirements for counties effective Jan. 14, 2019.
- Formally authorize the Lake County Emergency Services Council to advise the Board of County Commissioners on all aspects of the emergency medical and trauma services system and allocate resources for it to operate successfully. Authorization for the council can be accomplished by resolution or incorporated into an updated ambulance licensing resolution. This council should advise the Board of County Commissioners on ambulance licensing, recommend priorities for local emergency medical and trauma system development, monitor system quality, prioritize requests for supplemental local funding from the Central Mountains RETAC and report the current system status to the Board at least annually. This council can also serve as a forum to address operational issues and enhance interagency communication.
- St. Vincent General Hospital District should update its service plan and file the service plan with the Colorado Department of Local Affairs. Although the services currently offered are authorized by statute, a plan that includes all current services and addresses future enhancements will increase transparency for this level of government and potentially increase reimbursement if district resources are ever called to assist with a declared federal disaster.

System Finance



System Finance

The emergency medical and trauma services system providers and government officials demonstrated they are clearly motivated and well trained. They were consistently helpful and worked in a collaborative manner with the consultative visit team. Most of the emergency medical and trauma services are provided by local governments in Lake County. The emergency medical and trauma services system is funded through traditional sources including user fees, property tax levies, sales taxes, governmental transfer payments, public or private grants and donations.

Lake County

The county government provides significant funding for the emergency medical and trauma services system in Lake County. The 2019 budget proposes expenditures for dispatch, preparedness and emergency management, search and rescue, and the county share of support for Leadville-Lake County Fire Rescue. By agreement, 70 percent of fire department expenditures are funded by Lake County and the remainder is funded by the City of Leadville. Funding for the dispatch center is marginal based on the current operating model but is clearly inadequate to bring the center up to current standards or provide for future needs. Preparedness and emergency management appear to be funded at a reasonable level to meet current and anticipated future needs unless there is a dramatic change in risk for specific hazards. Annual costs for search and rescue are not usually substantial and funding appears to be adequate to meet baseline needs. About \$750,000 is programmed for transfer to St. Vincent General Hospital District through collection of a property tax levy dedicated to support the ambulance service.

St. Vincent General Hospital District

The 2019 budget for St. Vincent General Hospital District summarizes the financial expectations for the organization as a whole. Figures for each individual department were not available for review. The district anticipates an operating deficit of \$789,917 in 2019 although this deficit is substantially less than the estimated loss for 2018. When the tax subsidies are considered, the organization is expected to show a net surplus of \$812,882 in 2019. The projected 2019 tax subsidy of \$943,607 is a fraction of the approximately \$8 million in net revenue generated by the hospital. To some extent, the relative strength of the district's financial position is related to its designation as a critical access hospital. Under this program, the hospital is not subject to the inpatient prospective payment system or the hospital outpatient prospective payment system and is eligible for reimbursement of most inpatient and outpatient services to Medicare patients at allowable cost plus one percent. Ambulance services provided by a critical access hospital can also be reimbursed at 101 percent of allowable cost but St. Vincent General Hospital Ambulance is not currently eligible for reimbursement at this rate because another ambulance provider is located within a 35-mile drive. Grants have typically composed an even smaller portion of district revenues than taxes and appear to be focused on leveraging local funds to improve the cost effectiveness of improvements for the community. Fees for service make up the bulk of revenues and provide

an adequate level of funding for hospital services at current levels and contribute to future capital needs.

While the district provided much of the financial information requested by the consultative visit team, solid conclusions surrounding revenue and expenses within the ambulance department could not be determined definitively due to discrepancies between sources. For example, a preliminary 2018 income statement provided for the ambulance service shows net patient revenue of \$510,360 and operating costs of \$1,247,533 for an operating deficit of \$737,173. The figure for operating costs includes an allocation for overhead but does not account for the cost for employee benefits which are not allocated by hospital department. The hospital budget projects benefits expense at 29.5 percent of salaries for the period. Assuming this factor is consistent for all hospital employees, the estimated cost for employee benefits in 2018 is \$181,945 and total operating costs for the ambulance service are \$1,429,478 resulting in an operating deficit of \$919,118. When the \$750,000 tax subsidy from Lake County is considered, the operating deficit for the ambulance service is reduced, but also diminishes the operating results for district as a whole by \$169,118. The organization profile submitted to the state with the FY2020 EMTS provider grant application tells a different story. The organizational profile for St. Vincent General Hospital Ambulance shows net patient revenue of \$614,992 and operating costs of \$744,922 for an operating deficit of \$129,930. When the \$750,000 tax subsidy from Lake County is considered, the operating deficit becomes a net surplus, and contributes \$620,070 to net income for the district as a whole. It would also be helpful to look at the productivity of the ambulance by considering how the service affects the critical access hospital with respect to reduction of the costs allocated to patient care areas. It is a difficult process and calculation to determine how the ambulance service contributes to financial operations of the hospital, but worth the effort to show the symbiotic relationship and more definitively identify the financial effect of ambulance service operations on the organization as a whole.

The organizational profile reported ambulance rates that were on par with other agencies in the region but, as demonstrated above, are still insufficient to recover the full cost of providing services. St. Vincent General Hospital Ambulance reported an adjusted collection rate, collections divided by billings, of about 48 percent. The crude collection rate could not be calculated because adjustments for contractual allowances and discounts were not reported. This collection rate is slightly higher than expected and was attributed to a favorable payer mix for the service area consisting of 30 percent private insurance, 50 percent Medicare or Medicaid, and 20 percent private pay. Billing for all St. Vincent General Hospital District services is performed in-house. Coordination of the billing for ambulance, emergency department and inpatient services may contribute to the favorable collection rate and can enhance communication between the billing office and EMS providers to improve documentation from the field personnel.

Several factors affecting the financial picture for the ambulance service are incomplete. The full extent of administrative services supplied by the hospital are not broken out. Obviously, this makes it difficult to assess the total cost of administering the ambulance service. Employee benefits are not assigned to individual departments as noted above, confounding the

calculation of total costs for compensation for the EMS providers. It was also difficult to determine how the hours spent on the inpatient floor and emergency department were allocated to the department where the hours are worked. It appears the hours are re-allocated to the appropriate departments in the Medicare cost report at the end of the year but do not appear in the current financial reports. On the revenue side, the calculation of net proceeds from user fees includes some uncertainty. Collection rates and contractual allowances based on estimates for the organization as a whole may skew the net revenues reported for the ambulance department. These factors combine to make it nearly impossible for the ambulance service to be in control of their financials and put the ambulance director in the untenable position of being responsible for something outside his control. It also makes it difficult for Lake County to exercise due diligence in its oversight of the tax subsidy.

The EMS providers on the ambulance service are not actively engaged in an emergency response or interfacility transport 100 percent of the time. The hospital assigned the EMS providers to supplement staffing in the emergency department and on the inpatient floor. The “unproductive” hours between calls become very important hours to the hospital by using them for patient needs in the hospital. The desired balance between competing requirements of 911 response and fulfilling patient care duties on the floor varies depending on perspective. During the on-site visit, it was reported that the fire department arrived on scene before the ambulance service about 85 percent of the time. We also observed that the ambulances were dirty and had minor body damage, and the ambulance bay was unkempt. The call data submitted to the state EMS patient care report registry shows the elapsed time from dispatch until the ambulance began responding is less than five minutes only about half the time. It appears the hospital’s priority is to maximize staffing on the floor rather than devote time to the prehospital services.

The financial information specific to operation of the ambulance service is insufficient to provide a definitive comparison of service delivery models but we will provide some analysis within the limits of the information at our disposal.

At this juncture, there are three basic operational alternatives available to consider:

1. Operate as a third service (stand-alone) EMS organization;
2. Transfer ambulance operations to Leadville-Lake County Fire Rescue; or
3. Continue to operate as a department of St. Vincent General Hospital District.

There are variations within each alternative and all have advantages and disadvantages to consider.

Forming a new, independent organization to operate the ambulance service can take on different forms. One variation would be to form a new special purpose local government to provide ambulance service. Another variation would be for the local governments in Lake County to cooperatively form a new special purpose local government authority to provide ambulance service.

Operate the ambulance service under a special purpose local government (Title 32 Special District or local government authority).

Advantages:

- A special purpose local government is more responsive to community needs than a general purpose government.
- A special district is directly accountable to the public through an elected board.
- A special purpose local government has a single purpose so the ambulance service does not compete against other budgetary priorities for resources.
- A special purpose local government has a single purpose so the cost to provide ambulance service is clear to the public.
- A special purpose local government has a single purpose so decision making can be based on what is best for patients and the ambulance service.
- If an authority is formed, it may be able to take advantage of existing administrative infrastructure of the local government partners for personnel, finance or other administrative functions.
- If an authority is formed, it may be able to take advantage of existing administrative infrastructure of the local government partners for medical billing, quality management, continuing education and other medical-specific functions.
- Lake County can exert control over the ambulance service through the tax subsidy payments and the licensing authority delegated by the state.

Disadvantages:

- Formation of a special district requires permission from St. Vincent General Hospital District and a protracted, expensive process that requires a public vote. If an authority is formed, negotiating an intergovernmental agreement between the local government partners is a protracted and expensive process.
- A special district must establish a new administrative infrastructure that may be duplicative of other local governments. The infrastructure for medical billing, quality management, continuing education and other ambulance-specific functions must be established.
- The funding mechanism in place but it will require modification of existing intergovernmental agreements that could be complex and protracted.
- The new entity has no experience running ambulance operations.
- The new entity has no facilities.
- Ownership of ambulances, medical equipment and other capital assets required to provide services must be transferred to the new entity.

- The new entity must contract with outside vendors for maintenance and repair of cardiac monitor-defibrillators and other medical equipment.
- The concentrated focus on ambulance service will enhance clinical sophistication and quality of services.
- The level of trust and respect between the EMS providers and hospital providers will change when they no longer work side by side in the emergency department.
- Lake County will need to license a new ambulance provider.

If forming a special district, the specific type is a secondary decision based on the taxing authority and specific services permitted by statute and will be determined by the specific service the hospital district is willing to give up. The primary difference is ambulance districts have the authority to provide ambulance service and levy a property tax. Health service districts have the authority to provide numerous health services in addition to ambulance service and levy a sales tax in addition to a property tax. An authority cannot levy taxes on its own. Any tax must be levied by a constituent government.

Transfer the ambulance service to Leadville-Lake County Fire Rescue.

Advantages:

- The agency already has a funding mechanism in place. Lake County can add the ambulance tax subsidy to the contribution it is already making to support fire and rescue services.
- Possible efficiencies by merging fleet maintenance, communications infrastructure or other efficiencies.
- The EMS providers can be cross-trained as firefighters to increase resilience of the fire response capabilities.
- The city has an established administrative infrastructure for personnel and managing finances or other functions.
- Lake County can exert control over the ambulance service through the tax subsidy payments and the licensing authority delegated by the state.

Disadvantages:

- Leadville-Lake County Fire Rescue has no experience running ambulance operations. Institutional capability could be lost or suppressed under the leadership of a non-medical organization.
- Leadville-Lake County Fire Rescue must establish the infrastructure for medical billing, quality management, continuing education and other ambulance-specific functions.
- Ownership of ambulances, medical equipment and other capital assets required to provide services must be transferred to Leadville-Lake County Fire Rescue.

- Leadville-Lake County Fire Rescue must contract with outside vendors for maintenance and repair of cardiac monitor-defibrillators and other medical equipment.
- Ambulance response capabilities may be compromised when EMS providers serving as firefighters are responding to a fire services call.
- Fire services may take precedence over ambulance services.
- The ambulance service needs would compete against fire service needs when budgeting agency resources.
- Difficulties in merging disparate information systems to meet emergency services operations reporting requirements.
- Personnel difficulties in merging two disparate emergency services operations with different organizational cultures.
- Leadville-Lake County Fire Rescue facilities are not adequate to station additional crews and must be renovated, remodeled or replaced.
- The level of trust and respect between the EMS providers and hospital providers will change when they no longer work side by side in the emergency department.
- Lake County will need to license a new ambulance provider.

Continue to operate the ambulance service under St. Vincent General Hospital District.

Advantages:

- St. Vincent General Hospital District has experience with ambulance operations.
- St. Vincent General Hospital District has an established infrastructure for personnel, finance and administration as well as medical billing, quality management, continuing education and other ambulance-specific functions.
- St. Vincent General Hospital District owns the ambulances, medical equipment and other capital assets required to provide services.
- St. Vincent General Hospital District has current capabilities to maintain and repair cardiac monitor-defibrillators and other medical equipment.
- The level of trust and respect between the EMS providers and hospital providers will change as they continue to work side by side in the emergency department.
- Lake County can exert control over the ambulance service through the tax subsidy payments and the licensing authority delegated by the state.
- Lake County will not need to license a new ambulance provider.

Disadvantages:

- Ambulance response capabilities are compromised when EMS providers are serving as nurse aides in the hospital.

- Hospital services may take precedence over ambulance services.
- The ambulance service needs compete against hospital needs when budgeting agency resources.
- Personnel dissatisfaction when EMS providers are tasked with nurse aide duties on the inpatient floor.
- There is potential for personnel difficulties between in-hospital staff and EMS providers due to cultural differences.
- There is potential for future discontent when the new station in the south end of Lake County opens and the two locations have disparate facilities and job duties.
- St. Vincent General Hospital District facilities are not adequate and must be renovated, remodeled or replaced.

None of the options stood out and, absent any compelling evidence, the most favorable option is to continue operating the ambulance service as a department of St. Vincent General Hospital. It avoids the costs and negative repercussions of dramatic change, makes good use of existing government infrastructure and avoids duplication. The other options would not provide meaningful change or significant improvement to the services for Lake County residents and visitors. This does not preclude any of the other options from future consideration if the operating environment or demands for service change, however. The limited fiscal transparency and clear prioritization of hospital operations over ambulance response must be addressed. Currently the hospital district is undergoing a large capital improvement, without significant investment in the ambulance service. While EMS is just one aspect of their business, it represents 44 percent of the taxpayer's investment in St Vincent General Hospital.

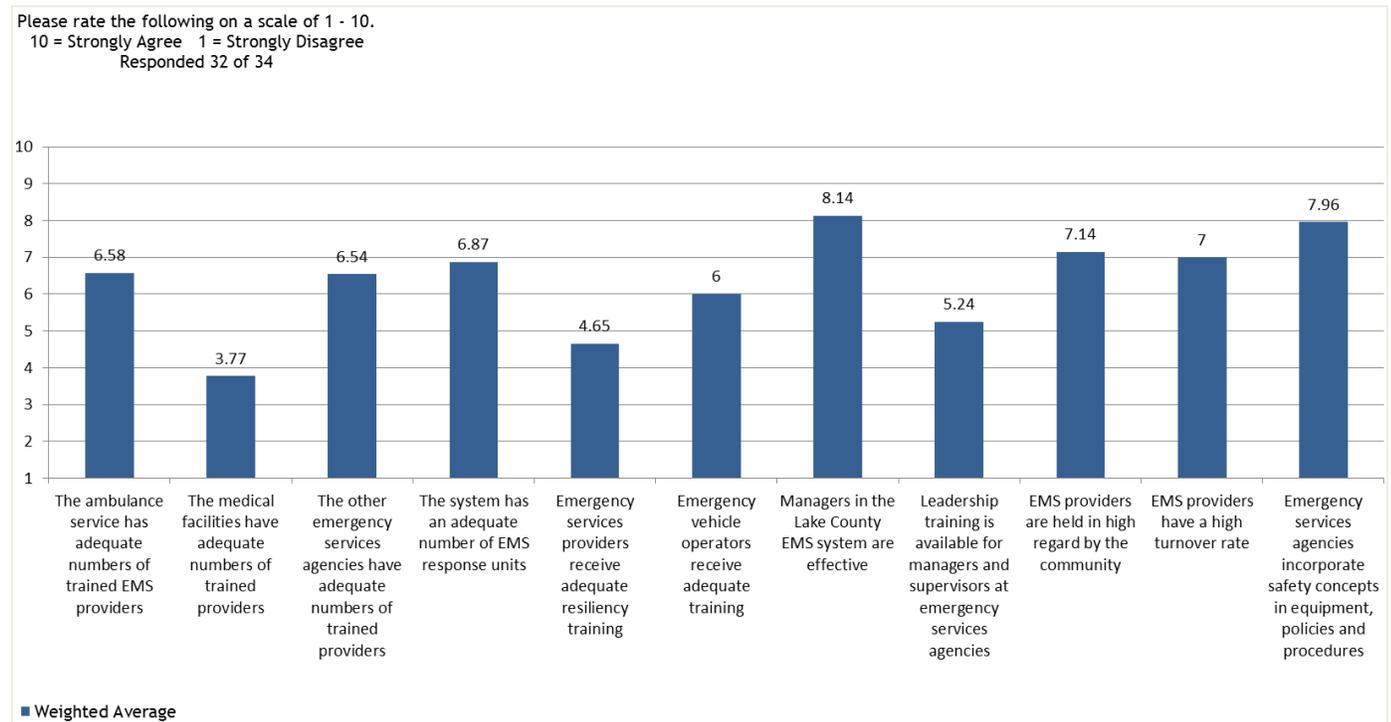
Recommendations

- ✱ St. Vincent General Hospital District is obligated to provide a copy of its annual audit and Medicare cost report to the Board of County Commissioners annually. These are valuable documents for the Board to use for oversight but they are in a format that is not useful for most members of the public. St. Vincent General Hospital District should also demonstrate its use of the proceeds from the ambulance services mill levy in a summary or dashboard format that is meaningful to the public. Consider depictions such as:
 - Charts comparing average out-of-chute time or scene time compared to a benchmark.
 - Stacked graphs showing where the revenue for the ambulance comes from compared to another graph showing where it goes (and how much is covered by the subsidy).
 - Charts showing how much time the EMS providers are training, working on the floor and responding to calls on a typical day.
 - A “fuel gauge” showing fiscal performance for the ambulance service.

There is a lot of good will and support for the hospital from the County Commissioners and the community. It is important for the hospital to reciprocate by showing the public what they receive for their tax dollars.

- ✿ To enhance fiscal transparency and build an understanding of the fiscal challenges of providing ambulance service, St. Vincent General Hospital District should provide frequent, monthly or at least quarterly, reports to the Board of County Commissioners. A well-structured report would provide a clear picture of income derived from user fees for interfacility transports and emergency responses, how EMS providers' time is allocated to ambulance, emergency department and the inpatient floor, which costs are attributed to administrative expense and progress on a comprehensive capital replacement plan.
- ✿ The ambulance service should re-evaluate the current staffing patterns for EMS providers to allot adequate time for response, readiness (including rest time on extended shifts), EMS training, EMS station maintenance with the remainder to support hospital staff.

Human Resources



Human Resources

Leadville-Lake County Fire Rescue has a minimal staff that takes pride in doing more with less. They are well trained, competent in the provision of fire suppression, rescue, hazardous materials response and helping the ambulance crew with patient care and transportation. With the assistance of a federal Staffing for Adequate Fire and Emergency Response (SAFER) grant funding, fire department has established a robust resident program to assist with recruitment of personnel and value the subsequent benefits of having locally residing, quality trained

personnel to supplement their full-time staff. The administration and staff recognize the benefits of actively participating in EMS, not only to the department, but also to the citizens that they serve and recognize the benefit of future collaboration with St. Vincent Hospital to jointly staff an additional ambulance when construction of the joint south station is completed.

The St. Vincent Hospital Ambulance staff is a group of providers dedicated to quality patient care. EMTs and paramedics are compensated at market value; however, they endure a complex staffing schedule, nontraditional job duties, substandard quarters and an ambiguous future. The ambulance staff strongly value the experience afforded to them by working in the emergency department at the hospital. They feel a sense of appreciation and respect by the nursing staff, mid-level practitioners and physicians that they interact with on a daily basis and are relied upon in critical situations. Conversely, the hospital's reliance on EMS providers as medical-surgical nursing assistants on the floor is contentious at best. The EMTs and paramedics tolerate this obligation as a condition of employment but feel their value and training would be better suited for more traditional roles in prehospital or emergency department functions.

The Ski Cooper Ski Patrol has significant turnover in the paid staff, about 30-50 percent per year. Much of this is structural and due to the fact that the paid patrollers are attending Colorado Mountain College for a limited period of time and are seasonal. The full-time volunteer patrollers are established and have been on staff for years.

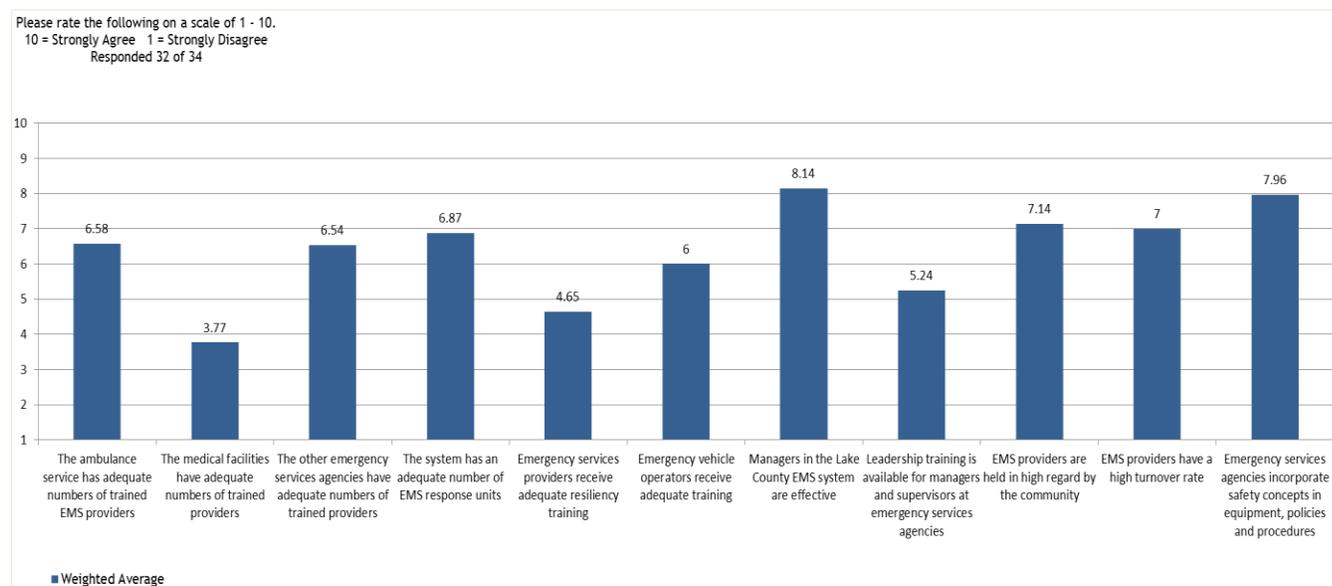
Lake County Search and Rescue has a strong core of dedicated response personnel but finds it difficult to recruit additional volunteers. It has also been difficult to muster enough members to respond to requests for service during regular working hours. To a great extent, these issues are related. Leadville is a bedroom community for the resort areas in adjacent counties and about two-thirds of the workforce has jobs outside the county. Long commutes extend the amount of time this demographic is unavailable to emergently respond, and limits the time to devote to volunteer activities.

The emergency department is staffed by a number of physicians, mid-level practitioners and locum tenens. There was an overall concern mentioned about retention and recruitment of physicians, providers, nursing staff and other ancillary department personnel. This was attributed to factors inherent to rural communities overall, such as limited access to amenities locally, and a lack of available housing units in the county. Although the team was not able to interview a broad cross section of the nursing staff, comments included with responses to our survey questions identified the authoritarian style of top management as a significant source of employee dissatisfaction. With respect to recruitment, Lake County is considered a low income Health Professional Shortage Area (HPSA) with a relatively high score. This should be a great help in recruiting physicians and nurses since the score allows National Health Service Corps scholars to work off their loan repayment in the area.

Recommendations

- ✿ Prioritize ambulance response for EMS providers and adequately staff the hospital so that EMS providers are able, and fully expected, to leave their in-hospital assignment for a call.
- ✿ Develop and implement a plan to transition staffing in the acute care unit from EMS providers to Certified Nursing Assistants and assign the EMS providers to other tasks more related to prehospital care. Using EMTs as nurse aides was a great way to have personnel available for calls and extract additional productivity by working them on the floor between calls. The ambulance service is evolving as the community grows and a station in the southern end of the county is added. Sustainability of the current staffing configuration is uncertain based on the prevalence of negative comments about working on the inpatient floor.
- ✿ Continue to value the participation and reliability of EMS providers in the emergency department of St. Vincent General Hospital.
- ✿ Examine the effects on staffing with the upcoming addition of the station shared with Leadville-Lake County Fire Rescue in the southern end of Lake County. Consider converting EMS staff to a more traditional 24-hour based, combination on-duty/on-call schedule that provides for 24/7 coverage for 911 calls, interfacility transports and emergency department staffing.

Medical Direction



Medical Direction

There is clearly a very dedicated team in place providing emergency medical services and medical direction for these services at the moment. It is a testament to the legacy of those doctors, nurses, paramedics and EMTs that have created the system that they have now.

There are three physicians providing medical oversight for the emergency medical services agencies in Lake County. The current medical director for St. Vincent Hospital Ambulance Service is Dr. Joshua Visitacion. He is a board-certified emergency physician and serves as the emergency department director at Heart of the Rockies Regional Medical Center in Salida. He is working to change the protocols from the Denver Metro EMS protocols to something more specific for the ambulance service in Leadville. The Heart of the Rockies Regional Medical Center provides online medical control and the ambulances in Lake County contact a physician in Salida by radio or mobile telephone for orders. Although he already has a full-time job at Heart of the Rockies Regional Medical Center, he is willing to take on medical direction for all the EMS agencies in Lake County if that is the direction they wish to go. Overall, he has great affinity for St. Vincent General Hospital and sees that it has made great strides in improving the resources given to the ambulance service. He feels that the paramedics and EMTs gain valuable clinical experience from working in the hospital however there is some uncertainty about medical direction when the EMS providers are working in the hospital. Historically, EMS providers have been allowed to operate within a scope of practice under medical direction in the field, but functioned under a different rule inside a medical facility. EMS providers will soon be authorized to operate in a facility under the same rule that applies in the field but there are still some discrepancies between the scope of practice and the duties assigned to the EMS providers within the hospital.

Leadville-Lake County Fire Rescue and Lake County Search and Rescue currently receive medical direction from Centura Health Prehospital Services under Dr. Peter Vellman and use the Denver Metro EMS protocols. Dr. Regan Brockmeyer is part of the medical direction team providing medical oversight for the providers in Lake County and supports the concept of unified medical direction among the prehospital agencies in the county. Lake County Search and Rescue is currently working to align its medical direction with St. Vincent General Hospital Ambulance.

The ski patrol at Ski Cooper is currently operating under medical direction from Dr. Doug Yeakel. The ski patrol uses the Denver Metro EMS spinal immobilization protocol and focuses on basic-life-support on the hill. The ski patrol does not have a formal quality management program although the Outdoor Emergency Care criteria for the National Ski Patrol does not require medical direction by a physician or a quality management program.

Dr. Lisa Zwerdinger is the chief medical officer for St. Vincent General Hospital. She also runs a primary care and has been the medical director for the ambulance. She is remarkably dedicated to the hospital and the community, functioning as a hospitalist, emergency department provider and community family practice physician who still delivers babies. She very much believes in online medical control for EMS and would like to be able to direct the ambulance crews from the emergency department despite their oversight and protocols from another medical director.

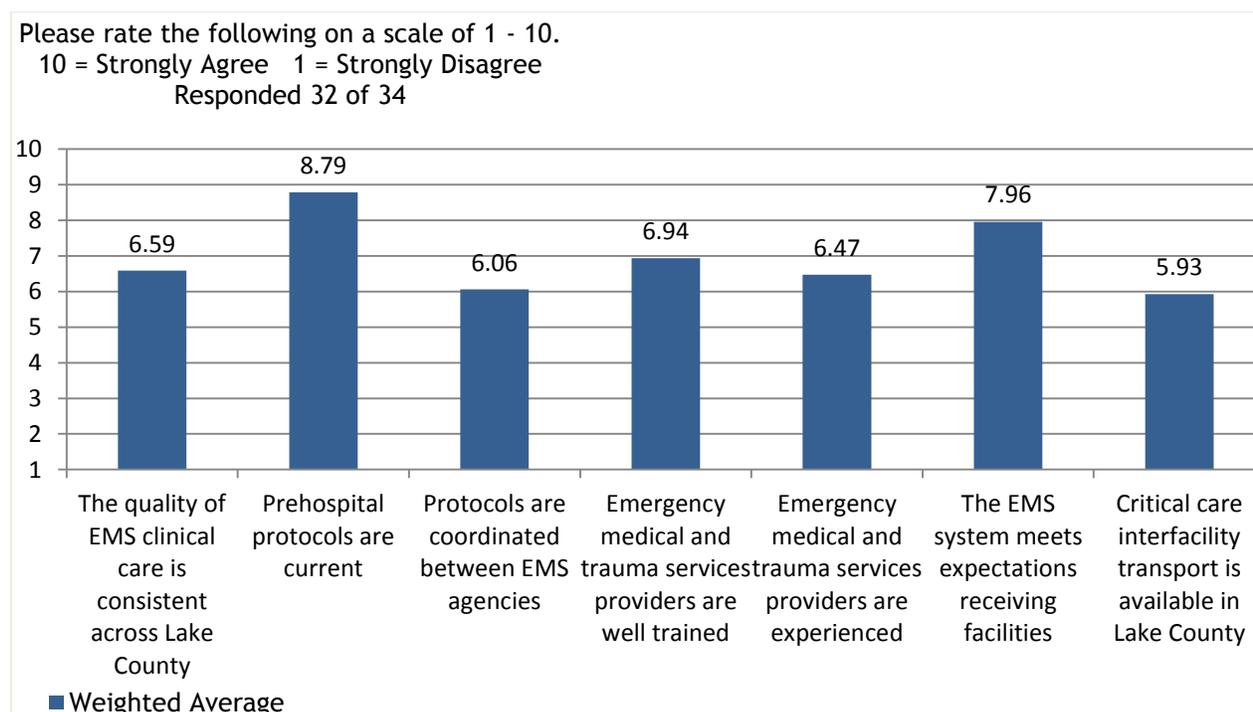
The Central Mountains RETAC does not have a regional medical director, rather physician involvement is provided collaboratively by a group of medical directors that collaborate. This

arrangement creates some challenges when trying to coordinate protocols and guidelines across the region although the final product is typically functional for the EMS agencies.

Recommendations

- Initiate communication and collaboration between the EMS medical directors in Lake County. Enhanced cooperation between the medical directors will help to ensure care is provided consistent with community expectations everywhere in the county, enhance quality of medical direction through sharing of best practices and reduce duplicative efforts.
- Structured cooperation and joint training among the EMS agencies in Lake County to support the communications and collaborative efforts between the EMS medical directors in Lake County on some shared, basic guidelines for medical care.
- Bring all EMS agencies under a single medical director for Lake County to provide prehospital emergency care consistent with community medical standards. One or two assistant medical directors may be needed to help coordinate among the various agencies providing emergency medical dispatch, first response and ground ambulance transport.
- Promote the development of an independent medical director for the county who is not funded directly by each individual agency.
- Advocate for a regional medical director to help coordinate medical direction in the Central Mountains RETAC and among the different counties to synchronize standards of care consistent with community expectations throughout the region.

Clinical Care



Clinical Care

Prehospital clinical care is relatively well developed, especially for such a small rural community. Emergency response is a tiered system consisting of basic life support fire-rescue first response with transport by advanced life support ambulance from the hospital. Leadville-Lake County Fire Rescue staffs one engine with four-member crew per shift. Additional support comes from resident firefighters when needed. St. Vincent General Hospital Ambulance typically staffs two crews consisting of an EMT and a paramedic, and a paramedic supervisor. Lake County Search and Rescue provides basic life support first response in the backcountry and ski patrol is staffed by patrollers trained at the Outdoor Emergency Care level during the winter months. Interfacility transports may be performed by air medical staffed by a critical care RN and critical care paramedic, a ground unit operated by one of the air medical providers that is based in an adjacent county or by the ambulance service from the hospital. The ambulance service at the hospital has some paramedics endorsed to provide care at the critical care level.

The integration of EMS providers into the hospital has had both advantages and disadvantages for the emergency medical and trauma services system overall. It has been the primary method for EMS providers to gain clinical experience in a rural community with fairly low call volume. The EMS providers and their medical director feel that the additional patient contacts in the emergency department environment have been quite useful overall. One of the paramedics told the team that working in the emergency department was one of the factors that attracted him to St. Vincent General Hospital Ambulance initially. Patients may also benefit from improved continuity of care when EMS providers initiate care in the field and continue to care for the patient in the emergency department. The greatest disadvantage is that work requirements within the hospital appear to take priority over the EMS responsibilities. The EMS providers are not only staffing the emergency department, they are used as nurse aides on the acute care floor as well. It does appear that the process to hand-off patients to the remaining staff on the floor detracts from the service provided by the ambulance. In addition, some of the job duties for the EMS providers in the hospital are outside their scope of training and are a significant source of dissatisfaction.

St. Vincent General Hospital meets the criteria for licensing as an acute care hospital and offers the typical range of services but is not currently designated as a trauma center. The hospital had been designated as a Level IV trauma center but changed to non-designated in 2013. The chief medical officer expressed that it was too expensive and the facility did not gain anything from trauma center designation. As a non-designated facility, the hospital is not taking advantage of the organized, pre-planned process of care and rigorous quality management required for trauma designation to assure optimal treatment for trauma patients and make more efficient use of resources to minimize costs. The enhanced systematic processes developed to comply with standards for trauma care are also applicable for medical patients and similar benefits accrue for these patients as well.

Prehospital Protocols

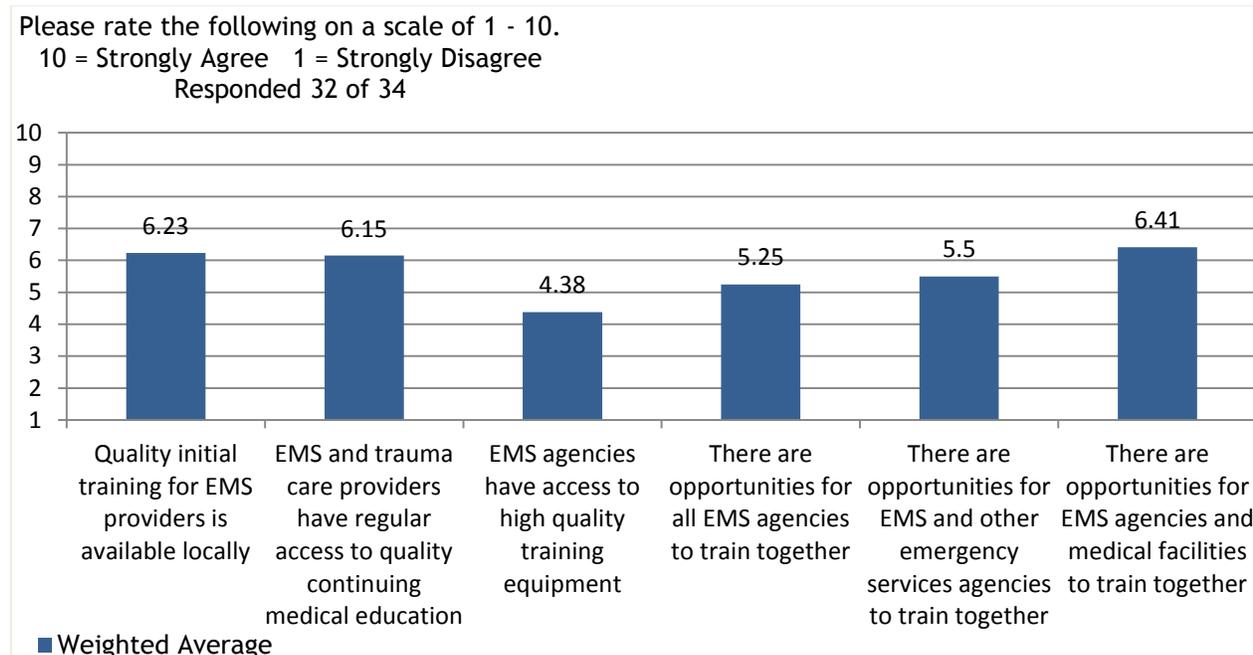
There are currently three different sets of protocols in use by prehospital providers in Lake County. St. Vincent Hospital Ambulance operates under its own protocols that have been developed internally. Ski Cooper Ski Patrol uses the Outdoor Emergency Care guidelines developed by the National Ski Patrol except for the spinal immobilization protocol. Leadville-Lake County Fire Rescue and Lake County Search and Rescue operate under the Denver Metro EMS protocols. These protocols provide similar structure and guidance for EMS provider although there are some differences and the disparate approaches to medical direction can lead to conflict when more than one EMS agency is on a scene. Three different medical directors also must collaborate with the local providers to establish EMS care consistent with medical standards in the community.

The current prehospital trauma triage algorithm for Lake County is not entirely clear and is in need of revision. As written, this rule allows ambulances to transport patients meeting the anatomic or physiologic criteria, those more likely to have a traumatic injury requiring surgical intervention, to a non-designated facility but requires that patients meeting the criteria for mechanism of injury or other considerations be transported to a designated trauma center. The prehospital trauma triage algorithm also does not include a consideration for time to transport to definitive care. This interpretation of the prehospital trauma triage algorithm clearly does not comply with the intent of the state trauma rules and begs for the algorithm to be revised. The statewide trauma system is based on getting the right patient to the right facility in the right amount of time. The small time differential to transport trauma patients directly to a higher level designated trauma center is insignificant in comparison to the vast improvement in care the patient will receive from a highly trained cadre of nurses, emergency physicians and surgeons dedicated to quality trauma services. Although prehospital destinations are not prescribed for non-trauma patients by rule, it would also be valuable to determine the destination that provides the greatest benefit for patients experiencing myocardial infarction, stroke, sepsis or other time-sensitive syndromes.

Recommendations

- ✿ Develop a common set of medical treatment protocols for use by all emergency medical response agencies in Lake County. Common medical treatment protocols for all levels of EMS providers at all of the agencies in Lake County are critical to ensure all patients receive consistent, high-quality care.
- ✿ Bring all EMS agencies under a single medical director for Lake County to provide consistent prehospital emergency care from emergency medical dispatch to first response and ground ambulance transport.
- ✿ Promote the development of an independent medical director for the county who is not funded directly by each individual agency.
- ✿ Discontinue staffing the acute care floor with EMS providers and stop using them to perform CNA duties. There appears to be some benefit to having EMS providers staff the emergency department given the overall call volume for the EMS system, but in-house staffing should not take priority over EMS response.

Education Systems



Education Systems

EMS has evolved into a higher functioning component of the healthcare system as the scope of practice continues to expand. This has increased the demands on initial training and continuing education to develop and maintain ongoing competency. Limited financial resources, travel outside the community and lack of qualified staff to backfill coverage create significant obstacles for EMS providers in rural areas to acquire and maintain the expertise to serve their community.

Lake County differs slightly from other rural areas because Colorado Mountain College is a state-recognized education center authorized to provide initial and continuing education at all EMS provider levels. Currently, courses at the campus in Leadville are focused toward initial EMT training. This provides a steady supply of new, entry level providers for the EMS agencies serving the community but leads to relatively high turnover as these individuals leave the area once they have completed their degree program. Initial paramedic training is not available at the Leadville campus but is offered at the Vail Valley campus about 40 miles away in Edwards. Initial nursing education is also offered through Colorado Mountain College with nurse aide training available nearby in Buena Vista, Edwards or Glenwood Springs, and Associates and Bachelor's degree programs in nursing at Breckenridge and Glenwood Springs.

In spite of the generally good working relationships between the emergency medical and trauma services organizations, the number of joint trainings between the different organizations in the system were minimal. Obviously the landscape will change later this year

when Leadville-Lake County Fire Rescue and St. Vincent General Hospital Ambulance co-locate in the new southern station.

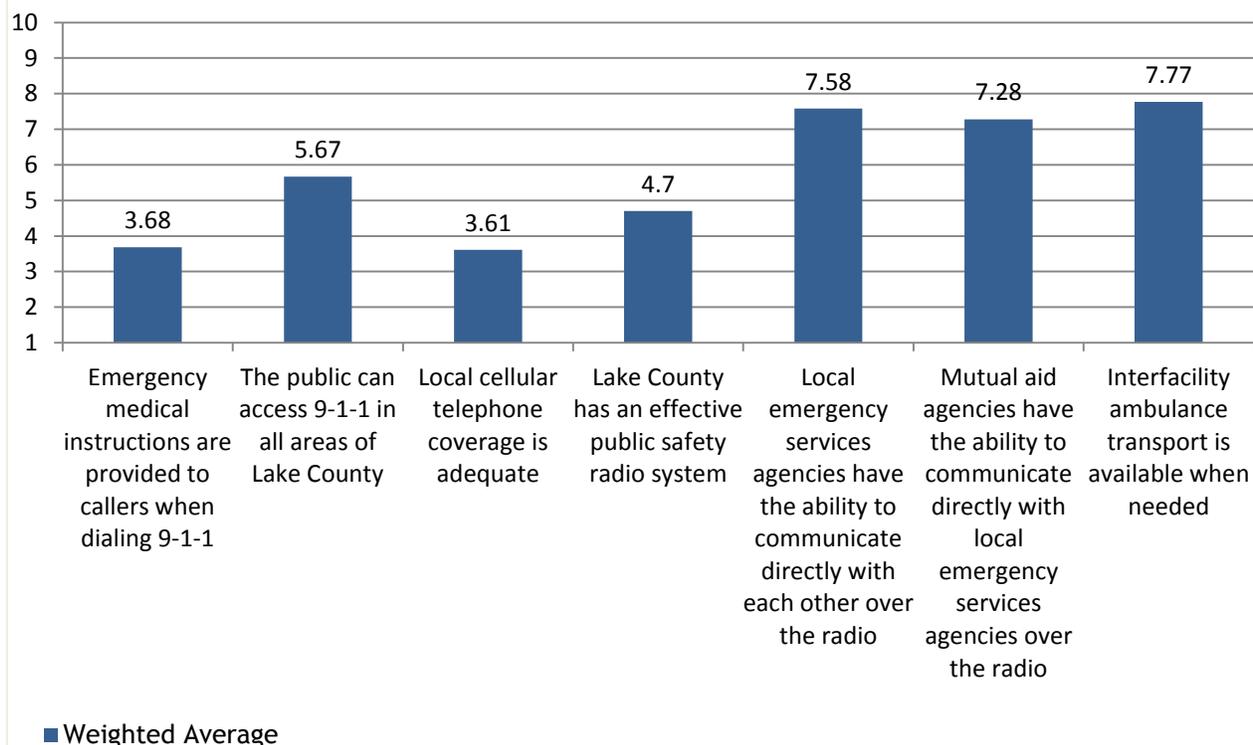
St. Vincent General Hospital also has a variety of in-house education available to the staff although the personnel we spoke with indicated its focus was primarily regulatory compliance. Medical direction and recognition of the education program was not entirely clear to ensure the continuing education hours are fully applicable for providers to renew their medical credential. There was concern that it appeared that the ambulance director was also responsible for the education of RNs and other members of the emergency department staff. Additionally, it was difficult to see how continuing education for the ambulance staff is budgeted and used specifically to maintain ongoing competency of the EMS providers.

Recommendations

- ✿ Ensure continuing education for all healthcare providers is supplied by an appropriate instructor through a credentialed education program.
- ✿ Increase opportunities for joint training sessions among the emergency medical and trauma service organizations. This can easily be accomplished by each organization opening its training sessions to any other members of the emergency medical and trauma services system in Lake County. Eventually the training sessions can be posted on a common calendar maintained by the emergency services council or the training center.
- ✿ Evaluate how grant funds may be used to support initial training and continuing education needs for emergency medical and trauma services providers in Lake County. Agencies should identify an individual to coordinate training requests, prioritize within budget constraints and make use of the CREATE program or other educational grants to leverage local funding to assist with initial training and continuing education.
- ✿ Although not designated as a trauma center, St. Vincent General Hospital should consider a hosting a multi-agency, quarterly case review session to evaluate one or more critical medical or trauma cases, similar to the process used by designated trauma centers. The case should be presented from dispatch through discharge, with emphasis on response, treatment and outcome to educate providers on tools and techniques to improve systemic or individual patient care.

Public Access and Communications Systems

Please rate the following on a scale of 1 - 10.
10 = Strongly Agree 1 = Strongly Disagree
Responded 32 of 34



Public Access

The universal 911 emergency access number is available in all areas of the county, ringing into a dispatch center operated by the Lake County Sheriff's Office. Lake County, like most communities throughout Colorado and the United States, has seen a large reduction in the use of land-line telephones. Mobile telephone service access throughout the populated areas of the county is good though there are many areas in the county where mobile coverage is spotty or non-existent. The computer-aided dispatch system and radios in the dispatch center are at end-of-life status and parts for the system are no longer available. The manufacturer will no longer be able to maintain the system and the need for replacement is critical. Everbridge is the primary means for public notification of potential or impending hazards and, while all land-lines within the county are automatically registered, a large portion of mobile telephone lines are not registered with the system. This could pose a public safety risk if an imminent hazardous threat approaches the community and those not signed up for the service are in harm's way. Lake County advertises this service on the website with easy to follow instructions. One helpful idea to increase the awareness of the service is to place marketing brochures throughout the community in businesses and schools advertising the Everbridge

system and how to sign up. The dispatch center does not have an emergency medical dispatch program and does not have the capability to provide pre-arrival instructions for calls requesting emergency medical services.

Communications Systems

The Lake County Sheriff's Office Dispatch serves all of the public safety agencies in the county. The dispatch center maintains 24/7/365 coverage with one staffed console and has the ability to staff a second console if an additional dispatcher is available for surges in volume. The dispatch center does not have an emergency medical dispatch program and does not have the capability to triage calls requesting emergency medical services to optimize response configurations based on call acuity. The center also maintains capabilities for mobile dispatch services in a communications trailer that can be deployed to the site of a large-scale event or relocate to the Emergency Operations Center in the event of catastrophic failure in the communications center. Field personnel primarily utilize the statewide digital-trunked-radio system for coordination, interagency communication and tactical operations. VHF systems are in place for paging and to supplement the digital-trunked-radio system in remote areas where the service is not available. EMS personnel communicate with hospitals and medical direction by radio or mobile telephone though neither source is recorded. Interoperable communications among local public safety agencies appear to work well. In discussions with the communications center staff, it was mentioned that there are no policies or procedures in place specifying when to contact outside agencies for mutual aid when the EMS system is saturated with requests for service.

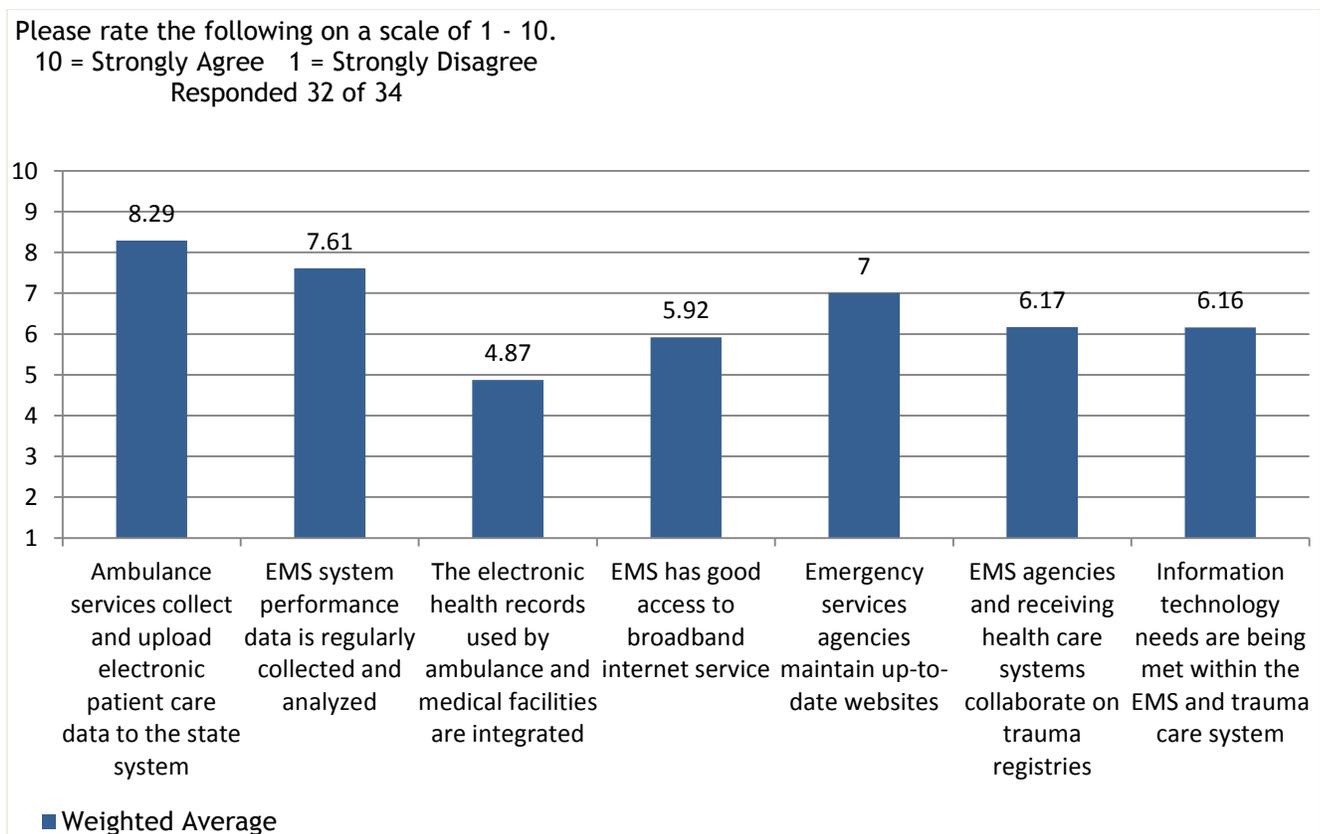
The dispatch center has the highest probability for being the point of failure of the public safety system. During periods of peak demand, dispatchers currently answer each call and place callers on hold. It is likely a call for another, unrelated incident may be abandoned after being placed on hold or simply lost in the mix during a large incident. Incoming 911 calls roll to the communications center in Chaffee County when all lines into Lake County dispatch are busy but there is no capability for the Chaffee County center to dispatch response units in Lake County due to the failure of a VHF repeater site south of Leadville. The Sheriff is aware of the issues and is taking steps to address them.

Recommendations

- Staff the communications center with two dispatchers during traditional peak usage times to reduce the number of incoming calls that are abandoned or put on hold.
- Create a process to quickly call in additional trained staff, restore remote access to the paging infrastructure and otherwise develop resiliency in the dispatch center to accommodate transient spikes in demand that occur during highly visible incidents to reduce the probability of incoming calls being abandoned or lost.
- Implement an emergency medical dispatch program to triage calls by acuity and dispatch optimal response resources to all calls. Create a set of pre-arrival instructions under the county medical direction to be used in conjunction with EMD.

- ✱ Create a unified communications center with sufficient staffing, equipment and facilities. Explore the feasibility of contracting for dispatch services from a communication center in a nearby jurisdiction.
- ✱ Work with the Emergency Telephone Service Authority to replace aged public safety answering point radios and equipment. Seek grant opportunities to leverage local funding and make use of expertise in the Office of Emergency Management to help compose grant requests. As a combined communications center with significant law enforcement use, consider Homeland Security grants that require 25 percent of the project be directed to law enforcement. Grants from the Colorado Division of Local Affairs are another possibility to help fund end of life communication equipment.
- ✱ Collaborate with the Emergency Telephone Service Authority, the Office of Emergency Management, and local public safety agencies to develop a campaign to increase the portion of mobile telephones registered with the Everbridge system.
- ✱ Work with St. Vincent General Hospital Ambulance to develop functional operating procedures for activation of mutual aid resources when all local ground ambulance transport resources are in use to decrease response times and reduce the need to find alternate means for patient transport to the hospital on an ad hoc basis.
- ✱ Work with the Emergency Telephone Service Authority, the Board of County Commissioners and local public safety agencies to develop a plan and funding mechanism for maintenance and capital replacement of the local public safety communications system.

Information Systems



Information Systems

The Lake County emergency medical and trauma services system is generally using current technology for patient care reporting and data collection. The majority of agencies in the county use electronic patient care reporting systems specific to their industry for mandatory reporting and data collection for quality management or billing needs. Currently, none of these record systems directly exchange data electronically. Linking the patient records in real time helps to ensure that downstream providers have access to information essential to the continuity of patient care. As healthcare progresses into a more technological and evidence based practice, it is imperative to review all available data to look for various trends not only for quality management but also as a possible marketing tool to demonstrate the value each service line provides for the community.

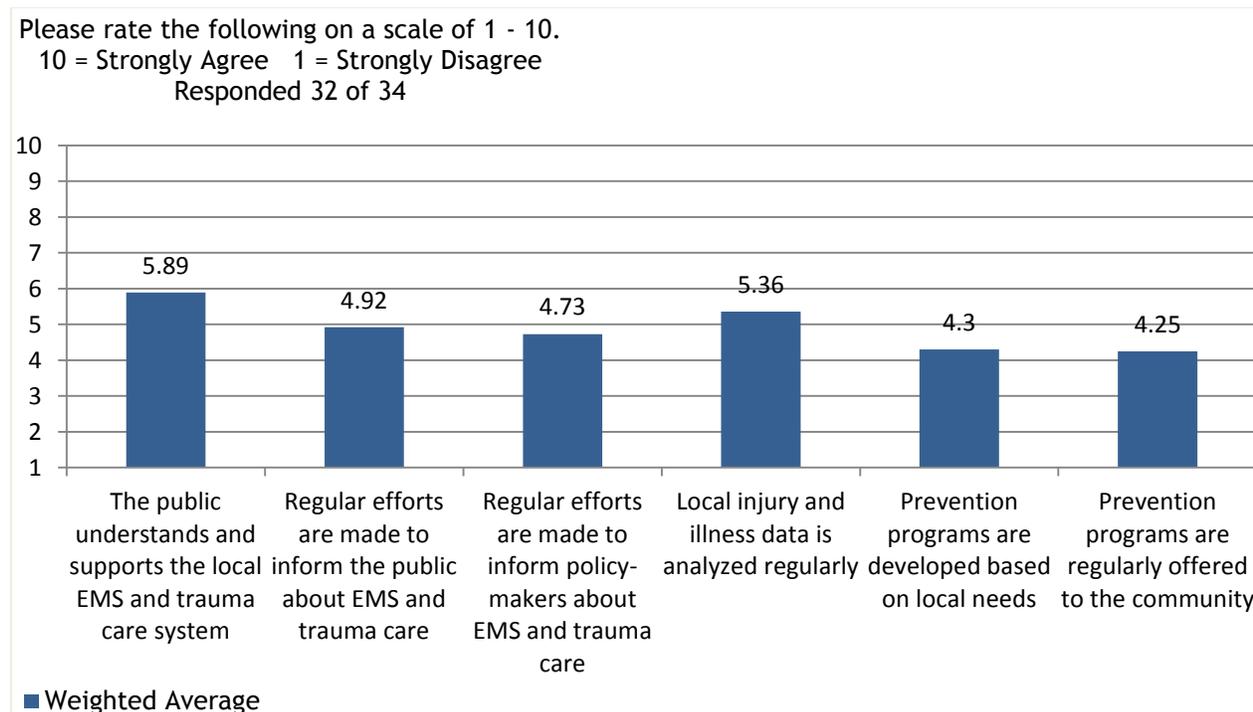
Advancing Technology

Lake County currently lacks the infrastructure to support sophisticated mobile data terminals for all the emergency vehicles in the field. As the communications technology improves mobile data terminals in emergency vehicles would allow crews to receive valuable call information like agency unit status, address, incident number, pertinent medical information, previous 911 history requests on residence and potential hazards, call time information (dispatch, en route, on scene, clear scene, arrive destination) and the ability to message crews back and forth without having to relay private critical information over the airwaves. In addition, MDTs have the ability to include mapping software for GPS capabilities. This comes in handy for difficult-to-locate persons on mobile devices who may not know their location but have a link to longitude and latitude position location. In mass casualty incident (MCI) situations or when a field supervisor is first on scene, the supervisor can track where the emergency vehicles are located and estimate the arrival time of the responding crews if response vehicles are equipped with automatic vehicle location technology.

Recommendations

- Collect and analyze data to create provider report cards, and incorporate those findings in the quality management process. Regardless of the frequency that a skill is performed by a provider or the agency, it is still important to track any trends to focus on areas of improvement as well as looking at what the service excels at. This can help focus continuing education classes or skills review sessions.
- Consider sharing ambulance patient care reports directly with receiving facilities for quality measures and continuity of care. EMS provides a valuable pre-hospital service where advanced life support measures are performed and should be thoroughly documented in a patient's medical record for continuity of care.

Public Education and Prevention



Public Education and Prevention

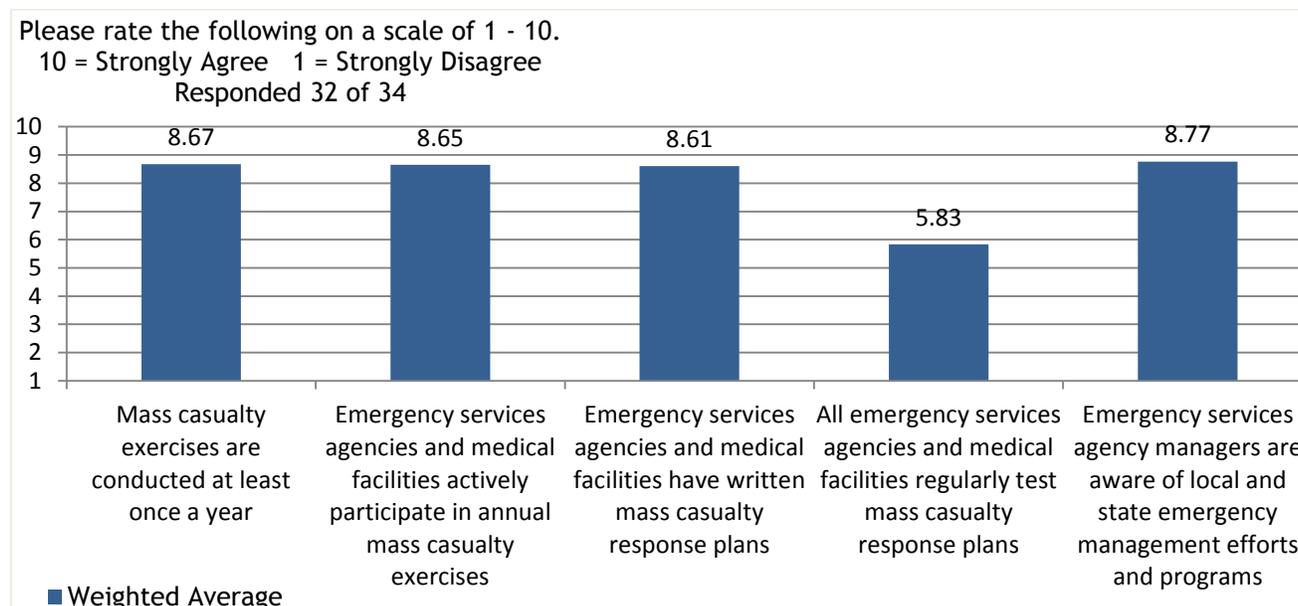
In most communities the general public has a very limited understanding of EMS, yet many EMS providers expect the public to know when, and when not, to use the EMS system, how to provide basic care before EMS arrival, and why EMS programs may come to them for funding. Progressive EMS programs not only provide fast, appropriate and high-quality care, they also enable their customers to be a stronger part of the system through innovative public education initiatives. Public education often overlaps with prevention activities, providing EMS with additional opportunities to be a more active community partner. Public education in Lake County appears adequate, though uncoordinated, with all agencies actively participating in some aspect. Leadville-Lake County Fire Rescue is active in fire prevention and safety, address signage and child safety seats; St. Vincent Hospital, as the hospital or through its ambulance service, conducts CPR, First Aid, AED, Stop the Bleed, bicycle safety awareness as well as physical conditioning, diabetic education, nutrition classes and other health and wellness programs on a routine basis; Lake County Search and Rescue promotes avalanche awareness and Ski Cooper Ski Patrol conducts annual ski safety and helmet awareness clinics. The Central Mountains RETAC has made prevention and education a priority, by providing financial, technical and promotional support to agencies choosing to partner with them. In addition, the Central Mountains RETAC has a robust seat belt awareness program that, in partnership with Lake County High School, has increased seatbelt usage among teenagers consistently over the past few years.

St. Vincent General Hospital District partners with Lake County Public Health with to create a combined Community Health Needs Assessment and jointly determined that access to health care was a critical need for the area. In response, the partners have been working to provide educational material in Spanish and English and the hospital has built tools within the electronic health record for screening behavioral health, brief interventions, referrals and treatment, and depression. The ambulance service is also a part of the strategic plan to improve health, as there are future considerations for a community paramedic program in the county.

Recommendations

- Acknowledge public education as an essential activity. All stakeholders should collaborate with other community resources to identify needs and explore methods to fund and execute public education initiatives.
- Continue to build on the community’s increased knowledge about the EMTS system gained through the 2015 mill levy increase for ambulance services and use widely publicized events such as National EMS Week or National Fire Prevention week to leverage local efforts.
- Encourage all stakeholders to actively participate in, and take advantage of, the planning, resources, coordination and support activities the Central Mountains RETAC has to offer.

Mass Casualty



Mass Casualty

The Office of Emergency Management has the lead role in planning for all hazards in Lake County, including mass casualty incident response, but each individual emergency medical and

trauma services organization needs to create its own plan to operationalize the county plan and articulate with the other organizations involved in the response. Mass casualties are considered in the county hazard analysis but are not included as a high relative risk in comparison to other hazards considered. The emergency medical and trauma services providers were generally aware of plans to address these incidents exist and the role of their organization within the plan.

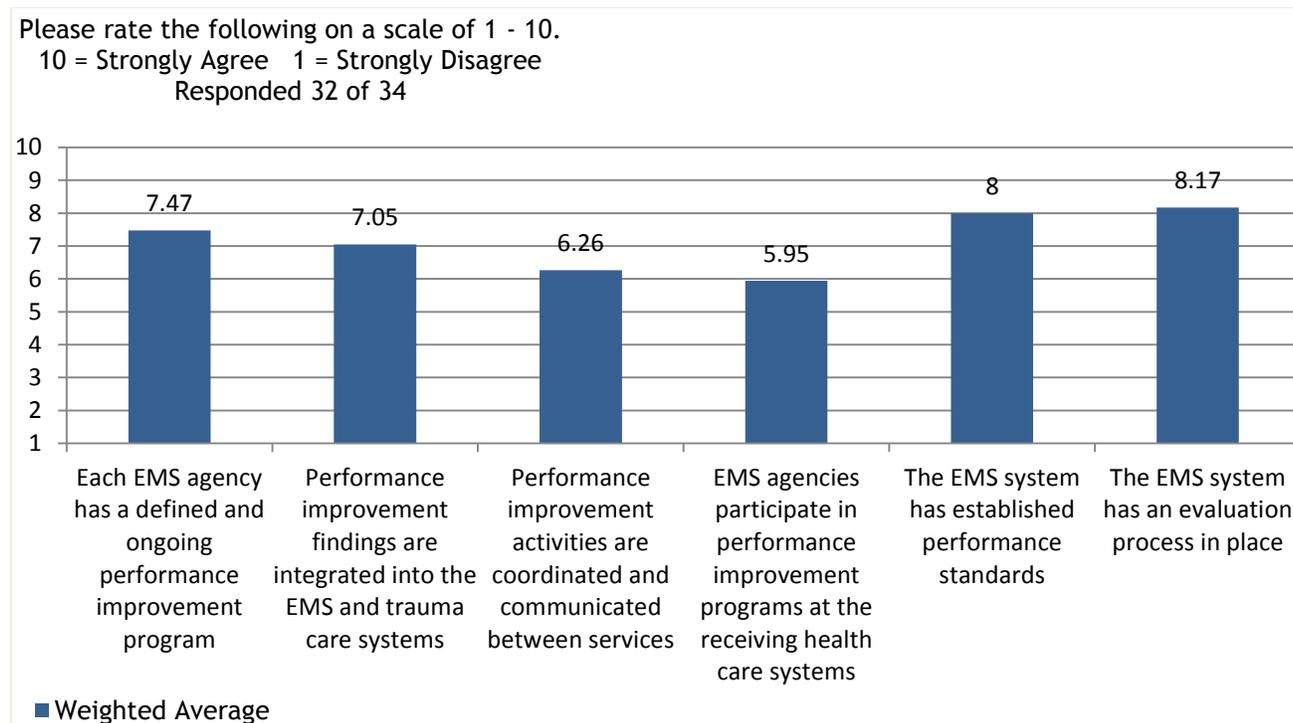
Lake County, like so many rural communities, has limited resources and personnel which creates many unique challenges. The consensus of the stakeholders is that three critical patients would constitute a mass casualty incident. Expectations for the limited number of ambulance personnel as well as capabilities in the hospital to adequately care for this number of patients is the limiting factor. For example, the emergency department relies on the ambulance paramedics to care for difficult airways and provide other advanced skills, however in a mass casualty incident all available ambulance paramedics are needed immediately in the field to care for and transport other patients at the incident scene. Lake County is far enough from its mutual aid partners that long response times can negatively impact patient outcomes. Weather conditions in this high altitude environment also have a significant influence on the availability of support from air medical providers.

Mass casualty incidents require preplanning and training on the part of all emergency medical and trauma services providers. Dispatch protocols need to be developed to mobilize surge capabilities in the community and mutual aid resources early, even before local response units arrive on scene. Medical destination protocols must be designed to achieve the best patient care possible under the circumstances and adhered to strictly. This often means that patients must be transported directly to more distant hospitals that can provide higher levels of trauma care, to better match patient needs with hospital capabilities but also to avoid overwhelming the local facility which merely changes the address of the disaster but does nothing for the patient other than delaying care.

Recommendations

- Review mass casualty incident plans and ensure that all responders are aware of the plan and have a thorough understanding of their role within the plan.
- Host a mass casualty incident summit for the emergency medical and trauma services organizations in the county and honestly discuss capabilities, response times for resources and probable patient outcomes. Explore how weather, season and other recurring events affect response capabilities. Assess emergency response equipment and infrastructure, and identify grants or other funding sources that could help to close capability gaps.
- Conduct a full-scale exercise of a mass casualty incident that will truly test capabilities within the next two years. Fund backfill of personnel to increase participation
- Work with the Board of County Commissioners and other governing boards to develop a reliable replacement plan for equipment that has already been purchased with grant funding assistance.
- Review mass casualty incident plans annually and update as necessary to current staffing levels and available resources.

Evaluation



Evaluation

Evaluation is a key process that assesses the quality of a system or product. Without evaluation there is no way to determine if the system is achieving its goals and mission. Many emergency medical and trauma services systems develop some form of evaluation to gauge the performance level of the agency in reaching its service level vision. Traditionally response times have been a primary metric for EMS to measure how effectively a service is delivering patient care. While response times are an important component of patient care delivery, they are not the only part that should be evaluated. The relationship between response times and quality outcomes is complex. Emergency medical and trauma services systems should be evaluated on their key outcomes and how they actually affect patient's lives in addition to response time goals. A good evaluation system can be compared to a dashboard in a car: one can easily look at it and tell what is going on. Modifications can then be made, steering the system towards its goal. Having an effective evaluation system in place also facilitates resource allocation to determine if there are adequate numbers of resources or if a particular resource needs to be added or decreased.

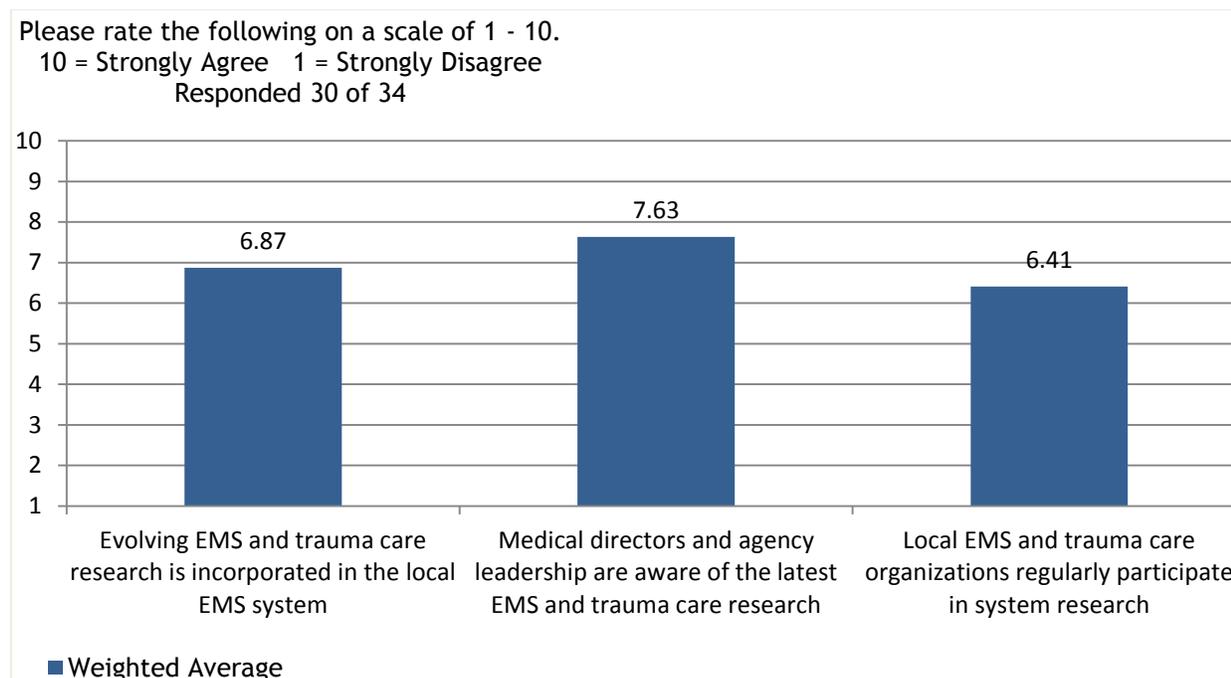
The Lake County emergency medical and trauma services system only has minimal and informal methods of evaluation in place. St. Vincent General Hospital Ambulance has an ongoing quality management program where all patient care reports are reviewed internally but only selected reports are brought to the attention of the medical director. This system could be enhanced somewhat by establishing specific guidelines for the types of patient care

reports subject to regular review by the medical director. The medical director has access to all patient care reports in the agency database and can easily review records from any location with an internet connection. The EMS providers do not prepare a patient care report on the patients they treat in the emergency department. It is not clear how these patient encounters are reviewed for quality purposes. The chief medical officer for the hospital made it clear that she provides concurrent review of the EMS providers involved in care when she treats a patient. Leadville-Lake County Fire Rescue had a robust quality management program through Centura Health Prehospital Service although these efforts have waned lately with the potential change in medical direction. There does not appear to be a formal quality management process for Ski Cooper Ski Patrol although there are minimal requirements to do so. St. Vincent General Hospital is not designated as a trauma center and its performance is not subject to periodic review during the ongoing designation process.

Recommendations

- ✿ Develop defined processes for EMS chart review to include clinical filters and a standardized approach to help identify and address gaps in provider knowledge or skills. Create mechanisms to demonstrate that appropriate training, remediation or other corrective action has been taken when issues are identified in the quality management process.
- ✿ Implement a more robust and comprehensive quality assurance process that incorporates primary review of every patient care report with secondary review from the medical director as appropriate. Perform mandatory quality reviews of all STEMI, stroke, sepsis and critical trauma patients as well as any patient transported to a hospital using red light and sirens.
- ✿ Many emergency medical and trauma services systems develop some form of evaluation to gauge the performance level of the system in achieving its service level goals. Collaborate with the Board of County Commissioners to create measures to evaluate performance of the Lake County emergency medical and trauma services system. Develop a dashboard to display the performance measures and post on a site accessible to the public maintained by the emergency services council.
- ✿ Establish a formal chain of command for the medical direction with emphasis on standing orders and protocols, decreased online medical control, consistent quality management reviews and unified medical direction from one physician for all prehospital agencies in the county.
- ✿ Conduct joint case reviews among the emergency medical and trauma services agencies in Lake County. Joint case reviews can help to provide consistent methods for evaluation, demonstrate how each agency contributes to the patient outcome and educates providers on tools and techniques to improve systemic or individual patient care.
- ✿ Pursue trauma designation for St. Vincent Hospital to improve care for all trauma patients in the county and contribute to the state trauma registry.

EMTS Research



EMTS Research

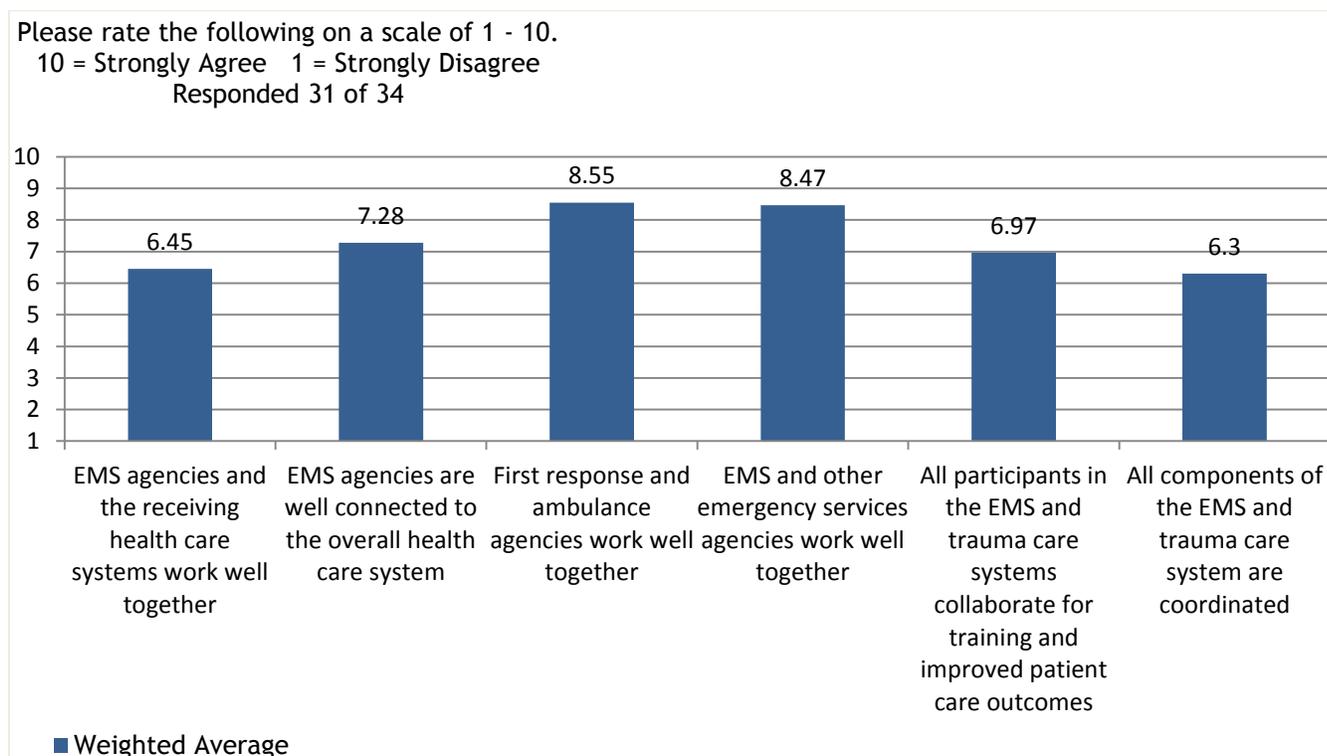
Research is a process of systematic investigation designed to discover factual information and contribute to increased knowledge or understanding. No formal research is currently being conducted within the Lake County emergency medical and trauma services system. There is potential for conducting scientifically rigorous research in the future considering all EMS transport agencies, both air and ground, are submitting data from patient care reports to the state database that can be used to assess the applicability of national standards of care in a high-altitude environment. Well-designed research can also be used as evidence to serve as a basis for change response structures and protocols. Understanding how patient outcomes are affected by destination decisions or specific treatment modalities should drive protocol development in the future. For example, should trauma patients be transported directly to a designated trauma center from the scene or should they be seen at a local medical facility prior to transport for definitive care? The answer to this and many other questions related to patient care and system design lie in data that is currently being collected by response agencies and facilities within the spectrum of care.

Recommendations

- ✱ The emergency medical and trauma services organizations in Lake County should collect a broad array of accurate data, including patient outcomes, to be used in research and verify the efficacy of changes in treatment modalities, provider training, medical equipment and technology.

- ✱ St. Vincent General Hospital has a very interesting research opportunity surrounding the integration of EMS and in-hospital care. The hospital should engage qualified investigators to design and conduct a research study to measure the clinical, operational or fiscal benefits of integrating EMS providers into the continuum of care provided in the hospital emergency department.

Integration of Health Services



Integration of Health Services

The concept of effective system integration includes a myriad of persons, organizations and processes that bring together the individual sub-components of a system into a coordinated group effort that functions together as one. It includes a network of organizations working together as partners to optimize resource utilization to achieve optimal outcomes. It is comprised of individuals who agree and are committed to provide a continuum of coordinated services for a common purpose. All of the organizations and persons must agree to be held personally, organizationally, functionally and fiscally accountable to not only each other, but to the communities and populations served as well.

An important aspect of modern, efficient, health systems is the full integration of services across the spectrum of clinical offerings. Many systems suffer from “silos of excellence,” structures that are exemplary when evaluated individually but lose out on the opportunity to exponentially expand their capability through collaboration. When systems integrate their value becomes greater than the sum of their parts, elevating care across the whole of their

offerings. While this concept flies in the face of many historical systems, it should be aspirational for every collection of care providers.

Achieving integration and collaboration across multiple entities within the greater health landscape can be accomplished by building basic systems of communication. Structures such as medical direction and quality oversight, exercise and planning, education, and event planning that include all stakeholders will allow opportunity to build relationships and align processes. A big tent approach to planning and problem solving will begin the process of moving towards a collaborative and integrated system.

Lake County has a structure that lends itself to integration and collaboration, embedding the ambulance service within the only hospital in the county. All advanced life support providers function under the same umbrella organization. One would expect that this structure would provide a single voice that directed care, and in many similar organizations it does. However, in the Lake County example, contrary to expectations, the ambulance service functions under medical direction from another hospital in a neighboring county. Further, this physician does not provide direction for all EMS agencies in Lake County. Consequently, from an EMS perspective, while the framework of integration is present, it is not being utilized. This disjointed direction of care is contrary to the tenets described above.

Most EMS responses are the responsibility of just two agencies, St. Vincent General Hospital Ambulance and Leadville-Lake County Fire Rescue, and the alignment of EMS response should not be complex. Although informal, the two agencies appear to currently have a good working relationship. Practicing regular communication, integration of training and some planning. The in-hospital commitments for the ambulance crews seem to hinder some opportunities for joint training, but this is likely impacting the fire department's opportunity for medical exposure more than the capability of the ambulance service. While apparently functional, there is no formality to ambulance and fire interactions, which leaves them subject to waning effort.

The communications system has been absent from the system discussion. This seems to be due, in part, to a significant lack of investment in the capability and sustainability of the dispatch center. Dispatch operates out of a make-shift facility, is understaffed and uses antiquated equipment. The capability of Lake County to muster effective communications even during normal operations is challenged and will only be exponentially magnified during large or complex incidents. The dispatch system does not have an emergency medical dispatch program and cannot provide prearrival instructions to callers which is standard practice in the industry. This missing piece of the collaborative scheme challenges the overall success of the system.

The ambulance service has become a more active participant in the Central Mountains RETAC lately and seems to maintain a good relationship with the other regional partners. Mutual aid support typically comes from Summit or Chaffee Counties depending on the location of the emergency. This does not seem to be a frequent occurrence, but Lake County does not have the same ability to reciprocate the support. St. Vincent General Hospital Ambulance utilizes several air transport vendors, including Flight for Life and REACH, with no exclusivity. St

Vincent General Hospital did recently enter into a relationship with REACH to provide air transport memberships as a benefit for hospital employees.

As a department of the hospital, St. Vincent General Hospital Ambulance has a fairly seamless relationship with the facility in an operational sense. By their own admittance, this integration has significantly benefited the ambulance service from the perspective of medical quality. EMS employees are relied upon heavily in the emergency department, as well as on the inpatient floor of the hospital. The opportunity for EMTs and paramedics to increase their patient contacts and skill opportunities under the guidance of physicians and advanced practitioners provides a significant opportunity for personal development of their capabilities. This design could easily be a model for other communities that struggle to both fill the days of responders in low volume systems and appropriately staff emergency departments.

The downside of this structure lies primarily in the use of ambulance personnel in patient care areas beyond the emergency department. Employees work as nurse aides within the facility while also functioning as members of the response team. From a structural perspective this makes timely response difficult, the EMS providers are likely to be in the midst of patient relationships, procedures, or care when they are called upon to respond, often without adequate staffing in the unit to assume their role. Additionally, the EMS providers are demotivated and disengaged when tasked with providing nursing care to non-acute patients. This is further complicated with an organizational structure that seems to not value their sacrifice, stating “this is your job, do it or you don’t have a job” when addressing their satisfaction concerns. The ambulance service has taken great strides to support the general operations of the hospital, often to the clear detriment to their primary response responsibilities.

Broadly, the system’s functionality is hampered by two categories of dysfunction. The first and most emergent issue is that of the lack of investment and capability within the communications and dispatch system. Without swift action in the form of investment and expansion, it is likely that this will be a point of failure - impacting the greater system’s capability. Second, St. Vincent General Hospital must reevaluate their use of on duty response personnel. While there is great benefit to the collaboration between the emergency department and the ambulance service, extending EMS providers into inpatient services, and relying on them to meet basic needs, diminishes the response system and puts the employees in an untenable position.

Recommendations

- Unify all response agencies under a common set of medical protocols and medical director.
- Create a unified communications center with sufficient staffing, equipment, and facility. Implement an emergency medical dispatch (EMD) program to triage call severity and tier response agencies - reducing the movement of all resources to all calls. Create a set of prearrival instructions under the county medical director to be used in conjunction with EMD.

- ✱ Integrate the medical director into a system wide quality management system. This system should have a broad base of participation across all care provided within the county and patients should be automatically included based on objective criteria as opposed to the opinions of care providers.
 - Consider quarterly morbidity and mortality (M&M) meetings where providers may benefit from being exposed to positive and negative aspects of complex or interesting patients.
- ✱ Discontinue using EMS providers for job duties beyond response and emergency department support. Clearly prioritize response and communicate this to all in hospital staff. Build systems and staff appropriately to allow EMS providers to quickly move into their response role.
- ✱ Mandate participation in monthly multi-agency coordination meetings, including all stakeholders in the healthcare delivery, communications, and emergency response systems.
- ✱ Report system metrics and clear financial picture of the ambulance service to the public on a frequent basis.

Summary of Recommendations

Lake County Recommendations

Short-term (1 to 2 years)

- ✿ Update the Lake County ambulance licensing resolution to comply with governing law and current practices including the rule revisions that established additional minimum requirements for counties effective Jan. 14, 2019.
- ✿ Formally authorize the Lake County Emergency Services Council to advise the Board of County Commissioners on all aspects of the emergency medical and trauma services system and allocate resources for it to operate successfully. Authorization for the council can be accomplished by resolution or incorporated into an updated ambulance licensing resolution. This council should advise the Board of County Commissioners on ambulance licensing, recommend priorities for local emergency medical and trauma system development, monitor system quality, prioritize requests for supplemental local funding from the Central Mountains RETAC and report the current system status to the Board at least annually. This council can also serve as a forum to address operational issues and enhance interagency communication.
- ✿ Develop a common set of medical treatment protocols for use by all emergency medical response agencies in Lake County. Common medical treatment protocols for all levels of EMS providers at all of the agencies in Lake County are critical to ensure all patients receive consistent, high-quality care.
- ✿ Staff the communications center with two dispatchers during traditional peak usage times to reduce the number of incoming calls that are abandoned or put on hold.
- ✿ Create a process to quickly call in additional trained staff, restore remote access to the paging infrastructure and otherwise develop resiliency in the dispatch center to accommodate transient spikes in demand that occur during highly visible incidents to reduce the probability of incoming calls being abandoned or lost.
- ✿ Collaborate with the Emergency Telephone Service Authority, the Office of Emergency Management, and local public safety agencies to develop a campaign to increase the portion of mobile telephones registered with the Everbridge system.
- ✿ Work with the Emergency Telephone Service Authority to replace aged public safety answering point radios and equipment. Seek grant opportunities to leverage local funding and make use of expertise in the Office of Emergency Management to help compose grant requests. As a combined communications center with significant law enforcement use, consider Homeland Security grants that require 25 percent of the project be directed to law enforcement. Grants from the Colorado Division of Local Affairs are another possibility to help fund end of life communication equipment.
- ✿ Work with St. Vincent General Hospital Ambulance to develop functional operating procedures for activation of mutual aid resources when all local ground ambulance transport resources are in use to decrease response times and reduce the need to find alternate means for patient transport to the hospital on an ad hoc basis.

- ✿ Acknowledge public education as an essential activity. All stakeholders should collaborate with other community resources to identify needs and explore methods to fund and execute public education initiatives.
- ✿ Continue to build on the community's increased knowledge about the EMTS system gained through the 2015 mill levy increase for ambulance services and use widely publicized events such as National EMS Week or National Fire Prevention week to leverage local efforts.
- ✿ Review mass casualty incident plans and ensure that all responders are aware of the plan and have a thorough understanding of their role within the plan.
- ✿ Host a mass casualty incident summit for the emergency medical and trauma services organizations in the county and honestly discuss capabilities, response times for resources and probable patient outcomes. Explore how weather, season and other recurring events affect response capabilities. Assess emergency response equipment and infrastructure, and identify grants or other funding sources that could help to close capability gaps.
- ✿ Conduct a full-scale exercise of a mass casualty incident that will truly test capabilities within the next two years. Fund backfill of personnel to increase participation
- ✿ Many emergency medical and trauma services systems develop some form of evaluation to gauge the performance level of the system in achieving its service level goals. Collaborate with the Board of County Commissioners to create measures to evaluate performance of the Lake County emergency medical and trauma services system. Develop a dashboard to display the performance measures and post on a site accessible to the public maintained by the emergency services council.
- ✿ Unify all response agencies under a common set of medical protocols and medical director.
- ✿ Mandate participation in monthly multi-agency coordination meetings, including all stakeholders in the healthcare delivery, communications, and emergency response systems.

Medium-term (3 to 5 years)

- ✿ Bring all EMS agencies under a single medical director for Lake County to provide prehospital emergency care consistent with community medical standards. One or two assistant medical directors may be needed to help coordinate among the various agencies providing emergency medical dispatch, first response and ground ambulance transport.
- ✿ Promote the development of an independent medical director for the county who is not funded directly by each individual agency.
- ✿ Implement an emergency medical dispatch program to triage calls by acuity and dispatch optimal response resources to all calls. Create a set of pre-arrival instructions under the county medical direction to be used in conjunction with EMD.
- ✿ Create a unified communications center with sufficient staffing, equipment and facilities. Explore the feasibility of contracting for dispatch services from a communication center in a nearby jurisdiction.
- ✿ Establish a formal chain of command for the medical direction with emphasis on standing orders and protocols, decreased online medical control, consistent quality management reviews and unified medical direction from one physician for all prehospital agencies in the county.

- ✿ Create a unified communications center with sufficient staffing, equipment, and facility. Implement an emergency medical dispatch (EMD) program to triage call severity and tier response agencies - reducing the movement of all resources to all calls. Create a set of prearrival instructions under the county medical director to be used in conjunction with EMD.

Long-term (5 years)

- ✿ Work with the Emergency Telephone Service Authority, the Board of County Commissioners and local public safety agencies to develop a plan and funding mechanism for maintenance and capital replacement of the local public safety communications system.
- ✿ Work with the Board of County Commissioners and other governing boards to develop a reliable replacement plan for equipment that has already been purchased with grant funding assistance.

Leadville-Lake County Fire Rescue Recommendations

Short-term (1 to 2 years)

- ✿ Examine the effects on staffing with the upcoming addition of the station shared with Leadville-Lake County Fire Rescue in the southern end of Lake County. Consider converting EMS staff to a more traditional 24-hour based, combination on-duty/on-call schedule that provides for 24/7 coverage for 911 calls, interfacility transports and emergency department staffing.
- ✿ Initiate communication and collaboration between the EMS medical directors in Lake County. Enhanced cooperation between the medical directors will help to ensure care is provided consistent with community expectations everywhere in the county, enhance quality of medical direction through sharing of best practices and reduce duplicative efforts.
- ✿ Structured cooperation and joint training among the EMS agencies in Lake County to support the communications and collaborative efforts between the EMS medical directors in Lake County on some shared, basic guidelines for medical care.
- ✿ Develop a common set of medical treatment protocols for use by all emergency medical response agencies in Lake County. Common medical treatment protocols for all levels of EMS providers at all of the agencies in Lake County are critical to ensure all patients receive consistent, high-quality care.
- ✿ Ensure continuing education for all healthcare providers is supplied by an appropriate instructor through a credentialed education program.
- ✿ Increase opportunities for joint training sessions among the emergency medical and trauma service organizations. This can easily be accomplished by each organization opening its training sessions to any other members of the emergency medical and trauma services system in Lake County. Eventually the training sessions can be posted on a common calendar maintained by the emergency services council or the training center.
- ✿ Evaluate how grant funds may be used to support initial training and continuing education needs for emergency medical and trauma services providers in Lake County. Agencies should identify an individual to coordinate training requests, prioritize within budget

constraints and make use of the CREATE program or other educational grants to leverage local funding to assist with initial training and continuing education.

- ✿ Acknowledge public education as an essential activity. All stakeholders should collaborate with other community resources to identify needs and explore methods to fund and execute public education initiatives.
- ✿ Continue to build on the community's increased knowledge about the EMTS system gained through the 2015 mill levy increase for ambulance services and use widely publicized events such as National EMS Week or National Fire Prevention week to leverage local efforts.
- ✿ Review mass casualty incident plans and ensure that all responders are aware of the plan and have a thorough understanding of their role within the plan.
- ✿ Conduct a full-scale exercise of a mass casualty incident that will truly test capabilities within the next two years. Fund backfill of personnel to increase participation
- ✿ Review mass casualty incident plans annually and update as necessary to current staffing levels and available resources.
- ✿ Conduct joint case reviews among the emergency medical and trauma services agencies in Lake County. Joint case reviews can help to provide consistent methods for evaluation, demonstrate how each agency contributes to the patient outcome and educates providers on tools and techniques to improve systemic or individual patient care.
- ✿ Mandate participation in monthly multi-agency coordination meetings, including all stakeholders in the healthcare delivery, communications, and emergency response systems.

Medium-term (3 to 5 years)

- ✿ Bring all EMS agencies under a single medical director for Lake County to provide prehospital emergency care consistent with community medical standards. One or two assistant medical directors may be needed to help coordinate among the various agencies providing emergency medical dispatch, first response and ground ambulance transport.
- ✿ Promote the development of an independent medical director for the county who is not funded directly by each individual agency.
- ✿ Establish a formal chain of command for the medical direction with emphasis on standing orders and protocols, decreased online medical control, consistent quality management reviews and unified medical direction from one physician for all prehospital agencies in the county.
- ✿ Unify all response agencies under a common set of medical protocols and medical director.

Long-term (5 years)

- ✿ Work with the Emergency Telephone Service Authority, the Board of County Commissioners and local public safety agencies to develop a plan and funding mechanism for maintenance and capital replacement of the local public safety communications system.
- ✿ Work with the Board of County Commissioners and other governing boards to develop a reliable replacement plan for equipment that has already been purchased with grant funding assistance.

St. Vincent General Hospital Recommendations

Short-term (1 to 2 years)

- ✿ St. Vincent General Hospital District should update its service plan and file the service plan with the Colorado Department of Local Affairs. Although the services currently offered are authorized by statute, a plan that includes all current services and addresses future enhancements will increase transparency for this level of government and potentially increase reimbursement if district resources are ever called to assist with a declared federal disaster.
- ✿ St. Vincent General Hospital District is obligated to provide a copy of its annual audit and Medicare cost report to the Board of County Commissioners annually. These are valuable documents for the Board to use for oversight but they are in a format that is not useful for most members of the public. St. Vincent General Hospital District should also demonstrate its use of the proceeds from the ambulance services mill levy in a summary or dashboard format that is meaningful to the public. Consider depictions such as:
 - Charts comparing average out-of-chute time or scene time compared to a benchmark.
 - Stacked graphs showing where the revenue for the ambulance comes from compared to another graph showing where it goes (and how much is covered by the subsidy).
 - Charts showing how much time the EMS providers are training, working on the floor and responding to calls on a typical day.
 - A “fuel gauge” showing fiscal performance for the ambulance service.

There is a lot of good will and support for the hospital from the County Commissioners and the community. It is important for the hospital to reciprocate by showing the public what they receive for their tax dollars.

- ✿ To enhance fiscal transparency and build an understanding of the fiscal challenges of providing ambulance service, St. Vincent General Hospital District should provide frequent, monthly or at least quarterly, reports to the Board of County Commissioners. A well-structured report would provide a clear picture of income derived from user fees for interfacility transports and emergency responses, how EMS providers’ time is allocated to ambulance, emergency department and the inpatient floor, which costs are attributed to administrative expense and progress on a comprehensive capital replacement plan.
- ✿ The ambulance service should re-evaluate the current staffing patterns for EMS providers to allot adequate time for response, readiness (including rest time on extended shifts), EMS training, EMS station maintenance with the remainder to support hospital staff.
- ✿ Prioritize ambulance response for EMS providers and adequately staff the hospital so that EMS providers are able, and fully expected, to leave their in-hospital assignment for a call.
- ✿ Continue to value the participation and reliability of EMS providers in the emergency department of St. Vincent General Hospital.
- ✿ Examine the effects on staffing with the upcoming addition of the station shared with Leadville-Lake County Fire Rescue in the southern end of Lake County. Consider converting EMS staff to a more traditional 24-hour based, combination on-duty/on-call schedule that provides for 24/7 coverage for 911 calls, interfacility transports and emergency department staffing.

- ✿ Initiate communication and collaboration between the EMS medical directors in Lake County. Enhanced cooperation between the medical directors will help to ensure care is provided consistent with community expectations everywhere in the county, enhance quality of medical direction through sharing of best practices and reduce duplicative efforts.
- ✿ Develop a common set of medical treatment protocols for use by all emergency medical response agencies in Lake County. Common medical treatment protocols for all levels of EMS providers at all of the agencies in Lake County are critical to ensure all patients receive consistent, high-quality care.
- ✿ Ensure continuing education for all healthcare providers is supplied by an appropriate instructor through a credentialed education program.
- ✿ Increase opportunities for joint training sessions among the emergency medical and trauma service organizations. This can easily be accomplished by each organization opening its training sessions to any other members of the emergency medical and trauma services system in Lake County. Eventually the training sessions can be posted on a common calendar maintained by the emergency services council or the training center.
- ✿ Evaluate how grant funds may be used to support initial training and continuing education needs for emergency medical and trauma services providers in Lake County. Agencies should identify an individual to coordinate training requests, prioritize within budget constraints and make use of the CREATE program or other educational grants to leverage local funding to assist with initial training and continuing education.
- ✿ Work with St. Vincent General Hospital Ambulance to develop functional operating procedures for activation of mutual aid resources when all local ground ambulance transport resources are in use to decrease response times and reduce the need to find alternate means for patient transport to the hospital on an ad hoc basis.
- ✿ Acknowledge public education as an essential activity. All stakeholders should collaborate with other community resources to identify needs and explore methods to fund and execute public education initiatives.
- ✿ Continue to build on the community's increased knowledge about the EMTS system gained through the 2015 mill levy increase for ambulance services and use widely publicized events such as National EMS Week or National Fire Prevention week to leverage local efforts.
- ✿ Review mass casualty incident plans and ensure that all responders are aware of the plan and have a thorough understanding of their role within the plan.
- ✿ Conduct a full-scale exercise of a mass casualty incident that will truly test capabilities within the next two years. Fund backfill of personnel to increase participation
- ✿ Review mass casualty incident plans annually and update as necessary to current staffing levels and available resources.
- ✿ Develop defined processes for EMS chart review to include clinical filters and a standardized approach to help identify and address gaps in provider knowledge or skills. Create mechanisms to demonstrate that appropriate training, remediation or other corrective action has been taken when issues are identified in the quality management process.

- ✿ Implement a more robust and comprehensive quality assurance process that incorporates primary review of every patient care report with secondary review from the medical director as appropriate. Perform mandatory quality reviews of all STEMI, stroke, sepsis and critical trauma patients as well as any patient transported to a hospital using red light and sirens.
- ✿ Many emergency medical and trauma services systems develop some form of evaluation to gauge the performance level of the system in achieving its service level goals. Collaborate with the Board of County Commissioners to create measures to evaluate performance of the Lake County emergency medical and trauma services system. Develop a dashboard to display the performance measures and post on a site accessible to the public maintained by the emergency services council.
- ✿ Conduct joint case reviews among the emergency medical and trauma services agencies in Lake County. Joint case reviews can help to provide consistent methods for evaluation, demonstrate how each agency contributes to the patient outcome and educates providers on tools and techniques to improve systemic or individual patient care.
- ✿ Unify all response agencies under a common set of medical protocols and medical director.
- ✿ Report system metrics and clear financial picture of the ambulance service to the public on a frequent basis.
- ✿ Mandate participation in monthly multi-agency coordination meetings, including all stakeholders in the healthcare delivery, communications, and emergency response systems.

Medium-term (3 to 5 years)

- ✿ Develop and implement a plan to transition staffing in the acute care unit from EMS providers to Certified Nursing Assistants and assign the EMS providers to other tasks more related to prehospital care. Using EMTs as nurse aides was a great way to have personnel available for calls and extract additional productivity by working them on the floor between calls. The ambulance service is evolving as the community grows and a station in the southern end of the county is added. Sustainability of the current staffing configuration is uncertain based on the prevalence of negative comments about working on the inpatient floor.
- ✿ Bring all EMS agencies under a single medical director for Lake County to provide prehospital emergency care consistent with community medical standards. One or two assistant medical directors may be needed to help coordinate among the various agencies providing emergency medical dispatch, first response and ground ambulance transport.
- ✿ Promote the development of an independent medical director for the county who is not funded directly by each individual agency.
- ✿ Discontinue staffing the acute care floor with EMS providers and stop using them to perform CNA duties. There appears to be some benefit to having EMS providers staff the emergency department given the overall call volume for the EMS system, but in-house staffing should not take priority over EMS response.
- ✿ Although not designated as a trauma center, St. Vincent General Hospital should consider a hosting a multi-agency, quarterly case review session to evaluate one or more critical medical or trauma cases, similar to the process used by designated trauma centers. The case should be presented from dispatch through discharge, with emphasis on response,

treatment and outcome to educate providers on tools and techniques to improve systemic or individual patient care.

- ✱ Collect and analyze data to create provider report cards, and incorporate those findings in the quality management process. Regardless of the frequency that a skill is performed by a provider or the agency, it is still important to track any trends to focus on areas of improvement as well as looking at what the service excels at. This can help focus continuing education classes or skills review sessions.
- ✱ Consider sharing ambulance patient care reports directly with receiving facilities for quality measures and continuity of care. EMS provides a valuable pre-hospital service where advanced life support measures are performed and should be thoroughly documented in a patient's medical record for continuity of care.
- ✱ Establish a formal chain of command for the medical direction with emphasis on standing orders and protocols, decreased online medical control, consistent quality management reviews and unified medical direction from one physician for all prehospital agencies in the county.
- ✱ Pursue trauma designation for St. Vincent Hospital to improve care for all trauma patients in the county and contribute to the state trauma registry.
- ✱ The emergency medical and trauma services organizations in Lake County should collect a broad array of accurate data, including patient outcomes, to be used in research and verify the efficacy of changes in treatment modalities, provider training, medical equipment and technology.
- ✱ St. Vincent General Hospital has a very interesting research opportunity surrounding the integration of EMS and in-hospital care. The hospital should engage qualified investigators to design and conduct a research study to measure the clinical, operational or fiscal benefits of integrating EMS providers into the continuum of care provided in the hospital emergency department.
- ✱ Integrate the medical director into a system wide quality management system. This system should have a broad base of participation across all care provided within the county and patients should be automatically included based on objective criteria as opposed to the opinions of care providers.
 - Consider quarterly morbidity and mortality (M&M) meetings where providers may benefit from being exposed to positive and negative aspects of complex or interesting patients.
- ✱ Discontinue using EMS providers for job duties beyond response and emergency department support. Clearly prioritize response and communicate this to all in hospital staff. Build systems and staff appropriately to allow EMS providers to quickly move into their response role.

Long-term (5 years)

- ✱ Work with the Emergency Telephone Service Authority, the Board of County Commissioners and local public safety agencies to develop a plan and funding mechanism for maintenance and capital replacement of the local public safety communications system.

- ✿ Work with the Board of County Commissioners and other governing boards to develop a reliable replacement plan for equipment that has already been purchased with grant funding assistance.

Central Mountains RETAC Recommendations

Short-term (1 to 2 years)

- ✿ Advocate for a regional medical director to help coordinate medical direction in the Central Mountains RETAC and among the different counties to synchronize standards of care consistent with community expectations throughout the region.
- ✿ Ensure continuing education for all healthcare providers is supplied by an appropriate instructor through a credentialed education program.
- ✿ Increase opportunities for joint training sessions among the emergency medical and trauma service organizations. This can easily be accomplished by each organization opening its training sessions to any other members of the emergency medical and trauma services system in Lake County. Eventually the training sessions can be posted on a common calendar maintained by the emergency services council or the training center.
- ✿ Evaluate how grant funds may be used to support initial training and continuing education needs for emergency medical and trauma services providers in Lake County. Agencies should identify an individual to coordinate training requests, prioritize within budget constraints and make use of the CREATE program or other educational grants to leverage local funding to assist with initial training and continuing education.
- ✿ Encourage all stakeholders to actively participate in, and take advantage of, the planning, resources, coordination and support activities the Central Mountains RETAC has to offer.
- ✿ Review mass casualty incident plans and ensure that all responders are aware of the plan and have a thorough understanding of their role within the plan.
- ✿ Conduct a full-scale exercise of a mass casualty incident that will truly test capabilities within the next two years. Fund backfill of personnel to increase participation
- ✿ Review mass casualty incident plans annually and update as necessary to current staffing levels and available resources.
- ✿ Many emergency medical and trauma services systems develop some form of evaluation to gauge the performance level of the system in achieving its service level goals. Collaborate with the Board of County Commissioners to create measures to evaluate performance of the Lake County emergency medical and trauma services system. Develop a dashboard to display the performance measures and post on a site accessible to the public maintained by the emergency services council.
- ✿ Conduct joint case reviews among the emergency medical and trauma services agencies in Lake County. Joint case reviews can help to provide consistent methods for evaluation, demonstrate how each agency contributes to the patient outcome and educates providers on tools and techniques to improve systemic or individual patient care.

Appendix A: Lake County EMS Statistics 2018

These statistics are compiled from data submitted to the state for NEMSIS reporting

Response Requests

Runs by Response Request	Number of Runs	Percent of Total Runs
911 Response (Scene)	618	67.17%
Interfacility Transport	162	17.62%
Standby	124	13.48%
Public Assistance/Other Not Listed	12	1.30%
Medical Transport	4	0.43%
Total:	920	100%

Request for Service Time Frames

Time Period	Sun	Mon	Tue	Wed	Thurs	Fri	Sat	Total	%
00:00 – 03:00	14	11	7	10	11	5	13	71	8%
03:00 – 06:00	5	2	4	2	5	11	8	37	4%
06:00 – 09:00	10	11	17	12	9	11	13	83	9%
09:00 – 12:00	19	25	16	16	19	14	24	133	14%
12:00 – 15:00	23	23	31	27	19	22	32	177	19%
15:00 – 18:00	37	26	13	20	20	24	36	176	19%
18:00 – 21:00	27	22	20	24	18	15	19	145	16%
21:00 – 24:00	22	12	4	11	12	19	18	98	11%
Total:	157	132	112	122	113	121	163	920	100%

Disposition

Response Disposition	Number of Runs	% of Runs
Patient Treated, Transported by this EMS Unit	396	43.0%
Standby-No Services or Support Provided	123	13.4%
ALS Inter-facility	122	13.3%
Patient Refused Evaluation/Care (Without Transport)	67	7.3%
Patient Evaluated, No Treatment/Transport Required	62	6.7%
Standby-Public Safety, Fire, or EMS Operational Support Provided	35	3.8%
Canceled on Scene (No Patient Contact)	31	3.4%
BLS Inter-facility	25	2.7%
Canceled (Prior to Arrival At Scene)	13	1.4%
Patient Treated, Released (per protocol)	8	0.9%
Canceled on Scene (No Patient Found)	7	0.8%
Patient Dead at Scene-No Resuscitation Attempted (Without Transport)	7	0.8%
Patient Treated, Released (AMA)	7	0.8%
Patient Treated, Transferred Care to Another EMS Unit	5	0.5%
Assist, Agency	3	0.3%
Assist, Public	3	0.3%
Patient Dead at Scene-Resuscitation Attempted (Without Transport)	3	0.3%
Assist, Unit	1	0.1%
Patient Treated, Transported by Law Enforcement	1	0.1%
Patient Treated, Transported by Private Vehicle	1	0.1%
Total:	920	100%

Response/Transport Mode

Response Mode to Scene	Number of Runs	% of Total Runs
Emergent (Immediate Response)	591	64.24%
Non-Emergent	311	33.80%
Emergent Downgraded to Non-Emergent	17	1.85%
Non-Emergent Upgraded to Emergent	1	0.11%
Total:	920	100.00%

Transport Mode from Scene	Number of Runs	% of Total Runs
Non-Emergent	528	57.39%
Not Reported	310	33.69%
Emergent (Immediate Response)	61	6.63%
Not Applicable	18	1.96%
Emergent Downgraded to Non-Emergent	2	0.22%
Non-Emergent Upgraded to Emergent	1	0.11%
Total:	920	100.00%

Average Run Mileage

To Scene	Number of Runs	% of Total Runs
Not Reported	25	2.72%
0 - 5	621	67.50%
5 - 10	69	7.50%
10 - 15	83	9.02%
15 - 20	22	2.39%
> 20	100	10.87%
Total:	920	100%

From Scene	Number of Runs	% of Total Runs
Not Reported	270	29.35%
0 - 5	403	43.80%
5 - 10	38	4.13%
10 - 15	49	5.33%
15 - 20	10	1.09%
> 20	150	16.30%
Total:	920	100%

Run Times

Enroute (Responding Unit Notified - Unit Enroute)		
Minutes	Number of Runs	% of Total Runs
Not Reported	13	1.41%
0 - <1	347	37.72%
1 - 2	312	33.91%
2 - 3	146	15.87%
3 - 4	48	5.22%
4 - 5	8	0.87%
>5	46	5.00%
Total:	920	100%

Response Time (Unit Enroute - Unit Arrived on Scene)		
Minutes	Number of Runs	% of Total Runs
Not Reported	49	5.33%
0 - 5	476	51.74%
5 - 10	195	21.20%
10 - 15	89	9.67%
> 15	111	12.07%
Total:	920	100%

Transport Time (Unit Left Scene - Arrived at Destination)		
Minutes	Number of Runs	% of Total Runs
Not Reported	393	42.72%
0 to <5	129	14.02%
5 to <10	148	16.09%
10 to 15	51	5.54%
> 15	199	21.63%
Total:	920	100%

Average Run Times in Minutes (HH:MM:SS)	
Dispatch to Enroute	0:01:46
Enroute to Scene	0:10:24
At Scene	0:23:51
Scene to Destination	0:33:35
Destination to Transfer of Care	0:08:43
Back in Service	0:39:21
Total Average Call Time:	1:57:40

Appendix B: List of Stakeholders Interviewed

Central Mountains RETAC

Centura Health Prehospital Services

Colorado Mountain College

Flight for Life-Colorado

Lake County Board of County Commissioners

Lake County Emergency Management

Lake County Search and Rescue

Lake County Sheriff's Office

Leadville-Lake County Fire Rescue

Reach Air Medical

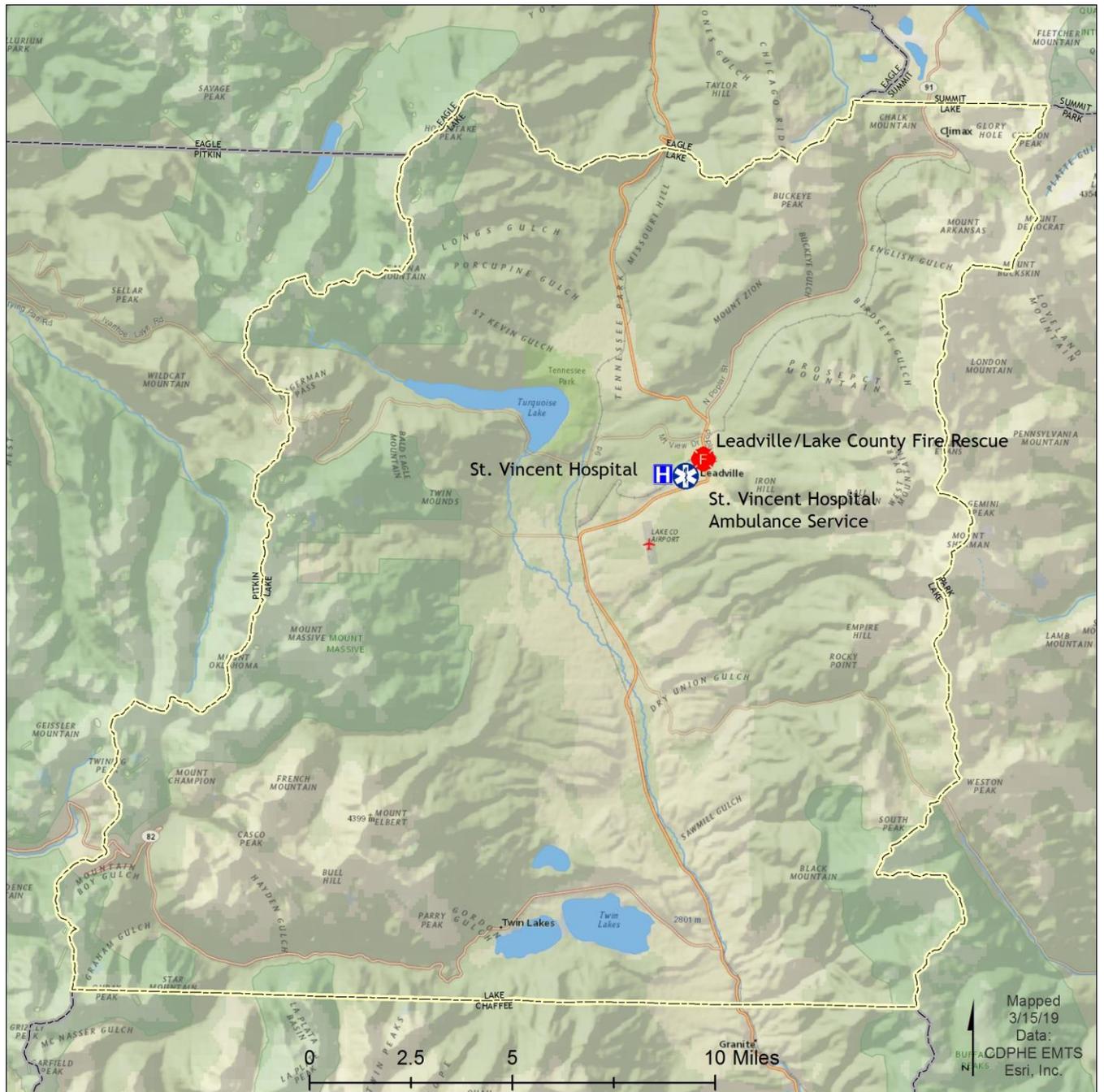
Ski Cooper Ski Patrol

St. Vincent General Hospital District

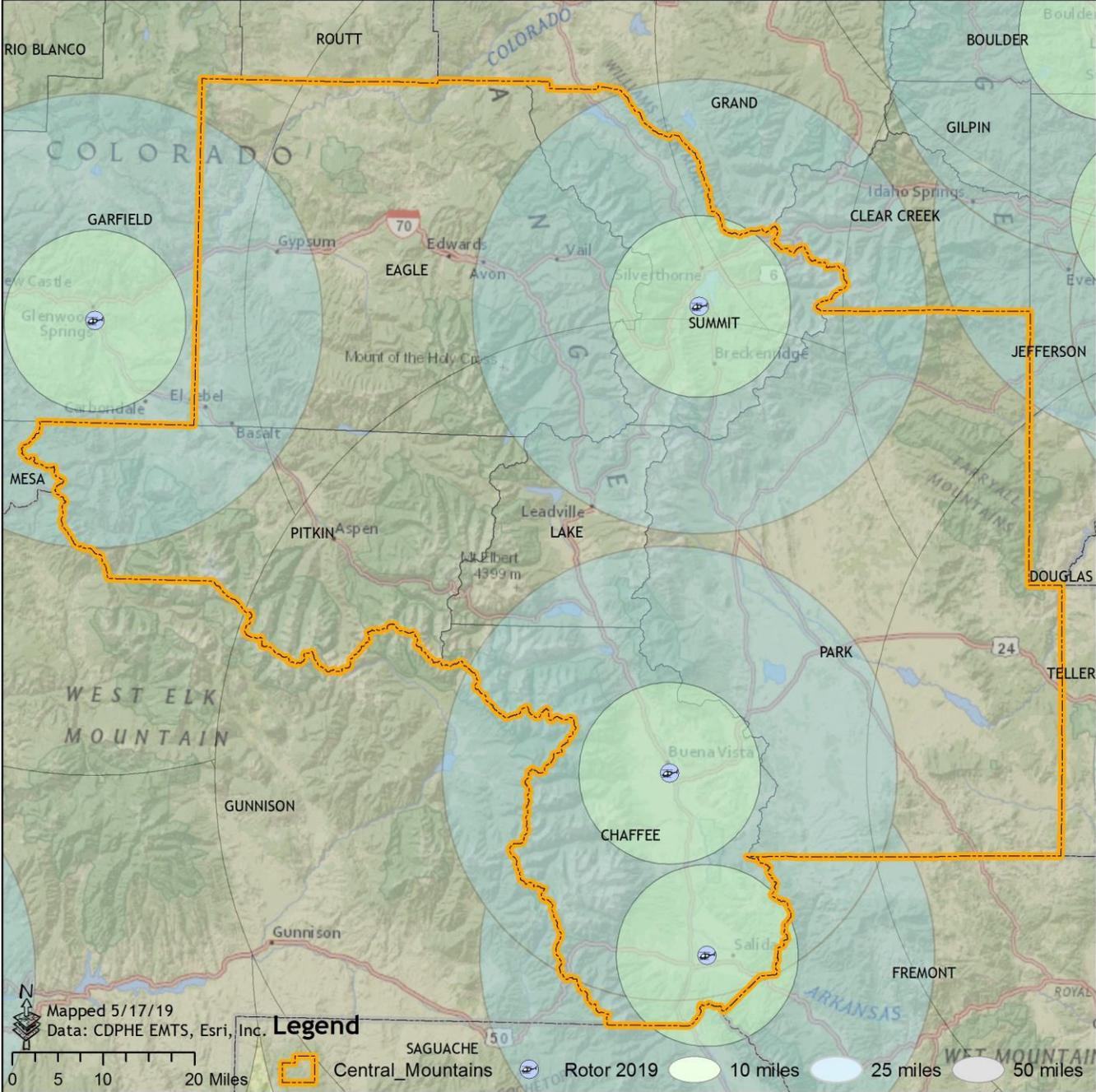
St. Vincent General Hospital District Ambulance Service

St. Vincent General Hospital District EMS medical director

Appendix C: Lake County Service Map



Appendix D: Air Medical Service Map



Appendix F: Assessment Team Biographical Information



Brandon Daruna, MBA, NRP

Brandon Daruna is the Chief of the Gilpin Ambulance Authority and an EMS nerd. He lives in Golden, Colorado and enjoys being outdoors with his awesome wife and son Wyatt. After 20-years in EMS, Brandon values progressive services that suspend patient judgment in favor of high-quality care and stellar employee support.

Brandon cut his teeth as an EMT at the City of New Orleans while earning his EMT-I and paramedic from Delgado College and Charity Hospital. Continuing as a paramedic and educator for West Jefferson Medical Center EMS, he was called to the mountains in 2003. His first decade in Colorado was spent working as a Captain for Northglenn Ambulance, a Lieutenant with Golden Fire Department, and a field training officer with the Denver Health Paramedic Division.

After receiving his MBA from the University of Denver, Brandon shifted his focus to bringing leadership and management education to emergency services, teaching the Public Safety Leadership program as an adjunct professor with the university. He envisions a collaborative emergency services profession that takes great care of employees, removing structural barriers and supporting their wellness. Brandon currently serves on the Foothills RETAC Board of Directors, chairs the RETAC's MCI Committee, the Gilpin County LEPC and Emergency Services Council, the North Central Region Health Care Coalition Governance Board, the North Central Region Urban Area Security Initiative Board of Directors, and the Rocky Mountain Combined SWAT Team.

Arlene Harms

Arlene started her career at Melissa Memorial Hospital in Holyoke, Colorado as a medical technologist over 25 years ago. She continued to work in the clinical arena in lab, cardiac rehabilitation and quality improvement until 2000, at which time she became administrator of Melissa Memorial Hospital. She also worked as an EMT-Intermediate for the Phillips County Ambulance Service and managed it during her tenure at Melissa Memorial Hospital. In 2007, she moved to Alamosa where she has been employed by Rio Grande Hospital as chief executive officer. She is active as an instructor in ACLS and PALS.

Tad Rowan, Paramedic

Tad Rowan is currently the Fire Chief of the Montrose Fire Protection District (MFPD), a mid-sized fire and EMS department that serves an area of 1,100 square miles in Western Colorado. Tad has over 25 years of experience in rural and urban EMS, beginning his career as an EMT and volunteer firefighter in 1989. He became an EMT-Intermediate in 1992, and completed his Paramedic certification in 1994 while working as the Operations Manager for a private ambulance service. In 1999, he was hired as the EMS Division Chief for the MFPD where he was responsible for the implementation of ALS and transport services for the district. He was promoted to Deputy Chief of Operations in 2004 and served in that capacity until selected for the Fire Chief's position in 2011. Tad remains active in EMS and fire education, systems development, and State and Federal grant review processes. He also serves on the board of directors for the Colorado State Fire Chiefs Association and the Colorado Public Safety Communications Sub-Committee.

Tom Soos, Paramedic

Tom has served as the emergency management coordinator for Moffat County since 2008. In this role, Tom is responsible for advising the Board of County Commissioners on matters related to EMS, emergency management and public health issues (animal and human) in the county. Through a collaborative stakeholder process, Tom ensures that emergency plans are updated as needed and that MCI exercises are conducted annually.

Tom was the director of EMS for The Memorial Hospital in Craig, Colo., from 2002-2008, where he was responsible for the day-to-day operations and management for the hospital-based EMS service. During his time at the facility, he was instrumental in upgrading the service to providing ALS level of care on all calls. He also worked to develop a high profile EMS presence at public events, to ensure public awareness of the importance of an EMS presence at public events in the county.

Tom was an EMS program instructor at Colorado Northwest Community College from 2004 to 2011 where he taught basic EMT classes, IV certification and refresher classes. Prior to moving to Colo., Tom worked at Rutgers, The State University of New Jersey, in the Department of Fire and Emergency Services for 19 years. While there he managed a combined paid and volunteer department. He established an in-house billing system that

achieved a 68 percent collection rate. Tom routinely commanded EMS operations at sporting events which drew over 40,000 spectators, and provided oversight of EMS coverage for high profile events such as presidential visits and World Cup events.

David Steinbruner, MD, FACEP

Dr. David Steinbruner, MD, FACEP, is a board certified emergency physician and chief of staff at Memorial Hospital in Colorado Springs. He graduated from the School of Medicine at Virginia Commonwealth University in 2001 and completed a combined internship and residency in 2004. He served with the U.S. Army at Ibn Sina Hospital, a combat support hospital in Baghdad, Iraq. Dr. Steinbruner served as the medical director for numerous EMS agencies in the Pikes Peak Region and across the eastern plains. He also represents emergency physicians on the State Emergency Medical and Trauma Services Advisory Council.

Eric Schmidt, RN, BSN, MBA, EMT-I

Eric is a Colorado native and began his career in emergency services more than 40 years ago after a call to the community for volunteers to fight a wildland fire southwest of Boulder. He is currently the funding section manager at the Colorado Department of Public Health and Environment, Emergency Medical and Trauma Services Branch. He has provided EMS consulting services, technical assistance to local governments and ambulance inspection services for ten counties in Colorado through his firm, EMS Services, since 1992. Eric has a broad array of experiences in emergency medical and trauma services. He contracted with the Northwest RETAC to serve as regional coordinator, was a trauma nurse coordinator for Penrose Hospital, a Level II trauma center in Colorado Springs, and served as the EMS Officer for El Paso County where his duties included management of a high performance ambulance contract for the El Paso County Emergency Services Agency, administration of the county's ambulance licensing program and EMS system coordination. He has also served as the manager for Upper San Juan Hospital District, a Title 32 special district that operated an ambulance service and built a community clinic and emergency center during his tenure, directed the EMS training program for Colorado Northwestern Community College, administered federal pass-through grants as a program manager for the Colorado Department of Transportation, collected prehospital data for system analysis as an information system specialist at the Colorado Department of Public Health and Environment, held paid and volunteer positions as an EMT at several rural EMS agencies and served as a volunteer firefighter in Colorado and Wyoming. He earned Bachelor of Science degrees in Nursing, Business Administration and Mechanical Engineering from the University of Colorado, and a Master of Business Administration from the University of Oregon. Eric currently holds a Colorado Registered Nurse license, Colorado EMT-Intermediate certification and a technician level Amateur Radio license from the Federal Communications Commission.

