



**WHEN EVERY
SECOND COUNTS**

**SAN MATEO COUNTY
EMERGENCY MEDICAL SERVICES**

SYSTEM OVERVIEW

2015-2016



753,123
people live
in San Mateo County
+
388,549
people travel
here to work every day.

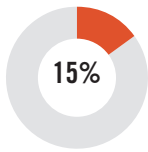
5.5
people helped
by our life-saving
emergency services
every hour.

32,000
trips to an emergency
department each year,
representing 10% of the patients
seen at local emergency
departments.

See page 13 for more
on receiving centers.

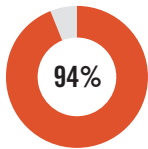
1 in 24
residents and visitors
uses the San Mateo County
Emergency Medical Services
(EMS) system every year.

RESPONSE VOLUME AND SPEED



increase in volume of 9-1-1 ambulance responses between 2009 and 2015, accounting for population increases.

See page 10 for more on response volume and speed.



of the time, we respond faster than or as fast as we're required to by response time standards.

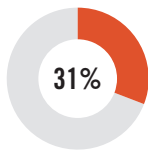
See page 10 for more on response volume and speed.



54,000 9-1-1 medical calls a year.

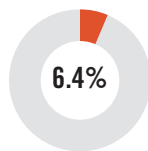
See page 10 for more on response volume and speed.

CARDIAC CARE



faster care for patients with most serious type of cardiac arrest.

See page 15 for more on our STEMI programs.



of local 9-1-1 transports are for cardiac emergencies.

See page 14 for more on our cardiac services.



1st County in California to implement a tiered system of care for stroke victims, helping us deliver faster care.

See page 18 for more on our stroke system.

AT A GLANCE

744 square miles in San Mateo County. The mix of densely populated urban areas and remote coastal areas provide unique challenges to providing 9-1-1 emergency medical care.

RESOURCES



19 ambulances and 3 surge ambulances staffed by 200 emergency medical technicians and paramedics.

See page 8 for more on EMS resources and organization.

PROGRAMS



100

car and booster seats distributed to low-income children every year.

See page 21 for more on our efforts to reduce motor vehicle trauma.



72%

more older adults living in San Mateo County by 2030.

See page 21 for more on our fall prevention programs protecting these older adults.



3,038

psychiatric emergency 9-1-1 transports in 2015 as a part of the new SMART program.

See page 25 for more on the SMART program and our other initiatives.



1,000,000

visitors to the Bay Area during Super Bowl 50 protected thanks to the efforts of our Health Emergency Preparedness (HEP) Unit and many partners.

See page 26 for more on our emergency preparedness efforts.

FROM THE DIRECTORS

WE'RE EXCITED TO PRESENT THE 2015-2016 EMS SYSTEM OVERVIEW—a recap of all we've accomplished recently and an update on the challenges and initiatives ahead.

The EMS system depends on many different elements working seamlessly together, from an informed public able to recognize medical emergencies to a network of public safety communication centers, fire departments, ambulance providers, and hospitals providing specialized care to sick or injured people.

Our goal is to deliver high-quality, cutting-edge emergency medical care and responsive public health and medical disaster preparedness to everyone who lives, works, studies, and plays in San Mateo County through an integrated and coordinated system of services.

This collaborative system wouldn't be possible without the strong partnership between local fire departments, collectively called the San Mateo County Pre-Hospital Emergency Medical Services Group (Fire/EMS JPA), South San Francisco Fire Department; American Medical Response (AMR), the County's 9-1-1 ambulance provider; our hospitals; Public Safety Communications (PSC); and the EMS Agency. Our extremely cohesive system is the envy of many other counties and helps us deliver the best life-saving care.

Here are just a few of our key accomplishments in 2015 detailed in this report:

- Implemented a tiered system of care for stroke victims—the first county in California to do so
- Completed the SMARTS (San Mateo Assessment Risk Tool for Stroke) study, data analyzed and in the process of publication
- Partnered with Stanford Health Care to submit an application to National Institutes of Health for Stroke Telemedicine and Education Pilot Project
- Conducted public outreach campaign on heart attack symptoms and importance of calling 9-1-1
- Participated in National Cardiac Arrest Registry to Enhance Survival (CARES)
- Began implementation of high-performance cardiopulmonary resuscitation (CPR) response protocol
- Studied cutting-edge video laryngoscopy to confirm intubation and success rates
- Hosted Vietnamese delegation wanting to learn about our EMS system
- Continued to exercise the County's ability to exceed the national standard of distributing critical medication to all households within 48 hours in a public health emergency
- Tracked patients from the second they call 9-1-1 through the prehospital setting to their discharge from our established specialty care centers to analyze system performance, identify training needs and institute appropriate policy changes.
- Provided mutual aid and medical and health planning for Super Bowl 50

In 2016 and beyond, we look forward to building upon this data to run more detailed timely reports for our providers and the public to answer system questions and make policy decisions.

This is our first iteration of this report, so we look forward to your feedback on how to make future versions even more valuable to you. Please send any comments to nlapolla@smcgov.org.

San Mateo County is truly a leader in prehospital care in California, and we aim to keep it that way.

Sincerely,



Nancy Lapolla, MPH

San Mateo County EMS Director



Gregory H. Gilbert, MD

San Mateo County EMS Medical Director



WHAT WE DO

HISTORY

Since 1999, paramedics on fire engines joined AMR ambulances in responding to 9-1-1 emergency medical calls. The system is a public/private partnership between AMR, San Mateo County's fire departments, and the County's EMS Agency. Both AMR and the Fire/EMS JPA, made up of 11 fire service agencies, contract separately with the County to provide paramedic first responder services.

The system benefits patients with a faster paramedic response—response times have fallen from an average of 9 minutes in 1999 to 7 minutes now—and better integration. A single dispatch center, San Mateo County's

Public Safety Communications (PSC) in Redwood City, performs all dispatch services for local fire departments and emergency ambulances. The system dispatches the closest fire engine and ambulance to every medical incident regardless of local fire department boundaries.

This bold approach of merging public and private services, with the County as the oversight agency, requires significant planning and cooperation. It is the result of a four-year planning process that involved medical professionals, city managers, fire agencies, ambulance providers, the public, and county staff.

WHAT'S NEXT

For the rest of 2016 and beyond, our EMS Agency is working on several key projects with our partners, including:

TESTING

telemedicine efforts in partnership with Stanford Health Care

EXPANDING

the reach of our high-performance CPR training

WORKING

with Mills-Peninsula Medical Center to assess the feasibility of a mobile computed tomography (CT) response unit to help us better assess strokes in the field

IMPROVING

coordination of 9-1-1 calls in response to cardiac events

STRENGTHENING

the quality of care we provide to everyone who comes into contact with the EMS system

HIRING

a management fellow to improve our outreach to vulnerable populations

ENHANCING

partnerships and creating new ones through outreach and education

- Developing survey for partners to assess effectiveness
- Identifying existing and future partners—internal, external, patient, community
- Ensuring partners attend appropriate committee meetings for enhanced collaboration
- Improving communications with partners at all levels
- Sustaining and growing financial independence

ENHANCING AND INTEGRATING the Medical Health Operational Area Coordination (MHOAC) program into disaster preparedness, response and recovery through collaboration, training, exercises, and actual events

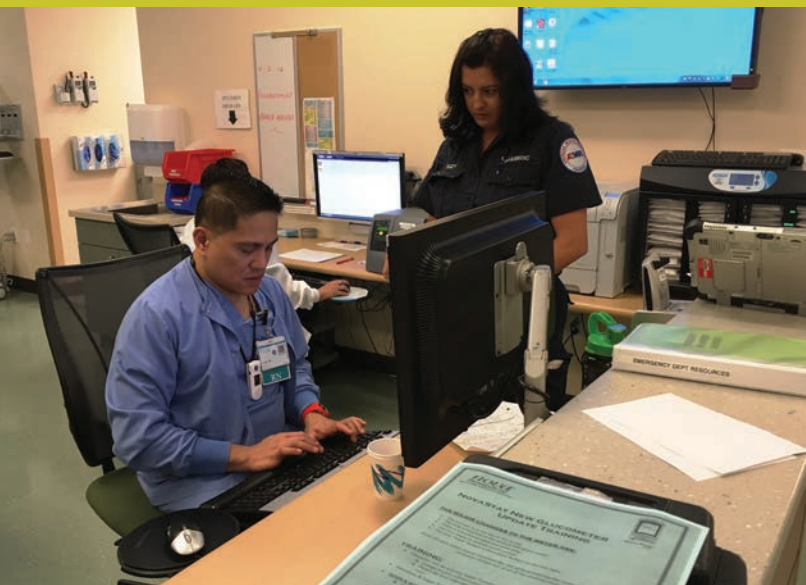
- Ensuring that all 17 functions identified in Health and Safety Code 1797.153 are addressed in medical and health disaster plans
- Using lessons learned from real events and exercises to enhance existing plans and develop best practices
- Developing continuity of operations plan for the San Mateo County Health System and San Mateo Medical Center
- Conducting exercises to test emergency response capabilities, plans and policies, such as Community Shield on May 11, 2016, a dirty bomb scenario to test communications, decontamination, triage and treatment, patient movement, and tracking protocols, and a large-scale multiple-casualty incident in November 2016

MAXIMIZING staff capabilities to achieve a high-performing agency

- Ensuring staff skills and knowledge match workload
- Using educational resources
- Promoting effective committees
- Teambuilding

DEMONSTRATING the value of the EMS system

- Using existing data to analyze specific care performance
- Understanding and using continuous quality improvement processes
- Evaluating current systems
- Promoting community visibility



WHO WE ARE

EMS SYSTEM RESOURCES



WHAT HAPPENS WHEN YOU CALL 9-1-1 FOR A MEDICAL EMERGENCY

1. Your call goes to your local law enforcement dispatch center before being transferred to a single dispatch center, PSC in Redwood City, which performs all dispatch services for fire departments within the county as well as for emergency ambulances.
2. The system dispatches the closest fire apparatus and AMR ambulance to every medical incident regardless of local fire agency boundaries.
3. Emergency care begins with Emergency Medical Dispatchers (EMD) gathering information and providing pre-approved instruction through the Medical Priority Dispatch Systems protocol prior to EMS arrival.



39

Emergency Medical Dispatchers (EMDs)

735

Emergency Medical Technicians (EMTs)

572

Paramedics

1

Fire/EMS Dispatch Centers

MISSION, VALUES, VISION

MISSION

To ensure the highest-quality emergency medical care to the people of San Mateo County through an integrated and coordinated system of services, and to foster the medical and health resiliency of our community during disasters and emergencies.

VALUES

In our journey to continuously improve the quality of emergency medical services and medical and health emergency preparedness we value:

- A patient- and community-oriented system
- A caring environment to inspire and produce innovation
- Research, scientific examination, focused process improvement, training and exercises
- Candor, integrity and mutual respect
- Multidisciplinary partnerships to produce excellence and enhance emergency management

VISION

To provide leadership that is proactively improving medical and health emergency preparedness and emergency medical services.

CERTIFICATION AND PROFESSIONAL STANDARDS

EMT AND PARAMEDICS

The EMS Agency is designated by state law as the county's regulatory agency for EMTs and paramedics. The EMS Agency certifies EMTs and accredits paramedics that meet the state and local professional and clinical standards for public safety. We've certified over 2,100 EMTs and provide local accreditation nearly 200 paramedics in the past six years.

EMS CONTINUING EDUCATION PROVIDERS

The EMS Agency is also designated by the state statute as the certifying body for EMS Continuing Education (CE) Providers within the county. Approved CE providers meet the requirements to conduct continuing education courses, classes, activities and issue earned continuing education credit to EMS personnel to help them maintain certification and ensure they continue to provide quality care.

EMS SYSTEM

SAN MATEO COUNTY BOARD OF SUPERVISORS

EMERGENCY MEDICAL CARE COMMITTEE (EMCC) — HEALTH SYSTEM CHIEF

Nancy Lapolla, MPH — EMS DIRECTOR — Greg Gilbert, MD, FAAEM — EMS MEDICAL DIRECTOR

Garrett Fahey, MBA
EMS OFFICE COORDINATOR

Carl Hess, MBA
HEALTH EMERGENCY PREPAREDNESS MANAGER

Theresa Smith
HEALTH EMERGENCY COMMUNICATIONS AND TRAINER

Kevin Rose
EMERGENCY PREPAREDNESS SPECIALIST

Annie Tai
HEALTH EMERGENCY PREPAREDNESS PROGRAM ANALYST

Ada Chan
EMERGENCY ANALYST

Stephanie Murti
MHOAC PROJECT COORDINATOR

Michael Leach, MPH
PERFORMANCE MEASUREMENT ANALYST

Linda Allington, RN, MPH, MPA, FACHE
EMS CLINICAL SERVICES MANAGER

Patrice Christensen, RN, PHN
INJURY PREVENTION PROGRAM COORDINATOR

SAN MATEO COUNTY EMS AGENCY

EXECUTIVE STEERING COMMITTEE (ESC) — MEDICAL ADVISORY COMMITTEE (MAC) — HEALTHCARE WORKING GROUP (HWG)

OPERATIONS COMMITTEE — QUALITY LEADERSHIP COUNCIL — STEMI QI COMMITTEE — STROKE QI COMMITTEE

PUBLIC SAFETY COMMUNICATIONS (9-1-1 DISPATCH CENTER) — FIRE FIRST RESPONDER AGENCIES — AMBULANCE SERVICES — AIR AMBULANCE PROVIDERS — NON-PROFIT & COMMUNITY STAKEHOLDERS — HOSPITAL, CLINICS & SPECIALTY CARE CENTERS

EMS AGENCY STANDING COMMITTEES

Our high-performing EMS system is possible thanks to strong collaboration between many community partners. Standing committees meet on a routine basis and provide input on the emergency medical care system. Members consist of representatives from EMS prehospital fire response and 9-1-1 ambulance provider, physician, nursing, and emergency manager/safety officer representatives from county receiving hospitals, non-government and community stakeholder organizations, public safety agencies, and EMS Agency staff.

RESPONSE VOLUME AND SPEED

RESPONSE VOLUME

Between 2009 and 2015, accounting for population increases, there was a 15.0% increase in the volume of 9-1-1 ambulance responses, as shown in Exhibit 1. South San Francisco Fire (SSFF) operates outside of the County's EMS 9-1-1 contacted ambulance exclusive operating area; SSFF responses within South San Francisco are shown in Exhibit 2.

Some of this increase in responses may be driven by the expansion of health coverage under the Affordable Care Act, as some newly insured residents lack a primary care provider. Across California, emergency department usage went up 3.9% from 2013 to 2014, the last year for which data is available, according to the Office of Statewide Health Planning and Development.

RESPONSE TIMES

San Mateo County EMS system requires the following response time performance to a 9-1-1 medical call.

Paramedics on fire apparatuses respond within 7 minutes for code or priority 1 responses (lights and sirens) and 15 minutes for code 2 responses (traveling with normal traffic flow), as shown in Exhibit 3. Emergency ambulances are staffed by paramedics and have a response time standard of 13 minutes. We're working toward a response time of zero minutes for some patients, with emergency medical dispatch providing basic first aid instruction, including CPR instructions, to anyone calling 9-1-1.

RESPONSE RATES BY ZONE

San Mateo County is broken into five response time areas, not including South San Francisco. AMR and the paramedic fire EMS providers are required to respond within the response times listed in Exhibit 2 90% of the time. As shown in Exhibit 4, response rates exceed 90% time requirements across all zones.



EXHIBIT 1

AMR 9-1-1 AMBULANCE RESPONSES PER 100,000 POPULATION

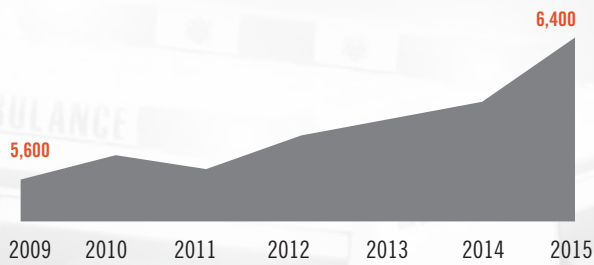


EXHIBIT 2

SOUTH SAN FRANCISCO 9-1-1 AMBULANCE RESPONSES

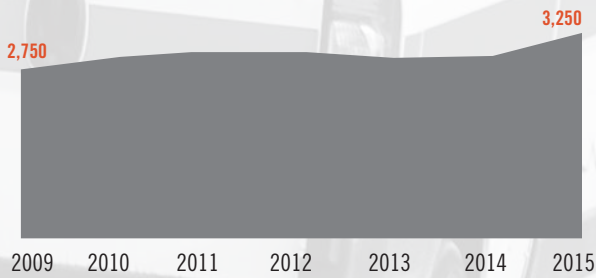


EXHIBIT 3

REQUIRED RESPONSE TIMES

PRIORITY RESPONSE	AREA TYPE	PRIORITY RESPONSE	
		EMERGENCY AMBULANCE	PARAMEDIC FIRE RESPONDER, NON-TRANSPORT
1	Urban/Suburban	12:59 Minutes	06:59 Minutes
	Rural	19:59 Minutes	11:59 Minutes
	Remote	29:59 Minutes	21:59 Minutes
2	Urban/Suburban	22:59 Minutes	14:59 Minutes
	Rural	59:59 Minutes	24:59 Minutes
	Remote	59:59 Minutes	29:59 Minutes

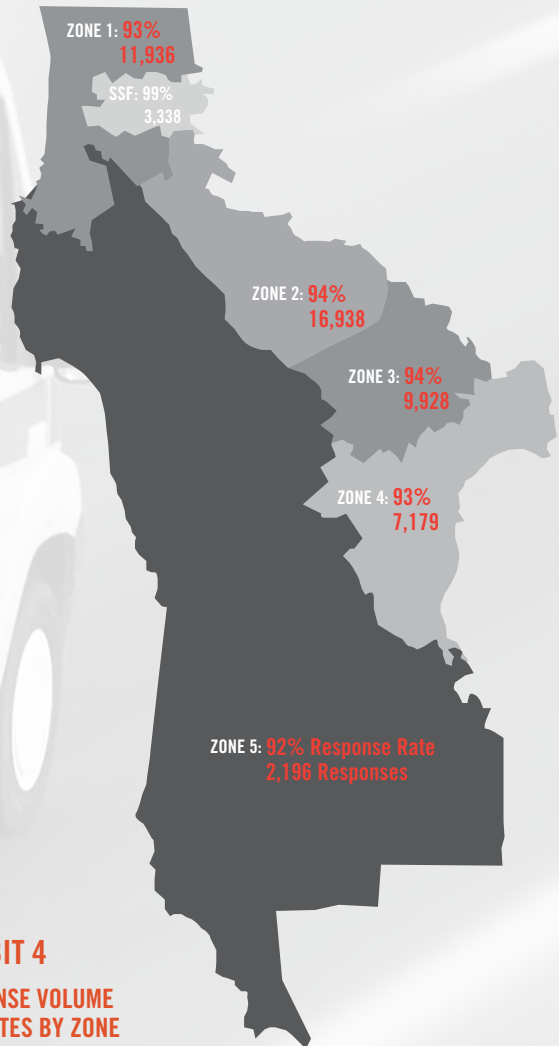


EXHIBIT 4

RESPONSE VOLUME AND RATES BY ZONE

WHY PEOPLE NEED EMS CARE

PRIMARY IMPRESSIONS

The EMS Agency develops treatment protocols for the various medical conditions paramedics respond to in the field and trains paramedics in these protocols to ensure all patients get the best care.

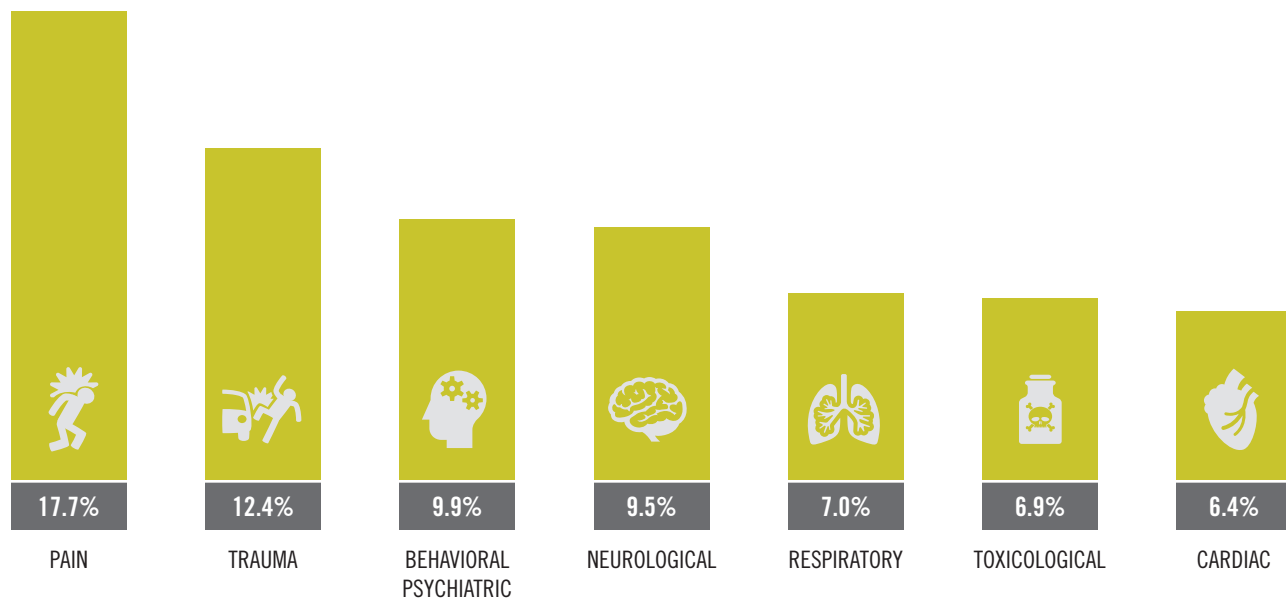


EXHIBIT 5

TOP PRIMARY IMPRESSION CATEGORIES AS A PERCENT OF ALL PRIMARY IMPRESSIONS, 2015

WHERE THEY GO

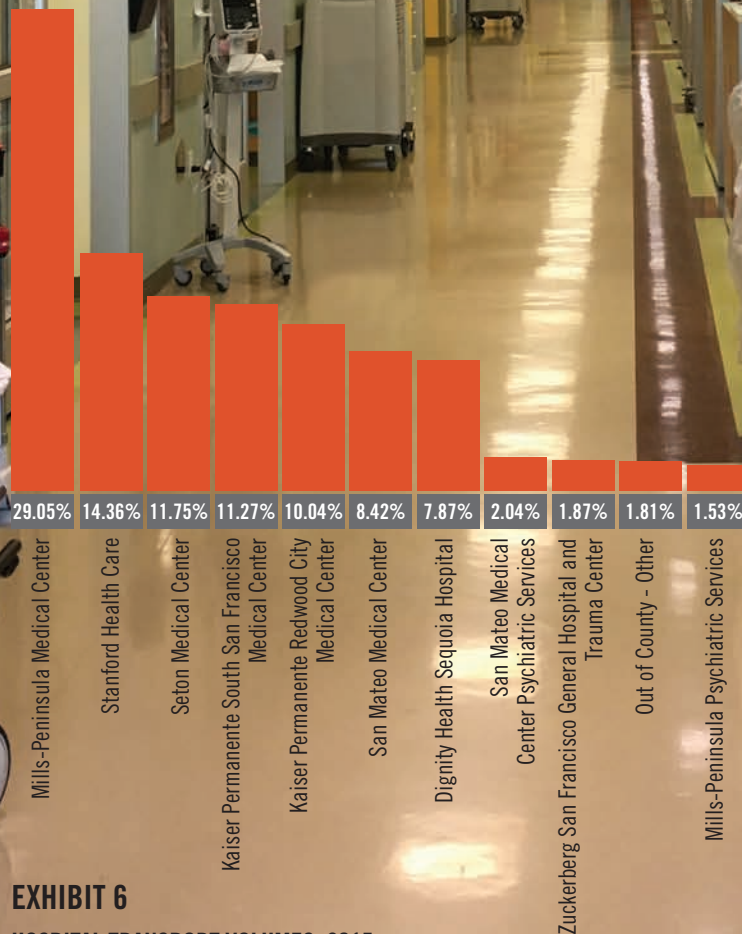


EXHIBIT 6
HOSPITAL TRANSPORT VOLUMES, 2015

9-1-1 RECEIVING CENTERS

In San Mateo County, patients may request the ambulance to transport them to the hospital of their choice, unless their condition warrants going to a specialty care hospital for ST segment elevated myocardial infarction (STEMI), stroke, trauma, or labor and delivery. Otherwise, paramedics try to keep the patient in their “medical home” or take them to the closest facility.

CARDIAC CARE

CARDIAC DISEASE IS THE LEADING CAUSE OF DEATH IN THE UNITED STATES. Many risk factors—such as high blood pressure, high cholesterol, diabetes, being overweight, and smoking—can lead to heart disease, which may result in a heart attack or myocardial infarction. San Mateo County has specialty care programs related to best practices for cardiac care.



OUTREACH CAMPAIGN

EMS launched an outreach campaign to educate the public on the symptoms of a heart attack and the importance of calling 9-1-1 in February 2015, timed to coincide with American Heart Month.

The campaign garnered 33 million views across many channels to help reach a diverse audience, including:

- Direct community outreach to 24,000 local older adults
 - Distributing heart magnets and training staff at 34 local nonprofits
 - Second Harvest Brown Bags
 - Senior meals at San Mateo Senior Center
 - Fair Oaks Health Center community event
 - Meals on Wheels
 - In-Home Supportive Services patients
 - Bookmarks in libraries
 - Magnet giveaway at Millbrae BART
 - Silver Dragon preparedness bags
- Billboards
- SamTrans and Caltrain placards
- Movie theater advertising
- Social media and web outreach
- Local media coverage

STEMI SYSTEM

THE HEART MUSCLE NEEDS OXYGEN TO FUNCTION. In a heart attack, the blood flow that brings oxygen to the heart is cut off or greatly diminished. STEMI is the most serious form of heart attack. Think of a STEMI as a blood clot in your heart—you can't shock the blockage away with CPR or an automated external defibrillator (AED), you need to get to a designated STEMI hospital right away for definitive treatment.

With STEMI patients, the best chance of survival with the least amount of residual damage occurs when symptoms are recognized early and patients are quickly brought to a STEMI receiving facility specially equipped to treat this type of heart attack. As shown in Exhibit 7, patients who call 9-1-1 at the first sign of a heart attack, have their STEMI detected by a 9-1-1 ALS ambulance and go directly to a STEMI receiving center get lifesaving care faster when every second counts.

The national standard door-to-device time for a STEMI receiving facility is 90 minutes. In 2015, San Mateo County's STEMI receiving facilities average 84 minutes, as shown in Exhibit 8.

San Mateo County has five designated STEMI center hospitals and they received 98% of the county's 172 STEMI alerts in 2015, as illustrated in Exhibit 9.

Time is muscle and when paramedics recognize the signs of a STEMI with clinical symptoms or on the EKG, they are able to transmit the 12-lead EKG to the receiving hospital. This transmission expedites getting the patient to the cardiac catheterization lab quickly with a goal of restoring perfusion and function to the heart as soon as possible.

STEMI PATIENTS WHO CALL 9-1-1 GET LIFESAVING CARE FASTER



EXHIBIT 7

SAN MATEO COUNTY STEMI SYSTEM, AVERAGE TIME FOR DOOR TO STEMI RECEIVING CENTER, 2015



EXHIBIT 9

AMBULANCE STEMI ALERTS WITH STEMI RECEIVING CENTER TRANSPORT DESTINATION, SAN MATEO COUNTY, 2015

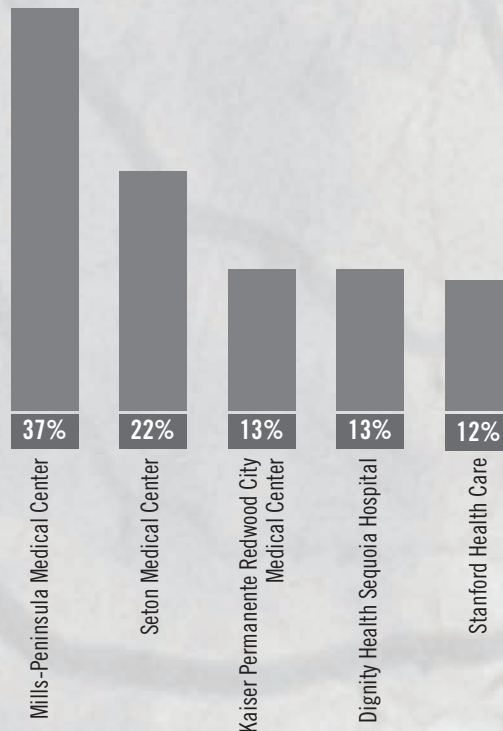
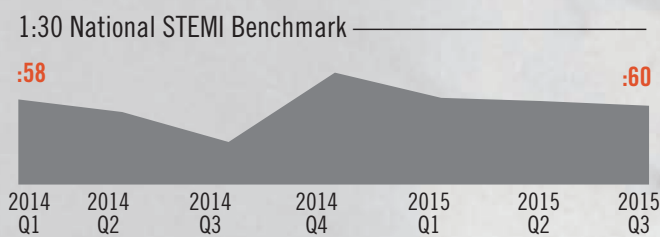


EXHIBIT 8

MEDIAN DOOR-TO-DEVICE TIMES FOR STEMI PATIENTS DETECTED BY 9-1-1 AMBULANCE WITH TRANSPORT TO STEMI RECOVERY CENTER 2014Q1 - 2015Q3



CARDIAC ARREST

SADLY, EVERY YEAR, MORE THAN 300,000 PEOPLE DIE OF SUDDEN CARDIAC ARRESTS. Sudden cardiac arrests can happen to anyone at any time. Every minute a person having a sudden cardiac event that results in cardiac arrest waits for CPR, his or her chance of survival drops by up to 10%.

- Studies show that patients who receive high-quality CPR and early defibrillation have a much greater chance of survival.
- San Mateo County has launched two new programs to help identify and treat cardiac arrest patients: PulsePoint and high-performance CPR.

PULSEPOINT

PulsePoint—a free mobile app that alerts registered CPR-trained users of a cardiac arrest victim in a public place in their immediate vicinity. Users can then start CPR in the critical minutes before emergency teams arrive.

CPR- and hands-only-CPR-trained residents who download the PulsePoint app can choose to be notified of nearby cardiac emergencies in public locations so they can respond and start CPR right away. The PulsePoint app also includes information on the closest AED.

California law requires individuals or organizations purchasing an AED notify their local EMS Agency. This is so that we will know where AEDs are placed to notify public safety providers. Owners may register their device, and provide additional placement details by completing the Public Access Defibrillation form at smchealth.org/EMS/AED.

PulsePoint is connected to local emergency response systems, so by the time the app notifies nearby bystanders, an ambulance is already on the way. For more information about PulsePoint, visit pulsepoint.org.



HIGH-PERFORMANCE CPR

Although firefighters and paramedics have been doing CPR for years, this choreographed way of doing CPR with defined roles helps keep the focus on compressions and has proven to be beneficial in saving more lives. All San Mateo County prehospital providers are undergoing training on high-performance CPR, including ongoing training throughout the year as well as individual and crew feedback after doing CPR.



CARDIAC ARREST REGISTRY TO ENHANCE SURVIVAL

San Mateo County started participating in CARES in 2015. CARES is a collaborative effort between the Centers for Disease Control and Prevention (CDC), the American Heart Association, and Emory University. After a cardiac arrest patient is transported to a local hospital, the EMS provider and hospital input the answers to a few simple questions into the registry. The reporting process is HIPAA compliant and gives us an opportunity to compare local patient outcomes against national outcomes.

The goal of CARES is to improve survival from sudden cardiac death for out-of-hospital cardiac arrest. Identifying who is affected and when and where the cardiac arrest occurs can help direct prevention efforts and make system changes. San Mateo County data will be benchmarked against other counties, which will help us improve performance.



CARDIAC ARRESTS FACTS IN 2015

184

67% MALE

33% FEMALE

MEAN AGE OF 65

35% INITIALLY IN A SHOCKABLE RHYTHM

illustrating the need for AEDs in the community

47% OF THE TIME, BYSTANDERS WERE ON SCENE



The implementation of PulsePoint will increase opportunities for bystander CPR and community-based AED. San Mateo County's hospital survival to discharge was 29%, which is lower than the national survival rate of 33%. Factors such as age and chronic illnesses influence this number. Our goal with the implementation of high-performance CPR and PulsePoint is to improve survival rates for San Mateo County.

STROKE

STROKE IS A LEADING CAUSE OF DEATH NATIONALLY. The CDC reports one person dies of stroke every four minutes in the United States. Patients who survive stroke are often left with life-altering disabilities. EMS transported 692 patients with signs and symptoms of stroke to one of the county's stroke centers in 2015.

San Mateo County has a well-established, evidenced-based stroke triage and patient destination system designed to quickly deliver patients to the most appropriate hospital for definitive care. Six hospitals serve San Mateo County patients as primary stroke centers, as illustrated in Exhibit 10.

The tiered system allows patients to receive assessment and treatment at either a primary or comprehensive center, depending on the time of symptom onset and the type of stroke.

Additionally, San Mateo County has led the way in designing a system that facilitates acute patient transfer from a community hospital or a primary stroke center to a comprehensive center by creating a critical care transport ambulance with a paramedic and hospital staff.

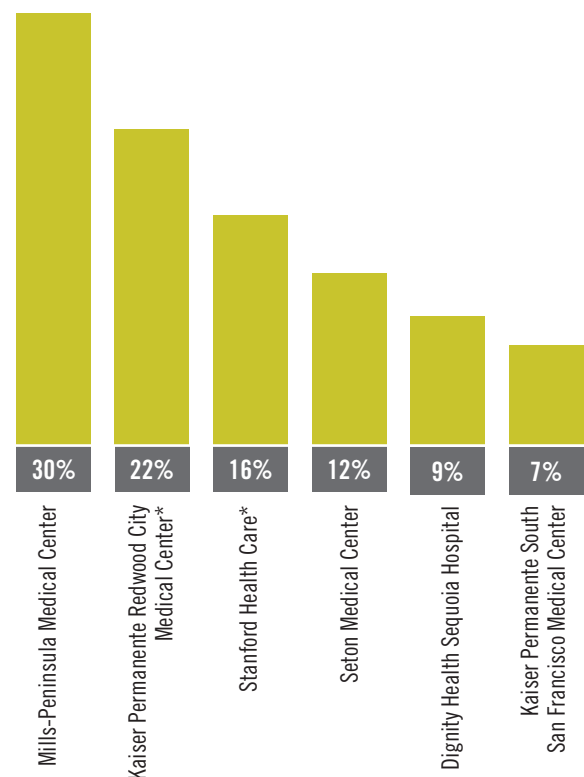
San Mateo County's Stroke System Committee is made up of physicians, stroke coordinator nurses, and EMS Agency members who participate in the stroke system all working together to improve quality. The committee reviews care and makes recommendations to the EMS Medical Director on best practices for stroke care.

A MATTER OF TIME

EMS holds its annual stroke conference, A Matter of Time, for prehospital, nurses, occupational therapists, physical therapists and other healthcare professionals involved in caring for stroke victims. The 2015 conference was on October 29 and drew 135 attendees.

EXHIBIT 10

AMBULANCE STROKE ALERTS WITH PRIMARY STROKE CENTER TRANSPORT DESTINATION, SAN MATEO COUNTY, 2015



* Comprehensive Stroke Center



NATIONAL STROKE DAY

EMS also helps increase public awareness of stroke symptoms and what to do on National Stroke Day, an annual collaborative event coordinated by Pacific Stroke Association that brings together their volunteers, stroke centers, AMR, JPA, and EMS to pass out FAST (for face, arms, speech, and time stroke symptoms) brochures at local BART and Caltrain stations. At the May 5, 2015 event, in just two hours, over 6,000 brochures were distributed—a 40% increase over 2014 outreach efforts.

STROKE IS AN EMERGENCY
 ACT **FAST** CALL 911



FACE
 Look for an uneven smile

ARM
 Check if one arm is weak

SPEECH
 Listen for slurred speech

TIME
 Call 911 right away

Any one of these signs could mean a stroke.

San Mateo County Takes Stroke Seriously!
 For information about stroke risk factors, stroke prevention and treatment please contact Pacific Stroke Association at 650-565-9465

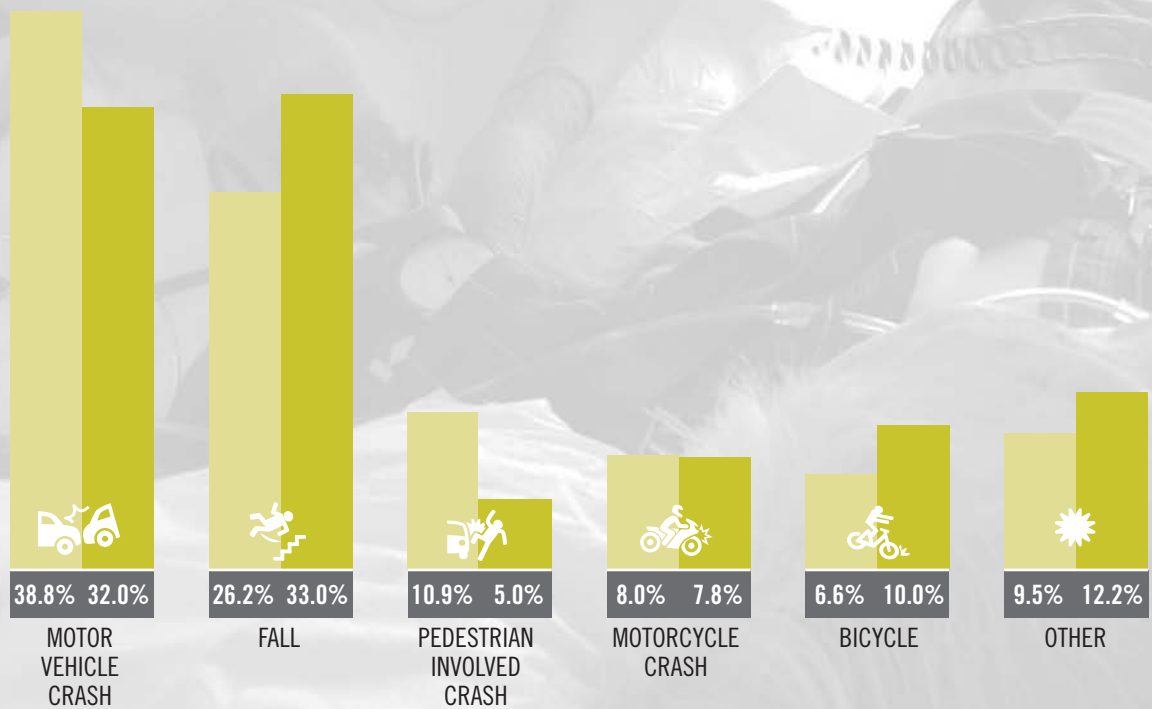
TRAUMA

TRAUMA IS THE LEADING CAUSE OF DEATH FOR AMERICANS AGE 1 TO 46.

In 1998, San Mateo County established its trauma system to ensure that seriously injured patients have access to quality specialized trauma care. To meet that goal, the County has contracts with the established trauma services at San Francisco General Hospital and Stanford Health Care, both designated as level 1 trauma centers, to care for our patients with severe, life threatening or potentially life threatening injuries. Exhibit 11 shows the leading causes of injuries for San Mateo County patients transported to level 1 trauma centers.

Not all injured patients require transport to a trauma center—patients with minor and less severe injuries as determined by San Mateo County EMS providers are transported to one of our local emergency departments.

EXHIBIT 11
LEADING MECHANISM OF INJURY FOR
SAN MATEO COUNTY PATIENTS TRANSPORTED
FOR TRAUMA CARE, 2014-15



ZUCKERBERG SAN FRANCISCO GENERAL HOSPITAL AND TRAUMA CENTER ■
 STANFORD HEALTH CARE ■

ADDRESSING THE LEADING CAUSES OF INJURIES

MOTOR VEHICLE DEATHS

Nationally, motor vehicle deaths increased 8% from 2014 to 2015—the largest increase in over 50 years, according to the National Highway Traffic Safety Administration. The jump is attributed to an increase in driving because gas is less expensive, more commuters on the road as the economy has been steadily adding more jobs, and increasingly distracted drivers due to cell phones and other electronic devices.

We're working to address this issue and decrease injury and death through several efforts:

CHILD PASSENGER SAFETY PROGRAM

California Law requires that children under eight must be properly buckled into a car or booster seat in the back seat. To help protect all children, EMS has partnered with the San Mateo County Sheriff's Office to provide around 100 car and booster seats to low-income children every year.

DISTRACTED TEEN DRIVING PROGRAM

Motor vehicle crashes are the leading cause of death for U.S. teens. The CDC estimates that six teens ages 16-19 die every day from motor vehicle injuries.

In 2013, California Safe Teen Driving Coalition identified San Mateo County as one of the top 20 counties in the state with a high-incidence of teen-related crashes and invited the San Mateo County EMS Injury Prevention Program to join their efforts to address the issue.

Since then, EMS has collaborated with Stanford Healthcare's Trauma Program to address distracted teen driving by promoting Impact Teen Drivers, an evidence-based program at local high schools. In 2015, 291 students from three high schools participated in a survey that looked at teens' beliefs and behaviors concerning distracted driving. The survey revealed that more teens use a cell phone and perform manual tasks while driving if their parents talk on the phone and drive and that teens might not use seat belts as passengers if their peers use cell phones while driving.

As a result of these findings, we're continuing to focus injury prevention efforts on implementing education programs to address distracted driving at local high schools and including parents in the dialogue.

THINK FIRST PROGRAM

Over 200 students at Mills High School participate in the EMS-sponsored Think First Program every year. The program discusses high-risk behaviors of young adults that can lead to lifelong spinal cord injuries.

FIGHTING FALLS

San Mateo County can expect to see a 72% overall increase in the number of older adults living in the County by 2030.

Nearly a third of adults 65 years and older experience a fall each year. For these older adults, the prospect of falling represents not just a potential injury and hospitalization, but also loss of confidence, independence and possibly an early death.

In 2015, EMS received Measure A funding to implement Stepping On Older Adult Fall Prevention Workshops. This 7-week evidence-based program was developed in Australia and has been shown to reduce falls by 50% and build confidence in older adults.

EMS is an active participant in the San Mateo County Fall Prevention Task Force. New in 2015, the Task Force teamed with Habitat for Humanity to remodel seniors' homes to help fight falls.



MEASURE A 2013-2023
**LOCALFUNDS
LOCALNEEDS**
WWW.SMCGOV.ORG



CARING FOR OUR YOUNGEST RESIDENTS

PEDIATRIC EMERGENCIES

IN 2015, LOCAL 9-1-1 WAS CONTACTED 1,164 TIMES FOR A PEDIATRIC-RELATED EMERGENCY, defined as an emergency in a patient under 15 years old. Exhibit 12 shows the top five reasons pediatric patients receive EMS care.

All San Mateo County paramedics are required to have specialized training in handling pediatric emergencies and have back-up from emergency department physicians at the Pediatric Base Hospital at Stanford Health Care to ensure that our youngest and most vulnerable patients receive proper care in the prehospital setting.

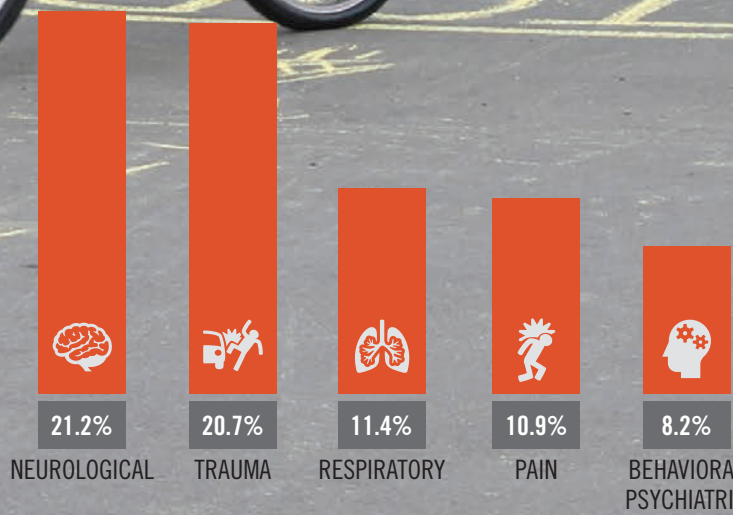


EXHIBIT 12
TOP FIVE PRIMARY IMPRESSIONS
FOR PEDIATRIC PATIENTS, 2015
(PERCENT OF TOTAL IMPRESSIONS)

INITIATIVES AND PROGRAMS

QUALITY IMPROVEMENT AND PATIENT SAFETY

EMS participates in a number of committees to help us continually deliver evidenced-based, high quality care. Their goals are to provide and oversee peer-driven performance improvement from a system standpoint, monitor trends, and make system improvement recommendations. Recent work includes using video equipment for advanced airways, implementing a stroke assessment tool and high- performance CPR, and developing clinical documentation to drive performance improvement.

Using video laryngoscopes with intubation with a device called Vividtrac has shown to increase success rates from 65% to 78%. Vividtrac has proved to be an improvement over direct laryngoscopes in three ways: improved success rates, chest compressions without pause, and confirmation can be confirmed definitively.

We conducted a trial study using a locally designed stroke assessment tool, San Mateo Assessment Risk Tool for Stroke (SMARTS). This study attempted to improve prehospital identification of stroke patients when compared to the usual prehospital tool, called the Cincinnati Prehospital Stroke Scale (CPSS). We found that filling out the SMARTS form improved both CPSS and SMARTS prehospital identification of stroke. When a SMARTS form was not filled out, there was no difference in CPSS before or during the study. Using some form of structured assessment tool clearly improved EMS personnel's ability to identify stroke patients.

JANUARY 2013

JANUARY 2014

JANUARY 2015

DECEMBER 2015

EXHIBIT 13

PSYCHIATRIC EMERGENCY
9-1-1 PATIENT TRANSPORTS
JANUARY 2013-DECEMBER 2015,
3 MONTH MOVING AVERAGE

190

270

THE HEALTH SYSTEM SMART CARE SERVICE FOR BEHAVIORAL/PSYCH PATIENTS

The San Mateo County Mental Health Assessment and Referral Team (SMART) program, funded in part by Measure A, dispatches specially trained paramedics to respond to people having behavioral health crises in a way that best meets their needs. This SMART paramedic performs a mental health assessment and can place a 5150 hold if needed and transport the client to psychiatric emergency services, or, in consultation with County staff, arrange for other services to meet the client's needs. This important program helps people having behavioral health crises get the help they need.

The system includes two SMART vehicles staffed during peak hours (7:00 am - 9:00 pm) seven days per week with SMART paramedics who have successfully completed a special paramedic training program.

The San Mateo County Health System established a performance benchmark that SMART respond to 80% of all appropriate calls. The SMART program is currently successful in meeting its goals, responding to 81% of all appropriate calls in 2014 and 2015 even as SMART calls have increased during that time (see Exhibit 13 above). For more information about this program, visit smchealth.org/mh911.



MEASURE A 2013-2023
LOCAL FUNDS
LOCAL NEEDS
WWW.SMCGOV.ORG



EMERGENCY PREPAREDNESS

SAN MATEO COUNTY MULTI-CASUALTY INCIDENT (MCI) RESPONSE PLAN

With help from AMR, Dispatch, Fire and the San Francisco International Airport Fire Airport Division, the EMS Agency spent 2014 updating the plan with best practices from previous MCIs and incorporating the mutual aid structure to better match FireScope and the California Department of Public Health and Medical Emergency Operations Manual (EOM). The focus for 2015: training the EMS system on the new plan before implementation.

The MCI Plan represents the best of EMS as it is a culmination of EMS system partners working collaboratively for the best of the community and it's a proven plan that has helped in the success of small MCIs to significant events like the 2010 San Bruno Gas Pipeline Explosion and international events like the 2013 Asiana Airlines Flight 214 Plane Crash at San Francisco International Airport.





VULNERABLE POPULATIONS

During emergencies, providing vulnerable populations, such as older adults, medically frail people, and people with access and functional needs (PAFN), with the care they need is a top priority. Through specific programs within the Health System, we are able to gather information about our most vulnerable residents to better assist them in times of need.

For instance, when there is a disaster or emergency, the Health Emergency Preparedness (HEP) Unit was able to develop a database of the county's vulnerable populations that allows the Health System to prioritize and map locations of vulnerable clients and provides the Health System the ability to monitor and quickly provide assistance to vulnerable clients depending on the emergency type. The vulnerable populations database is made possible with the assistance of San Mateo County's Aging and Adult Services, Behavioral Health and Recovery Services, the Health Plan of San Mateo (HPSM), the Ombudsman and the California Department of Licensing.

Additionally, with collaboration from local pharmacies and the Health Plan of San Mateo, the Health System's emergency preparedness program is able to provide or assist with prescription replacement for clients who may have lost their medications during an emergency.



2015-2016 EMS/HEP ACTIVITIES & EVENTS

FEBRUARY 2015

OPERATION COHESIVE CAPABILITY FUNCTIONAL EXERCISE

The scenario for this exercise was a sarin gas attack at the South San Francisco BART station. San Mateo County Office of Emergency Services (OES) activated their Emergency Operations Center (EOC) and the Med/Health Branch was staffed by EMS members. Participating San Mateo County hospitals activated their command centers and together EMS and the hospitals exercised simulated patient movement, medical surge, situation reporting, resource requesting, and interoperable communications with the Med/Health Branch.

APRIL 2015

SILVER DRAGON FULL SCALE EXERCISE

The Silver Dragon Exercise started nearly 10 years ago in response to the CDC's requirements on Points of Distribution (POD) sites during health emergencies that affect large segments of the population. Rather than pulling the community to POD sites, San Mateo County tested the Health System's ability to push a product to the public with the support of local fire department-managed Community Emergency Response Teams (CERT). With much success, Silver Dragon has become an annual exercise.

Currently, Silver Dragon has more than 20 participating agencies, with representatives from cities, law enforcement, fire, local nonprofits, and other community partners.

The exercise scenario exercised our ability to mitigate collateral damage from a cyber-attack that led to a mass power outage. A major power outage can quickly cause problems for individuals who rely on powered medical equipment, such as home oxygen machines and ventilators, or medical refrigerators to store insulin and other temperature-sensitive items. Using CERT, HEP simulated door-to-door wellness checks of our county's most vulnerable residents.

JUNE 2015

11TH ANNUAL DISASTER PREPAREDNESS DAY

Every year, EMS has assisted the Office of Supervisor Adrienne Tissier and the San Mateo County OES in planning the annual event where members of the first responder community educate, entertain and share their capabilities, programs and response vehicles with the community who receives a half day of disaster preparedness education and, sometimes, training. In addition, EMS helps fire and AMR provide CPR training to hundreds of individuals—from young to old—in a fun, interactive learning environment.

SEPTEMBER 2015

YELLOW COMMAND FUNCTIONAL EXERCISE

In September 2015, EMS/HEP participated in Urban Shield's annual Yellow Command Exercise, which tests the Bay Area's regional response capabilities. The scenario for the 2015 exercise focused on terrorism with multiple explosions at a stadium during a sports game with an eye towards Super Bowl 50, which was hosted in Santa Clara in February 2016. San Mateo County OES activated their EOC and the Med/Health Branch was staffed by EMS staff. For this exercise, AMR participated as an Agency Representative. During this exercise, EMS practiced simulated situation reporting with the region and simulated ambulance mutual aid response to Santa Clara County.

HEALTH EMERGENCY PREPAREDNESS

THE GOAL OF THE HEP UNIT IS TO STRENGTHEN ABILITIES TO RESPOND to all types of public health and medical incidents and build more resilient communities through engaging and coordinating with emergency management, healthcare organizations, fire, law, faith-based and private and community-based partners. In addition to actual events, every year EMS participates in various exercises that reinforce its ability to mitigate, respond and recover from public health and medical emergencies.

SEPTEMBER 2015

SFO ANNUAL AIR CRISIS FULL SCALE EXERCISE

In September, EMS participated in SFO's annual emergency exercise. The 2015 scenario was a moderate earthquake on the San Andreas Fault resulting in a collapse of a terminal and injuring individuals. EMS' role included triage, treatment, transport, identification, and reunification of victims.

OCTOBER 2015

CA GREAT SHAKEOUT

We assisted the County Manager's Office and OES in preparing county staff for this drill. EMS staff assisted with coordination and distribution of emergency "go-bags," which contained emergency essentials, such as flashlights, megaphones, rope, first-aid kits and other useful items during emergencies.

NOVEMBER 2015

STATEWIDE MEDICAL & HEALTH FUNCTIONAL EXERCISE

EMS participated in the Statewide Medical and Health Exercise by staffing the Med/Health and MHOAC branches in the Department Operations Center. The scenario for the 2015 exercise was pandemic influenza. Through EMS' participation in the DOC we were able to exercise situational awareness, resource requesting, HAvBED polling, and medical surge.

2016 ACTIVITIES AND EVENTS

In 2016, HEP celebrated its 10th Silver Dragon Exercise on April 14, 2016. The scenario for this year's exercise was mosquito abatement focusing on Zika virus. Similar to prior years, HEP partnered with local law and fire agencies, fire department-managed CERT teams and other community agencies.

Additionally, with collaboration from OES, HazMat, SWAT, and Terrorism Counter Assault Team (TCAT), EMS-HEP participated in Operation Community Shield on May 11. Through this exercise, participating agencies demonstrated command and control during a terrorist attack.

OUR PARTNERS

THANKS TO OUR PARTNERS that make our world-class, tightly integrated EMS system possible.

- 95th Civil Support Team
- American Medical Response
- American Red Cross
- Bayshore Ambulance
- Belmont, Foster City & San Mateo Fire Department
- CAL FIRE/San Mateo County Fire Department
- California Highway Patrol
- CALSTAR
- Central County Fire Department
- Coastside Fire Protection District
- Colma Fire Protection District
- Community Emergency Response Teams representing San Mateo County cities
- Dignity Health Sequoia Hospital
- Falck
- Kaiser Permanente Redwood City Medical Center
- Kaiser Permanente South San Francisco Medical Center
- Menlo College
- Menlo Park Fire Protection District
- Mills-Peninsula Medical Centers
- North County Fire Authority
- Pacific Gas & Electric
- REACH
- Redwood City & San Carlos Fire Department
- Royal Ambulance-South SF
- Salvation Army
- San Bruno Fire Department
- San Francisco Fire Department Airport Division
- San Francisco International Airport
- San Mateo County Emergency Managers Association
- San Mateo County Fire Chiefs Association
- San Mateo County Fire Chiefs Hazardous Materials Response Team
- San Mateo County Office of Emergency Services
- San Mateo County Police Chiefs Association
- San Mateo County Pre-Hospital Emergency Medical Services Group
- San Mateo County Public Safety Communications
- San Mateo County SWAT
- San Mateo County Terrorism Counter Assault Team
- San Mateo Medical Center
- Seton Medical Center & Seton Coastside
- South San Francisco Fire Department
- Stanford Health Care
- Stanford Life Flight
- United States Coast Guard
- Urban Search & Rescue (Task Force 3)
- verihealth
- Volunteer fire departments (Kings Mountain, La Honda, Loma Mar, Sky Londa, Palomar)
- West Med
- Woodside Fire Protection District
- Zuckerberg San Francisco General Hospital and Trauma Center



SAN MATEO
MEDICAL SERVICES
MEDICS
CAL RESPONSE
EMS
36
32556

SAN MATEO COUNTY
AGENCY MEDICAL
SERVICES
PARAMEDIC
DIAL
911
CAL
24963
American Medical Response

WHEN EVERY SECOND COUNTS

**SAN MATEO COUNTY
EMERGENCY MEDICAL SERVICES**

SYSTEM OVERVIEW

2015-2016

SMCHEALTH.ORG/EMS

