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# SAN JOAQUIN

— COUNTY —

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**Emergency Medical Services Agency**

**Annual Report 2022**

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## EMS Director Executive Summary

The data presented in this report provides a general picture of the volume and types of prehospital medical functions and activities during 2022 and performance trends from previous years.

As the COVID-19 pandemic transitioned to vaccinations and therapeutics, San Joaquin County Emergency Medical Services Agency (SJCEMSA) returned focus to local EMS system evaluation and performance priorities, in-person meetings, trainings, site visits, and other regulatory functions. In August, 2022, SJCEMSA experienced a change in leadership by promoting EMS Coordinator Jared Bagwell to the EMS Director role.

One unforeseen and unintended consequence to a global pandemic was the acceleration of staffing and supply shortages. These conditions continue to threaten the efficiency and effectiveness of the EMS system. To address these challenges head on, in 2022 SJCEMSA initiated planning efforts to develop a paramedic training program in San Joaquin County. The development of this paramedic training program is a prime example of how collaboration between the SJCEMSA, prehospital providers, hospitals, and EMS system stakeholders is essential to the continued success of the EMS system in San Joaquin County.



Jared Bagwell  
EMS Director

## Message from the EMS Medical Director

2022 proved to be a year of recovery for the EMS system in San Joaquin County. Following two years of efforts being focused on COVID-19 response, the EMS system returned to focusing its efforts to prehospital education, patient care, and continuous quality improvement. San Joaquin County EMS system felt the impacts of healthcare provider burnout and continues to evaluate the need for additional services and prioritizing the resiliency of those who serve the communities of San Joaquin County.



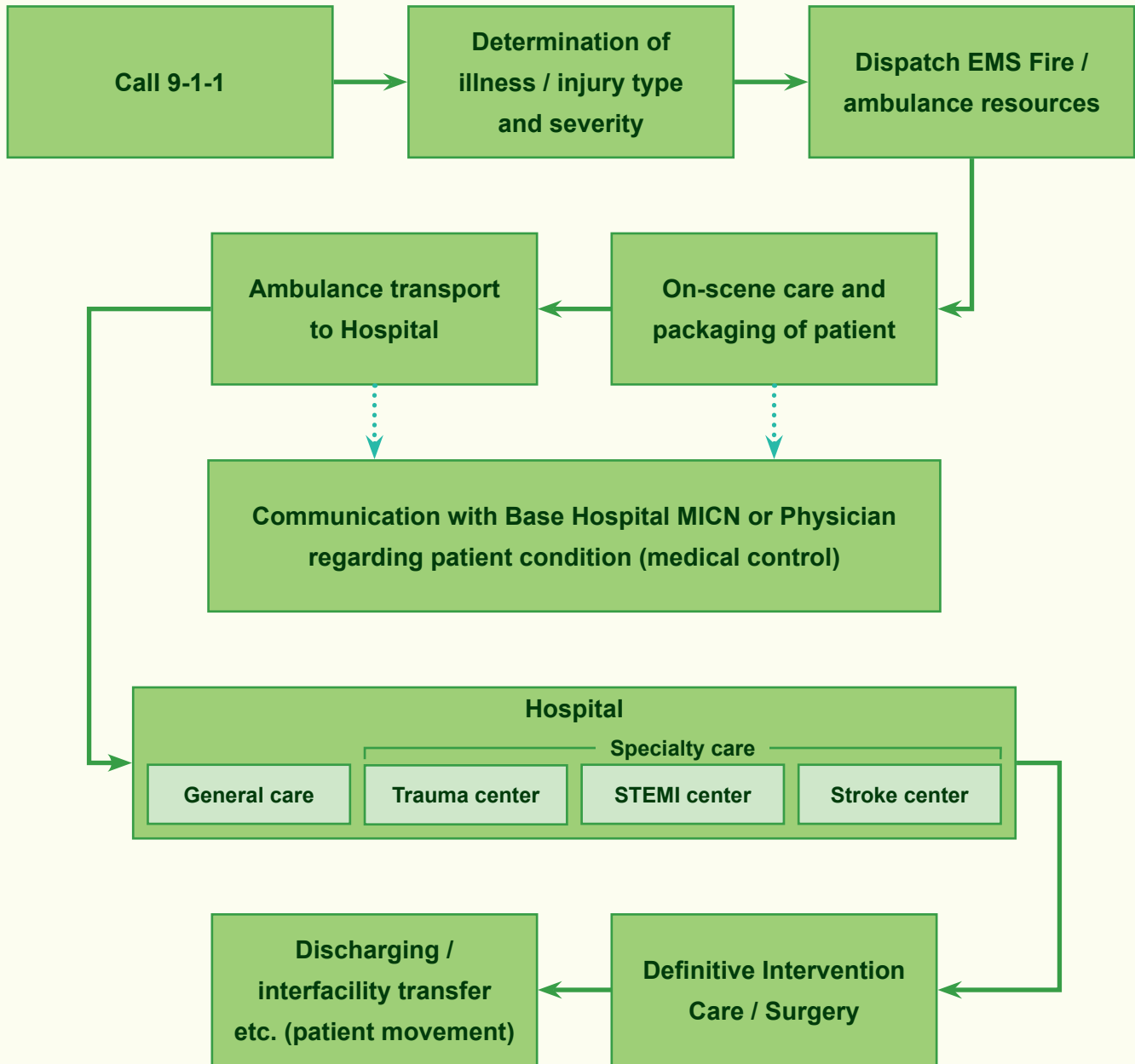
Katherine Shafer, MD  
EMS Medical Director

## EMS System Overview

The SJCEMSA is responsible to “plan, implement, and evaluate” the San Joaquin County emergency medical services system pursuant to Division 2.5 of the California Health and Safety Code. SJCEMSA administers over 60 agreements, permits to operate, and designations. A large part of fulfilling this role consists of collecting and evaluating data for system improvement. The San Joaquin County EMS System is coordinated and evaluated by the SJCEMSA and is comprised of highly trained individuals working in different sectors from different organizations of prehospital healthcare and public health and safety. These organizations and personnel have a shared mission and a vital role of providing a collective continuum of care for people in need. The continuum of care includes the first call to 9-1-1 for emergency medical services and is received by trained Emergency Medical Dispatchers (EMDs) who determine the type and acuity of the call; emergency response of personnel and resources; standardized SJCEMSA Medical Director approved pre-hospital medical treatment protocols; base hospital MICN and physician medical control; transport to EMS designated receiving hospital emergency departments or EMS designated specialty care hospitals; and continued EMS training and education programs. In addition, SJCEMSA permits non-emergency ambulance transport services that can pick up and deliver patients to more appropriate acute or sub-acute settings which adds value to the EMS system. The illustration on the next page demonstrates this patient care continuum.



### Patients' Movement Through EMS System





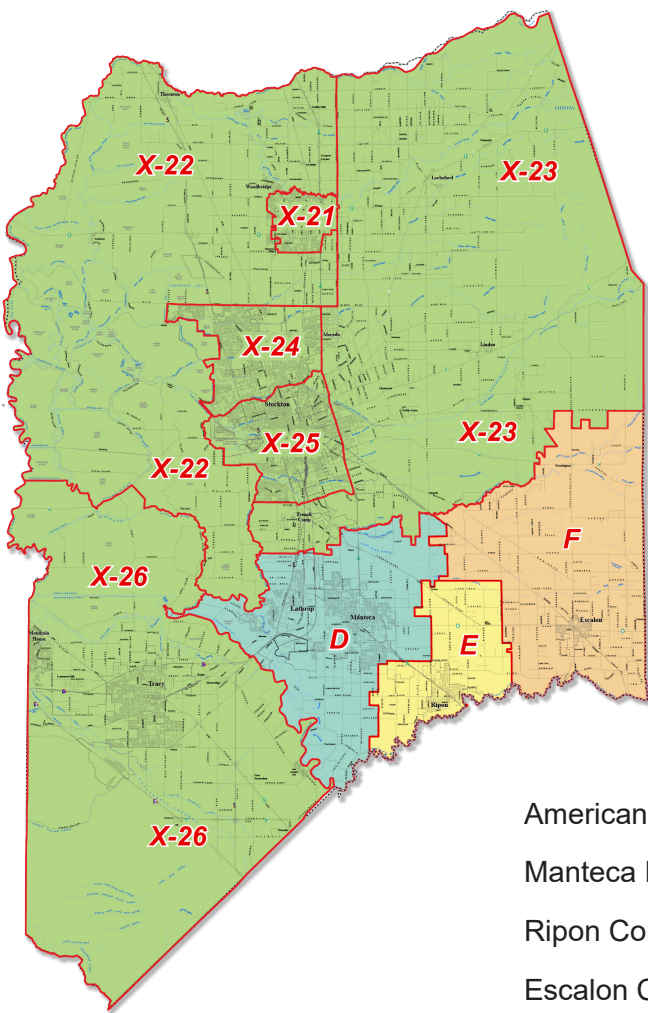
San Joaquin County encompasses nearly 920,000 acres (or about 1,440 square miles), with a population of approximately 789,410 (July 1, 2022, United States Census).

While 80% of the population is concentrated in the seven (7) cities in San Joaquin County, a key consideration during EMS system planning and policy development continues to be residents residing in rural communities.

## EMS System Response

### 9-1-1 Emergency Ambulance Services

9-1-1 emergency ambulance services are provided by four ambulance providers, each of which operates primarily in their respective compliance zones however, also provide mutual aid for each other as needed.



### Emergency Ambulance Compliance Zones

Ambulances are dispatched to emergency calls based on the EMS policy of sending the closest ambulance regardless of response area.

3% of patients are transported by ambulance to hospitals in Sacramento and Stanislaus Counties.

- |                                  |               |
|----------------------------------|---------------|
| American Medical Response        | <b>Zone X</b> |
| Manteca District Ambulance       | <b>Zone D</b> |
| Ripon Consolidated Fire District | <b>Zone E</b> |
| Escalon Community Ambulance      | <b>Zone F</b> |

SJCEMSA evaluates the compliance of each of the emergency ambulance providers and publishes a public report which is distributed on a bimonthly basis and posted on the SJCEMSA website. Performance standards are set under each respective exclusive emergency ambulance service agreement. The agreements establish accountability for meeting specific standards and provide SJCEMSA with complete access to data and information on operational, clinical, and administrative performance.

## Emergency Medical Response (EMR) Non-Transport

The EMS system relies heavily upon the contribution of EMS services provided by fire departments and fire districts. These fire organizations provide basic life support (BLS) care, rescue, and manpower essential to minimizing delays in patient treatment and transport.

Fire departments providing BLS care include:

- Clements Fire District
- Colleagueville Fire District
- Escalon Fire District
- Farmington Fire District
- French Camp-McKinley Fire District
- Lathrop-Manteca Fire District\*
- Liberty Fire District
- Linden Peters Fire District
- Lodi Fire Department
- Manteca Fire Department
- Mokelumne Fire District
- Montezuma Fire District
- Mountain House Fire Department
- Thornton Fire District
- Waterloo Morada Fire District
- Woodbridge Fire District

### Did you know?

EMR non-transport agencies assisted in approximately 75% of ambulance transports.

### Time critical issues:

The ambulance overall average elapsed on-scene time of <13 minutes for major trauma, stroke, and STEMI cardiac cases would not be possible without the assistance provided by EMR personnel.

\* Lathrop-Manteca Fire District has been authorized by SJCEMSA to provide ALS services but has not yet commenced providing service.

In addition to BLS services, Stockton Fire Department and the South San Joaquin County Fire Authority provide ALS services within their service areas.

## Non-Emergency Ambulance Providers

Non-emergency ambulance providers who are permitted by SJCEMSA to provide service in San Joaquin County in 2022 include:

- Active Transport Medical Services
- Amwest Ambulance
- Bay Medic Transportation
- Citizens Medical Response
- Protransport-1
- Norcal Ambulance



These non-emergency ambulance providers facilitate hospital throughput and ease Ambulance Patient Offload Time (APOT) in the emergency departments by transferring patients from acute care facilities to other destinations including other acute care facilities, specialty care facilities, and lower level of care facilities including home. These services provide alternatives for the transport of patients and speed the rate of patient discharges to allow space for new patients entering hospitals via the 911 system.

## Stakeholder Engagement

### EMS Advisory Committee

In November 2022, SJCEMSA formed and held its first EMS Advisory Committee meeting. The EMS Advisory Committee is a multi-disciplinary, stakeholder represented committee established to discuss, review, provide input, and make recommendations to the EMS Medical Director and SJCEMSA on matters related to policy and procedures with the purpose to enhance the delivery and effectiveness of prehospital emergency medical services.



## EMS Staffing and Training

Through the online application portal, SJCEMSA staff processed initial and renewal applications for 377 EMTs, 188 Paramedics, 54 Emergency Medical Dispatchers (EMDs), 33 MICNs, and 8 Paramedic Preceptors in 2022.

### Training and EMS CE Provider Programs

SJCEMSA renewed Bradford College of Nursing's EMT Training program through 10/31/2023. Bradford College of Nursing is the only authorized EMT training program in San Joaquin County. SJCEMSA also conducted several EMS CE Provider audits, ensuring the required program standards are being met.

### Emergency Medical Responder Training

SJCEMSA coordinated an Emergency Medical Responder (EMR) course in June 2022. The thirty-six hours of in-class instruction by SJCEMSA staff was provided during a five-day period that included prerequisite online training and a final examination. Those completing the course met the requirements for initial certification as a San Joaquin County EMR.

### Law Enforcement Narcan Training

The SJCEMSA provided training to the Lathrop Police Department on the use and safety considerations of Narcan (Naloxone) in May 2022 as part of the SJCEMSA's ongoing effort to address the problem of opioid overdoses by providing this training to local law enforcement agencies. According to the CDC, since 2013 there has been a rapid rise in opioid overdose deaths due primarily to synthetic opioids (such as Fentanyl). Narcan quickly reverses the effects of an overdose from opioids and can restore normal breathing within minutes in a person whose breathing has slowed or even stopped.

### COVID-19 Antigen Testing Training

In January 2022, SJCEMSA staff provided training for San Joaquin County Human Resources employees on the use of COVID-19 Antigen Test kits. After instruction, SJCEMSA provided Human Resources with test kits to distribute to county departments as needed.

## EMS Dispatch and Communications

### Establishment of MPDS QI Committee

In November 2022, SJCEMSA held the first Medical Priority Dispatch System Quality Improvement Commit-

tee (MPDS QI Committee) meeting. The MPDS QI Committee is a multi-disciplinary peer review committee established to monitor, review, evaluate, and improve the quality of the performance and care given to callers requesting medical emergency services in San Joaquin County. The MPDS QI Committee provides input and reviews matters related to the performance of MPDS and other related policies and procedures and shall review performance and adherence to standards.

The EMS Policy No. 3400, Med Net Radio Communications Plan was implemented on March 1, 2022 following the county-wide Med-Net radio system upgrade and lists the channels that prehospital personnel must use to communicate with hospitals. This system upgrade (one channel specifically for MCIs and one channel specifically for base hospital) will prevent interruption of field to base hospital communication caused by radio traffic from simultaneous radio call-ins.

## Emergency Medical Dispatch Process

Valley Regional Emergency Communications Center (VRECC) and the Stockton Fire Emergency Communications Division (ECD) are EMD Centers that receive 9-1-1 emergency calls from Public Safety Answering Points (PSAP) such as CHP. The call is briefly interrogated by trained Emergency Medical Dispatchers to determine the nature and severity. Once the call is categorized into one of 34 EMS protocol types (such as “breathing problems” or “fall”) and ranked in one of the six acuity level categories (Alpha, Bravo, etc.), an emergency dispatcher will dispatch the closest appropriate EMR and emergency ambulance units with the call information.

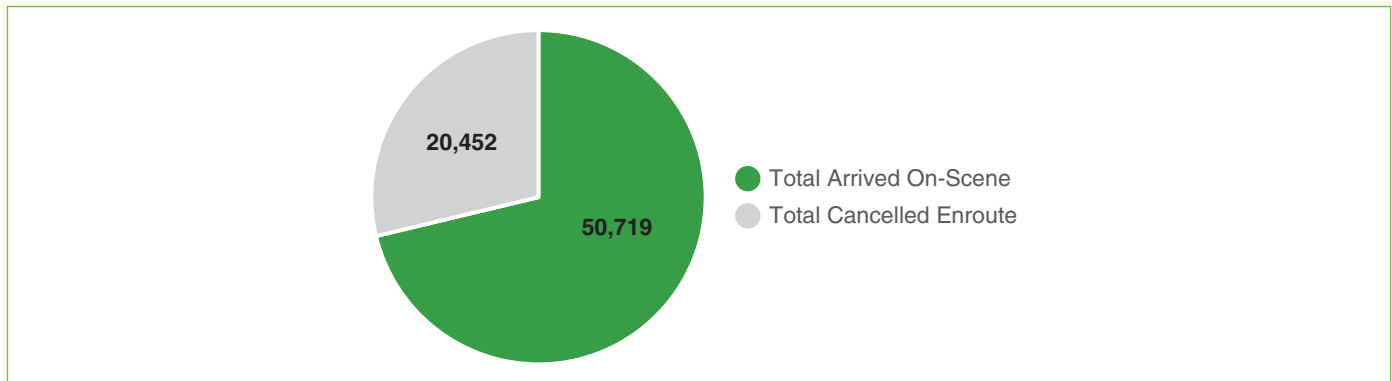
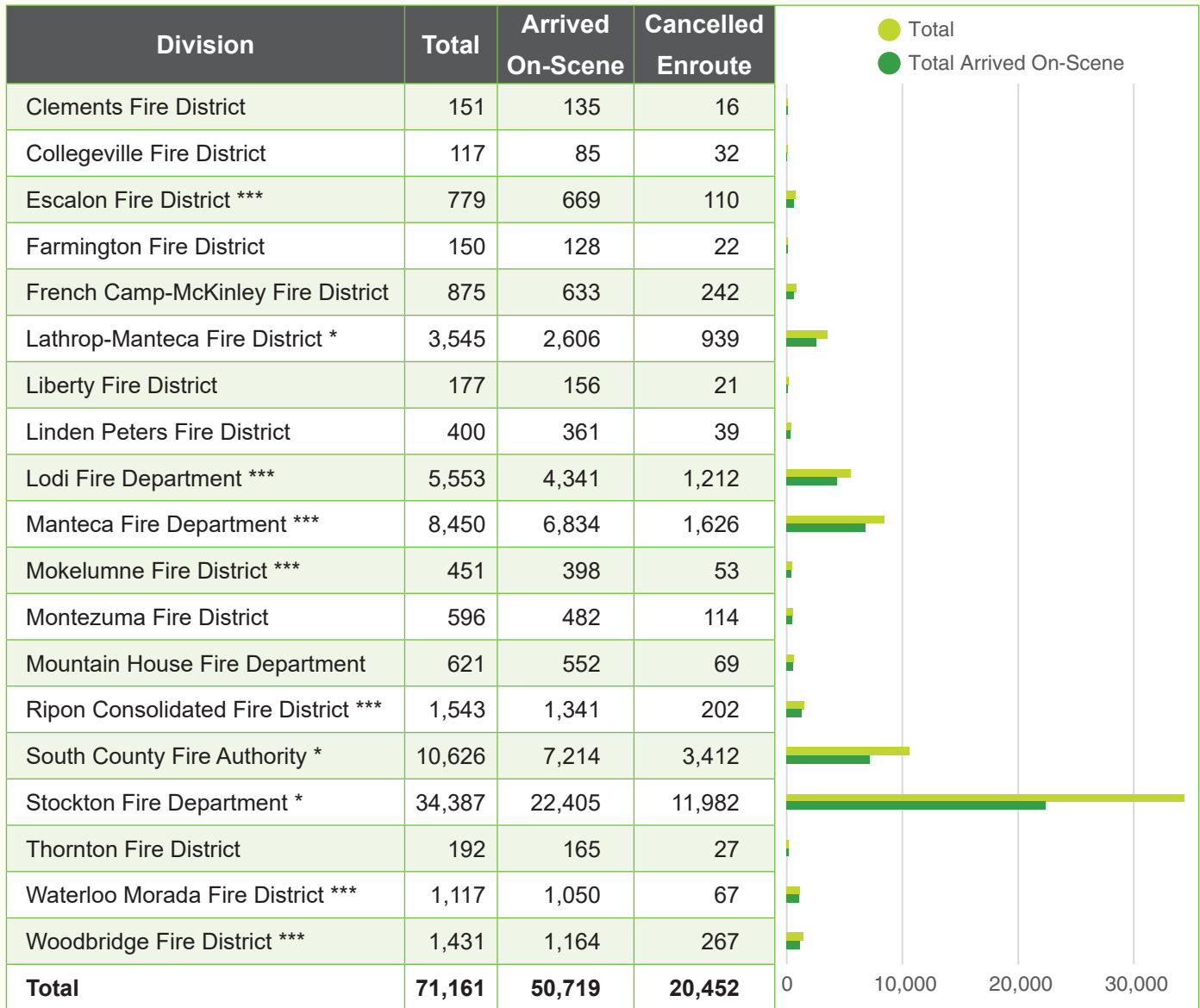
## Response and Transport

A total of 93,106 total ambulance responses to 9-1-1 requests occurred in 2022, resulting in 68,668 ambulance transports of patients to acute care facilities in San Joaquin County, Sacramento County, and Stanislaus County.

### Emergency Ambulance Responses and Transports

Ambulance Provider	Responses	Transports
American Medical Response	78,929	58,810
Manteca District Ambulance	11,184	8,152
Ripon Consolidated Fire District	1,711	894
Escalon Community Ambulance	1,282	812
<b>Total</b>	<b>93,106</b>	<b>68,668</b>

### First Responder Responses in 2022



\* Information provided by Stockton Fire ECD

\*\*\* Information provided by SJCEMSA

## Hospitals and Specialty Care

The SJCEMSA has designated hospitals in San Joaquin County which provide three types of specialty care services: 1. Major trauma patients (San Joaquin General Hospital); 2. Patients that require emergency cardiac catheterization (Dameron Hospital Association & St. Joseph's Medical Center as STEMI Receiving Centers); and 3. Primary Stroke Centers (all 7 SJC hospitals).

### Major Trauma

Major trauma is any injury that has the potential to cause prolonged disability or death. Traumatic injury is the primary cause of death for people ages 1 to 44, regardless of gender, race, or economic status. The SJCEMSA is responsible for assessing, directing, developing, and implementing the county's trauma plan based upon local topography, demographics, population density, available healthcare resources, and funding. The data collected in this program is derived from a hospital-based trauma registry purchased by the SJCEMSA and developed to allow a review of aggregate data to identify variations in care and ultimately result in better treatment and patient care. Patients identified in the prehospital setting as major trauma patients meet criteria established in SJCEMSA policies using an assessment methodology designed to minimize elapsed on-scene times to no more than ten minutes.

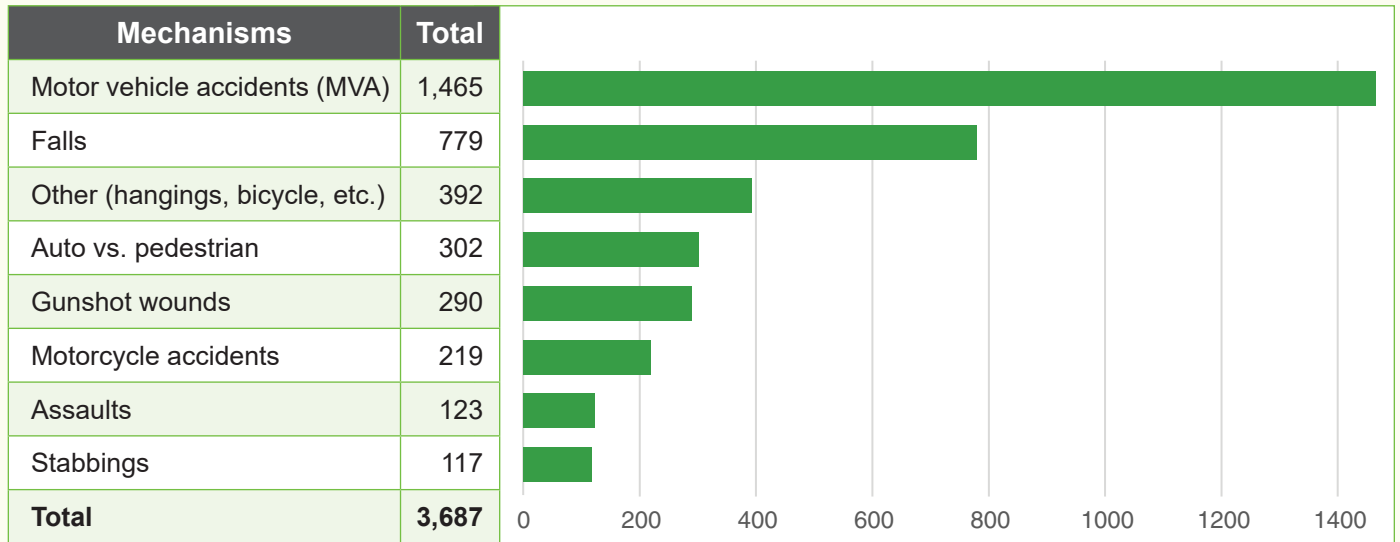
### Trauma Audit Committee

The Trauma Audit Committee (TAC) is an EMS system level multi-disciplinary peer review committee that meets on a quarterly basis. It was established to review selected trauma cases based on audit criteria with the goal of reducing trauma patient morbidity and mortality and improving the provision of care to trauma patients in the EMS system. TAC is a required component of SJCEMSA's approved trauma system plan.

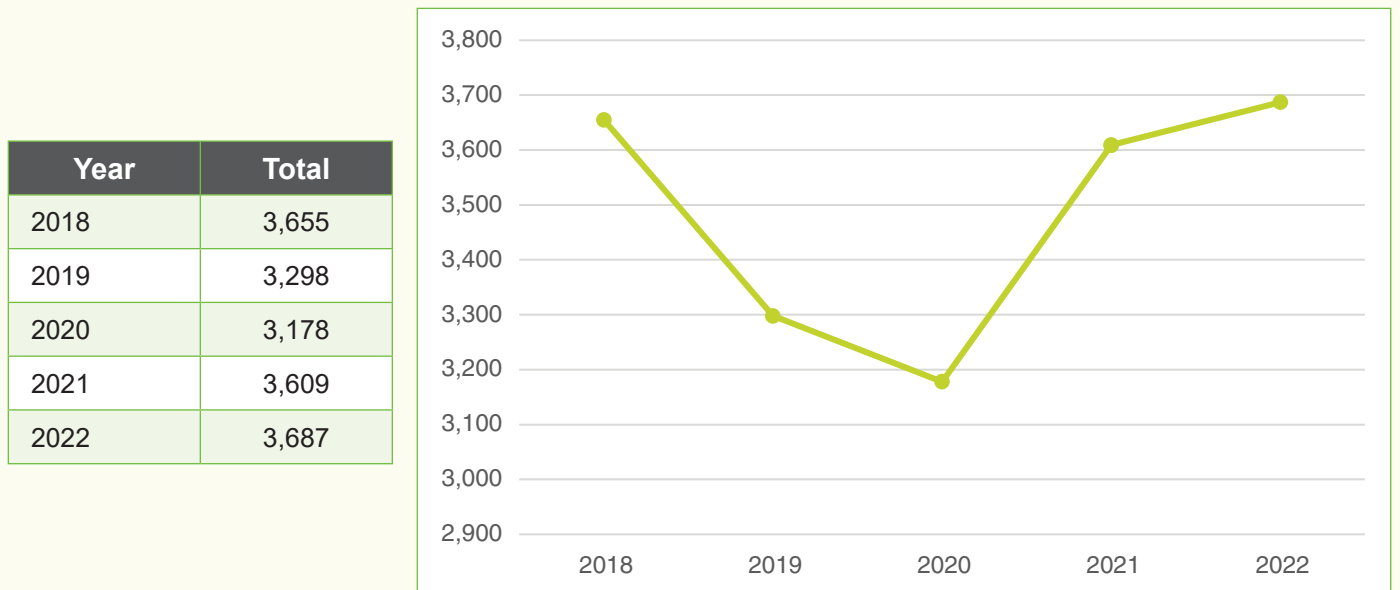
### Major Trauma Data for 2022

Major Trauma	Total
Transfers in (from other hospitals)	463
Total Major Trauma Patients	3,687

### Major Trauma by Mechanism for 2022



### Major Trauma by Year





## Stroke

According to the Centers for Disease Control (CDC), a stroke occurs when something blocks blood supply to part of the brain or when a blood vessel in the brain bursts. A stroke can cause lasting brain damage, long-term disability, or even death. The less time from the onset of an acute stroke to the time a patient receives definitive care in the hospital setting, the better the patient outcome. Definitive care requires the immediate availability of diagnostic imaging tools (CT or MRI).

For this reason, prehospital personnel are trained to rapidly identify and transport suspected stroke patients and to pre-alert the closest stroke center of their impending arrival. This pre-alert or stroke alert process saves precious minutes by alerting key hospital staff and ensuring the availability of necessary diagnostic tools.

San Joaquin County hospitals surpass the American Stroke Association’s (ASA)/American Heart Association (AHA) 60-minute hospital arrival to administration of thrombolytic medication (door to needle) goal, with a 58-minute average across all 7 hospitals.

### Thrombolytic Medication (TPA) Performance in 2022

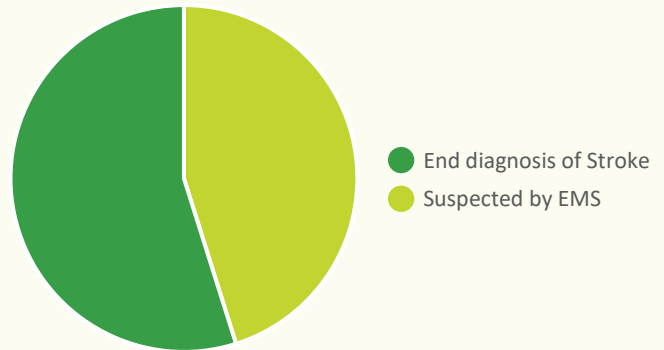
Performance	Average Time
Hospital Performance Door to CT	0:11:07
Hospital Performance Door to TPA	0:58:35
EMS at Patient to TPA	1:22:49

**58:35  
average**

Despite the use of comprehensive stroke criteria to identify stroke patients, the confounding nature of stroke symptoms and the fact that prehospital stroke scales rely heavily upon a patient’s ability to respond to direct questions, many cases of stroke are missed by prehospital personnel. While solutions to resolve this problem remain elusive nation-wide, it is important to note that since all hospitals in San Joaquin County have been designated as primary stroke centers, all stroke patients are quickly transported by ambulance to the most appropriate destination to receive the care that they need.

### Stroke Diagnosis in 2022

Summary	Counts	Percent
Suspected by EMS	265	45.14%
End diagnosis of Stroke	587	-



### STEMI

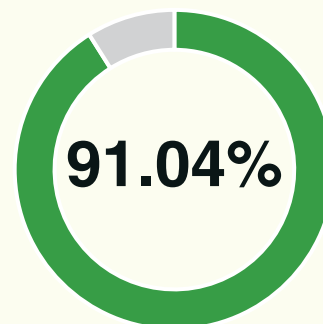
An ST-Elevation Myocardial Infarction (STEMI) is a very serious type of heart attack during which one of the heart’s major arteries (that supplies oxygen and nutrient-rich blood to the heart muscle) is blocked. The two (2) hospitals designated by the SJCEMSA as STEMI receiving centers in San Joaquin County are Dameron Hospital Association and St. Joseph’s Medical Center. These hospitals must submit data to show that they meet minimum criteria. The SJCEMSA analyzes this data by using key metrics pertaining to successful performance in both prehospital and in-hospital setting.

The key in-hospital metric that measures speed and directly correlates to patient survivability is whether patients receive a percutaneous intervention (PCI) within 90 minutes of arrival at the hospital (door to balloon or PCI). The American Heart Association (AHA) has established the goal of having every STEMI receiving center have patients receive a PCI within 90 minutes of arrival at least 75% of the time. As shown below, STEMI receiving centers in San Joaquin County met that goal 91% of the time in 2022.

### Key Measurements of Time to Definitive Care for STEMI Patients

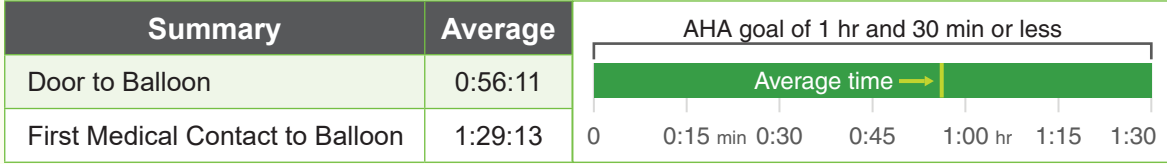
Summary	Success	Total
Door to Balloon ≤ 90 min	61	67

\*AHA Goal > 75%



### 2022 Total STEMI Average Time

#### Door to Balloon Performance

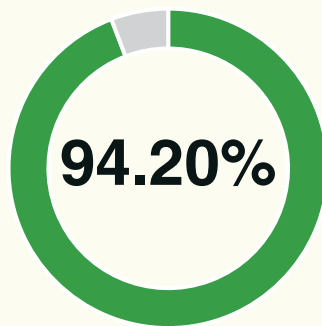


\*AHA Goal > 1:30:00

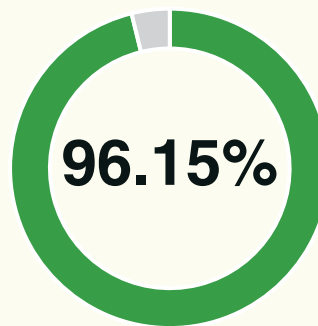
### Prehospital Performance with STEMI Cases in 2022

Summary	Total	Percent
Total number of STEMI alerts transported to SRC	291	-
Number of STEMI cases (confirmed by STEMI Center)	78	26.80%
<b>Performance Metrics for Confirmed Cases</b>		
Cases that received PCI	69	88.46%
Cases with outcome alive	65	94.20%
Prehospital EKG Completed	75	96.15%

PCI Outcome Alive



Completion of EKG



## Disaster Medical Response

SJCEMSA manages the Federal Hospital Preparedness Program (HPP) Grant and chairs the San Joaquin County Area Healthcare Coalition. SJCEMSA personnel taught, facilitated, coordinated, and/or funded the following disaster preparedness training courses:

**4/12 - 4/13**

Modular Emergency Response Radiological Transportation Training

**4/14**

Radiological Training for Hospital Personnel

**8/4**

CHEMPACK – Nerve Agent Antidotes

**8/17**

HAM Cram – Amateur Radio Operators Licensing

**9/6**

Respirator Fit Testing Train-The-Trainer

**9/27**

ICS-300 Intermediate Incident Command System for Expanding Incidents

In addition to courses above, the following disaster preparedness exercises were conducted:

**1/27**

Healthcare Coalition Ham Radio Communications Drill

**4/12**

Burn Surge Annex Tabletop Exercise

**7/28**

Healthcare Coalition Ham Radio Communications Drill

**10/31 - 11/3**

Medical Response and Surge Functional Exercise

SJCEMSA manages more than 650 registered volunteers in San Joaquin Unit of the California Disaster Healthcare Volunteers (DHV), and processes all Disaster Services Workers Volunteers, in accordance with the Title 19 CCR §2570. SJCEMSA also participated in quarterly statewide DHV drills.

SJCEMSA, in conjunction with the San Joaquin Operational Area Emergency Preparedness Committee, developed the Burn Surge Annex to the San Joaquin Operational Area Healthcare Coalition Emergency Operations Plan (EOP). On April 12, 2022, the Burn Surge Annex was evaluated during a tabletop exercise, in conjunction with FEMA Emergency Management Institute.

In November 2022, SJCEMSA started surge planning for the possible rise in Respiratory Syncytial Virus (RSV) and influenza cases. All seven acute care hospitals were polled weekly to provide information regarding their respective ability to expand pediatric capabilities within their facilities.

## 2023 Goals and Beyond

In 2023, SJCEMSA will be working on EMS system assessment and subsequent Emergency Ambulance Service Request for Proposal (RFP) development, centralizing EMS data, and a Paramedic training program.

