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Essex County Emergency Medical Services: Existing Conditions Report

How Emergency Medical Care is Provided

February, 2017

Prepared for:

Essex County and New York State Department of State Municipal Restructuring Fund

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Summary

Introduction

Essex County has identified that its current system of emergency medical services is in need of a long term strategic plan to improve its operations and set the system on a sustainable course. This project will lead to the development of a strategic plan and specific action plans for the county and several agencies that provide EMS in the county.

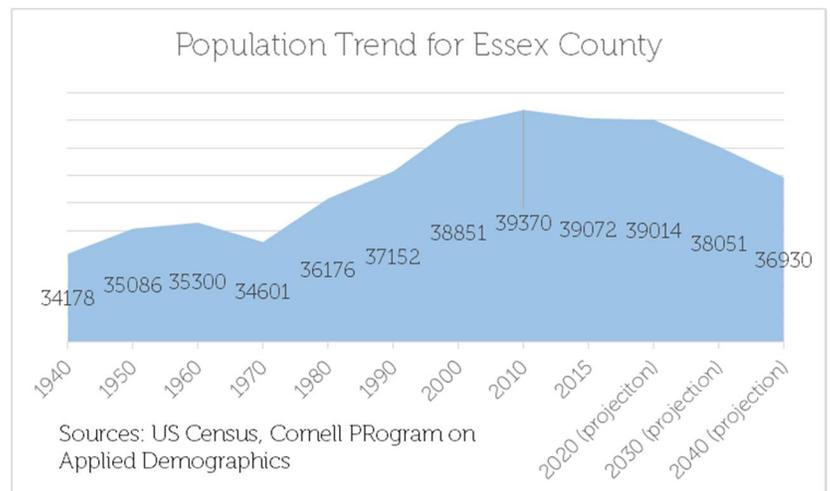
CGR has collaborated with the county and area EMS agencies to analyze the existing operations of the EMS system. The baseline document will provide information to enable the leaders of the county and area agencies to develop options for improving the operations of EMS in the county and drafting plans to implement the changes. Throughout the planning process, members of the agencies as well as community leaders will have the opportunity to shape the outcome of the project to best serve the community.

Essex County Overview

Essex County is located in the northeast section of New York. The county has 18 towns and over 1,900 sq. miles of land area. The county is wholly located in the Adirondack Park. The population is estimated to be just over 39,000. Not included in this population are the many seasonal residents that have second homes or the visitors to the many outdoor attractions in the county. On some peak weekends, it is estimated that the population is nearly double the permanent residents.

Population Changes

Over the long term, the population of Essex County had been slowly increasing until the 2015 estimated population showed a slight decline from the 2010 census. There is a projected decline of population in the county due to decreasing birth rates combined with out-migration of younger adults.



EMS System Overview

The emergency medical services (EMS) system in Essex County has evolved over the last three decades from an entirely volunteer system that subsisted on donations or minimal tax funds to one where most EMS calls are answered by agencies with a paid staff that bill for services. Along that evolutionary pathway, community expectations have increased, care standards are higher, medical equipment is more expensive, the number of available volunteers has reportedly decreased and the age of the workforce has increased. The system has 18 transport EMS companies that serve the county and 2 flight medical companies that operate in the county.

An EMS system commonly includes not only the transport ambulances, but emergency communications, receiving hospitals, first responders, educational facilities, physician medical direction and administrative oversight. While transportation and the care they provide will be the primary focus of the project, each of the other aspects will also be addressed.

Emergency Communications

Most of the EMS agencies in the county primarily receive emergency calls through a central public safety answering point (PSAP) operated by the Essex County Emergency Services Office (ESO). The 911 Center then assigns calls to the appropriate EMS agency using a combination of radio transmissions and text notifications. The ESO operates a dispatch center with a minimum of two dispatchers on duty at all times. There are 11 full time employees and four per diem staff. The 911 center supervisor will also fill in as needed during peak demand periods. The center is responsible for EMS calls, fire calls and the Essex County Sheriff's Road Patrol and Ticonderoga Police.

The Essex County EMS agencies have dispatch protocols that do not initiate the request for mutual aid until after 8 minutes have passed from the initial time of the call. This practice is requested by the EMS agencies, but can lead to extended response times. The 911 Center does not routinely know which agencies have a crew available to respond to calls. The latter is influenced by the fact that not all agencies have a "duty crew" that indicates they are ready to respond.

The PSAP receives about 200 calls per day and only about 20 percent are true emergencies.

Hospitals In and near Essex County

There are two hospitals in Essex County (Elizabethtown Community Hospital and Moses-Ludington Hospital in Ticonderoga) and a free standing emergency room in Lake Placid (Adirondack Medical Center) that operates 16 hours per day. In addition to the three emergency rooms in the county, EMS agencies frequently transport to three hospitals in neighboring counties - Champlain Valley Physician's Hospital (CVPH) in Plattsburgh, **Glens Falls Hospital** in Glens Falls and Adirondack Medical Center – Saranac Lake Site. Also, EMS agencies will

occasionally transport out of the immediate area to specialty hospitals in Burlington or Albany. The table shows the transports in 2015.

Transports by Hospital

Destination Hospital	Transports	% of Total
Elizabethown Comm. Hospital	776	23.8%
Moses-Ludington Hospital	648	19.9%
AMC-Saranac Lake ED	635	19.5%
CVPH	464	14.3%
AMC-Lake Placid ED	370	11.4%
Glens Falls Hospital	313	9.6%
Non Hospital Destinaton	16	0.5%
Porter Medical Center/Middlebury	14	0.4%
Fletcher Allen Healthcare/Burlington	6	0.2%
Albany Medical Center Hospital	5	0.2%
Univ. of Vermont Healthcare	4	0.1%
Newcomb Health Center	3	0.1%
Lake Placid Airport	1	0.0%
Grand Total	3,255	100.0%

Medical Direction

Medical direction for Essex County EMS agencies comes primarily from one of four physicians. All physicians have been heavily involved in EMS for many years and provide the service on a volunteer basis to the agencies. The physicians perform a variety of services for the agencies from reviewing operating plans to signing necessary paperwork. All physicians participate on the Regional Emergency Medical Advisory Committee (REMAC) for the Mountain Lakes Region.

Education

EMS education in Essex County is handled through the county EMS County Coordinator's Office in coordination with Mountain Lakes Regional EMS Council. In 2015, there was one CFR original course that yielded 3 certified providers and two EMT original courses that yielded 21 new EMTs. There were also two EMT recertification courses that helped 15 EMTs retain their certification. Also, 4 AEMT-CCs became certified in courses taught in the county and six others completed their recertification.

Regional Coordination

Essex County is in the Mountain Lakes Region for the New York State EMS Councils. The region includes Clinton, Franklin, Warren and Washington Counties. The regional coordination infrastructure includes a program agency, the REMAC and Regional EMS Council (REMSCO). The program agency's role is to provide support to the REMAC and REMSCO, collect data related to the performance of EMS in the region, and support educational initiatives including through the training of new instructors and the approval of new EMS course sponsors. The REMAC sets protocols and standards of practice for the region. The REMAC consists of physicians and EMS providers from each county in the region. The REMSCO has the authority to regulate the agencies that provide ambulance transport, advanced life support first response and EMS education. The REMSCO is also tasked with developing a training plan for EMS providers.

County Coordination

Essex County named their first full time EMS coordinator in January 2016. Previously, the position was filled by a part time employee. The full time coordinator has wide range of responsibilities including interfacing with county government, liaison with the 911 Center, participation in regional EMS activities, coordination of training, representing the county in state EMS activities, and responding to large scale events. The office has only the one employee, but she does receive support from other members of the emergency management office.

Agency Profiles

The data on the agencies comes from a variety of sources including agency interviews, agency records, Department of Health records, Essex County data and U.S. Census. In some cases, the data was not provided for all agencies or certain data points were missing.

The EMS transport agencies in the county are as diverse as the communities that they serve, each has a proud history that usually goes back to the middle decades of the 20th century when volunteers sought training and equipment to begin helping neighbors get to the hospital in emergencies. Over the ensuing decades, community expectations, training requirements and fiscal demands have led many of the agencies to begin billing for services and hiring paid employees to meet the needs of the community. The full report contains information on a variety of agency characteristics. The table below provides a summary of some of the key findings.

Agency Name	Type of Service	Service Area	Members/ Employees	Ambulances	Bill for Service?	Population	Calls in 2015
Ausable Forks Vol Amb Svc Corp	Combo	Towns of Jay and Black Brook	51	2	Yes	4003	405
Elizabethtown Community Hospital Transport	Paid	n/a: Hospital Transport	21	2	yes	n/a	n/a
Elizabethtown-Lewis Emergency Squad	Combo	Town of Lewis, Town of Elizabethtown	43	2	yes	2,545	214
International Paper	Paid	International Paper facility	12	1	no	n/a	n/a
Keene Rescue Squad	Vol	Town of Keene	7	1	yes	1105	64
Keene Valley EMS	Vol	Keene Valley FD	31	1	no		74
Lake Placid Vol Amb Svc, Inc	Combo	Lake Placid Village and Town of North Elba	37	3	yes	8957	1071
Lamoille EMS	Paid	Interfacility and Crown Point	12	2	yes		177
Minerva Rescue Squad	Vol	Town of Minerva	28	1	no	809	168
Moriah EMS	Vol	Town of Moriah	12	2	no	4798	411
Newcomb Ambulance Squad	Combo	Town of Newcomb	40	1	Yes	436	73
Schroon Lake EMS	Combo	Schroon Lake, North Hudson	22	2	no	1894	298
Ticonderoga Emergency Squad	Vol	Ticonderoga, Putnam,	40	2	yes	7711	429

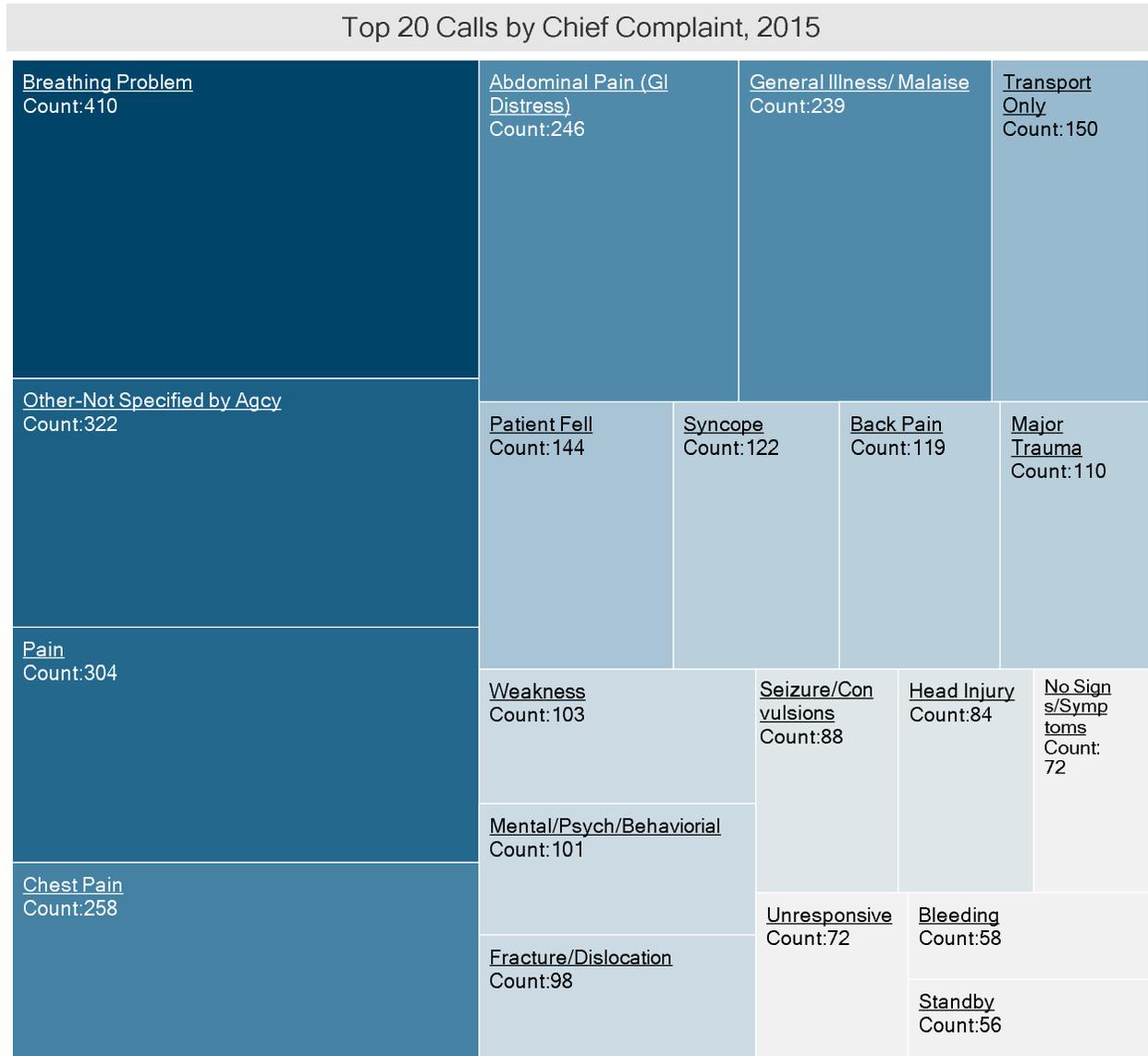
Agency Name	Type of Service	Service Area	Members/ Employees	Ambulances	Bill for Service?	Population	Calls in 2015
		Crown Point					
Westport Fire District Emergency Squad	Vol	Town of Westport	28	2	no	1312	150
Willsboro-Essex EMS	Vol	Towns of Willsboro and Essex	26	3	yes	2696	403
Wilmington Town Ambulance	Combo	Town of Wilmington	25	2	yes	1253	191
Total			435	29	11 of 16	37519	4128
Keeseville and Saranac Lake are based outside the county and were not included in this section of the report.							

Other EMS services include the Olympic Regional Development Authority (ORDA) which is responsible for providing EMS staffing at five venues in Essex County, North Country Life Flight is a non-profit, combination service that provides medical staffing for the New York State Police helicopters that are stationed at the Adirondack Regional Airport north of Saranac Lake, and Lifenet of New York, which began operating a helicopter service out of the Ticonderoga Airport in October, 2016.

Calls for Service in 2015

The data regarding the EMS calls for services in Essex County was requested from each of the 13 ambulance services that provide substantial EMS transport in the county. The agencies were requested to submit 25 common data points (see list in Appendix 1) for each call that they responded to during 2015. All agencies completed an excel spreadsheet and submitted at least partial data for the calls. 4,128 calls for service were reported by the agencies indicating that there are about 11 calls per day on average in Essex County.

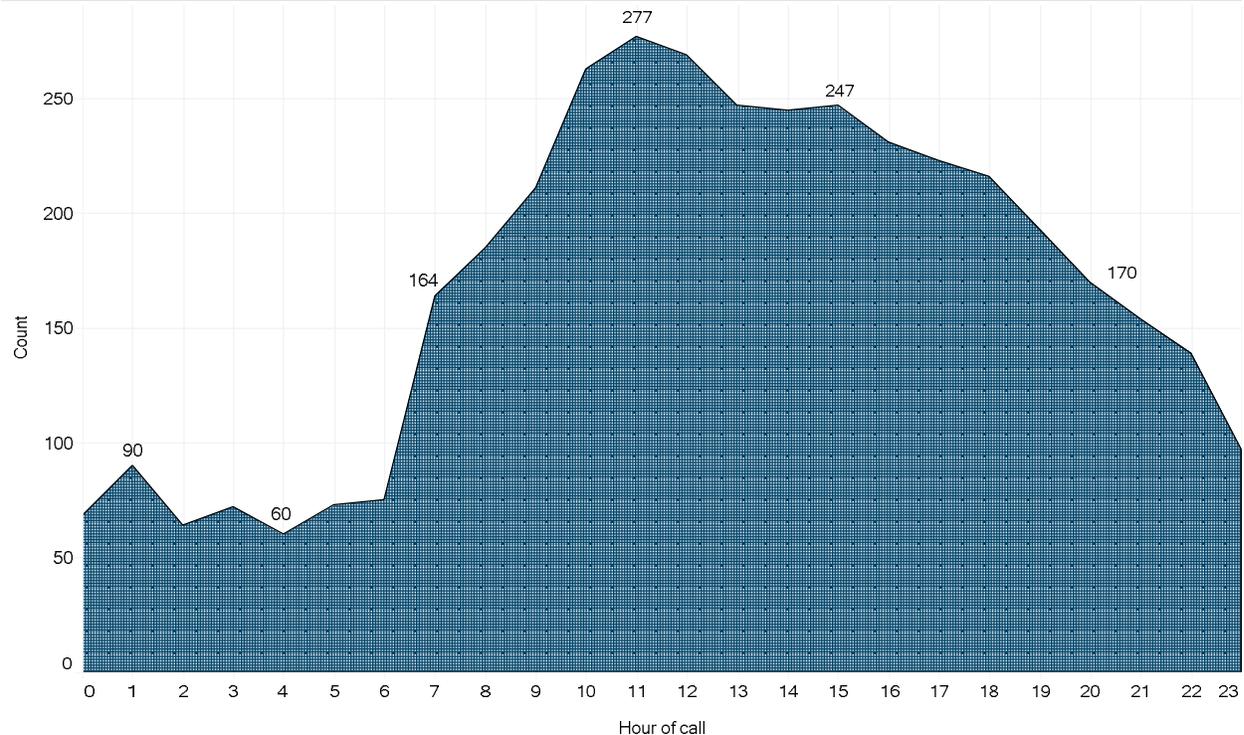
The top 20 calls by chief complaint accounted for 76 percent of the calls that were reported by the agencies. These are the complaints specified by the agency at time of transport and may not reflect the final outcome of the patient. More than 20 percent of calls had chief complaints of breathing problems, chest pains, major trauma, seizures, and unresponsiveness that likely would benefit from advanced life support. Other calls list pain and fracture/dislocations as a chief complaint that might benefit from pain management from ALS providers.



Distribution of EMS Calls by Time of Day

About 69 % of EMS calls occur between the hours of 7 am and 7 pm. The rate of calls per hour is substantially lower on the overnight hours with the hours between midnight and 7 am accounting for only 12% of calls. The busiest hours are between 10 am and 3 pm with those 5 hours accounting for 32 % of calls.

Calls by Hour



Call Time Intervals

CGR calculated some key time intervals for each agency. The intervals were shown in the agency descriptions earlier in the report (p. 10). On the following table, the times are presented for the county as a whole. An important caveat is that not all data was provided for each call. Also, a missing data piece is the call processing time from when the call is answered at the 911 center to when it is assigned to the agency. For EMS calls, it routinely takes 1.5 to 2 minutes from the time of answering the call to the time it is assigned to the agency.

Chute Time: Across the county, the median chute time is 5 minutes and the 90th percentile chute time is 11 minutes. The Mountain Lakes Region has established a target of 10 minutes or less for this time interval. Five agencies (AuSable, Keene, Lake Placid, LaMoille, and Newcomb) meet this target and only one of them (Keene) relies primarily on volunteer responders.

Response Time: Response times are a frequent measure of EMS performance, but full context is needed to use that measure properly and full context is not available from the agencies. The key piece that is missing is the call type at time of dispatch. It is common practice in EMS to not respond to with lights and sirens to routine calls such as transports between facilities or minor medical problems as identified through the dispatch triage process. The information on call type was not available for this

analysis. The median response time in the county is 10 minutes and the 90th percentile is 21 minutes. Some agencies with larger service areas (Schroon Lake and LaMoille) have longer 90th percentile response times, while Lake Placid and its dense call distribution has the shortest 90th percentile time. This time interval includes the chute time.

Transport Time: The transport time is the time interval from when an agency begins transporting to when they arrive at the hospital. While the median time for transport is only 20 minutes in the county, that time is lowered by several higher volume agencies with short distances to their hospitals. Minerva, Newcomb, and Schroon Lake all have transport times that exceed a median value of 40 minutes and a 90th percentile of nearly an hour. These long transport times lengthen the total call time and also place a burden on the crews that are on those calls, particularly the volunteers.

Total Call Time: The total call time for agencies indicates how long their ambulance is out of service on the event. The median value of 75 minutes is influenced, again, by the larger agencies with short transport time. The communities with longer transport times (Minerva, Newcomb and Schroon Lake) all have median call times around 2 and half hours with 90th percentile values over an hour longer. These time intervals don't include the time necessary for crews to prepare for their next call or completing paperwork. For crews in areas with long transports, an EMS call is more than three hours in length when the other routine tasks are taken into consideration. It should also be acknowledged that during the calls in many places, there is not another ambulance available or the crew to staff one if it does exist, therefore there is a gap in EMS coverage.

Call Time Intervals

Agency	Chute Time (hh:mm)			Response (hh:mm)			Transport Time (hh:mm)			Total Call Time (hh:mm)		
	Median	80thP	90thP	Median	80thP	90thP	Median	80thP	90thP	Median	80thP	90thP
Essex County	0:05	0:09	0:11	0:10	0:16	0:21	0:20	0:35	0:45	1:15	2:03	2:35
AuSable	0:03	0:06	0:09	0:10	0:16	0:21	0:35	0:43	0:46	0:39	1:47	2:14
Etown-Lewis	0:08	0:11	0:13	0:15	0:21	0:25	0:08	0:15	0:21	0:50	1:17	1:39
Keene	0:06	0:08	0:09	0:09	0:13	0:20	0:15	0:19	0:21	1:13	1:29	1:49
Keene Valley	0:08	0:12	0:14	0:10	0:17	0:23	0:17	0:21	0:24	1:30	1:48	2:08
Lake Placid	0:03	0:06	0:08	0:07	0:11	0:15	0:18	0:21	0:23	0:57	1:28	1:55
LaMoille	0:05	0:08	0:10	0:15	0:21	0:25	0:12	0:24	0:44	1:04	1:54	2:27
Minerva	0:07	0:09	0:11	0:13	0:17	0:20	0:49	0:54	0:58	2:33	3:11	3:34
Moriah	0:08	0:10	0:12	0:13	0:16	0:19	0:21	0:26	0:28	1:38	1:57	2:10
Newcomb	0:03	0:06	0:07	0:07	0:14	0:20	1:05	1:10	1:17	2:46	3:34	3:46
Schroon Lake	0:03	0:10	0:14	0:12	0:20	0:27	0:44	0:51	0:57	2:25	3:09	3:30
Ticonderoga	0:06	0:09	0:11	0:10	0:15	0:20	0:03	0:07	0:12	0:39	0:55	1:10
Westport	0:07	0:10	0:12	0:12	0:17	0:21	0:12	0:16	0:19	1:29	1:51	2:11
Wb-Esx	0:07	0:10	0:12	0:11	0:16	0:19	0:31	0:37	0:40	1:50	2:09	2:19
Wilmington	0:05	0:09	0:11	0:11	0:17	0:21	0:24	0:35	0:41	1:53	2:15	2:34

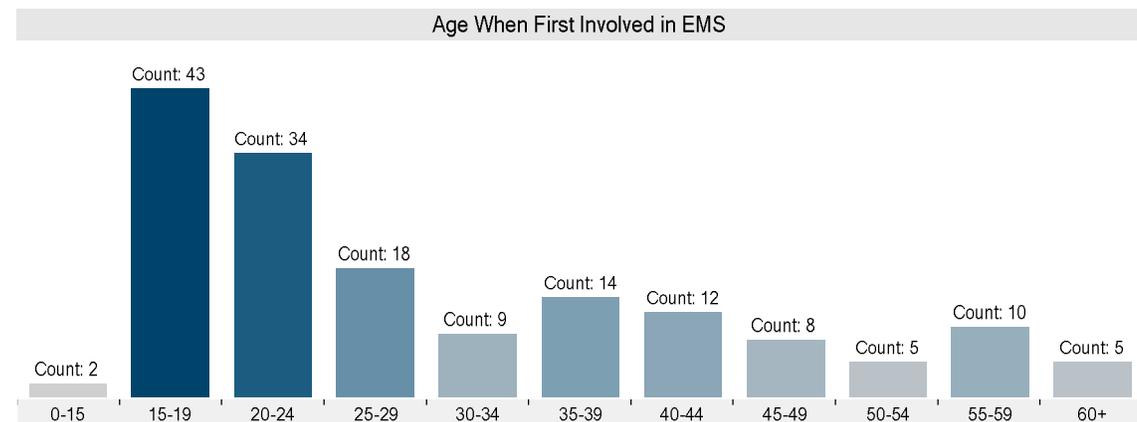
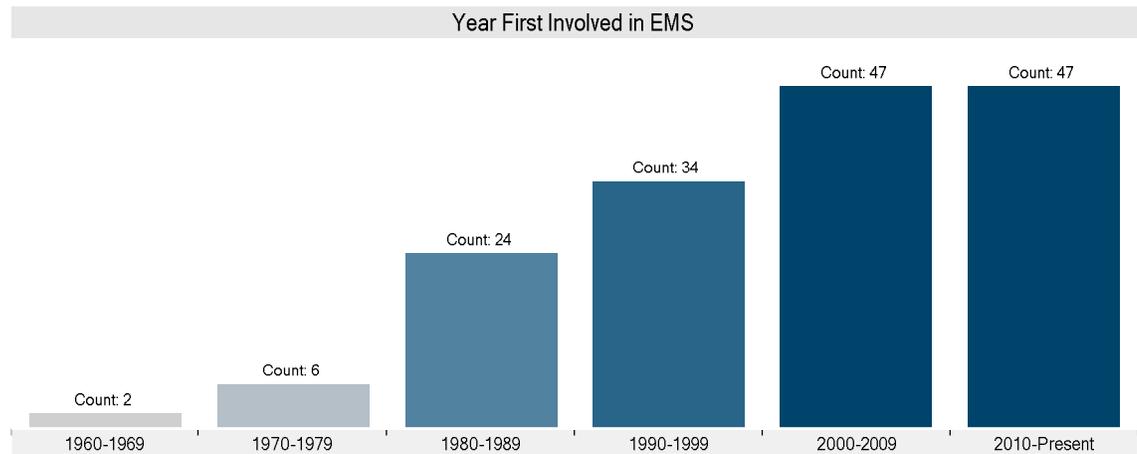
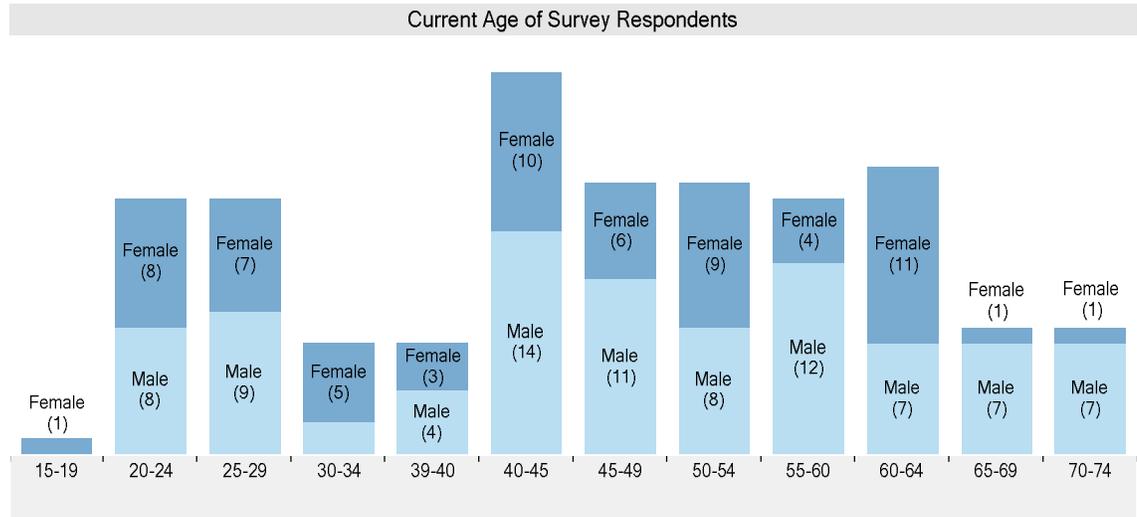
Survey of EMS Workforce

In October of 2016, surveys were electronically distributed¹ to the Essex County EMS community that requested provider data on items such as tenure, volunteer and/or employment commitment levels, certification levels, and agency affiliation. Open-ended questions were included for the respondent to express personal answers to questions regarding training opportunities and solutions to challenges their agency

¹ paper copies of surveys were available to those that requested them

may face. The 160 responses received were provided anonymously and no identifying data was requested. Some of the questions will be used to inform later stages of the

Essex County EMS Provider Survey - Respondent Information



project.

More than half (53%) that completed the survey indicated that they are only volunteers, while 30% both work and volunteer. 45% indicate that they are with only one agency. A small share (6%) indicate that they are involved with 5 or more agencies.

The majority of volunteer providers feel that they are appreciated and recognized by their community. They also feel that they would be more likely to continue to volunteer if they received incentives such as tax relief or a life insurance program. The paid EMS providers were split as to whether they were fairly compensated for their job.

Respondents who indicated that they:

Both VOL and work for PAY	42
Volunteer only	73
Work for Pay only	22
Work/VOL at 1 agency	69
Work/VOL at 2 agencies	35
Work/VOL at 3 agencies	22
Work/VOL at 4 agencies	14
Work/VOL at 5 agencies	5
Work/VOL at 6 agencies	3
Work/VOL at 7 agencies	2
Work/VOL at 9 agencies	1

Baseline Key Findings

- EMS Agency Characteristics
 - There are 18 EMS transport agencies that serve the county. Most are either fire department based (41%) or independent non-profit organizations (30%). In 2015, the independent ambulances responded to about 73% of the calls in the county and fire department ambulances about 18%. The remaining amount were reported being split by the town ambulance and the commercial services' 911 calls. The hospital based systems were excluded.
 - The EMS system responded to 4,128 events in 2015, 11.3 responses per day countywide. Through mid-September 2016, there were 11.7 responses per day. As call volume slows after the summer tourist season ends, response per day is anticipated to finish consistent with 2015.
 - Only the five busiest EMS agencies respond to calls at a rate greater than one call per day and no agency averages more than two calls per day. The five least active agencies responded to fewer than six calls per month.
 - Agencies can assure an adequate EMS response when all resources are available, but second calls or calls when key people are unavailable challenge the system's ability to respond in a timely manner. Nearly all agencies meet the goal of having an ambulance responding to calls in less than 10 minutes 90 percent of the time

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- Nearly all agencies are providing the highest tier of medical care (advanced life support) or have it readily available. ALS is requested by BLS providers as needed, but is not dispatched by protocol.
 - Most of the basic life support ambulances have advanced treatments such as epinephrine injections, albuterol administration and continuous positive airway pressure adjuncts available to them.
 - Advanced life support (ALS) is often available for calls to the larger agencies with some paid staff. Some agencies have very few ALS providers.
 - Anecdotally, patients are harmed from slow EMS response several times a year. This is typically attributed to lack of provider availability. This is not officially reported or reviewed.
 - Community observers report little improvement EMS response times over the last few decades. The lack of historical data will prevent this from being measured.
 - The addition of a full time county EMS coordinator in 2016 is seen as having a positive impact by both EMS providers and outside parties.
 - No non-commercial ambulance reports being able to cover all their operational costs based on patient billings. More than half the agencies have a substantial reliance on property tax revenue.
- EMS Workforce
 - Based on 2015 NYS DOH data, there are 215 certified EMS providers living in Essex County. Three are Certified First Responders (CFRs), 159 are Emergency Medical Technicians (EMTs), 5 are Advanced EMTs, 37 are AEMT-Critical Care, and 10 are paramedics. This equates to 4.1 EMTs per thousand residents and 1.2 advanced life support providers per thousand residents. This rate is slightly better than the other four counties in the EMS region (Clinton, Franklin, Warren, and Washington). Additional data is needed to compare against other rural counties and previous years.
 - The EMS system and the individual agencies rely on a small percentage of the certified EMS providers to respond to calls and provide agency leadership.
 - Based on interviews, the share of calls covered by paid staff has increased in each of the previous 5 years.

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- A majority of the key EMS providers are over 50 with a substantial percentage planning to leave the field in the next five to ten years.
 - There is no coordinated effort to develop EMS leaders for the next decade and beyond.
 - There are few paramedics (10) in the county, probably related to the limited educational facilities and lack of career opportunities.
 - Agencies that employ EMS providers report that they have difficulty recruiting both full and part time employees.
 - The majority of agencies that rely on volunteers report that their numbers are down from five years ago, that they rarely have new members join and that the burden of responding is increasingly shifted to a few active members.
 - The expanded EMS Educational curriculum from 2012 improves patient care, but is a barrier to recruiting and retaining EMS providers because of the extended number of hours in the class.
 - EMS providers report difficulty in finding appropriate continuing education and recertification education opportunities.
 - There are only three active Certified Instructor Coordinators (CICs) that are able to teach EMS certification courses and all teach on a part time basis.
 - State law limits EMT certification to individuals 18 and older. The NYS Department of Health takes this one step further by not allowing enrollment in EMT classes that end before the individual turns 18. This limits the opportunity to work with high schools to develop EMTs and provide valuable vocational training. This could be rectified by a change in DOH regulation to allow EMT students complete the course, then take the certification exam after turning 18.
 - Most EMS providers in the county became involved under the age of 30 with a substantial portion getting involved in their early 20s or younger.
 - General Observations On Improving the EMS System
 - EMS in Essex County will never match that in an urban or suburban area, however a well-designed system could lead to improvements in response time and level of care.
 - The hospitals in the county will need to participate in any EMS system improvement.

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- The records management system at the 911 center has substantial information on EMS calls, but the data are not extracted and analyzed to improve the system.
 - The aging population will both reduce the number of available volunteers as they become physically unable to perform the work and will increase the volume of calls because older residents use the EMS at a greater rate.
 - The solutions for improving the EMS system could involve partners from neighboring counties and Vermont.
 - Unanswered Questions
 - The prevalence and distribution of mutual aid was not able to be answered from the available data.
 - The varied funding sources and opaque financial reports prevented the development of a model for financial operations.
 - The utilization of air medical resources and the impact of the new service could not be analyzed.
 - Historical call data on a county and agency level was not available to evaluate long term trends.

Recommendations for Immediate Action

The following items are based on practices in other EMS systems and could be undertaken with limited additional resources.

- Institute a shorter time interval before mutual aid is requested from neighboring agencies. The home agency could continue to be requested, but help from a neighboring agency should be initiated at four minutes if the home agency has not indicated there is a crew available.
- Advanced life support should be assigned to calls using Emergency Medical Dispatching protocols such as all calls categorized "Charlie", "Delta" and "Echo".
- First response protocols for "Echo" calls that involve non-ambulance personnel such as law enforcement and firefighters.
- EMS agencies and the 911 center need to better communicate when there are crews available to respond to calls. This is particularly important for volunteer

agencies that rely on scramble crews and have a volume of calls greater than 150 per year.

- The 911 Center and EMS coordinator should develop a series of operational “dashboards” to help manage the EMS system using data from the dispatch system. Data points that should be tracked on a regular basis, by municipality, include: number of responses, type of responses, chute time, response time, utilization of mutual aid, need or availability of ALS and destination hospitals for transport.
- Develop an “incident report” that can be generated by the 911 center to the EMS coordinator to official track key events such as mutual aid, extended response times for serious calls, and unavailability of ALS when requested.
- Develop a process for critical event reviews (including medical direction) at an agency or county level for calls such as cardiac arrests, severe trauma, acute myocardial infarction, stroke and pediatric calls. This should be a “no fault” review targeted at improving the agency response.
- Work with the REMSCO to develop training programs for low frequency skills such as pediatric assessment, epi-auto pens, needle decompression, and synchronized cardioversion.
- Develop a process that neighboring agencies can be “put on alert” when an agency with limited resources (only one ambulance) will be tied up on a call for transport. Although state law prohibits “staging” in another operating district, this step could reduce response times.

Next Steps

Strategic Planning Process for the county and the agencies will move toward developing specific action plans to address some of the concerns identified in this report. To inform that process, the EMS survey and interviews of the agencies asked questions related to the strengths, weakness, opportunities for improvement and threats to current operations.

CGR will be working with members of the EMS study steering committee and other interested parties to develop key action areas and then work to develop action plans to help the EMS agencies progress into the future.

The goal is for CGR to work with local providers to develop several strategic action plans by May 2017 that can be implemented over the following 18 months.