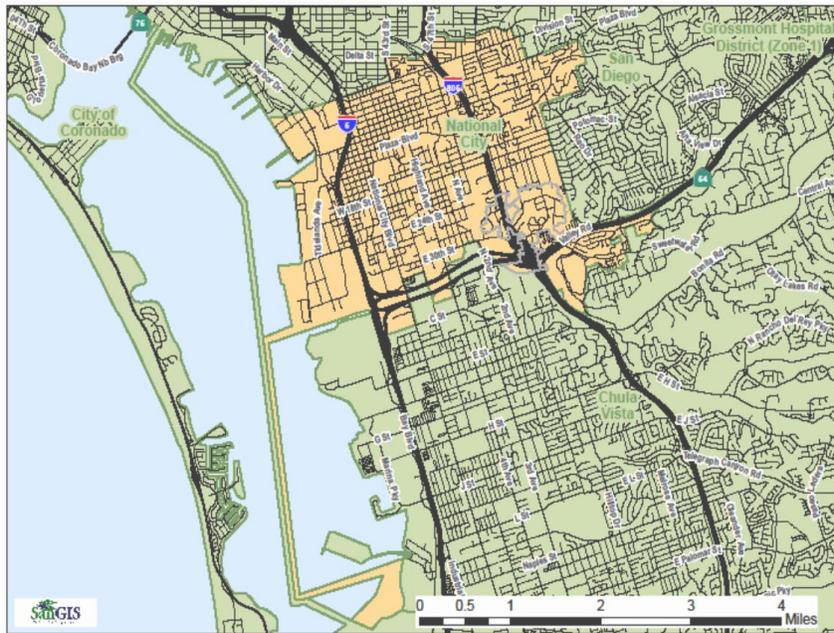




**ABARIS GROUP**  
FOUNDED 1989 INNOVATING FOR 25 YEARS

# SAN DIEGO COUNTY EMERGENCY MEDICAL SERVICES CONSULTANT'S REPORT

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Date: 4/13/2018

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National City  
Operating Area

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## Section 1: Executive Summary

The County of San Diego requested The Abaris Group complete a needs assessment of the emergency ambulance services within the National City Operating Area. This assessment included:

1. Community and stakeholder listening sessions,
2. Industry and leading practice research,
3. Recommendations to improve the emergency medical services (EMS) delivery,
4. Proposed evaluation criteria for measuring performance, and
5. Proposed ambulance service delivery model and performance measurement and indicators.

The National City Operating Area emergency ambulance service provider is currently meeting or exceeding the standards set within the service agreement. In general, the attendees at the listening sessions spoke positively about the current system and performance. Recommendations to further enhance the service were received as well.

A national roll-up of EMS best practices and industry trends was completed for consideration of the Local EMS Agency (LEMSA) and National City stakeholders. As a system, these leading EMS practices should be evaluated for local applicability and value to the operating area.

The recommendations provided by The Abaris Group focus around maintaining the current high level of service provided. Improvements to further integrate the EMS system are available. The final agreement for service should allow for future innovation as the state approves community paramedicine and other best practices.

## Section 2: Overview

### 2.1 Scope of Work

The Abaris Group was contracted by the County of San Diego to coordinate, plan, advertise and conduct stakeholder and community feedback sessions, research and compile information and develop reports of findings and recommendations for the ambulance exclusive operating area (EOA) in National City.

## Section 3: Background Information

### 3.1 Community Profile

#### Location

The National City Operating Area is comprised of the National City - City Limits, as well as the entirety of the Lower Sweetwater Fire Protection District (this area is also known as Lincoln Acres). The Lower Sweetwater Fire Protection District's service area is surrounded by the city. The Lower Sweetwater Fire Protection District contracts with the City of National City for fire service and EMS first responder services, and therefore is included in the National City Operating Area for EMS. National City spans an area of 9.2 square miles, and the fire district adds another 298 acres.<sup>1,2</sup>

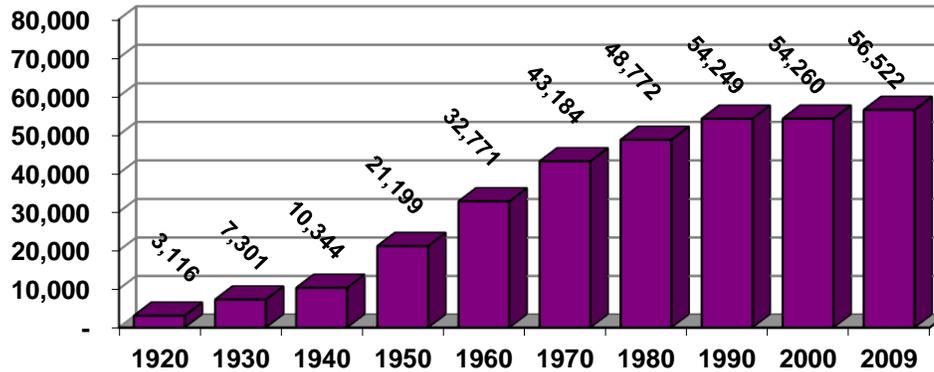
<sup>1</sup> <http://www.nationalcityca.gov/home/showdocument?id=11438>

<sup>2</sup> [http://www.sdlafco.org/images/Profiles/Profile\\_FPD\\_LowerSweetwater.pdf](http://www.sdlafco.org/images/Profiles/Profile_FPD_LowerSweetwater.pdf)

### Population

According to the National City website, the National City Fire Department serves about 63,000 residents. The department also serves the Lower Sweetwater Fire Protection District (also known as Lincoln Acres – pop. 2,600), the Port of San Diego, and Navy Base San Diego.<sup>3</sup>

#### National City Historic Population Data<sup>1</sup>



#### Population Trends<sup>4,5</sup>

	1980	1990	2000	2010	2017*
Total Population	48,772	54,249	54,260	58,582	61,363
Growth from Prior Period		11%	0%	8%	4.8%

\* 2017 Census estimates

#### Age<sup>6</sup>

#### Age of National City Residents (Census, 1980-2000, SANDAG, 2010 Estimate)

	2010		2000		1990		1980	
	#	%	#	%	#	%	#	%
under 5	4,941	9%	4,410	8%	4,850	9%	4,914	9%
5-14	8,359	14%	9,482	17%	8,095	15%	6,902	13%
15-24	11,027	19%	10,065	19%	12,444	23%	13,696	25%
25-34	9,537	16%	8,115	15%	10,572	19%	8,842	16%
35-54	13,848	24%	13,023	24%	9,865	18%	7,368	14%
55-64	4,340	8%	3,176	6%	3,372	6%	3,169	6%
65-74	2,645	5%	3,242	6%	2,945	5%	2,251	4%
75 +	3,102	5%	2,747	5%	2,106	4%	1,630	3%
Total	57,799	100%	54,260	100%	54,249	100%	48,772	100%
Median Age	29.7		28.7		26.5		24.3	

<sup>3</sup> <http://www.nationalcityca.gov/government/fir>

<sup>4</sup> [https://www.sandag.org/resources/demographics\\_and\\_other\\_data/demographics/fastfacts/nati.htm](https://www.sandag.org/resources/demographics_and_other_data/demographics/fastfacts/nati.htm)

<sup>5</sup> <https://www.census.gov/quickfacts/fact/table/nationalcitycalifornia/PST045217>

### **Fire Department Responses**

In 2016, the National City Fire Department responded to 8,379 incidents including 4,296 emergency medical responses (EMS, rescue, etc.).<sup>6</sup>

The National City Fire Department works closely with the current service provider, American Medical Response (AMR). Since the inception of the paramedic program in 2007, the department can provide basic and advanced life support services before the AMR ambulance arrival. It is common practice to staff all units (e.g., Engine 34, Engine 31, Truck 34, Squad 33) with a paramedic.<sup>7</sup>

## **Section 4: Listening Sessions**

### **4.1 Introduction**

The Abaris Group offered two formal listening sessions at Fire Station #34 in National City and one informal session conducted at the National City's Neighborhood Council Breakfast meeting. The purpose of the listening sessions was to gather community and stakeholder input on emergency ambulance services in National City.

The informal gathering consisted of an information table set up in the room for community members to ask questions and provide feedback regarding their emergency ambulance services. The formal listening sessions were scheduled for two hours in length and consisted of a short presentation, community member and stakeholder forum, and collection of feedback and input provided.

### **4.2 Marketing**

The Abaris Group did extensive marketing in cooperation with City staff including social media and disbursement of flyers throughout National City.

#### **Flyers**

To advertise the listening sessions to the community, flyers were created for National City which explained the goals and objectives of the sessions and provided the specific dates, times and locations of the three sessions.

The National City flyer is included as Attachment 1: National City Flyer.

Flyers were posted in fire stations, library community boards, local post offices, markets, feed stores, and community centers.

#### **Social Media**

Six separate Facebook advertisements were created focused on specific zip codes. The zip codes used covered the National City Service Area and included: 91950 and 91951.

An example of the Facebook advertisement is included in Attachment 2: Facebook Advertisement.

The City of National City official Facebook page also posted the listening sessions in their events section. See Attachment 3: National City Facebook Page.

<sup>6</sup> <http://www.nationalcityca.gov/government/about-us>

<sup>7</sup> <http://www.nationalcityca.gov/city-government/fire/emergency-medical-services>

### **Libraries**

The Abaris Group contacted the National City Public Library and the Lincoln Acres Branch Library and asked if they would post the flyers on their bulletin boards as well as print off extras to place near their community handouts. Both branch managers were happy to assist in spreading the word.

## **4.3 Complete Listening Sessions**

### **National City's Neighborhood Council Breakfast Meeting – June 9, 2018**

It is estimated that 161 people attended the breakfast meeting. Few community members utilized the opportunity to visit the information table. However, there were some questions posed which have been captured in the feedback section below.

### **Fire Station #34 – June 14, 2018**

There were four people in attendance including two firefighters, one AMR employee, and one LEMSA staff person.

### **Fire Station #34 – June 21, 2018**

Ten people attended including four from National City Fire Department, one from the County of San Diego, one from National City Council, two from Mercy, one from AMR, and one community member.

### **Questions Asked**

An important step in the process of issuing a request for proposal (RFP) for emergency ambulance service is finding out what the public would like to see in its service, including input from community members and other stakeholders such as the fire department and city government. The community feedback captured is then used to determine what is put into the RFP, which directly affects the future of emergency ambulance service in National City.

Three questions were asked to help start the comments and input.

1. What do you like about your current emergency ambulance service?
2. What could be improved?
3. What might you like to see in the future?

## **4.4 Feedback**

The feedback is summarized below and organized by topic area. All comments can be found in Attachment 4: Listening Session Comments.

### **Current Ambulance Service Strengths**

#### **Integration**

A recurring theme throughout the listening sessions was the insistence of continuity of current provider. The public is well served by the current partnership, and they do not want to see this partnership end. It was evident in the comments that people are very pleased with their current service.

The current provider is well integrated into the community. For example, they offer community education such as bilingual CPR classes, and there is joint participation in community events with the current provider and fire attending events side by side. People like and recognize the Type III ambulances that are painted red.

The current provider also offers rapid availability of full advanced life support (ALS) equipment complement for strike teams and single resource development. They also host joint training such as CPR, ACLS, PALS, MCI, and county required training. National City Fire Department attendees described a good working relationship with AMR.

### **Response Times**

Another theme discussed during the listening sessions was response times. There was strong support to ensure the same or better service currently provided. One attendee stated that the current response times are great as demonstrated in the internal response time audits that he reviewed. Comments were in support of maintaining the same response times as the fire department.

### **Fiscal**

The current provider houses the ambulances in the fire stations and pays rent for housing the ambulances. The provider also provides a standby ambulance during fire suppression activities at no cost. Currently, there is a pass-through fee for training and medical direction of first responders, which should be maintained. There is currently no charge for non-transport.

The current provider supports finance and training assistance for CERT training. It also funds and support high school scholarships.

### **Suggested Improvements**

#### **Integration**

The comments centered around dispatch protocols. One suggestion included dispatch center overlay with First Watch and First Pass alerting (i.e., online compliance utility software). Another was immediate dispatch transparency for both fire and ambulance, including same time and radio channel. Even though the current provider is well integrated into the community, one comment focused on the need for offering more community programs/resources, e.g., sidewalk CPR training, Every 15 Minutes program.

#### **Quality**

One suggested improvement was to have two medics on every ambulance. The other theme focused on enhancing current programs and implementing future programs. For example, a suggestion was made to enhance further quality improvement programs offered to both fire and provider. Another comment focused on studying and defining mortality and morbidity reduction programs.

#### **Response Times**

While the comments regarding response times were generally positive, there were some suggested improvements offered. One comment recommended consistent response times, and another suggested a two-minute add-on for ALS first response from time of dispatch. There was a recommendation to reduce the number of times "no ambulances available" is heard. A suggestion was made to post ambulances at fire stations as opposed to street corners.

#### **Process**

The main theme conveyed was the importance of ensuring no bias in the RFP process.

**Fiscal**

One of the comments expressed was the need for consistent billing rates for the entire County. Another suggestion was that financial statements should be available and audited by the City Council.

**Future System Innovations**

It was clear that the community and stakeholders want one seamless response area. The future emergency ambulance service should include a memorandum of understanding (MOU) with surrounding providers to offer the closest ambulance for service calls (i.e., boundary drop). The future service provider should be required to offer enhanced emergency medical dispatch (EMD) and medical triage. Finally, a community paramedicine program would work with insurance providers to support the community.

**Section 5: Industry and Leading Practice Research**

As an industry, EMS continues to evolve and improve. Starting as a “load-and-go” service with untrained attendants and using hearses (i.e., the only vehicle that could transport a person lying flat), modern EMS brings the emergency department (ED) to the patient through ALS paramedics and mobile healthcare equipment. Some EMS providers have implemented best practices to improve patient care in the pre-hospital environment. These industry trends can be organized into five categories – dispatch triage and awareness, alternate transportation and destination, high system user diversion, clinical benchmarks and standards, and primary and mobile healthcare (see chart below). Each best practice is focused on reducing 9-1-1 use, bringing the right patient to the right place, redirecting frequent users of the 911 system, establishing data-driven clinical standards, and offering mobile integrated healthcare (i.e., community paramedicine).

Location/Program	911 Dispatch Triage & Awareness	Alternate Transportation & Destination	High System User Diversion	Clinical Standards & Benchmarks	Primary & Mobile Healthcare
Fort Worth, Texas	✓		✓	✓	✓
Houston, Texas		✓			
Lake County, Florida	✓				
Las Vegas, Nevada		✓	✓		
Liberty County, Texas					✓
Louisville, Kentucky	✓		✓		
McKinney, Texas			✓		✓
Mesa, Arizona			✓		
San Antonio, Texas		✓			
San Diego, California		✓ <sup>1</sup>	✓ <sup>1</sup>		
San Francisco, California		✓	✓		
San Mateo County, California		✓			

Location/Program	911 Dispatch Triage & Awareness	Alternate Transportation & Destination	High System User Diversion	Clinical Standards & Benchmarks	Primary & Mobile Healthcare
Santa Barbara County, California		✓ <sup>1</sup>			
Santa Cruz County, California				✓	
Seattle, Washington	✓				
Spokane, Washington		✓			
Toronto (Ontario), Canada	✓				
Tucson, Arizona			✓		
Western Eagle County, Colorado			✓		✓

Note: <sup>1</sup> Discontinued

## 5.1 9-1-1 Dispatch Triage and Awareness

### Tele-Triage Services

The four programs listed below use advanced dispatch protocols administered by a healthcare professional (typically a nurse) to determine if 9-1-1 resources are necessary. If not, other transportation and appointments are coordinated to ensure the caller receives the appropriate level of care and treatment. The goal is to reduce the demand for 9-1-1 services while delivering the most appropriate care for the caller.

Comparison of Tele-nursing Programs				
Location	Houston	Seattle	Richmond	Toronto
Population (2011)	2,145,146	620,778	205,533	2,615,060
Runs/year <sup>1</sup>	300,000	136,000	40,880	240,000
<b>Diversion rate</b>	<b>1.83%</b>	<b>0.51%</b>	<b>8.04%</b>	<b>1.42%</b>
Diversions/year	5,475	700	3,285	3,398
<b>Send-back rate</b>	<b>75%</b>	<b>9%</b>	<b>83%</b>	<b>18%</b>
Final diversions/year	1,369	637	548	2,786
<b>Final diversion rate</b>	<b>0.46%</b>	<b>0.47%</b>	<b>1.34%</b>	<b>1.16%</b>
<b>Net savings</b>	<b>\$328,562</b>	<b>\$240,324</b>	<b>\$30,660</b>	<b>\$1,560,362</b>

Sources: [http://www.philadelphiacontroller.org/publications/audits/04\\_21\\_09\\_tele\\_nursing%20report.pdf](http://www.philadelphiacontroller.org/publications/audits/04_21_09_tele_nursing%20report.pdf), US Census

Notes: <sup>1</sup> Runs/year are from 2006, except Toronto and (2011)

### Dispatch Resource Triage

The King County (WA) dispatch center uses a contemporary dispatch triage process to determine which 9-1-1 resources to send for each call in the Seattle area. Often, a basic life support (BLS) fire engine is sent as the first response to determine need. Then, after an assessment, a BLS or ALS ambulance may be requested if ambulance transport is warranted.

### 9-1-1 Awareness Campaigns

Other services are starting marketing and public service announcement campaigns about the proper reasons to call 9-1-1. This is typically referred to as "Use them, don't abuse them."

## 5.2 Alternate Transportation and Destination

### Mental Health Transportation

Many EDs find themselves with mental health patients who need a medical screening before transport to the proper behavioral health facility. This requirement impacts ED throughput. San Mateo County (CA) has paramedics who have completed additional training and can perform the mental health evaluation on scene. The same paramedic can place and document the application for 72-hour detention for evaluation and treatment form, transport the patient directly to the behavioral health facility or release to the police officer for transport. This program saves an ambulance ride to the hospital, an ED assessment, and a second ambulance ride from the hospital to the behavioral health facility.

### Sobering Centers

Some cities have established sobering centers. The goal is to keep these patients from overusing the ambulance system and the EDs as well as provide law enforcement a better option. Two centers that have been very successful include San Francisco (CA) and Spokane (WA). Both have a medical practitioner (typically a nurse) on-site to assess and monitor any healthcare needs as many of the people brought to sobering centers have medical issues as well.

San Francisco Encounters by Referring Parties						
	2011		2010		2009	
Ambulance	1,878	36.3%	1,448	44.5%	1,128	43.5%
Mobile Assistance Patrol (MAP)	1,991	38.5%	1,227	37.7%	1,033	40.4%
Police	393	7.6%	286	8.8%	167	6.5%
ED Transfer (via MAP)	599	11.6%	116	3.6%	71	2.7%
Referred by Other	314	6.0%	177	5.4%	189	7.0%
<b>Total Referrals</b>	<b>5,175</b>	<b>100%</b>	<b>3,254</b>	<b>100%</b>	<b>2,588</b>	<b>100%</b>
Source: San Francisco Coordinated Case Management System						
Note: The number of EMS calls referred to MAP is not tracked currently						

Spokane 9-1-1 Diversions to Sobering Center by Referring Parties						
Referral Source	2012*		2011		2010	
Fire Department	654	42%	635	35%	418	36%
Police Department	670	43%	944	52%	607	52%
Merchants/Private Citizens	218	14%	241	13%	142	12%
<b>Total Referrals</b>	<b>1,542</b>	<b>100%</b>	<b>1,820</b>	<b>100%</b>	<b>1,167</b>	<b>100%</b>
Note: * Projected using Jan-Jun 2012 data						

### Taxi Cab Vouchers

Some EMS systems will provide vouchers for taxis as an alternate form of transportation. This can be offered by 9-1-1 dispatch center after proper screening or the field staff following assessment for any medical emergency conditions. This best practice requires significant quality assurance to prevent any adverse outcomes.

### 5.3 High System User Diversion

Some EMS systems are focused on reducing 9-1-1 calls by frequent users of the EMS system. The goal is to prevent the calls from occurring by proactively managing chronic healthcare conditions. In Fort Worth (TX), the EMS system identified 21 people calling 9-1-1 two or more times per week for over 1,000 calls (>1%) annually. A Community Health Program intervention reduced 9-1-1 use by 86% in the first 12 months, saving \$1.6 million in EMS and \$7.4 million in ED charges. San Diego implemented a Resource Access Program (RAP) intervention that reduced EMS encounters by 38% in the first 30 days for 933 individuals that accounted for 3,347 (11%) of annual transport volume.

### 5.4 Clinical Standards and Benchmarks

As an industry, EMS is just starting to embrace data-driven decision making. Some procedures and tools have been proven ineffective or worse, detrimental, to patient care. MAST trouser application and unilateral use of c-spine precautions and other practices have changed due to clinical data. Fort Worth (TX) and Santa Cruz (CA) have both adopted clinical and operational standards with applicable benchmarks based on clinically proven data. Existing organizations that provide recommended standards include state EMS agencies, national EMS information system (NEMSIS), American Heart Association (AHA), National Health System (England), and Centers for Medicare and Medicaid Services (CMS). Clinical areas include cardiac arrest, STEMI, stroke, trauma, seizures, sepsis, pain management, respiratory distress, hypoglycemia, and patient safety. See Attachment 5 for national benchmarks and clinical standards adopted by Santa Cruz.

### 5.5 Primary and Mobile Healthcare

#### Community Paramedicine

Many states now allow paramedics to provide more than acute care during a 9-1-1 call. After completing additional training and education, these “community paramedics” will visit people before a condition reaches the need for 9-1-1 services. Some systems focus on follow-up after hospital discharge to prevent patients from being readmitted. Others look at high-risk hospice patients likely to call 9-1-1. California is currently permitting some pilot projects and, hopefully, will approve the programs to become permanent as the results are positive.

### 5.6 Medicare Healthcare Innovation Awards

Medicare has approved a number of innovation awards looking to improve care or reduce costs in healthcare. There are five that specifically involve EMS. They include:

#### **Post-discharge and high system user support using community paramedics**

Regional EMS Agency (REMSA), NV – \$9.9 million

#### **Post-discharge support using community paramedics**

Prosser Public Hospital District, WA - \$1.5 million

#### **EMS in-home, follow-up care in medically underserved areas**

Upper San Juan Health Service District, CO - \$1.7 million

#### **Provide hospital-at-home care**

Icahn School of Medicine at Mount Sinai (NY) - \$9.6 million

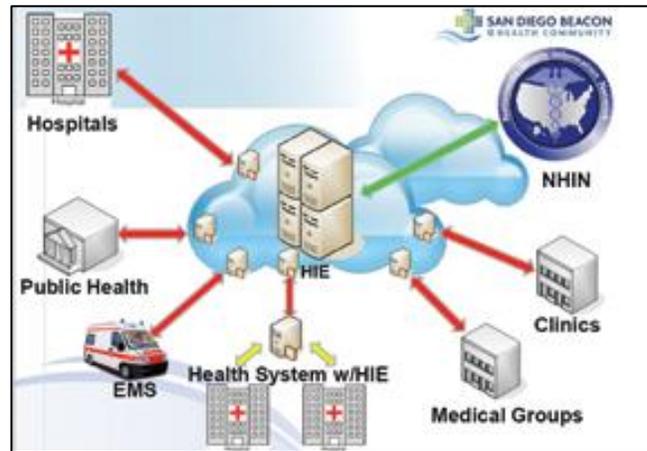
#### **Fall prevention by EMS to reduce future 9-1-1 calls**

Yale University (CT) – \$7.2 million

Most of these award programs will become possible within California when the State approves community paramedicine following validation of the current pilot projects.

### 5.7 Beacon Community Program /San Diego Health Connect

San Diego (CA) received a \$15M federal award to create a health information exchange (HIE) for its community. The goals are to push historical healthcare information to EMS when encountering a 9-1-1 patient, improve pre-hospital care, reduce hospital turnaround times, improve quality assurance, reduce hospital utilization, increased community surveillance, and upload EMS records for hospital access. Some counties are exploring the use of HIE for hospital and pre-hospital care.



The program has transitioned to San Diego Health Connect and is operational. The EMS component is called "SAFR" – with four elements:<sup>8</sup>

**Search** – When the field crew begins inputting patient data, the HIE automatically looks for a match. If one is located, it prompts the EMS provider to confirm the identity. Once validated, the provider has access to patient history, medications, allergies, and previous EMS encounters. The goal is improved prehospital clinical decision-making and patient care.

**Alert** – Transport crews can alert the ED through the system of the pending patient. The HIE will transmit, vital signs, electrocardiograms (EKGs), and narrative report as they are entered into the ePCR. This improves receiving hospital preparedness, transitions of care, and patient care.

**File:** The completed ePCR is automatically attached to the hospital's electronic health record with no need to print, fax, or email to the receiving facility. A better longitudinal patient record is created and available for future reference.

**Reconcile:** The hospital shares insurance information with the EMS provider to expedite accurate billing. The HIE also transforms the data into NEMESIS-compliant formatting for further analysis. Finally, the patient's final diagnosis is recorded at discharge and available for EMS providers to review and compare with their initial findings (e.g., did the patient have a stroke). The goal is improved overall care and population health.

The major health systems and EMS providers in the City of San Diego are participating. The implementation with the University of California, San Diego is complete, and it is underway with Kaiser, Scripps, and Sharp healthcare systems. Roughly 60 percent of EMS cases are being entered during the call, and approximately the same percentage have a record that the field provider can confirm, review, and use to improve the patient care delivered.

<sup>8</sup> <https://ehrintelligence.com/news/onc-safr-guide-to-aid-ems-providers-in-health-data-exchange>



## Section 6: The Abaris Group Recommendations – Improve EMS Delivery

### 6.1 Recommended EMS Delivery Improvements

The current provider for emergency ambulance service is meeting the standards and criteria established in the agreement for service. One of the best strengths is the integrated public/private partnership for EMS delivery. This includes ALS first response that extends the ambulance response time requirement with compensation to first responders for providing this service. Besides coordinated call response, there is joint training between all system providers. These should be considered the base standard for future agreements for emergency ambulance service.

Suggested service improvements would embrace additional EMS system integration. It should be noted that The Abaris Group was hired to conduct listening sessions and review current agreements for service. The following recommendations are based specifically on this information combined with our industry knowledge of best practice systems.

**Consolidated fire/EMS dispatch** – Many EMS systems have experienced gains in performance through centralizing the dispatch of first responder and ambulance transport units. Having one communications center simultaneously dispatching all units can reduce the time from 9-1-1 call to units responding by up to one minute (e.g., dispatch consolidation by Contra Costa County in 2016). One center eliminates the need to electronically or otherwise share call information and improves dispatcher-call taker coordination. Having all crews on the same radio channel simplifies communication for finding the call location as well as greater crew safety.

**System-level quality improvement** – The EMS system should be evaluated in its entirety, not as individual providers. Evaluation requires a single repository for all pre-hospital call data. It is most effectively done by selecting a single electronic patient care report (ePCR) system for all EMS providers. This option allows for the real-time transfer of data from first responders to ambulance crews and the most efficient approach to data capture. Some EMS systems utilize “middleware” to connect different software and extract necessary data fields to a centralized data warehouse. While not ideal and potentially adding significant manpower to accomplish, it may be an alternative approach. Once collected, reports can be generated to identify clinical care trends and potential deficiencies that can be the focus of future clinical training and education for all system providers.

**Clinical Benchmarks and Standards** – While it is important to arrive quickly, it is more critical that the patient care provided is high quality. EMS systems should establish clinical standards based on objective criteria from highly-respective organizations, such as AHA, CMS, NEMSIS, EMS Compass, and United Health System. EMS providers should only be held to clinical benchmarks that it can manage. System-level benchmarks that are impacted by all providers, such as bystander CPR, should be established as well. A consolidated database of ePCR data supports this process.

**Boundary Drop** – There are a number of ambulance providers near National City and, where possible, these providers should work together. The contracted provider should participate in a mutual aid process that ensures the closest ambulance responds to every call, even if not necessarily inside the EOA (this is often referred to as “boundary drop”). Typically, this is easier to accomplish when the same dispatch center is responsible for all of the operating areas. Any boundary drop should be executed in a neutral and objective manner that does not favor any one provider participating in this approach to service delivery. For example, a provider could position resources closer to its operating area’s borders and unfairly “steal” calls in other EOAs. To mitigate this concern, the contract administrator should track the number of mutual aid calls performed and received on a regular basis by the contracted provider. Any unbalanced mutual aid levels can be addressed by requiring the contracted provider to shift ambulance post location(s) and system status planning. Through transparency, a boundary drop can be achieved

between all providers, whether public or private.

**Flexibility** – The provider agreement should allow for future system improvements during its term. This could include more refined triage of appropriate resources by the dispatch center. It may not be necessary to send first responders and an ambulance to every call based on the level of urgency, on-scene medical staff, and the probability of transport. Reviewing the history of each call type determinant (e.g., medical priority dispatch system-MPDS) may lead to the optimized use of EMS resources. There are a number of community paramedic pilot projects in California with proven benefits for recent hospital discharges, high 9-1-1 system users, and other programs. When the State approves community paramedicine beyond the pilot period, the agreement should allow for this potential.

**Section 7: Proposed Evaluation Criteria**

**7.1 Framework for New Response Time Standards**

**Response Time Standards**

The current response time standards (see below) are consistent with most EMS systems in the United States. They consider the value of first responder ALS when determining the ambulance standard. Minimal exemptions are recommended to simplify the contract compliance process.

Emergency Incident in District(s) with ALS Engine Company Coverage	11 minutes, 59 seconds	90% of applicable incidents or greater
Emergency Incident in District(s) without ALS Engine Company Coverage	9 minutes, 59 seconds	90% of applicable incidents or greater
Non-emergency ALS Incident response received through 911	19 minutes, 59 seconds	90% pf applicable incidents or greater

While meeting the industry standard, response times are not based on data-driven, clinical research.<sup>9,10,11</sup> They started as an arbitrary number proposed in one high-performance, competitive ambulance bid that seemed appropriate for the public expectation of ambulance service. Since that time, some research studies have been completed that demonstrate there is no value beyond four minutes – when the brain starts to die following cardiac arrest. Response times are also the most expensive driver of ambulance costs with roughly 80 percent of budgets being devoted to unit hour costs (i.e., personnel and ambulance).

Progressive EMS systems are starting to look at ways to improve patient outcomes beyond quick response times. A new phrase, “*Pre-EMS*” has been coined to describe the important role of bystanders in the chain of survival. This includes bystander CPR, defibrillation, and bleeding control. From an economic point of view, it may save more lives to relax EMS response times and focus the limited financial resources on more training and education of bystanders to deliver care in the first four minutes following the medical emergency.

<sup>9</sup> Pons PT, Haukoos JS, Bludworth W, et al. Paramedic response time: Does it affect patient survival? Acad Emerg Med. 2005;12(7):594–600.

<sup>10</sup> De Maio V, Stiell I, Wells G, et al. Optimal defibrillation response intervals for maximum out-of-hospital cardiac arrest survival rates. Ann of Emerg Med. 2003;42(2):242–250.

<sup>11</sup> Pons P, Markovchick V. Eight minutes or less: Does the ambulance response time guideline impact trauma patient outcome? J Emerg Med. 2002;23(1):43–48.

It is recommended that response times remain the same until the EMS system and all of its stakeholders are ready to commit to a wholesale change in EMS delivery through fiscal prioritization of Pre-EMS over quicker response times that are clinically unproven.

### **Clinical Standards**

Hospitals have been held to clinical standards for decades. CMS penalizes and rewards hospitals for the care they provide based on a number of clinical criteria. To date, the pre-hospital environment has not been affected by this CMS requirement. To prove the value of EMS, it is important that systems adopt clinical standards that are data-driven to improve outcomes. This can include the length of time on scene during a stroke or heart attack as an example (see Section 5.4 for more examples). EMS systems should incorporate clinical standards beyond just measuring response times to demonstrate value. One recent competitively bid EMS system provides credits towards response time penalties based on the patient care provided (see Attachment 5). At a minimum, all EMS systems should at least start measuring ambulance service performance of clinical care to prove value. Examples of performance measures currently monitored in many systems that have proven clinical value include “door-to-needle” times for stroke patients and “door-to-balloon” times for heart attack patients.

## **Section 8: The Abaris Group Recommendations – Ambulance Service Delivery**

### **8.1 Ambulance Service Delivery Model**

The Abaris Group recommends an ambulance service delivery model that is driven by a combination of response times and clinical care provided. As an example, Santa Cruz County relaxed emergency response times, eliminated non-emergency response times, and set clinical goals that would provide sliding scale credits to response time penalties based on the level of care delivered (i.e., clinical report card of 90 percent = full penalty credit, 80 percent report card = 75 percent credit, etc.). The goal is not only timely ambulance arrival, but also excellent patient care. The model should empower an integrated public-private partnership to value the role of fire first responders in the role of patient care. One way this can be accomplished is allowing the ambulance provider to subcontract with the fire service to guarantee ALS response times and extending ambulance response times. All EMS resources should be dispatched simultaneously and tracked by a consolidated dispatch center. Ambulance rates should be regulated with reasonable automatic annual increases based on the change in costs; extraordinary changes in expenses should allow for the provider to request a manual rate review.

### **8.2 Performance Measurement and Indicators**

Response times should be monitored using the industry acceptable “90 percent” standard. It is recommended that there be no penalty for the ten percent of late calls as this is expected in the normal course of EMS operations. That said, calls that are significantly late should be subject to a penalty. These “outliers” are typically considered 200 percent of the response time standard in other systems. Many EMS systems are using a third-party online compliance utility (e.g., First Watch) to monitor compliance and offer real-time performance dashboards. These utilities can decrease the workload for both the contract administrator and the provider.

The application of ePCRs in recent years affords a greater ability to measure clinical performance. It is possible to run reports using ePCR data on the clinical performance being delivered to EMS patients. For example, average length of time on scene for trauma, stroke, and heart attack patients can be easily measured. Systems should monitor overall performance as well as the individual performance of first response and transport providers. These results should regularly be reviewed to identify how the EMS system can become more efficient and effective at delivering patient care in the pre-hospital environment.



## Section 9: The Abaris Group Recommendations – Statement of Work

### 9.1 Current Operational Statement of Work

As part of the review process, The Abaris Group examined the statement of work within the current agreement for emergency ambulance service. The agreement is consistent with the majority of recommended components, including performance, rate increases, insurance, call exemptions, and other minimum standards. There are a few additional components worth considering.

**Level of staffing vs. performance** – Two ambulances are required at all times per the current agreement. This is considered a “level of staffing” standard. However, there is also a requirement to perform within the response times provided at least 90 percent of the time – known as a “level of performance” standard. In the experience of The Abaris Group, only one standard is appropriate per service area; most EMS systems utilize the level of performance as it specifies a quality goal.

**Performance period** – The current agreement requires a monthly review. That is defined as the first day to the last day of the month. A less ethical provider could decide to cut unit hours at the end of the month if response time performance is significantly above the contract standard during the first half of the month. The Abaris Group also recommends that the contract administrator be able to request a 30-day floating performance period within the provider agreement. This ensures adequate response times during any 30-day period, such as the 15<sup>th</sup> of one month to 15<sup>th</sup> of the next month.

**Outlier liquidated damage** – Many high-performance EMS systems are not imposing a penalty when late to a call, unless the ambulance is excessively late, i.e., an outlier. Being late is acceptable up to 10 percent of the time per the contract. Most contracts define an outlier as 150 to 200 percent of the required response time standard.

**First responder ALS funding** – The current agreement requires financial support of the ALS first responders. This is considered an acceptable practice – as long as the support does not exceed the value of the service (i.e., extending the ambulance by two minutes). When contracting, it is important to calculate the value and state, in writing, that the financial support will not exceed the value provided not to violate federal antitrust guidelines.

**Other funding** – Some required funding items do not directly support the EMS system. This includes Explorer post, high school fire/EMS technology program, equipment funding, fire service Six Sigma and EMT refresher training, flu vaccinations, and biohazardous waste disposal. While not significant in dollar amounts, funding mandates not specifically and easily related to the performance of the scope of work can lead to unwanted scrutiny and should be reviewed by county counsel/risk management.

**Response zones** – The current performance zones are broken down by the fire battalion chief districts. It may be worth confirming that this is the most appropriate breakdown of the EMS call volume based on population density. As an example, a small battalion district may be difficult to meet the response time standard on a monthly basis and may need to be combined with another district.

**Insurance** – The agreement currently requires liability insurance of \$10 million. This is significantly higher than what is typical for the EMS industry. Within San Diego County, other emergency ambulance service providers must maintain \$1-3 million. Most contracts are \$5 million or less in the experience of The Abaris Group. A higher insurance limit can be a barrier to entry for smaller ambulance companies and favors the national providers, who are often self-insured.



**Section 10: Attachments**

## Attachment 1: National City Flyer



# Listening Sessions on Ambulance Services For National City We Need Your Input

You are invited to attend one of the listening sessions listed below to provide input on ambulance services in the community of National City. The County of San Diego has retained The Abaris Group, an Emergency Medical Services (EMS) consulting firm, to conduct the listening sessions.

All the sessions will cover similar material, so you are encouraged to attend the session that best fits your schedule.

If you cannot attend and would like to provide input, please call or email using the contact information below.

### **Saturday, June 9th**

National City's Neighborhood Council  
Breakfast Meeting  
10:00AM – 12:00PM  
Please RSVP to: (619) 336-4290  
Martin Luther King Jr. Community Center  
140 E. 12<sup>th</sup> Street  
National City, CA 91950

### **Thursday, June 14th**

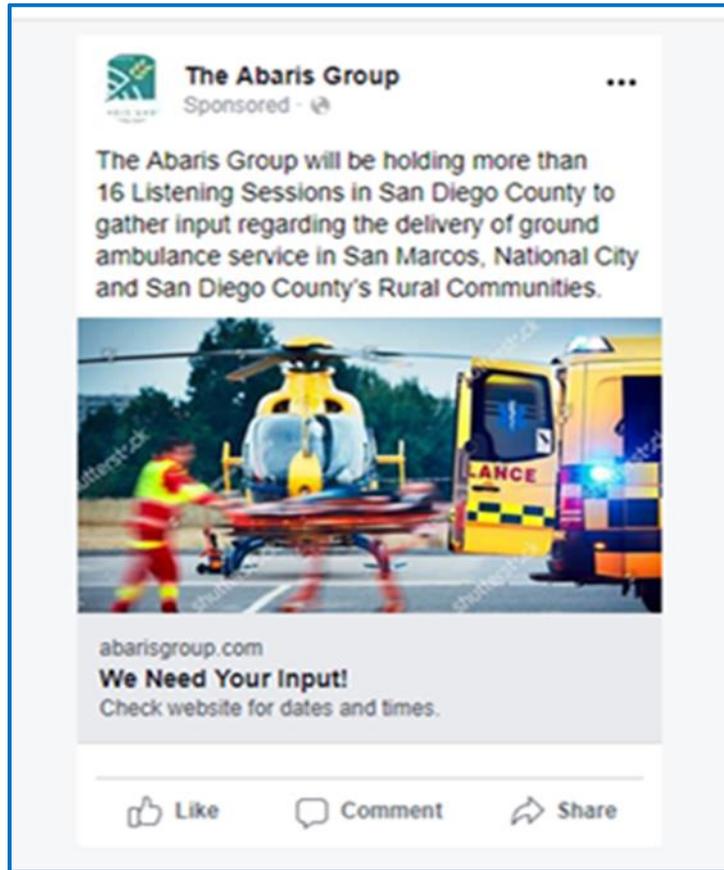
Fire Station #34  
6:00PM – 8:00PM  
343 East 16<sup>th</sup> Street  
Corner of 16<sup>th</sup> & D Avenue  
National City, CA 91950

### **Thursday, June 21st**

Fire Station #34  
6:30PM – 8:30PM  
343 East 16<sup>th</sup> Street  
Corner of 16<sup>th</sup> & D Avenue  
National City, CA 91950

Please contact Mike Williams at The Abaris Group  
with questions or input, or to request special accommodations for a session  
888-EMS-0911 or [mwilliams@abarigroup.com](mailto:mwilliams@abarigroup.com)

## Attachment 2: Facebook Advertisement





### Attachment 3: National City Facebook Page

The screenshot shows a Facebook event page for "Listening Session- Ambulance Services" hosted by the City of National City. The event is scheduled for Thursday, June 21, from 6:30 PM to 8:30 PM PDT. The location is National City Fire Station #34. The page includes an "About" section with the following text:

**1 Went · 7 Interested**  
Share this event with your friends

**Details**

You are invited to attend one of the listening sessions listed below to provide input on ambulance services in National City.

The County of San Diego has hired The Abaris Group, an Emergency Medical Services (EMS) consulting firm, to conduct the listening sessions.

All the sessions will cover similar material, so you are encouraged to attend the session that best fits your schedule.

If you cannot attend and would like to provide input, please call or email using the contact information below.

Please contact Mike Williams at The Abaris Group with questions or input, or to request special accommodations for a session 888-EMS-0911 or [mwilliams@abarigroup.com](mailto:mwilliams@abarigroup.com)

<http://www.nationalcityca.gov/Home/Components/Calendar/Event/8649/17>

See Less ▾

Health

**About City of National City- Official**

 **City of National City- Official**  
Government Organization · National City, California

### Attachment 4: Listening Session Comments

Date	Time	Zone	Type	Comment
6/14/2018	18:00	National City	Current	Maintain same response times as fire department
6/14/2018	18:00	National City	Current	Ensure same or better service as currently provided
6/14/2018	18:00	National City	Current	Public is well served by the current partnership
6/21/2018	18:30	National City	Current	Very pleased with current service, working relationship with AMR, Community education (bilingual CPR classes)
6/21/2018	18:30	National City	Current	Great response times, internal response time audits
6/21/2018	18:30	National City	Current	Pass through fee remains intact for training and medical direction
6/21/2018	18:30	National City	Current	Ambulance in fire station model, pays rent for housing
6/21/2018	18:30	National City	Current	Type III ambulance in color red
6/21/2018	18:30	National City	Current	Joint provider and fire participation in community events
6/21/2018	18:30	National City	Current	Provider standbys for fire suppression activities at no cost
6/21/2018	18:30	National City	Current	Provider hosted joint training, CPR, ACLS, PALS, county required training, MCI training.
6/21/2018	18:30	National City	Current	No charge for non-transport
6/21/2018	18:30	National City	Current	Provider supports finance and training assistance for CERT training
6/21/2018	18:30	National City	Current	Provider funds and supports High School scholarships
6/21/2018	18:30	National City	Current	Provider offers rapid availability of full ALS equipment complement for strike teams and single resource deployment
6/21/2018	18:30	National City	Current	Continuity of same provider
6/21/2018	18:30	National City	Future	One seamless response area
6/21/2018	18:30	National City	Future	Closest ambulance, no boundary, MOU with other surrounding providers
6/21/2018	18:30	National City	Future	Community paramedic working with insurance providers to support
6/21/2018	18:30	National City	Future	Enhanced EMD and medical triage
6/14/2018	18:00	National City	Improvements	Ensure no bias in the RFP process
6/14/2018	18:00	National City	Improvements	Offer more community resources (e.g., sidewalk CPR training, Every 15 Minutes program)
6/14/2018	18:00	National City	Improvements	Reduce number of times "no ambulances available"
6/21/2018	18:30	National City	Improvements	Posting of ambulance at fire stations v street corner
6/21/2018	18:30	National City	Improvements	Consistent response times
6/21/2018	18:30	National City	Improvements	Two minute add on for ALS first response from time of dispatch
6/21/2018	18:30	National City	Improvements	Two medics on every ambulance
6/21/2018	18:30	National City	Improvements	Study and define enhanced mortality and morbidity reduction programs
6/21/2018	18:30	National City	Improvements	Enhance quality improvement programs for both fire and provider
6/21/2018	18:30	National City	Improvements	Consistent billing rates for entire county not needed in RFP
6/21/2018	18:30	National City	Improvements	Financial statements availability and audit of city council
6/21/2018	18:30	National City	Improvements	Dispatch center overlay with First Watch and First Pass alerting
6/21/2018	18:30	National City	Improvements	Immediate dispatch transparency for both fire and ambulance. Same time, same frequency dispatch

### Attachment 5: National Benchmarks and Santa Cruz County Clinical Standards

EMS Standards, Core Measures, & Benchmarks								
Organization	SCEMS	MedStar	EMSA	NEMSIS	Compass	NHS-UK	AHA	CMS
<b>Cardiac Arrest</b>								
Response interval < 5 minutes for CPR/AED		●						
Bystander CPR rate	●	●		●			●	
Bystander AED rate	●	●		●			●	
Appropriate airway management		●						
End-tidal CO2 monitored				●			●	
Pit crew/focused CPR	●							
Transport to "Resuscitation Center"		●						
ROSC percentage	●	●	●	●		●		
Survival to discharge (e.g., overall, Utstein)	●	●	●	●		●		
<b>Hypoglycemia</b>								
Glucose recorded before treatment					●	●		
Hypoglycemia corrected through treatment					●			
Glucose recorded after treatment						●		
Correct disposition (e.g., transport, referral, home)						●		
<b>Pain Management</b>								
Offered pain meds prior to movement		●	●					●
Pain score decreased		●			●			●
<b>Respiratory Distress (e.g., asthma, intubation)</b>								
Mental Status		●						
Resp. rate, SpO2, PEFR recorded before treatment		●		●		●		
Oxygen administered (if appropriate)		●				●		
Bronchodilators for pediatrics with wheezing			●		●			
Beta2 agonist administration for adults		●	●			●		
Endotracheal intubation success rate		●	●	●				
End-tidal CO2 performed on any successful ET intubation		●		●				
Improvement after treatment								
<b>Seizure</b>								
Glucose recorded					●			
Received intervention as appropriate					●			
<b>Seizure, Febrile</b>								
Glucose recorded						●		
SpO2 recorded						●		
Anticonvulsant administration						●		
Temperature management						●		
<b>Sepsis</b>								
Protocol completed (HR, BP, resp, temp documented with fluid initiation, O2, hospital)		●						
<b>STEMI</b>								
Recognition		●					●	
ASA administration	●	●	●	●		●	●	●
NTG administration		●				●	●	
Appropriate analgesia given		●				●	●	
Two pain scores recorded		●				●	●	
SpO2 recorded				●		●	●	
EKG acquired	●			●		●	●	
EKG acquired within X minutes (e.g., 5-10)		●					●	●
12L acquired		●	●	●			●	
12L transmitted		●					●	
Scene time (e.g., < 10 minutes)	●	●	●				●	
Transport to STEMI center rate (with notification)	●	●	●	●		●	●	●
911-to-balloon time	●							

EMS Standards, Core Measures, & Benchmarks								
Organization	SCEMS	MedStar	EMSA	NEMSIS	Compass	NHS-UK	AHA	CMS
<b>Stroke</b>								
Time last seen normal	●	●		●		●	●	
Use of a prehospital stroke scale (e.g., NHS, FAST, MEND, CPSS, LAPSS, MASS)	●	●		●	●	●	●	
Blood glucose documented	●	●	●	●		●	●	
Blood pressure documented		●		●		●	●	
Appropriate O2/airway management		●						
Scene time (e.g., < 10 minutes)	●	●	●	●				
Transport to a stroke-capable facility (and alerted)	●	●	●	●		●	●	
911-to-needle time	●							
<b>Trauma</b>								
Over-triage rate							●	
Under-triage rate							●	
PAM scale recorded	●							
Scene time (e.g., < 10 minutes)	●	●	●					
Trauma center destination	●	●	●		●			
NON-CLINICAL STANDARDS, CORE MEASURES, BENCHMARKS								
<b>Efficiency Domain</b>								
Cost per patient contact								
Cost per transport		●						
Cost per unit hour		●						
Employee turnover rate								
<b>Patient Safety</b>								
Drops per 1,000 patient contacts								
AMA to new call within X hours (e.g., 24-72)		●				●		
AMA to hospital within 24 hours								
Mission failures per X responses/miles		●						
Ambulance crashes per X responses/miles								
Chart Review (random, manager, MD)								
Protocol compliance rate (note: this can be overall or individual)								
<b>Total Standards</b>	<b>19</b>	<b>39</b>	<b>15</b>	<b>19</b>	<b>8</b>	<b>25</b>	<b>22</b>	<b>5</b>

**Legend:**

- SCEMS = Santa Cruz EMS System
- MedStar = MedStar Mobile Integrated Healthcare (Fort Worth, TX)
- EMSA = California EMS Authority (2015)
- NEMSIS = National EMS Information Systems (version 3.0)
- Compass = EMS Compass produced by National Association of EMS Officials (NASEMSO)
- NHS-UK = National Health Service-United Kingdom (version 1.31, 2016)
- AHA = American Heart Association
- CMS = Centers for Medicare and Medicaid Services (ED standards applicable to EMS)

Santa Cruz County Transport Report Card								
Criterion	2016	Goal	Weighted Value	Score				
<b>Cardiac Arrest</b>								
End-tidal CO2 monitored	38.9%	90.0%	3.0%	1.30				
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50				
<b>Respiratory Distress</b>								
Mental Status assessed/documented	90.9%	90.0%	3.0%	3.00				
bronchodilator administration for wheezing	72.0%	85.0%	3.0%	2.54				
<b>Airway Management</b>								
End-tidal CO2 performed on any successful ET intubation	38.8%	90.0%	3.0%	1.29				
Other confirmation techniques (e.g., visualize chords, chest rise, auscultation)	75.0%	90.0%	3.0%	2.50				
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50				
<b>STEMI</b>								
ASA administration	56.7%	90.0%	3.0%	1.89				
SpO2 recorded	98.3%	95.0%	3.0%	3.00				
12 LEAD EKG acquired within 5 minutes	35.0%	80.0%	3.0%	1.31				
Scene time less than 15 minutes	16.7%	80.0%	3.0%	0.63				
Transport to STEMI center rate (with notification)	96.7%	95.0%	3.0%	3.00				
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50				
<b>Stroke</b>								
Time last seen normal	0.0%	90.0%	3.0%	-				
Use of a prehospital BEFAST stroke scale	58.9%	90.0%	3.0%	1.96				
Scene time less than 15 minutes	18.7%	80.0%	3.0%	0.70				
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50				
<b>Trauma</b>								
PAM scale recorded	60.8%	90.0%	3.0%	2.03				
Scene time less than 15 minutes	12.7%	50.0%	3.0%	0.76				
Trauma center destination	29.8%	90.0%	3.0%	0.99				
Complete documentation (see System QI P&P)	75.0%	90.0%	3.0%	2.50				
<b>Safety</b>								
Employee injuries per 10,000 hours worked	1.11	1.00	2.0%	1.80				
Employee turnover rate	36.7%	25.0%	8.0%	5.45				
Protocol compliance rate per chart review (high acuity, AMA/RAS, & random)	75.0%	90.0%	10.0%	8.33				
<b>Patient Satisfaction (use standardized questions to allow inter-agency comparison)</b>								
Communication by medics (patient and family)	96.0%	97.2%	3.0%	2.96				
Care shown by the ambulance crew	95.0%	94.4%	2.0%	2.00				
Skill and professionalism of our ambulance crew	94.3%	93.8%	2.0%	2.00				
Cleanliness of ambulance	96.0%	94.1%	2.0%	2.00				
Ride of the ambulance	80.0%	92.3%	2.0%	1.73				
<b>ePCR Submission Compliance</b>								
At time of patient drop off (over 90 days)	75.0%	90.0%	2.0%	1.67				
High acuity (ROSC, STEMI, Stroke, Trauma) cases at time of drop off	75.0%	95.0%	2.0%	1.58				
Completed within 24 hours	75.0%	100.0%	2.0%	1.50				
<b>Total Standards</b>			<b>100.0%</b>	<b>70.43</b>				
<table border="0"> <tr> <td style="background-color: #008000; color: white; padding: 2px;"><b>Green: Meet/Exceed Goal</b></td> <td rowspan="3" style="vertical-align: top; padding-left: 20px;"> <b>Criteria</b>                      1) Measurable                      2) Must be improvable                      3) Reflect value to the patient                 </td> </tr> <tr> <td style="background-color: #FFA500; padding: 2px;"><b>Orange: 0-20% Below Goal</b></td> </tr> <tr> <td style="background-color: #FF0000; color: white; padding: 2px;"><b>Red: &gt;20% Below Goal</b></td> </tr> </table>					<b>Green: Meet/Exceed Goal</b>	<b>Criteria</b> 1) Measurable 2) Must be improvable 3) Reflect value to the patient	<b>Orange: 0-20% Below Goal</b>	<b>Red: &gt;20% Below Goal</b>
<b>Green: Meet/Exceed Goal</b>	<b>Criteria</b> 1) Measurable 2) Must be improvable 3) Reflect value to the patient							
<b>Orange: 0-20% Below Goal</b>								
<b>Red: &gt;20% Below Goal</b>								
<i>Note: 2016 numbers highlighted in blue are placeholders as not currently tracked</i>								



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