



# EMERGENCY MEDICAL SERVICES

**2017**  
**CONTRA COSTA**  
**EMS SYSTEM PERFORMANCE REPORT**



## MESSAGE FROM THE DIRECTOR

### *2017 An EMS System Striving for Optimization*

Contra Costa EMS System stakeholders continuously strive to improve reliability of services focused on improving patient outcomes in emergencies. During 2017 the EMS System was tested like never before and called upon to provide not only life-saving fire and EMS response but shelter and safe haven for hundreds of displaced elders from neighboring communities during the North Bay fires.

The 2017 EMS System annual report also marks the full implementation of the Alliance emergency ambulance service delivery model (Contra Costa Fire Protection District, in partnership with legacy ambulance provider American Medical Response). The unique service delivery model has been the subject of both curiosity and scrutiny and has without question offered outstanding EMS ambulance service to the citizens of Contra Costa County along with San Ramon Fire Protection District and Moraga Orinda Fire Protection District.

Under year two of the new EMS System design the Contra Costa EMS System is evolving into a more integrated patient centric ~~model system~~. Once again winning national awards for patient care in the area of high-risk heart attack while building new partnerships with behavioral health, law enforcement, schools, long term care facilities and homeless services.

The EMS system is the ultimate health care safety net. As ~~communities~~ navigate the changes in healthcare, your EMS community is at the ready to support, innovate and respond.

The Contra Costa EMS Agency is privileged to be a part of a community of engaged dedicated EMS professionals. Join me in recognizing their collective accomplishments with this 2017 annual report.

Patricia Frost RN, MS, PNP  
Director, Contra Costa EMS

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# EMERGENCY MEDICAL SERVICES

Contra Costa's coordinated EMS system began in 1968, when the Board of Supervisors appointed the Contra Costa Emergency Medical Care Committee.

The first EMS System Plan was established in 1975.

## MISSION STATEMENT

To ensure that quality emergency medical services are available for all people in Contra Costa County, and that emergency medical care is provided in a coordinated, professional, and timely manner.

### CORE VALUES

- ▶ Monitor and ensure patient safety at all times
- ▶ Inspire and emulate professionalism
- ▶ Provide services with a high level of integrity
- ▶ Assure a reliable and high-quality emergency response
- ▶ Support and facilitate emergency and disaster preparedness
- ▶ Integrate with healthcare systems to improve outcomes
- ▶ Promote and support community resiliency

# EMS TIMELINE 2017: ACCOMPLISHMENTS AND SIGNIFICANT EVENTS

- ▶ Implemented web-based technology platform allowing prehospital personnel to submit online applications of EMT and Paramedic accreditation and certification.
- ▶ Established first dynamic publically available interactive Ambulance Patient Offload Time (APOT) reporting system for real-time and retrospective data.
- ▶ Implementation of technology platform ~~to support~~ online prehospital training ~~to enhance EMS system training of stakeholders.~~
- ▶ New Paramedic Advanced Life Support Intra-facility Transport Service Line launched by Alliance in Contra Costa County.
- ▶ Emergency Medical Care Committee hosts first 5150 psychological emergency summit in February of 2017 involving multiple stakeholders: County Health, Contra Costa Regional Medical Center, community hospitals, public and private transport providers, transport staff.
- ▶ EMS Agency establishes optional scope for use of epinephrine and Narcan in first responder BLS protocols.
- ▶ EMS Agency partners with CCHS Public Health Department in the development of a county marijuana ordinance informing policy makers on the impacts of legalization on EMS System.
- ▶ Contra Costa EMS is named one of two state sites to pilot EMSA POLST (Physicians Orders for Life Sustaining Treatment) electronic registry in 2017 in collaboration with Alameda/ Contra Costa County Medical Association and California Healthcare Foundation.
- ▶ Contra Costa EMS System was selected to pilot improvements in California Stroke Registry and Stroke system as part of ~~CMS~~ grant with Stanford Health Services.
- ▶ Contra Costa EMS System ~~Stakeholder~~ join the Contra Costa Community College Paramedic Program Advisory Committee to develop first paramedic training program in Contra Costa County.
- ▶ The Board of Supervisors recognized May 21-27<sup>th</sup> 2017 as National EMS Week, and May 24<sup>th</sup> as EMS for Children Day.
- ▶ Contra Costa EMS ~~system stakeholders and~~ Medical Health hospital and long term care facilities respond to support the largest medical mutual aid disaster response during the devastating 2017 North Bay Fires.
- ▶ November 8<sup>th</sup>, EMS hosted the 2<sup>nd</sup> annual Contra Costa County Survivors Reunion Luncheon to show tangible continuum of care, and where survivors meet their rescuers.

# POPULATION USE OF EMS SERVICES

An increase of **4,827** EMS responses since 2016.

In 2017, Contra Costa County had an estimated population of 1.1 million, making it the ninth most populous county in California. Concord, Richmond and Antioch were the three largest cities in the county, each home to more than 110,000 residents. Between 2016 and 2017, the county gained more than 12,312 residents. EMS utilization over the last three years has continued to increase.

CONTRA COSTA COUNTY EMS SERVICE UTILIZATION BY POPULATION			
	2015	2016	2017
Population <sup>2</sup>	1,126,745 <sup>1</sup>	1,135,127 <sup>1</sup>	1,147,439 <sup>1</sup>
EMS Responses	94,278	98,769	103,596
EMS Responses/1000 population <sup>3</sup>	94	87	104
Average EMS Responses/day	258	271	283
Square Miles EMS Serves	716	716	716
Population per square mile <sup>2</sup>	1,573 <sup>1</sup>	1,585 <sup>1</sup>	1,603 <sup>1</sup>
Responses per square mile	131	138	145
County Median Household Income <sup>2</sup>	\$79,799 <sup>1</sup>	\$80,185 <sup>1</sup>	\$82,881 <sup>1</sup>
County Population below poverty	10.5% <sup>1</sup>	10.2% <sup>1</sup>	8.7%

1 Estimated figures as of July 2017

2 Source: US Census Bureau.

3 Total includes all responses, including those that did not result in patient transport.

# EMS SYSTEM UTILIZATION

## TOTAL EMS RESPONSES

Responses By Year	2017
Contra Costa Fire/AMR (Alliance)	93,368
San Ramon Valley Fire Protection District	7,862
Moraga Orinda Fire Protection District	2,366
<b>Total</b>	<b>103,596</b>

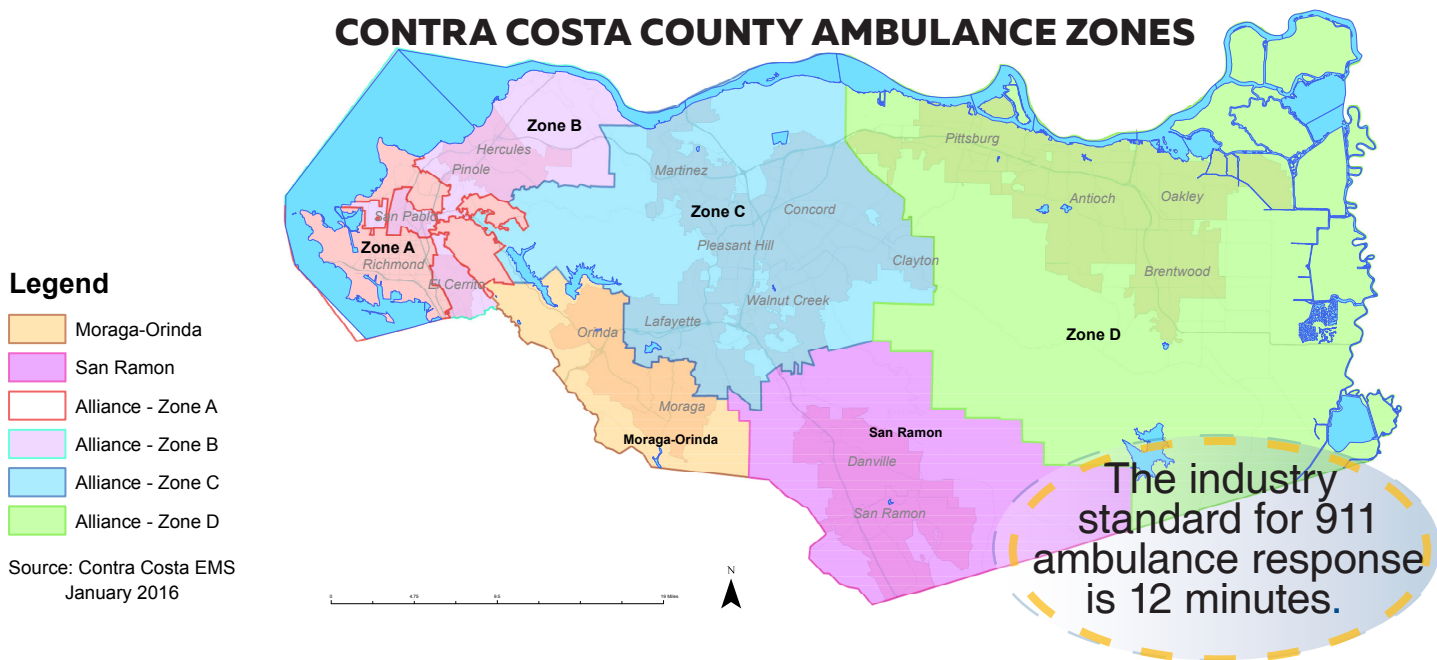
Responses By Year	2016
Contra Costa Fire/AMR (Alliance)	89,768
San Ramon Valley Fire Protection District	6,873
Moraga Orinda Fire Protection District	2,128
<b>Total</b>	<b>98,769</b>

Responses By Year	2015
American Medical Response (AMR)	85,767
San Ramon Valley Fire Protection District	6,323
Moraga Orinda Fire Protection District	2,188
<b>Total</b>	<b>94,278</b>

An EMS response typically occurs after a 911 request for emergency medical services.

# 2017 EMS SYSTEM AMBULANCE RESPONSE REQUIREMENTS

## CONTRA COSTA COUNTY AMBULANCE ZONES



## GEOGRAPHY

Contra Costa County is located in the San Francisco Bay Area of Northern California, northeast of San Francisco and southwest of Sacramento. The county covers roughly 716 square miles, including 19 cities and numerous unincorporated communities. The county has seven emergency response zones for ambulance-based paramedic service. Each response zone is geographically and demographically diverse, and average response times reported include urban, suburban and rural responses.

AMBULANCE EMERGENCY RESPONSE ZONE (ERZ)		RESPONSE TIME REQUIREMENTS BY MINUTES AND RESPONSE PERCENT <sup>1</sup>		
ERZ Provider	Geographic Area	High Density	Low Density	Response %
ERZ A (AMR)	City of Richmond	10:00	20:00	90%
ERZ B (AMR)	West County (non-Richmond)	11:45	20:00	90%
ERZ C (AMR)	Central County	11:45	20:00	90%
ERZ D (AMR)	East Contra Costa County	11:45 16:45 (in Bethel Island)	20:00	90%
ERZ Moraga Orinda	Moraga Orinda Fire Protection District <sup>2</sup>	11:59	20:00	90%
ERZ San Ramon	San Ramon Valley Fire Protection District <sup>2</sup>	10:00	20:00	95%

Source: Contra Costa EMS Agency Verified Provider Dispatch Data

<sup>1</sup> Current ambulance response performance requirements for the contracted ambulance provider

<sup>2</sup> A fire protection district provides emergency ambulance service in this zone. A fire district board is the local authority for establishing response requirements in this service area.



# EMS AMBULANCE RESPONSE TIME PERFORMANCE

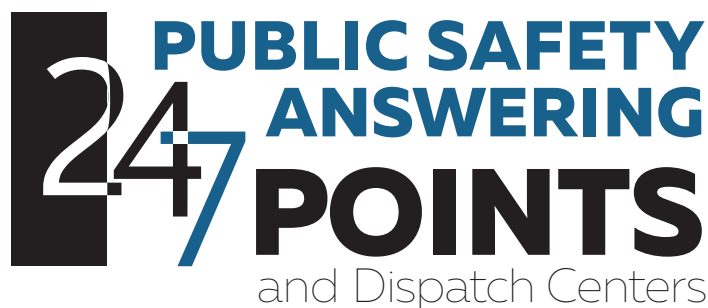
AMBULANCE RESPONSE PERFORMANCE BY ZONE AND SERVICE PROVIDER		
ERA ZONE/PROVIDER	AREA SERVED	2017 AVERAGE CODE 3 (LIGHTS AND SIRENS) RESPONSE TIME IN MINUTES
ERZ A/Alliance*	City of Richmond	4:05
ERZ B/Alliance*	West County (except the City of Richmond)	4:31
ERZ C/AMR Alliance*	Central County	4:38
ERZ D/Alliance*	East County Antioch/Bay Point/Pittsburg	4:34
Moraga-Orinda ERZ	Moraga-Orinda Fire Protection District	5:28
San Ramon ERZ	San Ramon Valley Fire Protection District	4:04

\*Alliance: Contra Costa Fire Protection District (contractor) and American Medical Response (AMR) subcontractor.

# EMERGENCY SYSTEM DISPATCH

A PSAP answers emergency calls for police, firefighting and ambulance services.

Contra Costa EMS System is composed of several partners working together to bring the highest level of patient care to our constituents.



## **PUBLIC SAFETY ANSWERING POINTS (PSAPS)**

Antioch Police Department  
Brentwood Police Department  
California Highway Patrol  
Concord Police Department  
Contra Costa Sheriff's Office  
East Bay Regional Park District Police  
Martinez Police Department  
Pinole Police Department  
Pleasant Hill Police Department  
Richmond Police Department  
San Pablo Police Department  
San Ramon Police Department  
Walnut Creek Police Department

## **FIRE/MEDICAL DISPATCH CENTERS**

Contra Costa County Fire Protection District  
Contra Costa Sheriff's Office (multi-casualty coordination)  
Richmond Police Department  
San Ramon Valley Fire Protection District

# EMERGENCY MEDICAL DISPATCH

## DISPATCH

Contra Costa County is serviced by 13 primary Public Safety Answering Points (PSAPs). These are the communication centers responsible for answering 911 calls. After initial law enforcement triage, medical calls are transferred to secondary PSAPs where Emergency Medical Dispatch (EMD) process takes place, and then an EMS response is dispatched according to professional emergency medical dispatch protocols.



Contra Costa County has three approved and operational EMD centers that utilize Medical Priority Dispatch System (MPDS), a nationally recognized process for rapidly determining what EMS resource is needed. Contra Costa Regional Fire Communications Center, San Ramon Valley Fire Communications Center, and Richmond Police Communications Center. Emergency Medical Dispatchers are trained and certified to International Academies of Emergency Dispatch (IAED) standards and provide potentially life-saving pre-arrival instructions to 911 callers utilizing MPDS. San Ramon Valley Fire is recognized by the IAED as an Accredited Center of Excellence.

## 2017 COMMUNICATIONS CENTER DATA



EMD instructions are not required for all 911 calls. Example: fire first responders may be “on scene” making a request for EMS resources.



# EMERGENCY MEDICAL SYSTEM PARTNERS

## **FIRE DEPARTMENTS AND DISTRICTS**

Contra Costa County Fire Protection District  
Crockett-Carquinez Fire Protection District  
El Cerrito Fire Department  
Pinole Fire Department  
Richmond Fire Department  
East Contra Costa Fire Protection District  
Kensington Fire Protection District (served by El Cerrito Fire Department)  
Moraga-Orinda Fire Protection District  
Rodeo-Hercules Fire Protection District  
San Ramon Valley Fire Protection District

## **EMS PARAMEDIC SERVICE PROVIDERS**

American Medical Response  
California Highway Patrol (helicopter unit)  
Concord Police Department (tactical paramedic program)  
Contra Costa County Fire Protection District  
El Cerrito Fire Department  
Moraga-Orinda Fire Protection District  
Pinole Fire Department  
Rodeo-Hercules Fire Protection District

San Ramon Valley Fire Protection District

## **AIR RESCUE AND AMBULANCE**

REACH  
CALSTAR  
California Highway Patrol

## **PUBLIC SAFETY: LAW DEFIBRILLATION PROGRAMS**

Antioch Police Department  
Blackhawk Police Department  
Brentwood Police Department  
Concord Police Department  
Contra Costa Sheriff's Office  
Clayton Police Department  
Danville Police Department  
El Cerrito Police Department  
Hercules Police Department  
Kensington Police Department  
Lafayette Police Department  
Martinez Police Department  
Moraga Police Department  
Oakley Police Department  
Orinda Police Department  
Pleasant Hill Police Department  
Pittsburg Police Department  
Richmond Police Department  
Roundhill Police Department  
San Pablo Police Department  
San Ramon Police Department  
Walnut Creek Police Department

# EMS WORKFORCE AND HOSPITALS



## TYPE OF PERSONNEL

2017

Emergency Medical Dispatchers

52

Emergency Medical Technicians

994

Paramedics

547

Mobile Intensive Care Nurses

56

Public safety dispatch centers (PSAPs)

12

Fire and EMS dispatch centers

3

Available emergency ambulance units per day

22–50

Non-emergency ambulance units

93

## HOSPITALS

Base Hospital

1

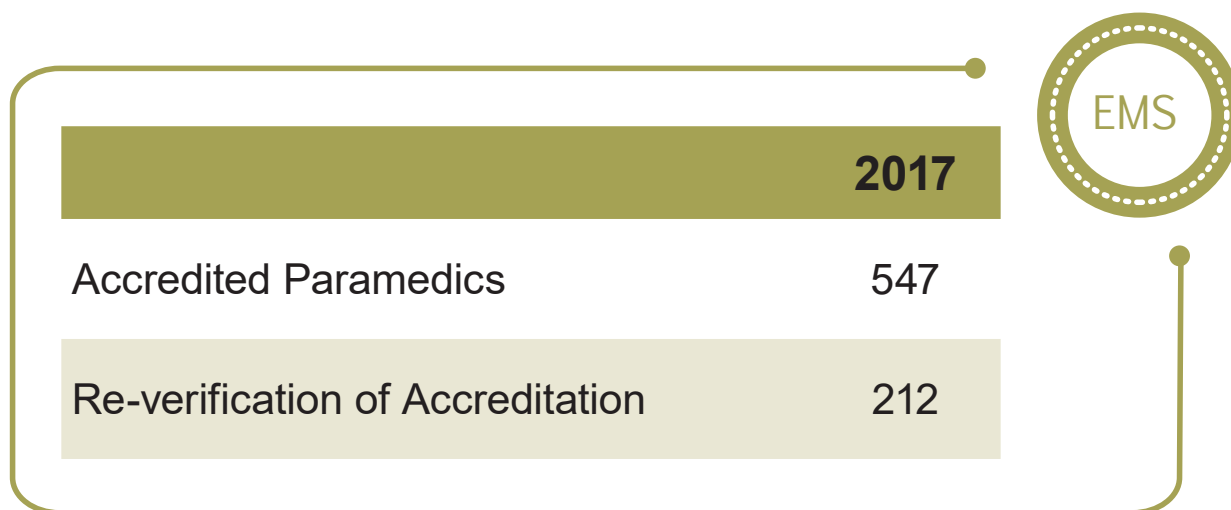
911 Receiving Hospitals

8

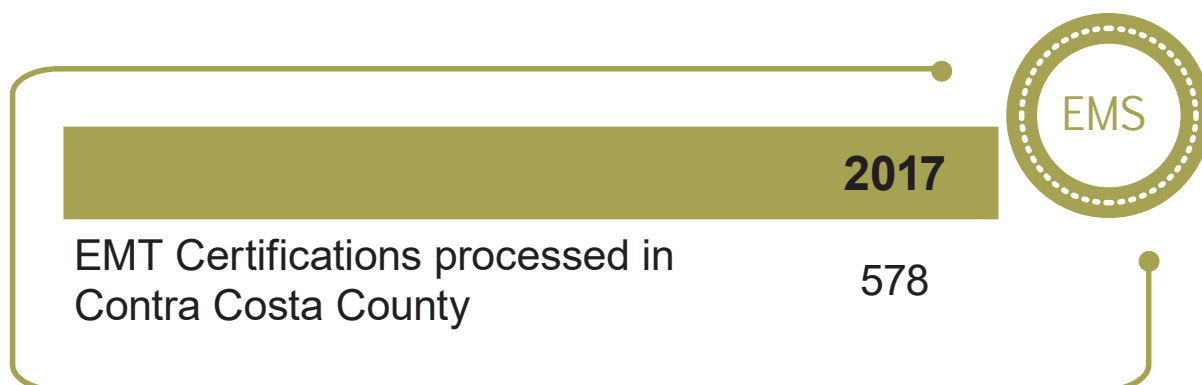
# CERTIFICATION AND ACCREDITATION

Paramedics are required to obtain a California paramedic license from the State of California EMS Authority. Once a paramedic has obtained a license to practice as a paramedic, the paramedic must then accredit themselves in the jurisdiction in which they are employed. Accreditation ensures that paramedics meet the county's minimum requirements to practice and have complied with the county's EMS quality improvement plan. Paramedics are required to verify compliance and update their accreditation with the County every two years.

## EMT CERTIFICATION AND PARAMEDIC ACCREDITATION



EMTs are required by state law to possess a State of California EMT certificate before they can practice. An EMT obtains a State of California EMT certificate by applying to one of California's local EMS agencies or a certifying entity. An EMT certificate obtained through the county is valid statewide for two years.



# EMS SYSTEM LICENSING AND CERTIFICATION OVERSIGHT

## PROFESSIONAL STANDARDS PROGRAM

The EMS Agency investigates allegations of misconduct against EMTs certified by the Agency. The professional standards program ensures that each EMT certified by the EMS Agency or working within Contra Costa County provides safe, professional and competent clinical care to the county's residents and visitors.

### Contra Costa County EMS Agency

	2017
Active Probation	16
Denied	2
Expired Probation	0
Revoked	6
Surrendered	2
Suspended	13
Withdrawn	0



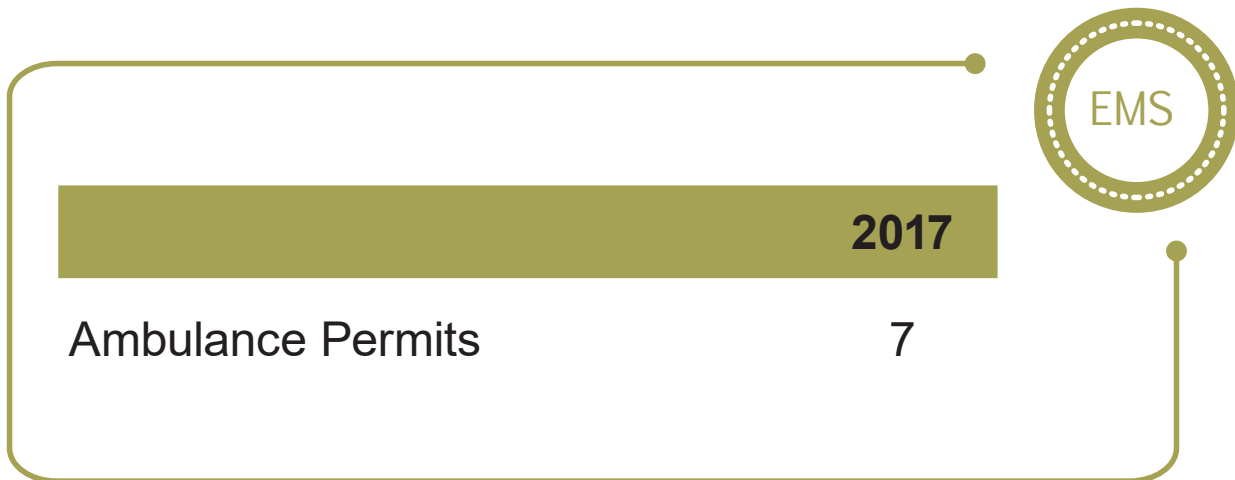


# AMBULANCE PERMITS

Contra Costa County has an Ambulance Ordinance Code regulating ambulances. The ordinance requires that each ambulance provider apply for and be granted an ambulance permit by the EMS Agency before originating patient transports in the county.

The EMS Agency reviews ~~and investigates~~ each application and inspects each of the applicants' ambulances to ensure the public health, safety and welfare is protected.

The EMS Agency is also responsible for investigating alleged violations of the ambulance ordinance by permit holders and, when necessary, it takes enforcement action to suspend or revoke an ambulance permit.



# EMT TRAINING PROGRAMS IN CONTRA COSTA COUNTY

The EMS Agency is delegated the regulatory responsibility under the state's EMS regulations for approving EMT and paramedic training programs located in Contra Costa County. The EMS Agency has approved three EMT training programs. There are currently no paramedic training programs based in the County.

EMTs who successfully graduate from an approved EMT program are required to pass the National Registry of Emergency Medical Technicians (NREMT) basic EMT examination before they may apply for a California EMT certificate.



## 2017 NREMT Examination Pass/Fail Rates From Contra Costa County EMT Programs

Attempted the Exam	First Attempt Pass	Cumulative Pass Within 3 Attempts	Cumulative Pass Within 6 Attempts
<b>Contra Costa College</b>			
4	25%	50%	50%
<b>Los Medanos College</b>			
145	72%	79%	79%
<b>Mt. Diablo Adult Ed.</b>			
14	29%	43%	43%

# HOSPITAL EMERGENCY DEPARTMENT UTILIZATION DATA









## 2017 Pedi Emergency Department Visits

	<1 year	1-9 year	10-19 years	Total
Contra Costa Regional Medical Center & Health Centers	566	2,011	3,726	6,303
John Muir Health Concord	861	5,542	5,399	11,802
John Muir Health Walnut Creek	1,197	4,509	3,781	9,487
Kaiser Medical Center Richmond	1,094	6,269	5,775	13,138
Kaiser Medical Center Antioch	1,187	6,658	6,145	13,990
Kaiser Medical Center Walnut Creek	822	4,722	4,710	10,254
Sutter Delta Medical Center Antioch	1,263	6,560	5,716	13,539
San Ramon Regional Medical Center	176	1,436	1,998	3,610
<b>Total</b>	<b>7,166</b>	<b>37,707</b>	<b>37,250</b>	<b>82,123</b>

# HOSPITAL EMERGENCY DEPARTMENT UTILIZATION DATA



	Total ED Visits 	EMS Transports 	Percent of All EMS Transports to Total ED volume 	90% ambulance patient offload time in minutes 
Contra Costa Regional Medical Center & Health Centers 	42,406	7,523	18%	32
John Muir Health Concord	59,456	10,001	17%	20
John Muir Health Walnut Creek	55,528	11,374	20%	26
Kaiser Medical Center Richmond	64,680	9,487	15%	29
Kaiser Medical Center Antioch	61,149	6,903	11%	37
Kaiser Medical Center Walnut Creek	63,670	9,238	15%	33
Sutter Delta Medical Center Antioch	58,704	9,786	17%	40
San Ramon Regional Medical Center	18,932	2,308	12%	27
<b>Total</b>	<b>424,525</b>	<b>66,620</b>	<b>16%</b>	<b>31</b>
<b>PES</b> 	<b>10,369</b>	<b>5757</b>	<b>56%</b>	<b>36</b>

# HOSPITALS AND SPECIALTY CENTERS



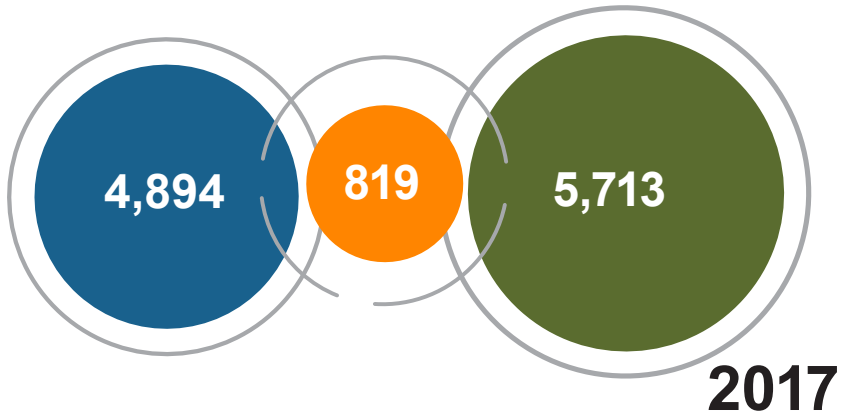
	STEMI	Helipad	Labor & Delivery	Stroke	Trauma	Behavioral
Contra Costa Regional Medical Center & Health Centers			✓			✓
Sutter Delta Medical Center Antioch	✓	✓	✓	✓		
San Ramon Regional Medical Center	✓		✓	✓		
John Muir Health Concord	✓			✓		
Kaiser Medical Center Walnut Creek	✓		✓	✓		
Kaiser Medical Center Richmond				✓		
Kaiser Medical Center Antioch			✓	✓		
John Muir Health Walnut Creek	✓	✓	✓	✓	✓	

# EMS AND HOSPITALS WORKING TOGETHER

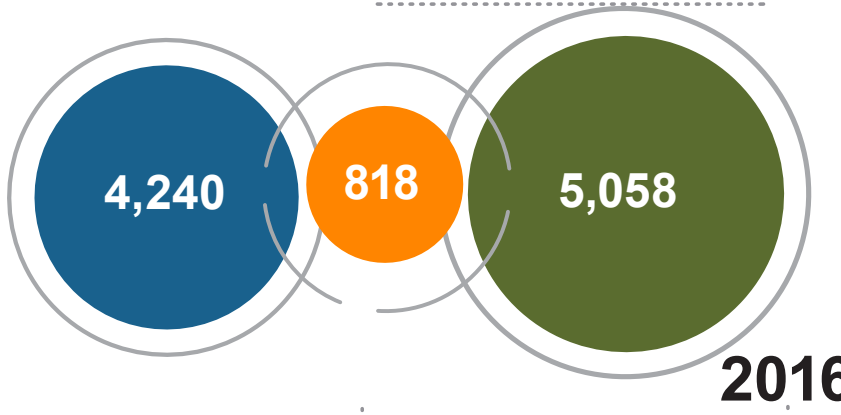
Trauma

Medical

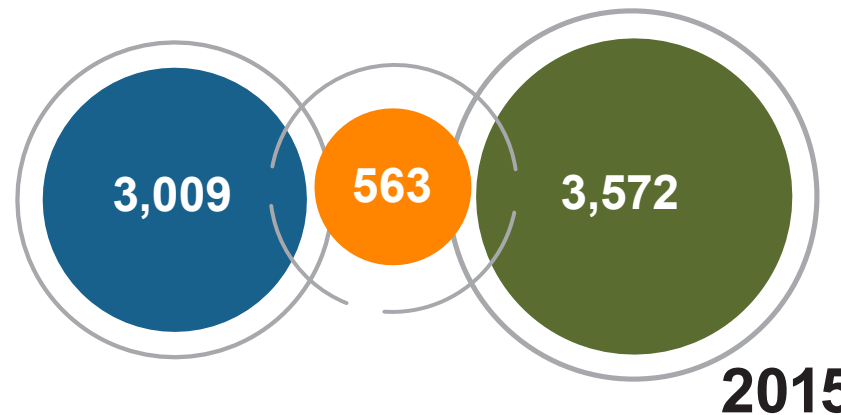
Total



2017



2016



2015

## BASE HOSPITAL CALLS BY TYPE

Base hospitals provide medical consultation to EMS personnel in the field when they encounter patients with conditions outside of standardized EMS protocols, or in situations that require real-time medical consultation.

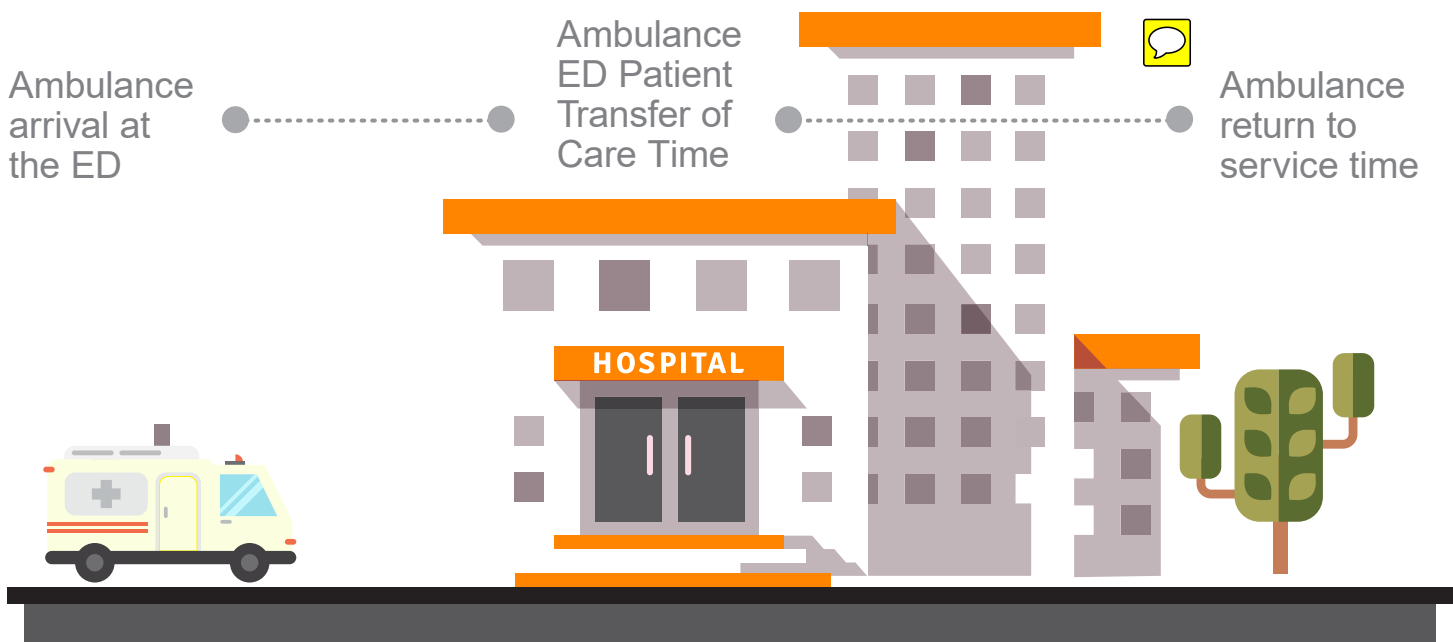
John Muir Medical Center in Walnut Creek serves as the Base Hospital for Contra Costa County.

# AMBULANCE-EMERGENCY DEPARTMENT PATIENT TRANSFER OF CARE PERFORMANCE



## AMBULANCE PATIENT TRANSFER OF CARE

EMS patient transfer of care is known to improve the availability of 911 ambulances and patient safety. All hospitals are expected to transfer patients arriving by EMS within 20 minutes 90% of the time. The time measured is from ambulance arrival at the ED to the patient transferred to the care of the ED staff and report given.



# AIR AMBULANCE MEDICAL PROVIDERS



## AIR TRANSPORT

Air Medical Transport provides specialized services throughout the county in response to EMS calls where air medical transport is essential to getting a critically ill patient to definitive care. Air transports may occur in rural areas of the county, at the scene of severe traffic accidents during commute hours and when hospitals need to transport a critical patient to another facility. Authorized Air providers REACH and CALSTAR make up less than 1% of emergency patient transport in Contra Costa County annually.

## HELICOPTER EMS DESTINATIONS

John Muir Walnut Creek	UCSF Benioff Children's Hospital	Other Trauma Centers
77%	11%	12%



2017



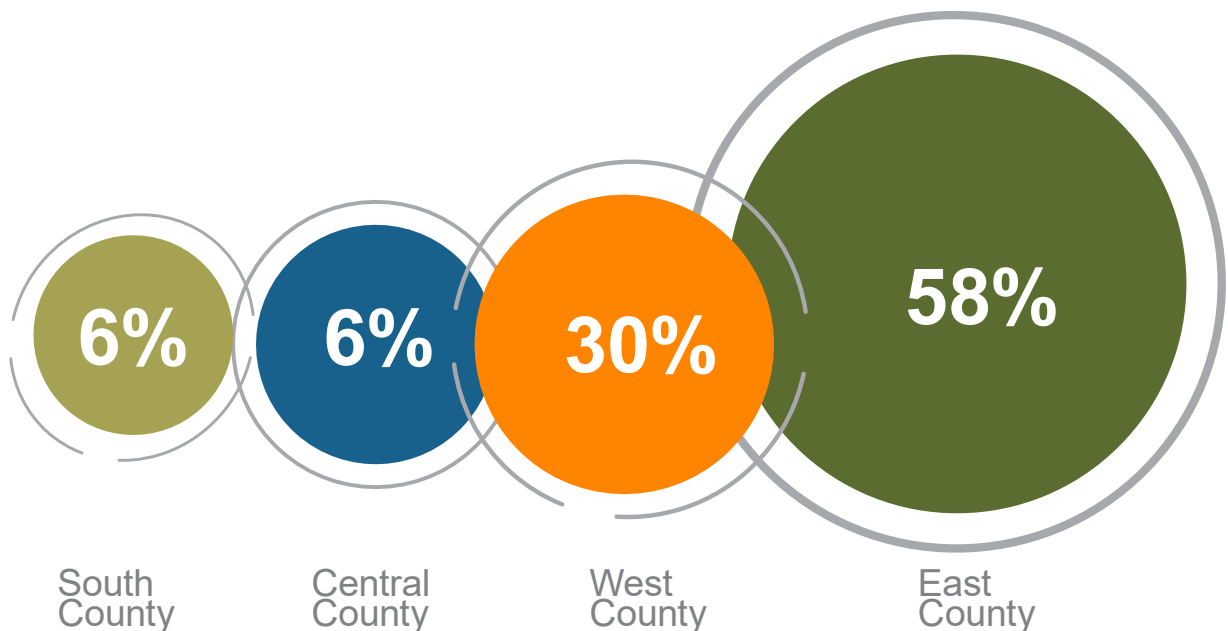
# AIR AMBULANCE TRANSPORT

## Transports Originating in Contra Costa County

REACH	2017
911 "Scene" Calls	54
Interfacility Transports	100
Total Air Transports	154

CALSTAR	2017
911 "Scene" Calls	65
Interfacility Transports	31
Total Air Transports	96

## Helicopter Trauma Transport Origins, 2017



# QUALITY IMPROVEMENT & PATIENT SAFETY 2017

## QUALITY IMPROVEMENT PROGRAMS

Quality Improvement continues to be central to the mission of EMS services in Contra Costa County. EMS activity and patient care outcomes are routinely measured and evaluated by the stakeholders and regulators to assure the system is performing and improving over time. Our measures focus on the quality of our care in the delivery of EMS services.

## PATIENT SAFETY EVENTS

The EMS Agency is committed to supporting a culture of safety. In 2017, the patient safety program was supported by the EMS Agency Quality Patient safety and medical oversight review as part of a continued formal effort to monitor, evaluate and act upon EMS system issues. 792 EMS events were reported in 2017. ~~This is an increase of 10% from 2016. Each EMS~~ is part of a coordinated effort to learn and improve patient safety and clinical outcomes for the benefit of the patient and the communities served.

## ~~QUALITY IMPROVEMENT INITIATIVES~~

~~EMS System Quality Improvement Program (EQIP)~~ This program is ~~part of a~~ coordinated system of medical and patient safety oversight facilitated by the Contra Costa EMS Agency. Data is continuously used to improve and support improvements in patient care, ambulance service delivery in collaboration with our ~~Hospitals,~~ Emergency department physicians and nurses, Specialists in cardiology, neurology, trauma and pediatrics. To learn more about our EMS System and patient care safety initiatives go to [www.cccems.org](http://www.cccems.org)

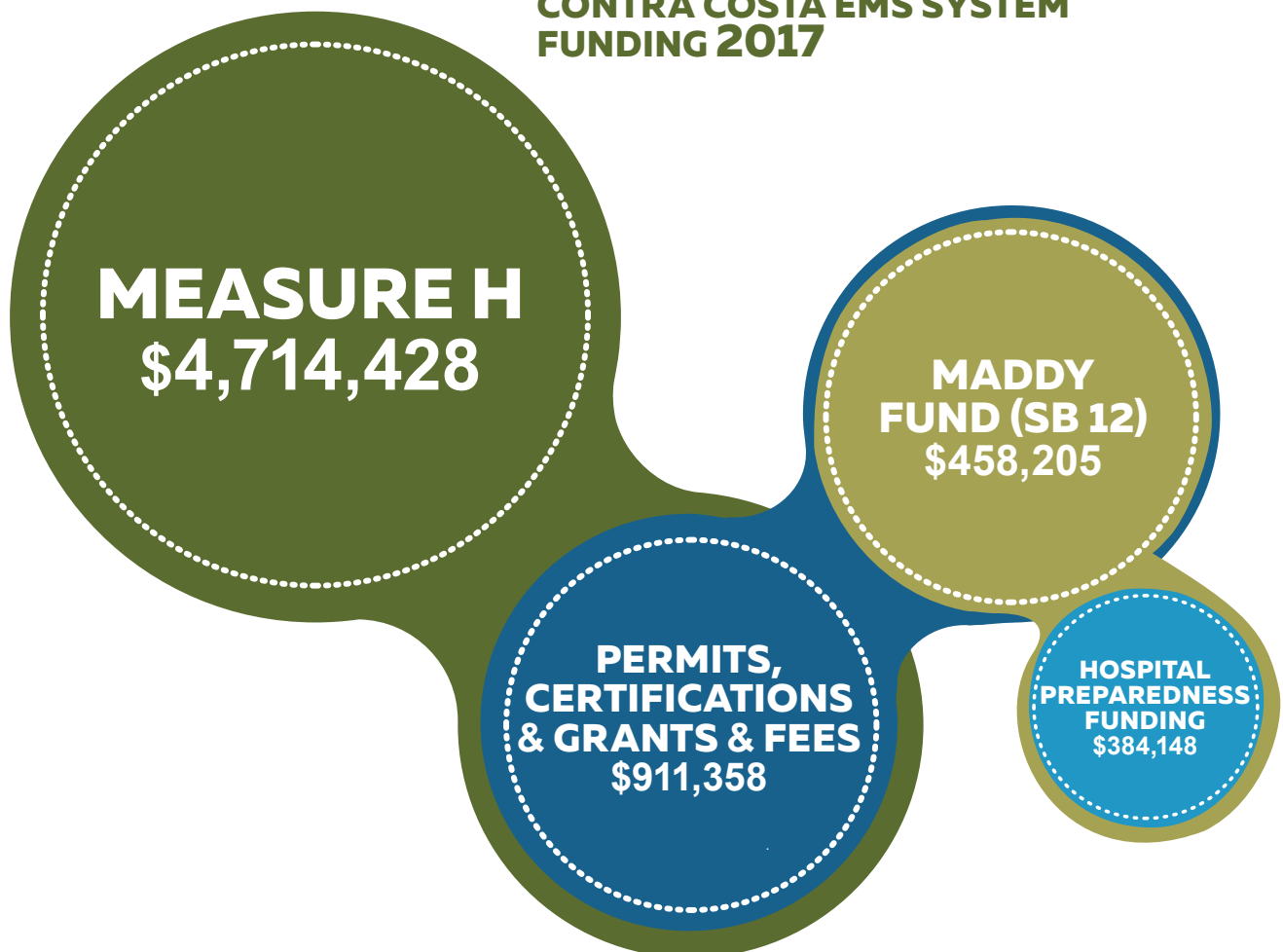
~~The EMS Agency re-evaluates internal and stakeholder performance processes as part of a coordinated system of review. Data driven feedback are part of the improvement process and supported by just culture understanding that collectively public and private partners are all focused on patient safety. To learn more about the EMS System EQIP program go visit [www.cccems.org](http://www.cccems.org)~~

# COUNTY EMS SYSTEM FUNDING

The Contra Costa EMS System is supported through state and federal grants, permit and certification fees and County Service Area funds (EM-1) also know as Measure H.

Measure H parcel levies provide limited but important support for the provision and quality of emergency medical services for the residents of Contra Costa County since 1988. Priorities for Measure H funding include: Paramedic first responder and ambulance services, countywide first-responder and public-access defibrillation programs, Fire-EMS training for multi-casualty and disaster response, emergency and disaster communication systems, Fire and ambulance dispatch technology, medical and quality oversight of “systems of care” including Trauma, STEMI, Stroke, Cardiac Arrest and EMS for Children, pre-hospital and law enforcement equipment and training.

## CONTRA COSTA EMS SYSTEM FUNDING 2017

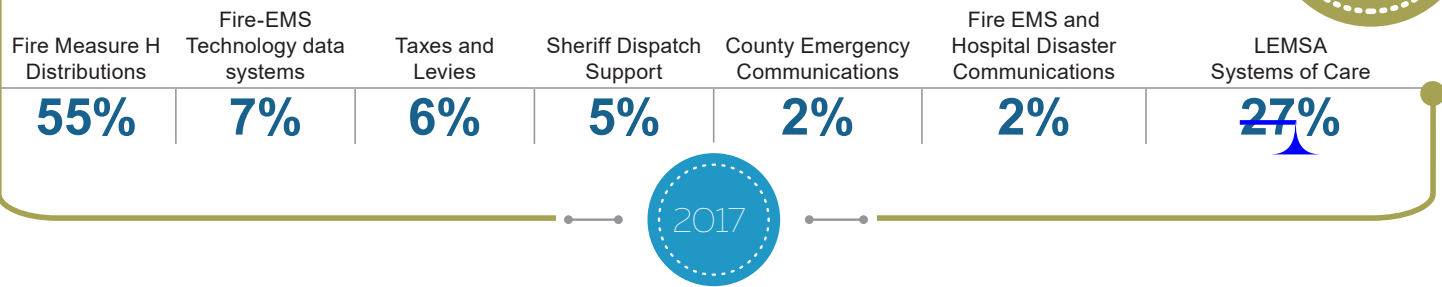


**TOTAL EMS SYSTEM FUNDING**  
**\$6,468,139**

# 2017 EMS SYSTEM ENHANCEMENT




## MEASURE H DOLLARS AT WORK—EMS SYSTEM FUNDING \$4,714,428



# CARDIAC ARREST SYSTEM OF CARE



## Contra Costa County

	Events	Population	Incidence per 100,000
2017 	758	1,147,439	66.1
2016	712	1,135,127	62.7
2015	532	1,126,745	47.2

Contra Costa County participates in a national cardiac arrest survival registry program, which allows for comparative benchmarking and improvement in cardiac arrest emergency care. Through our partnership with the Cardiac Arrest Registry to Enhance Survival (CARES), we collect uniform and reliable outcome information, and have made significant changes to enhance the delivery of CPR by bystanders and improve pre-hospital cardiac arrest care in our communities.

We track our progress using the Utstein survival measure, a standardized cardiac arrest reporting tool introduced in 1991. The measure is used nationally by EMS systems to set benchmarks and compare results.

**NATIONAL INCIDENCE OF CARDIAC ARREST** **55 PER 100,000**

# CARDIAC ARREST SURVIVAL



## Survival to Hospital Discharge (Utstein)

2015	2016	2017
28%	32%	29%

Source: Data obtained from the Cardiac Arrest Registry to Enhance Survival (CARES). Inclusion criteria: A witnessed, out-of-hospital cardiac arrest where the patient is found in a shockable rhythm and resuscitation is attempted by an emergency responder.

## NATIONAL SURVIVAL TO DISCHARGE RATE **33%**

Cardiac arrest patients who received care that met or exceeded benchmarks found in CARES and the Utstein Uniform Reporting Guidelines were more likely to survive to hospital discharge than patients who did not.



## Bystanders Save Lives: Bystander CPR Rate

2015	2016	2017
40%	39%	41%

Source: Data obtained from CARES Registry.

## NATIONAL BYSTANDER CPR RATE **38%**

Data show an increase in bystanders initiating CPR on someone in cardiac arrest before emergency medical responders arrive. The CARES national benchmark for this kind of bystander interaction is 38% of all cardiac arrest cases. For more information about this program, visit [cchealth.org/ems/cardiac-arrest.php](http://cchealth.org/ems/cardiac-arrest.php).

# STEMI SYSTEM OF CARE



Every 42 seconds, someone in the United States has a heart attack. One deadly type, ST Elevation Myocardial Infarction (STEMI), requires rapid assessment, specialized equipment and specially trained personnel to offer patients the best chance of survival.

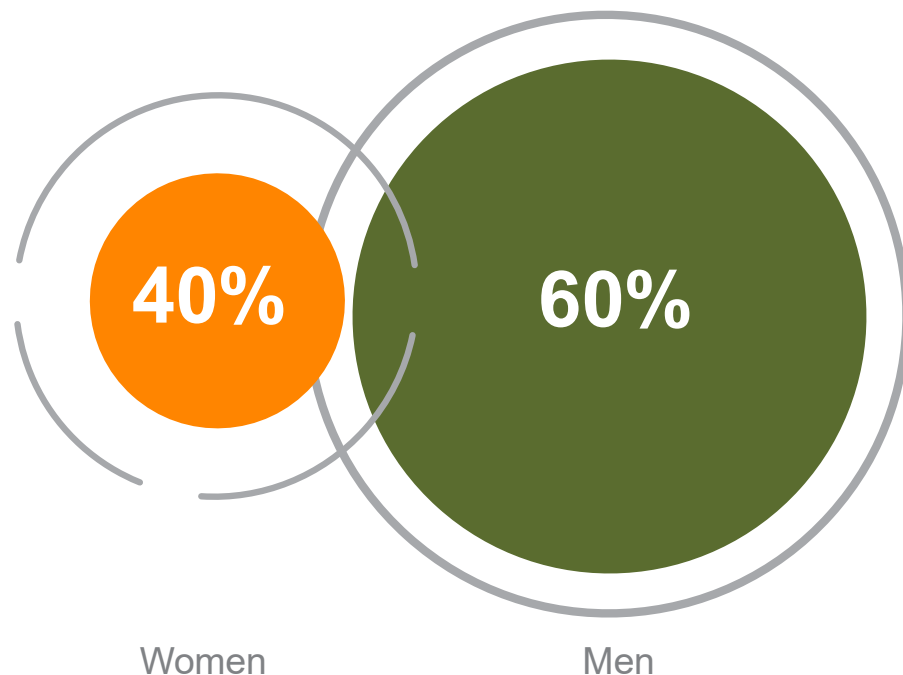
Paramedics use field transmission of 12-Lead ECGs and “STEMI Alerts” to provide hospitals with early notification of STEMI cases, which allows emergency departments and cardiac intervention teams time to prepare and immediately treat patients upon arrival.

San Ramon Regional Medical Center, John Muir Medical Centers in Concord and Walnut Creek, Sutter Delta Medical Center in Antioch and Kaiser Permanente Medical Center in Walnut Creek are Contra Costa’s STEMI receiving centers.

For more information about the STEMI System of Care, visit [cchealth.org/ems/stemi.php](http://cchealth.org/ems/stemi.php).

## 2017 Gender of Patients Affected with ST-Elevation MI

Total=392



# STEMI SYSTEM OF CARE



## Annual STEMI Alerts

2015	2016	2017
309	396	392

## Age Distribution of STEMI Alert Patients



Age	
0–10	0
11–20	0
21–30	3
31–40	7
41–50	32
51–60	81
61–70	93
71–80	93
81–90	83
91–100	21



# STEMI SYSTEM OF CARE



## Average First Medical Contact (FMC) and Door to Intervention Times

	2015	2016	2017
FMC to Intervention (in minutes)	86	85	82
Door to Intervention (in minutes)	58	58	55


First medical contact to intervention national benchmark is 90 minutes.

First medical contact (FMC) is defined as the time that EMS providers make initial contact with a patient. This could be an EMT or a paramedic. FMC to Intervention is the time from initial contact with the patient to the time the patient has their artery open or stent placed. The goal is 90 minutes or less for FMC to time the patient arrives at the hospital to receive intervention.

# PREHOSPITAL PERFORMANCE STEMI MEASURES



## STEMI Pre-hospital Performance Measure

	2015	2016	2016 
Aspirin Administration	94%	88%	88%
12-Lead ECG acquired on STEMI Patients	99%	98%	98%
Patient identified as STEMI and transported to STEMI Intervention Center	100%	99%	100%
Average Scene Time Interval (minutes) Performance Goal = /<15 minutes	13	13	15

The Contra Costa prehospital performance measures are based on State indicators and the American Heart Associations. Contra Costa EMS continues to meet state and national benchmarks in all areas.

# STROKE SYSTEM OF CARE

Stroke is the fifth-leading cause of death nationally, and the leading cause of disability.

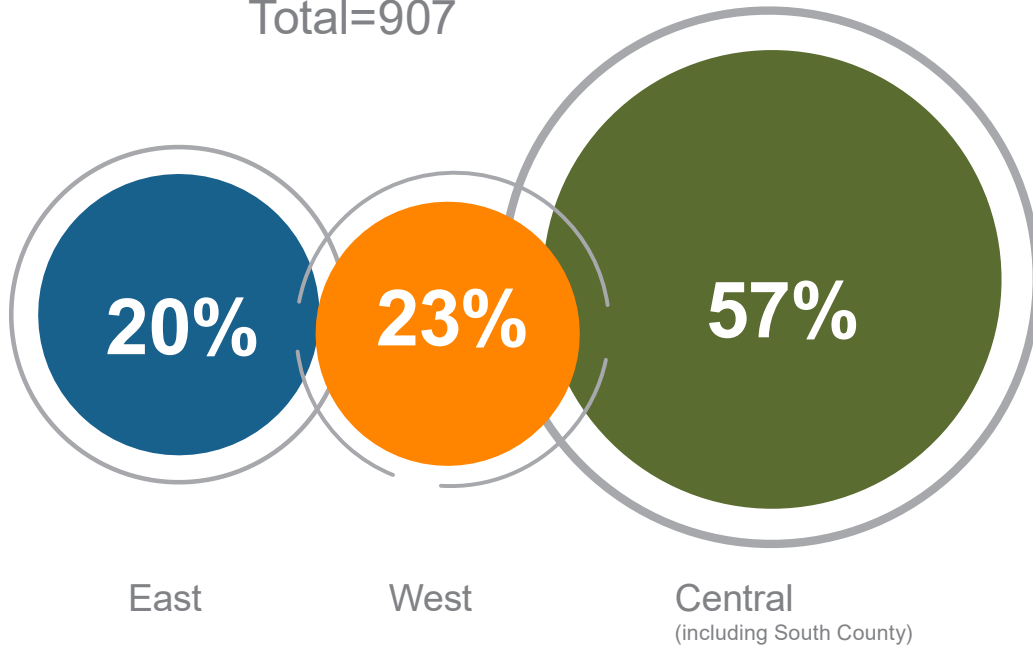
Contra Costa's Stroke System of Care facilitates rapid assessment and transport of patients to designated Primary Stroke Centers.

Contra Costa  
County had  
approximately  
**907 stroke alerts**  
in 2017.

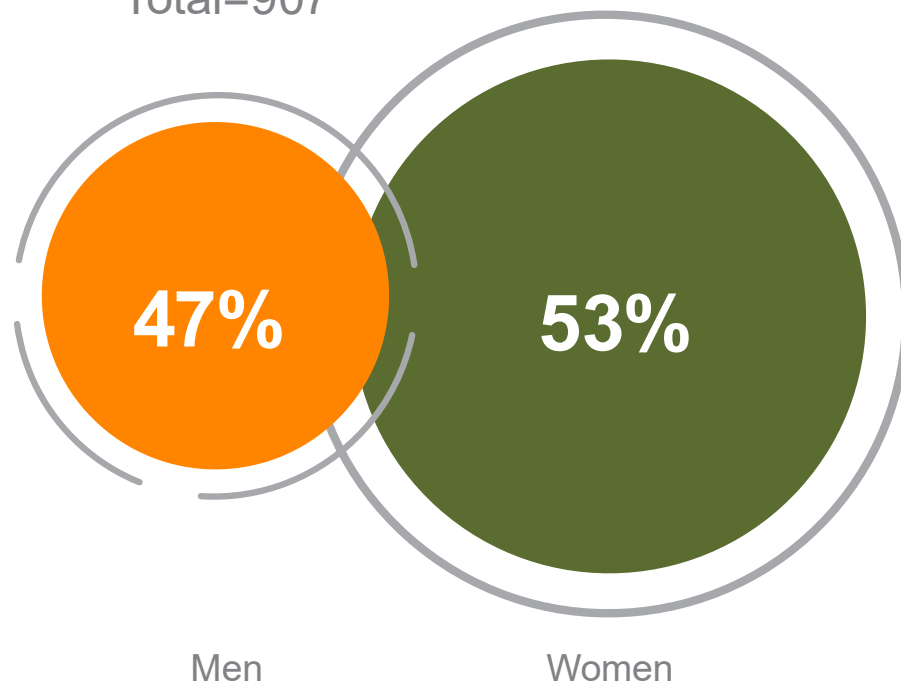


# STROKE SYSTEM OF CARE

**Stroke Alerts by County Region, 2017**  
Total=907



**Gender of Stroke Alert Patients, 2017**  
Total=907

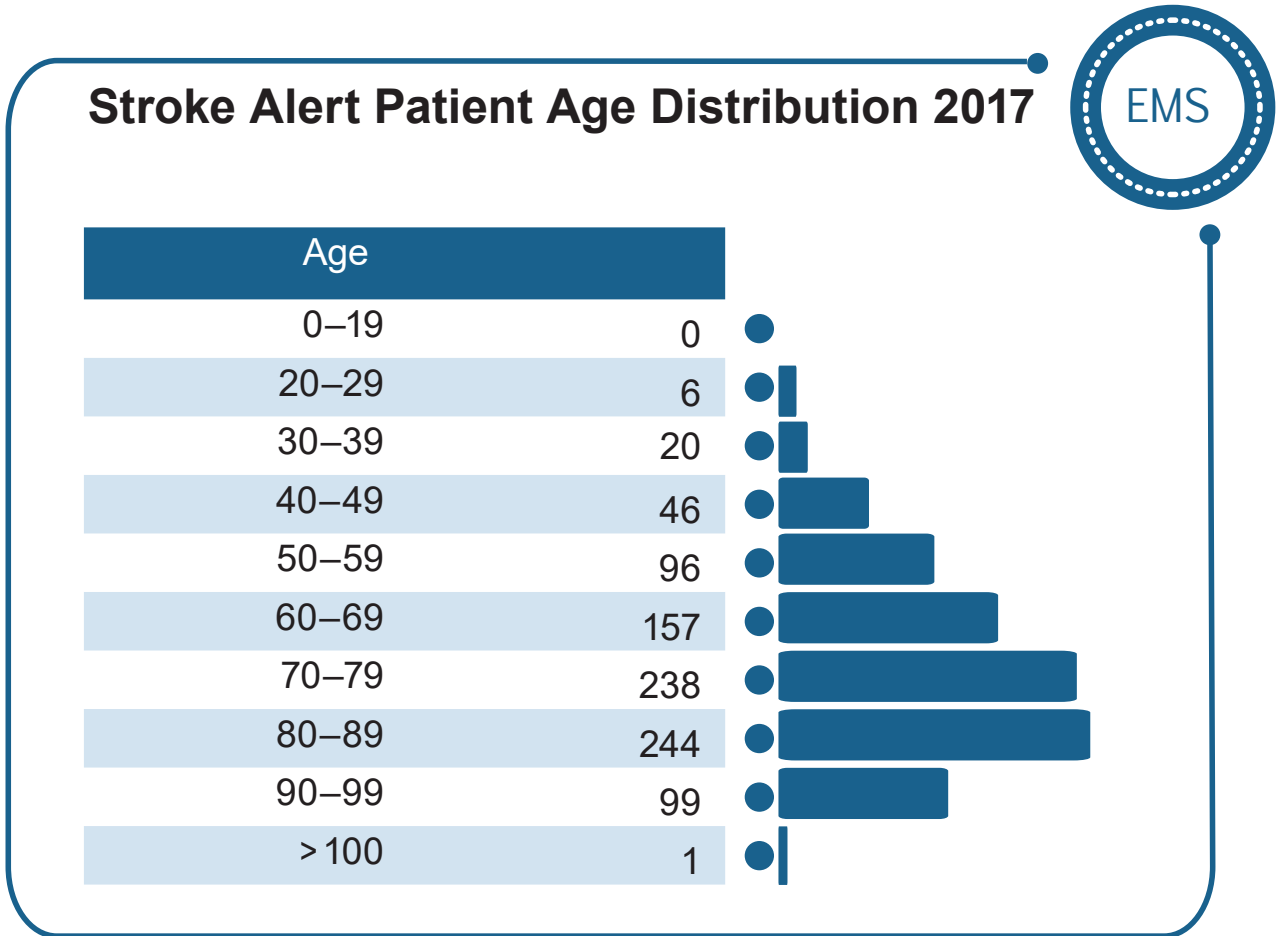


# STROKE SYSTEM OF CARE

## MEASURING SYSTEM PERFORMANCE

EMS providers rapidly identify patients having stroke symptoms, initiate immediate transport and call a “Stroke Alert” to the closest center. Calling 911 is key in getting patients to treatment quickly.

Our goal is for patients to receive the clot-dissolving drug tPA (Tissue Plasminogen Activator) within 4 1/2 hours of a patient’s first stroke symptoms at the nearest Primary Stroke Receiving Center. Door to tPA shows the time it took for a patient to receive tPA after their ambulance arrived at the hospital.



Source: Prehospital electronic data (Meds/Zoll)

# STROKE SYSTEM OF CARE

## Average Door to Treatment Time (tPA) for EMS patients with Stroke Symptoms



	2015	2016	2017
Door to tPA time (in minutes)	54	44	43
Number of patients treated	158	162	152



# STROKE SYSTEM OF CARE



## Stroke Alerts by Hospital

	2015	2016	2017
John Muir Medical Center—Walnut Creek	138	150	152
John Muir Medical Center—Concord	165	159	143
Kaiser Antioch	159	179	180
Kaiser Richmond	167	172	209
Kaiser Walnut Creek	131	121	140
San Ramon Regional Medical Center	64	55	83

# TRAUMA SYSTEM OF CARE

The Board of Supervisors approved a comprehensive trauma system plan for the county in 1986, and the EMS Agency designated John Muir Medical Center—Walnut Creek as the county’s sole trauma center.

The trauma system is designed to facilitate rapid identification, management, and transport of critical trauma patients to a trauma center within the “golden hour”—the first hour after injury, which is considered the most crucial time for successful treatment.





# TRAUMA SYSTEM OF CARE

Trauma activations are those patients who are seriously injured and meet activation criteria. Trauma patients are those patients who have been injured but do not meet trauma activation criteria and may be transported to a non-trauma center for care.



## Trauma Patients and Trauma Center Activations

	Activation	Patients
<b>2017</b>	2032	2197
<b>2016</b>	1615	1884
<b>2015</b>	1471	1766

# TRAUMA SYSTEM OF CARE INJURY STATISTICS

## Penetrating Injuries

Gun Shot Wound  
Stabbing

2016

52%  
48%

2017

48%  
42%

## Blunt Injuries

Assault  
Auto Collision  
Auto vs Pedestrian  
Bicycle  
Motorcycle  
Falls  
Other

2016

5%  
33%  
5%  
6%  
7%  
26%  
18%

2017

6%  
28%  
8%  
7%  
8%  
34%  
9%



# CONTRA COSTA MEDICAL HEALTHCARE COALITION (HCC)

The Contra Costa County Medical Healthcare Coalition is a collaborative network of healthcare organizations and individuals that provide or support healthcare services in the County. The Coalition meets regularly to share information, coordinate planning and response activities, and build resiliency. Membership includes, but is not explicitly limited to hospitals, public and private medical or health services, emergency preparedness agencies, emergency services and governmental bodies with an interest in the provision of healthcare.

## Health Care Coalition Activities Program Activities

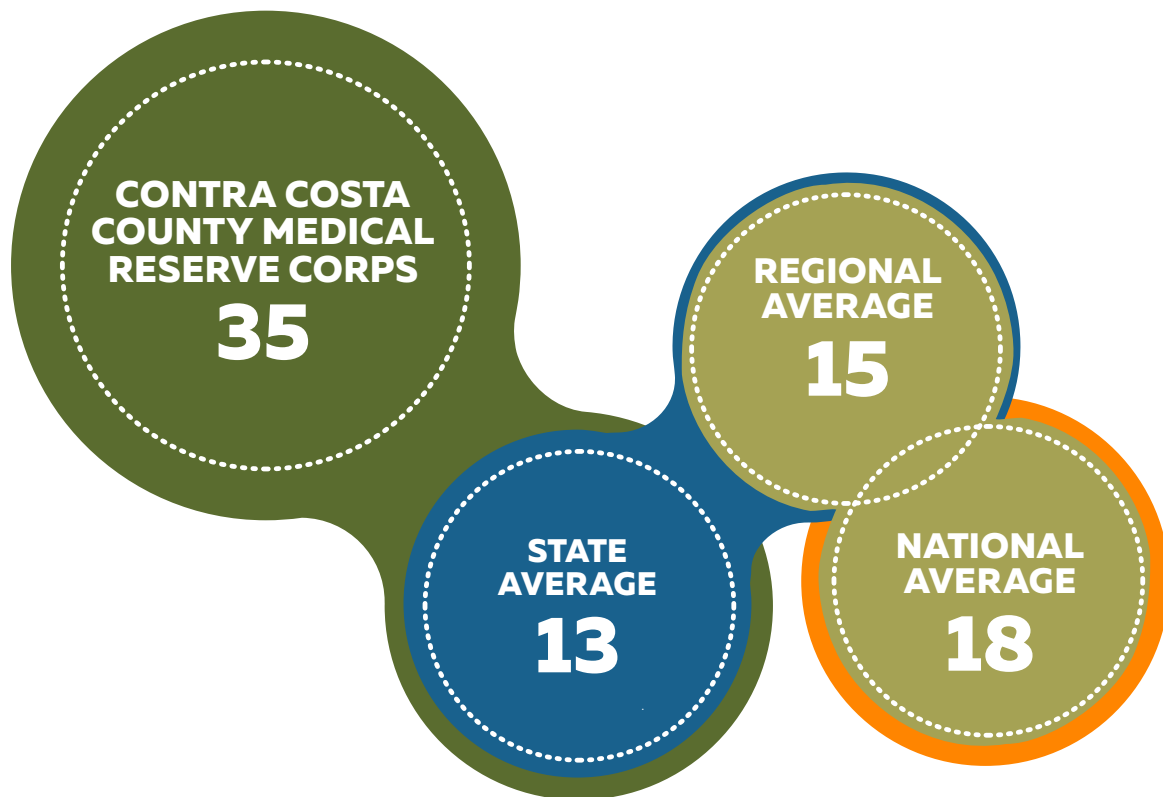
2016 Training/Exercise/Response	Frequency
Situation-Status Drills	Monthly
Triage and Tracking Exercise	Bi-monthly
Medical Health Coalition Meetings	Quarterly
Disaster Health Volunteers Communication Drills	Quarterly
Medical Reserve Corp Meeting/Training	Monthly
State Wide Tabletop & Functional Exercise	Annually
County Emergency Operations Center Earthquake Functional Exercise	Annually



Patient decontamination disaster simulation.

# CONTRA COSTA MEDICAL RESERVE CORPS (MRC)

The Contra Costa EMS System MRC provides community outreach during non-emergency events to improve unit capability, enhance community preparedness, and improve public health. The MRC provides first aid stations at community events, medical screenings, conducts influenza vaccine clinics, teaches hands-only CPR, participates in health and disaster preparedness fairs and participates in drills and exercises. The MRC supports youth engagement and provides career mentorship and disaster education and training through our partnership with Dozier Libbey Medical High School's Health Occupations Students of American (HOSA) organization.



**COMPARISON:  
NUMBER OF ACTIVITIES**

# CONTRA COSTA MEDICAL RESERVE CORPS (MRC)

The Contra Costa Medical Reserve Corps continues to be a major asset in our community when it comes to providing community outreach and emergency preparedness activities. During 2017 the Contra Costa Medical Reserve Corps was deployed to support sheltering operations during the North Bay Wildfires in Napa and Solano Counties.

## CONTRA COSTA MRC FIRE RESPONSE

Contra Costa County MRC was first, amongst all MRC units deploying as Mutual Aid, to arrive on the scene of the North Bay Fires.

### THE NORTH BAY FIRES OF 2017

Careful research of the industry and consumer makeup must be conducted before starting up a business. Some business owners choose to hire market research firms to aid them.

### TYPES OF VOLUNTEERS

Our 32 volunteers staffed 9 types of positions at the shelter clinic: RN, EMT/EMT-P, MD, LVN, Mental Health, MA, DDS, CPHT, and non-medical or administrative support.

Volunteer Type	Percentage
RN	37%
EMT/EMT-P	28%
MD	18%
Non-medical	12%
Other	6%
Mental Health	3%
LVN	3%
MA	3%

### CONDITIONS TREATED

Shelter ops treated 18 types of conditions. The top categories of issues treated were: 27% Acute Pain (OTC), 12% Acute Respiratory, 12% Cont. Care/ADL, 8% Diabetes, 7% Stomach issues, 7% Med Refill

### TOTAL HOURS SERVED

Our volunteers served a total of 760.7 hours of continuous shelter ops during this response, which lasted 9 days.

## 760.7

### TOTAL ECONOMIC IMPACT

The combined work of the CCC MRC volunteers was equivalent to \$29,144.12 of paid staffing.

## \$29,144

## Contra Costa County MRC, 2017

- Total Number of Activities Reported:** 35
- Total Number of MRC Participants:** 271
- Total Number of Hours Contributed:** 139
- Economic Value of Contributions:** \$55,753

# DISASTER PREPAREDNESS PROGRAM FOR CHILDREN



## NEONATAL AND PERINATAL DISASTER PREPAREDNESS PROJECT

The Neonatal and Perinatal Disaster Preparedness Project helps in planning to support newborns and mothers in the event of disaster, and prepares the system for medical surges from this population. The system continues to improve readiness and practices quarterly communication drills as part of its overall preparedness and unit readiness.

Contra Costa EMS plans to update of the County EMS for Children Program as a system of care. In preparation for this effort all Contra Costa Community Hospitals will complete the National Pediatrics Readiness Survey. The National Survey assesses the “readiness” of community hospitals for children who require emergency medical services. To learn more, visit [www.cchealth.org/ems/feature-emsc.php](http://www.cchealth.org/ems/feature-emsc.php).

Contra Costa EMS supports and evaluates community hospital emergency departments for pediatric readiness. The Pediatric Readiness Project is a national multi-phase quality improvement and emergency preparedness initiative to ensure that all U.S. emergency departments (ED) have the essential guidelines and resources in place to provide effective emergency care to children. This EMS for Children initiative began in California in 2013 and provides benchmarking to hospitals on their pediatric capability based on national guidelines for care of children in the emergency department. The project continues to provide hospitals an opportunity to review and improve how to properly care for pediatric patients who arrive in their EDs.

# EMERGENCY MEDICAL SERVICES FOR CHILDREN

The Emergency Medical Services for Children Program (EMSC) monitors and maintains a coordinated and comprehensive system that delivers high-quality emergency care for the children of Contra Costa County.

In 2017 there were **82,123** pediatric emergency department visits.

## BACKGROUND

The vast majority of pediatric patients seen in an emergency room do not require hospitalization. Contra Costa County's designated pediatric critical care and trauma center is UCSF Benioff Children's Hospital & Research Center Oakland.

Inpatient pediatric services are provided at John Muir Medical Center in Walnut Creek, Kaiser Permanente Medical Center in Walnut Creek and San Ramon Regional Medical Center. In addition, all Contra Costa community hospitals and emergency departments are expected to be ready for emergencies involving children. In April of 2015, John Muir Medical Center opened Contra Costa County's first pediatric intensive care unit.

2016 PEDIATRIC EMERGENCY DEPARTMENT VISITS				
	<1 year	1–9 years	10–19 years	Total
Contra Costa Regional Medical Center	566	2,011	3,726	6,303
John Muir Medical Center in Concord	861	5,542	5,399	11,802
John Muir Medical Center in Walnut Creek	1,197	4,509	3,781	9,487
Kaiser Permanente Medical Center in Richmond	1,094	6,269	5,775	13,138
Kaiser Permanente Medical Center in Antioch	1,187	6,658	6,145	13,990
Kaiser Permanente Medical Center in Walnut Creek	822	4,722	4,710	10,254
Sutter Delta Medical Center in Antioch	1,263	6,560	5,716	13,539
San Ramon Regional Medical Center	176	1,436	1,998	3,610
<b>Total</b>	<b>7,166</b>	<b>37,707</b>	<b>37,250</b>	<b>82,123</b>

\*Source: OSPHD





# EMS FOR CHILDREN INJURY PREVENTION

## CHILDHOOD EMERGENCIES

Since most pediatric emergencies are preventable, the program not only focuses on the coordination of pediatric emergency and critical care services but also focuses on injury prevention. In 2009, Contra Costa partnered with Alameda County on EMSC to support regional injury prevention, promote pediatric prehospital and emergency care capability, and promote statewide neonatal and pediatric disaster and medical surge planning.

Children make up approximately 25% of our county population, 14–27% of all emergency department visits and approximately 10% of our 911 responses. Although life threatening emergencies involving children are rare, specialized pediatric skills and training are required by the EMS Agency to support the care of children in the field. In Contra Costa, the emergency medical response for children is provided by a network of first-rate agencies and hospitals in partnership with child advocacy groups to reduce injury and death to children.

Drowning is a leading cause of unintentional death in children ages less than 5 and the fifth leading cause of death in all age groups. From 2012–2016 Contra Costa saw 31 drownings of adults and children.

## ACCOMPLISHMENTS THROUGH PARTNERSHIP

- ▶ Contra Costa EMS is the home of the California Neonatal/Pediatric and Perinatal Disaster Preparedness Coalition, which works to implement recommendations supported by the National Advisory Committee for Children and Disasters.
- ▶ Childhood Injury Prevention Network-Bay Area (CIPN-BA) member. CIPN focus on unintentional injuries for a target population of children 0–14 years of age in the areas of: falls, car and child passenger safety, fire and burns, choking, water and home safety, and poisonings
- ▶ Keeping Babies Safe partner. Non-profit organization that provides education, assistance, advocacy and leadership in the development of safer children's products and practices.
- ▶ National Pediatric Readiness Program in Contra Costa County is an integral part of our EMS for Children Program.
- ▶ All Contra Costa Hospitals and Fire Departments are "Safely Surrendered Baby Sites". To learn more about Safely Surrendered Baby go to [cchealth.org/ems/baby-safe.php](http://cchealth.org/ems/baby-safe.php)
- ▶ Contra Costa EMS had 100% of all hospitals participate in the National Pediatric Readiness Project, benchmarking hospital's capability for children.
- ▶ California State EMSC Technical Advisory Committee: Contra Costa is an active participant in this important state task force dedicated to improving emergency care for children.



# CONTRA COSTA EMS STAFF DIRECTORY

Patricia Frost ----- EMS Director  
 David Goldstein ----- EMS Medical Director  
 Jesse Allured ----- EMS Program Coordinator  
 Geoff Martin ----- Prehospital Care Coordinator  
 Maria Fairbanks ----- Prehospital Care Coordinator  
 Aaron Doyle ----- Prehospital Care Coordinator  
 Marshall Bennett ----- Prehospital Care Coordinator  
 Chad Henry ----- Prehospital Care Coordinator  
 Michelle Voos ----- Prehospital Care Coordinator  
 Brandon Rowley ----- Prehospital Care Coordinator  
 Lisa Vajgrt-Smith ----- Prehospital Care Coordinator  
 Rachel Morris ----- Administrative Assistant  
 Jeanne Kerr ----- Administrative Analyst  
 Patti Weisinger ----- Account Clerk  
 Carol Gray ----- Senior Clerk



Martinez, CA 94553  
 925-646-4690 (phone)  
 925-646-4379 (fax)  
 cchealth.org/ems  
 Follow us on Facebook/Twitter





# CONTRA COSTA COUNTY EMS THE SYSTEM OF EMERGENCY MEDICAL SERVICES

## STRENGTHEN THE CHAIN OF SURVIVAL



**EMS Training Institutions, Administrative Agencies and Regulatory Bodies** play a critical role in developing, refining and ensuring a high quality / effective EMS system.

Learning the signs of a heart attack, stroke and sudden cardiac arrest and calling 9-1-1... all of these actions can play a part in saving a life.

**Emergency Medical Dispatchers, First Responders (e.g. Firefighters, Law Enforcement), Paramedics, and EMTs** respond to over **98,769** emergency calls for service in Contra Costa County each year.

**Ambulance Transporting Providers (e.g. Paramedics, EMTs and Nurses)** ensure patients are provided treatment and transported to the most appropriate receiving hospital.

**Hospitals and Specialty Care Facilities (e.g. Nurses and Emergency Physicians)** ensure the continuum of emergency care by treating patients and providing definitive care services.

**Quality improvement (QI)** is a proactive process, that recognizes and solves problems, and ensures that EMS systems of care are reliable and predictable.

Together, through **collaboration and local partnerships (e.g. MRC)**, Contra Costa County residents receive quality, efficient and **highly effective emergency patient care.**

[cchealth.org/ems](http://cchealth.org/ems) • 925-646-4690

