



SAN JOAQUIN

— COUNTY —

**Emergency Medical Services Agency
2023 Annual Report**

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EMS Director Executive Summary

2023 was a year of reflection and transition for the San Joaquin County Emergency Medical Services Agency (SJCEMSA) and the San Joaquin County EMS system. SJCEMSA reflected on current and past challenges to find new solutions and to expand collaboration to transition our EMS system to the future. As we transitioned out of a pandemic and into a new normal of staffing shortages, higher costs, higher EMS utilization, and strained resources, SJCEMSA looked to better coordinate, integrate, and utilize EMS system resources by working with our allied partners such as the Office of Emergency Services (OES), Office of the Medical Examiner (OME), Law Enforcement, Public and Mental Health Services, and all stakeholders through the EMS Advisory Committee. SJCEMSA reflected on our current and past performance through better EMS data management and reporting so that we can make better evidence-based decisions with data driven information. In addition, a comprehensive EMS assessment was initiated to review the current state of our EMS system to facilitate a robust plan and emergency ambulance RFP to address these challenges in the years to come. Finally, to assist with our immediate need, SJCEMSA fast tracked a local paramedic training program to address the immediate staffing shortages with efforts to establish our own paramedic training program in 2025 and beyond. All these accomplishments are only possible because of our dedicated SJCEMSA staff and our local EMS system providers, hospitals, EMTs, nurses, physicians, paramedics, and firefighters. I look forward to even more improvements in 2024.



Jared Bagwell
EMS Director

Message from the EMS Medical Director

I am excited to be part of an EMS system that will be looking for ways to improve our delivery of care to San Joaquin County. One of these ways is through a professional EMS assessment that was initiated in 2023. With the valuable input from all stakeholders of our EMS system we will start the process to build upon the great work that we do every day. As illustrated in this annual report, the EMS System in San Joaquin County provides great care to our community. We look forward to expanding on our successes and building on innovating ways to transition to the future of EMS.



Katherine Shafer, MD
EMS Medical Director

Changes in 2023

Engagement and collaboration with San Joaquin County EMS system stakeholders led to several important changes to the EMS System.

A significant increase in the availability of non-emergency ambulance provider services in 2023

These services help reduce emergency ambulance patient off-load times (APOT) by moving patients to non-acute facilities.

New education program for prehospital personnel

SJCEMSA developed and rolled-out an education class for caring of patients with Autism Spectrum Disorder.

New method for coordination between SJCEMSA and hospitals

A “Hospital Engagement Meeting” was created to provide hospital leadership with current and pertinent information on the EMS System to ensure real-time coordination.

Collaboration with the SJC Office of Emergency Services

Enhanced support for all at-risk Medicare beneficiaries living within San Joaquin County during flood evacuations and/or other natural disasters.

Summary of EMS System Components

The EMS System is a continuum of care that begins with a call to 911, the dispatch of fire and/or EMS resources by trained Emergency Medical Dispatchers (EMDs); and care and transport of the patient to a hospital/specialty care center (Trauma Center, Stroke Center, STEMI Center).

San Joaquin County encompasses nearly 920,000 acres (or about 1,440 square miles), with a population of approximately 800,965 (July 1, 2023, 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.

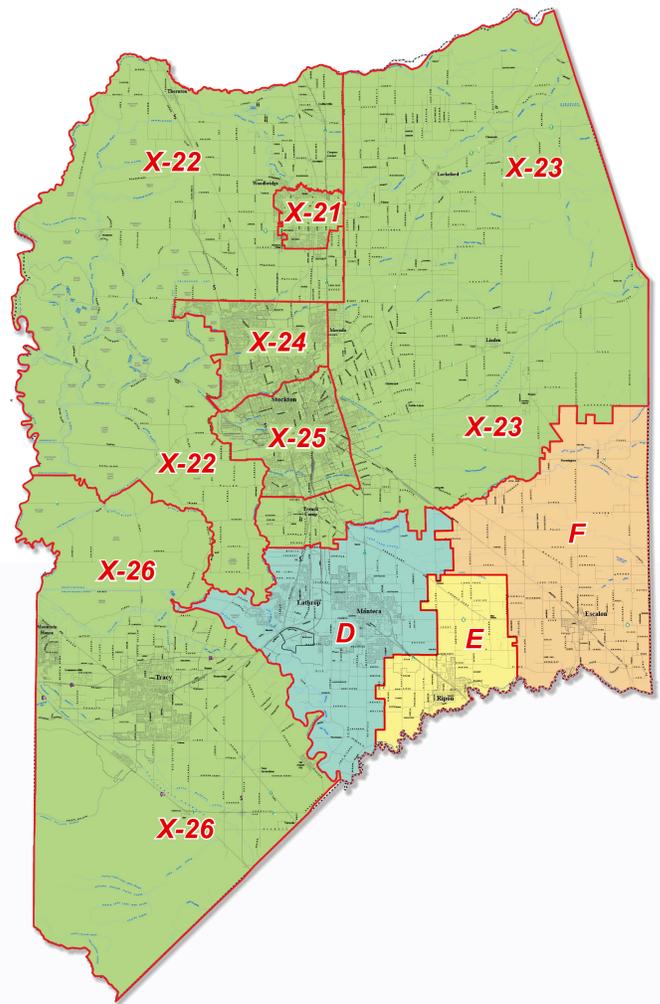
EMS Advisory Committee

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 the San Joaquin County Emergency Medical Services Agency (SJCEMSA) on matters related to policy and procedures to enhance the delivery and effectiveness of prehospital emergency medical services.

Emergency Ambulance Services

San Joaquin County is Divided into Four Exclusive Ambulance Operating Areas for Response to 9-1-1 Calls:

- American Medical Response **Zone X**
- Manteca District Ambulance **Zone D**
- Ripon Consolidated Fire District **Zone E**
- Escalon Community Ambulance **Zone F**



EMS Ambulance System Oversight

SJCEMSA evaluates the performance of the 9-1-1 ALS providers based on requirements set forth in exclusive emergency ambulance service agreements.

SJCEMSA ensures accountability of for 9-1-1 emergency ambulance response through collection and analysis of operational, clinical, and administrative performance.

Emergency Medical Responder (Fire) Services

Non-transport emergency prehospital care is provided by city fire departments and districts.

Basic Life Support Service Provider	Advanced Life Support Service Providers**
Clements Fire District	Defense Logistics Agency
Collegetown Fire District	South San Joaquin County Fire Authority
Escalon Fire District	Stockton Fire Department
Farmington Fire District	<div style="border: 2px solid #00AEEF; padding: 10px; margin: 10px;"> <p>The care provided by EMRs is often “first on-scene” life-saving procedures, patient packaging, and assistance to minimize transport delays. The importance of these services is evident in the excellent elapsed on-scene times for Major Trauma, Stroke, and STEMI patients.</p> </div>
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	

* Lathrop-Manteca Fire District was approved in 2021 by SJCEMSA to provide ALS services but is not yet providing ALS services.

** Lodi Fire Department applied for ALS Authorization.



| Non-Emergency Ambulance Services

Non-emergency ambulance providers must renew their permits to provide basic life support, advanced life support, or specialty care transport services in San Joaquin County.

Non-Emergency Ambulance Provider	Basic Life Support (Two EMTs)	Specialty Care Transport (EMT and RN)	Advanced Life Support (EMT and Paramedic)
Amwest Ambulance	■	■	■
BayMedic Transportation	■	■	<div style="border: 1px solid #0070C0; padding: 5px;"> These non-emergency ambulance providers reduce ambulance patient off-load delays by completing interfacility transports. </div>
Active Transportation Medical Services	■	■	
Norcal Ambulance	■	■	
ProTransport-1	■	■	
Citizen's Medical Response	■		

| Staffing and Training

SJCEMSA staff coordinated, developed, processed, audited, and approved Continuing Education (CE) providers, training and training programs; and ensured that qualified EMTs, paramedics, dispatchers, MICNs, and paramedic preceptors were evaluated through initial and bi-annual re-certification processes.

Certifications Processed in 2023

- EMTs: 440
- Paramedics: 52
- Dispatchers: 51
- MICNs: 34
- Paramedic Preceptors: 46

Emergency Medical Responder Training

SJCEMSA hosted and provided instruction for the fifty-two-hour course in June 2023. This course was offered to all first responders and disaster healthcare volunteers.

EMT Training Program Renewals

- Bradford College of Nursing’s EMT Training program thru October 31, 2027.
- San Joaquin Delta College EMT Training program thru July 31, 2027.

Law Enforcement Narcan Training

In response to the opioid epidemic, SJCEMSA continues to provide training to Law Enforcement on the use and safety considerations for Narcan (Naloxone).

In 2023, law enforcement reported the deployment of Narcan in the field 37 times, a 28% increase compared to 2022.

Autism Spectrum Disorder (ASD) Training

Upon request of EMS personnel, SJCEMSA staff added Autism Spectrum Disorder (ASD) training to the monthly Paramedic Accreditation Orientation and Paramedic Skills Review curriculum in February 2023.

The curriculum addresses possible behaviors, sensory differences, and provides helpful tools for treating and supporting neurodivergent patients.

First Presentation of the SJCEMSA EMS Award of Excellence



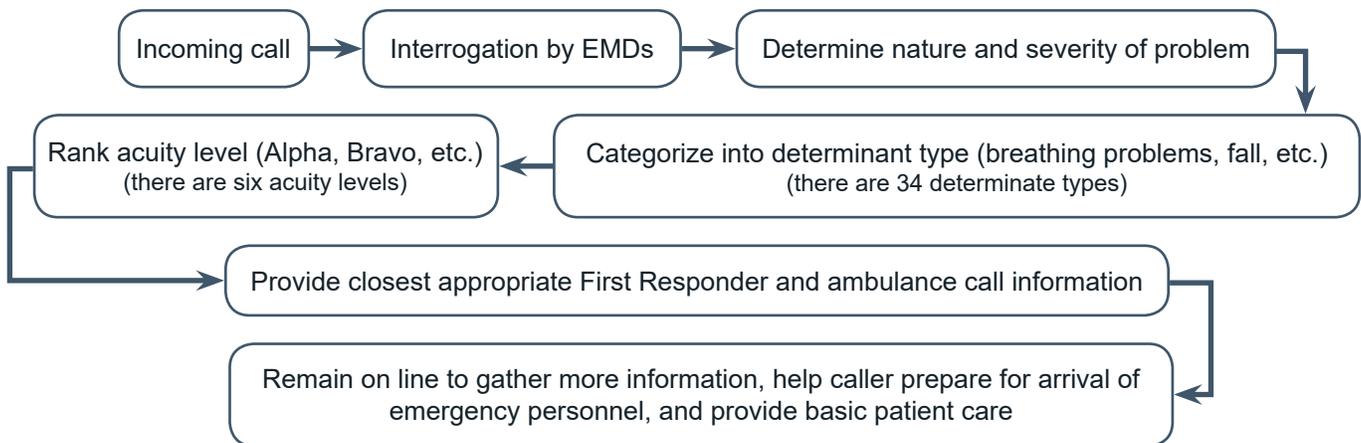
Katrina Garcia was presented with this award for being an outstanding EMS educator and mentor to EMS personnel and their families. Through her efforts, both in the classroom at AMR's training academy and through her Podcast, Ms. Garcia has made positive changes to reduce the stigma related to mental health struggles of EMS personnel.

"Be your biggest field save, break the stigma before it breaks you."
- Katrina Garcia

| Communications

The primary goal of emergency medical communications systems is to ensure that the correct resources are promptly dispatched to emergency calls and for those resources to respond with the degree of haste appropriate to the acuity level of the emergency. In San Joaquin County, this function is provided by the Valley Regional Emergency Communications Center (VRECC), and Stockton Fire Emergency Communications Division (ECD). The system adopted to fulfill this function is called the Medical Priority Dispatch System (MPDS).

The MPDS Process Explained



Trained Emergency Medical Dispatchers (EMDs) are an essential part of the EMS System's continuum of care and quickly gather the minimum necessary information to get the caller emergency aid as fast as possible.

Establishment of Multi-disciplinary Peer Review Quality Improvement Committee

The MPDS QI Committee is a multi-disciplinary peer review committee that was established to monitor, review, and evaluate the emergency medical dispatch system to improve the quality and care given to callers requesting medical emergency services in San Joaquin County. The committee's membership is comprised of Emergency Medical Dispatcher representatives from the Stockton Fire Department Emergency Communications Division (ECD), the Valley Regional Emergency Communications Center (VRECC), a representative selected by the SJC Fire Chiefs' Association, and a SJCEMSA staff member.

Key Functions of Committee

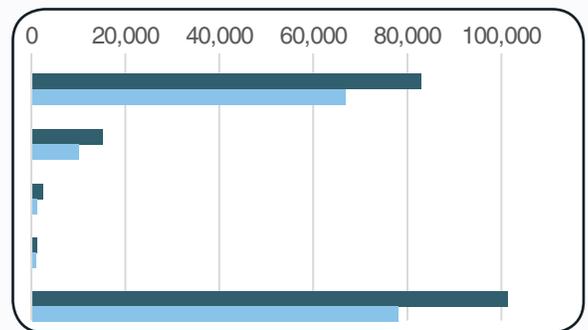
- Identify and resolve dispatch system challenges (such as “wrong address” issues).
- Improve coordination and collaboration between the two emergency medical dispatch centers.
- Review and recommend updates to EMS policies and procedures pertaining to communication issues.

Response and Transport Performance Data

A total of 101,077 total ambulance responses to 9-1-1 requests occurred in 2023, resulting in 77,896 ambulance transports of patients to acute care facilities in San Joaquin County, Sacramento County, and Stanislaus County.

Transports by Ambulance Provider in 2023

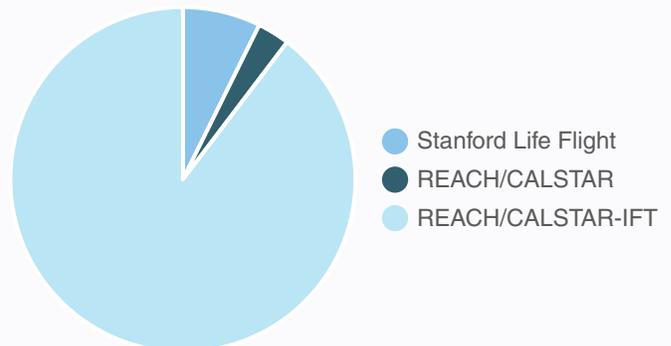
Ambulance Provider	Responses	Transports
American Medical Response	82,812	66,518
Manteca District Ambulance	14,987	9,769
Ripon Consolidated Fire District	1,638	981
Escalon Community Ambulance	1,022	740
Total	101,077	77,896



● Responses ● Transports

Transports by Air Ambulance Provider in 2023

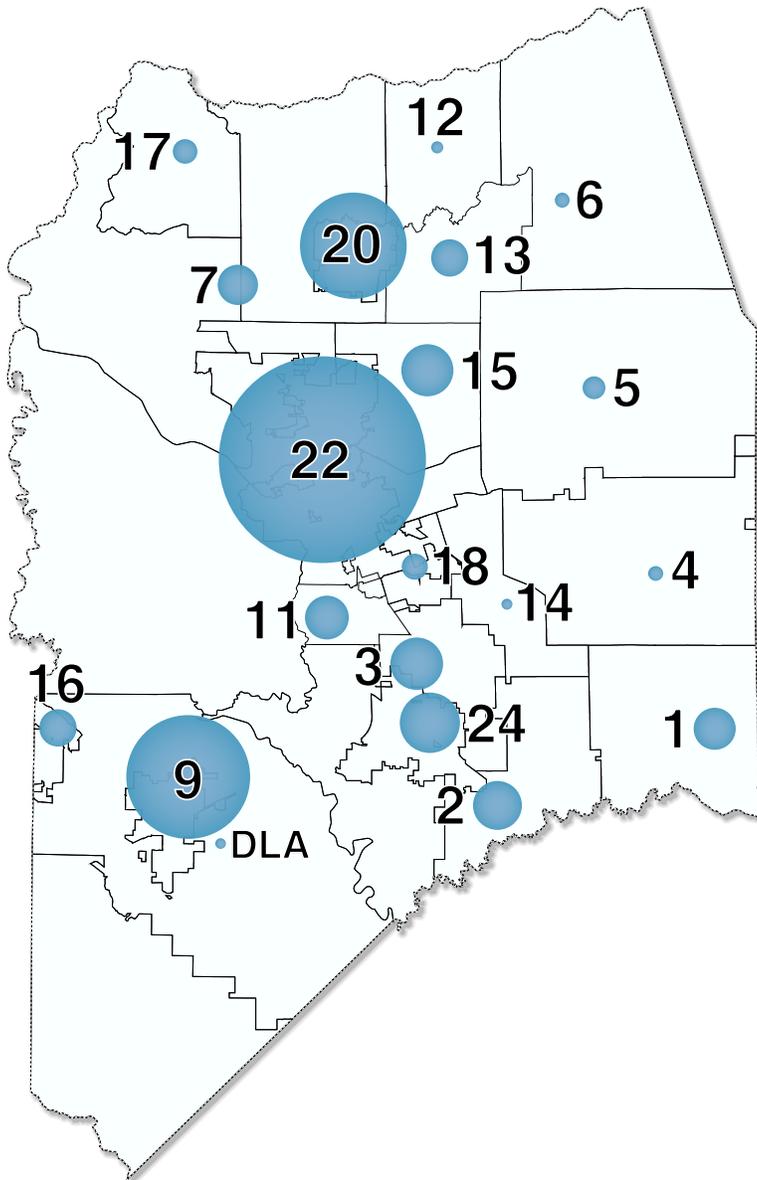
Air Ambulance Provider	Transports
Standford Life Flight – IFT	29
REACH/CALSTAR – Scene	12
REACH/CALSTAR-IFT	356
Total	397



Transports by Non-Emergency Ambulance Providers in 2023

Non-Emergency Ambulance Providers	Transports
Active Transport	5
AmWest	2,662
BayMedic	3,460
Citizens Medical Response	2,395
NorCal Ambulance	14,477
ProTransport	983
Total	23,982

Response Volume by Fire Jurisdiction



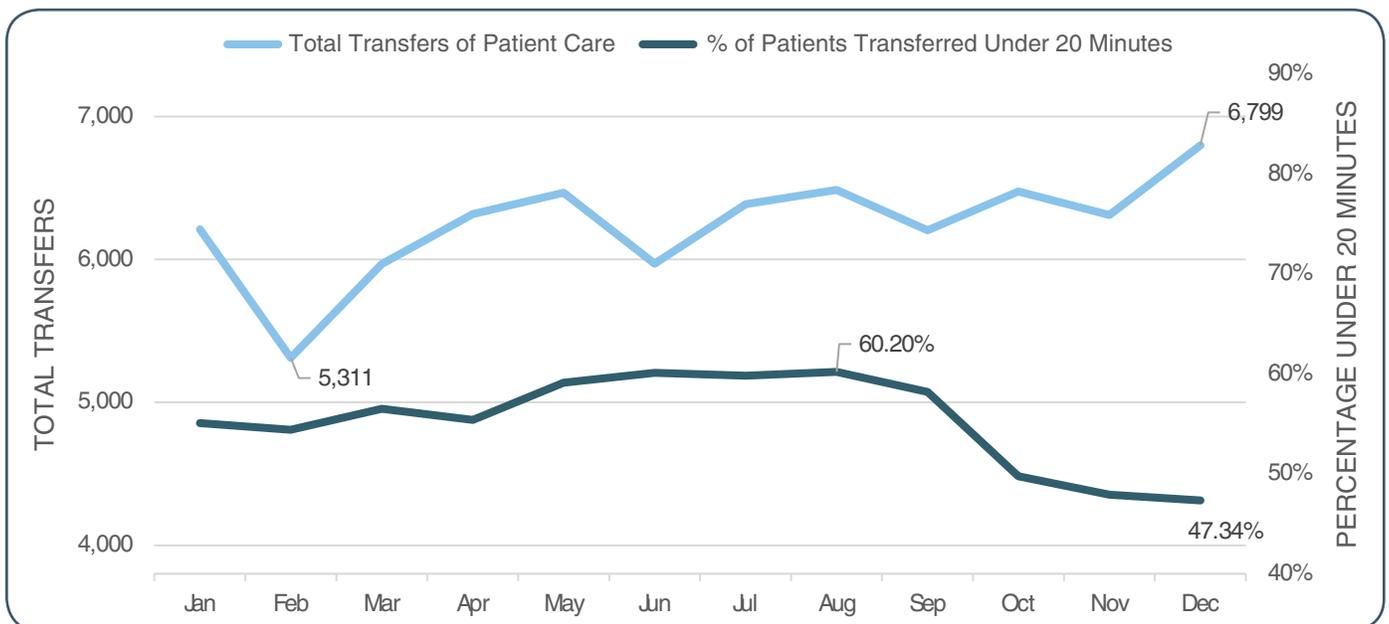
Jurisdiction	Response
01. Escalon	1,221
02. Ripon	1,638
03. Lathrop Manteca	1,922
04. Farmington	158
05. Linden Peters	357
06. Clements	157
07. Woodbridge	1,126
09. South San Joaquin Fire Authority	10,628
11. French Camp	1,336
12. Liberty	103
13. Mokelumne	962
14. Colledgeville	81
15. Waterloo Morada	1,895
16. Mountain House	964
17. Thornton	418
18. Montezuma Fire District	476
20. Lodi	7,861
22. Stockton	29,674
24. Manteca	2,526
Defense Logistics Agency	80



| Ambulance Patient Off-load Time Challenges

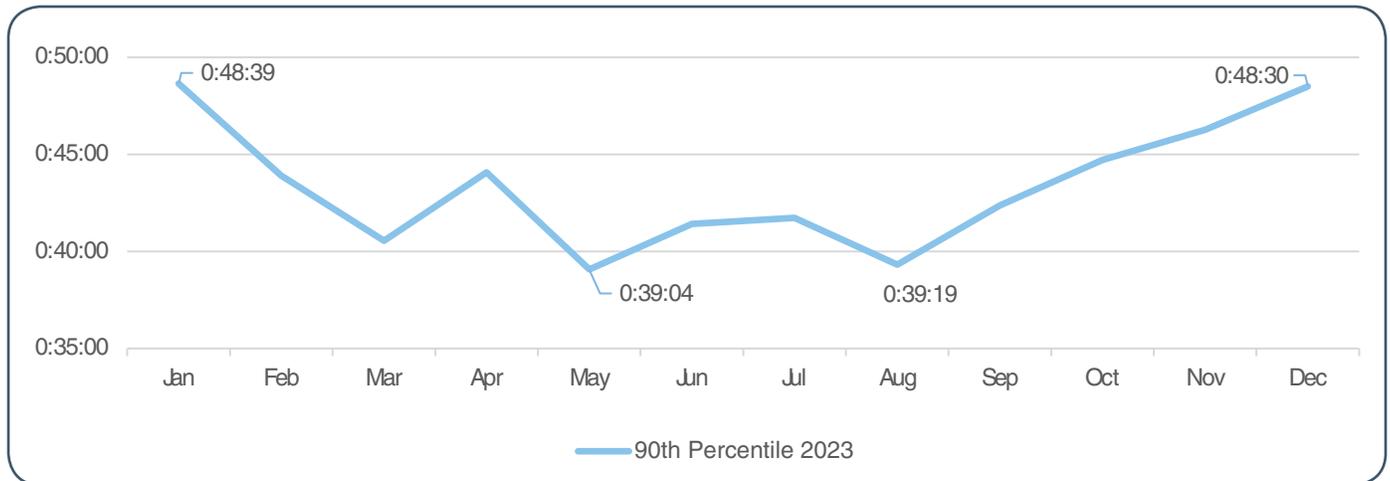
An issue identified by local EMS agencies throughout California led to the development of California Health and Safety Code, section 1797.120 (effective January 1, 2016) to address ambulance patient offload delays. This statute required the State EMS Authority to “adopt a statewide standard methodology for the calculation and reporting by a local EMS agency of ambulance patient offload time” as a means of addressing the statewide patient offload delay problem. This resulted in the development of a measurement called the Ambulance Patient Off-load Time (APOT) and the adoption of the standard for hospitals to accept the transfer of patient care and move the patient to either a gurney or wheel-chair no later than 20 minutes from the arrival of the ambulance patient in the emergency department.

Combined Hospital APOT Performance with Off-load Volume and Percent of Transfers within Twenty Minutes



This chart shows the combined average 90th percentile of ambulance patient offload times (APOT) for all San Joaquin County hospitals in 2023. As illustrated in the chart, there appears to be a pattern of longer off-load times during the winter months (10% of off-loads exceed 48 minutes), compared to spring and summer months (when 10% of off-loads exceed 39 minutes).

Elapsed 90th Percentile Off-load Times in 2023 by Month



Hospital and Specialty Care Services Description and Performance Data

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

| Major Trauma

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. Major trauma policy changes and updates are supported by findings in the continuous quality improvement processes put in place by SJCEMSA with prehospital and hospital stakeholders.

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.

SJCEMSA policies established an assessment methodology designed to minimize elapsed on-scene times to no more than ten minutes.

Trauma System Policy Changes in 2023

- Updated EMS Policy No. 5210, Major Trauma Triage Criteria to improve trauma system responses to multi-casualty incidents (MCIs).
- Individuals suffering from falls to ensure their hospital of choice is taken into consideration.
- Updated EMS Policy No. 5115, Cervical Spine Stabilization to require assessments to include additional clinical findings and to include the suspicion of injury based upon presentation or mechanism.

Trauma System Quality Review

The trauma system in San Joaquin County undergoes a review process that examines trauma cases with the goal of reducing trauma patient morbidity and mortality and improving the provision of care. This function is served by the Trauma Audit Committee (TAC), an EMS system level multi-disciplinary peer review committee that meets on a quarterly basis.

Major Trauma Patients	Totals
Grand Total	3,743
Transferred in from other hospitals	501
Mechanism of Injury	
Motor vehicle accidents (MVA)	1,390
Motorcycle accidents	196
Gunshot wounds	317
Stabbings	121
Falls	896
Assaults	144
Auto vs. pedestrian	356
Other (hangings, bicycle, etc.)	323

Year	Total Major Trauma Cases per Year
2020	3,178 
2021	3,609 
2022	3,687 
2023	3,743 

Types of major trauma are routinely categorized as falling within categories of “Blunt” “Penetrating,” and “Burns.” The adjacent table provides a snapshot of the mechanisms (causes) of major injuries in 2023.

Stroke

Patients suffering from a stroke that receive care and transport by EMS personnel in San Joaquin County benefit from the fact that all seven hospitals are stroke centers. Regardless of whether prehospital personnel suspect that a patient is having a stroke, that patient will be taken to a stroke center to receive specialized treatment.

Prehospital personnel use a prehospital stroke assessment tool/method to identify suspected stroke patients and then provide the closest stroke center with a “stroke alert.” This process saves precious minutes because the in-hospital stroke team and equipment are prepared and ready for the patient’s arrival.

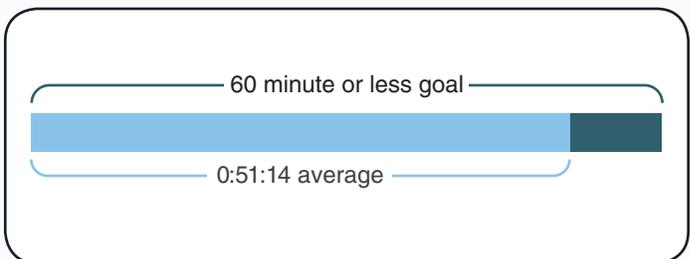
Stroke Cases Transported by Ambulance Diagnosed After Arrival at the Hospital in 2023

Stroke Summary	Stroke Cases Transported by Ambulance
Diagnosed by Hospital	631
Suspected by EMS	339
Due to patients transported while in an altered level of consciousness, 53.72% of stroke cases were identified by EMS	

Prehospital personnel are encouraged to “over triage” to reduce the number of cases in which stroke patients don’t receive the benefits of a stroke alert. This results in a higher number of prehospital stroke alerts than patients diagnosed with stroke at the hospital, (for example 153 alerts vs 61 stroke diagnosis in October 2023).

Hospital Arrival to Administration of Thrombolytic Medication

Elapsed Time to CT Scan and Treatment	Average Time
From Arrival at Hospital to CT	0:10:28
From Arrival at Hospital to Thrombolytics	0:51:14
From EMS Arrival at Pt to Thrombolytics	1:13:50



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 51-minute average across all 7 hospitals.

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 submit data that allows the SJCEMSA to measure key metrics pertaining to successful performance in both prehospital and in-hospital setting.

Elapsed Time to Treatment	Average Time
Arrival at hospital to PCI	0:56:34
First Medical Contact to PCI*	01:30:15

*AHA Goal <1:30:00

Hospital Performance in 2023

The key in-hospital metric that measures speed and directly correlates to patient survivability is whether a patient receives percutaneous intervention (PCI) within 90 minutes of arrival at the hospital. This procedure opens blocked arteries in the heart to reperfuse the heart muscle with oxygenated blood. STEMI Receiving Centers (SRCs) in San Joaquin County met this goal 91.8% of the time (well above AHA’s goal of meeting this metric 75% of the time) in 2023.

Prehospital Performance

Performance metrics are routinely collected and reviewed to ensure compliance and overall system success. Ultimately, the success of this program is seen in the survival rate of cases that receive PCI.

STEMI Summary	Total	Percent
Alerts transported to SRC	259	
Cases (confirmed by STEMI center)	77	29.73%
System Performance Metrics for Confirmed STEMI Cases		
Cases that received PCI		93.50%
PCI outcome Alive		90.28%
Prehospital EKG Completed		92.21%

To ensure that patients experiencing a STEMI are transported to a STEMI Receiving Center, EMS personnel are directed by SJCEMSA policies to err on the side of casting an overly wide net. This approach is the industry standard and is the reason why only 30% of prehospital STEMI alerts result in cases being confirmed as STEMI at the hospital.

Disaster Medical Response

SJCEMSA manages the Federal Hospital Preparedness Program (HPP) Grant and chairs the San Joaquin Operational Area Healthcare Coalition.

| Training and Exercises

SJCEMSA personnel taught, facilitated, coordinated, and/or funded thirteen disaster preparedness training courses and conducted eight disaster preparedness exercises during 2023.

Training & Exercises	
Cal OES Disaster Service Worker Volunteer Program	PsySTART® (Psychological Simple Triage and Rapid Treatment)
Hazardous Materials First Responder Awareness/Operations	Radiological Training for Hospital Personnel
ICS-100 Introduction to the Incident Command System	15 'til 50 Mass Casualty Incident Response for Healthcare Facilities
ICS-200 Basic Incident Command System for Initial Response	Healthcare Coalition Ham Radio Communications Drill
ICS-300 Intermediate Incident Command System for Expanding Incidents	Medical Response and Surge Exercise
ICS-400 Advanced Incident Command System	Pediatric Surge Workshop and Tabletop Exercise
Incident Action Plans	Statewide Disaster Healthcare Volunteers (DHV) System Drill
Incident Planning Process for Extended Operations	

| San Joaquin County Healthcare Coalition

San Joaquin Operational Area Healthcare Coalition's purpose is to improve and sustain the healthcare preparedness capabilities within the San Joaquin County by providing a forum for multi-agency coordination; joint emergency preparedness planning, training, and exercising; as well as information and resource sharing.¹

¹ Details available at www.sjgov.org/department/ems/Menu/emergency-preparedness

The coalition is comprised of 239 healthcare facilities, providers, public and private medical and health agencies/organizations, public safety agencies, non-government agencies, and other community partners operating within the geographic boundaries of San Joaquin County.

The coalition consists of three distinct functional groups:

- Medical Health Multi-Agency Coordination Group
- Emergency Preparedness Committee
- Coalition MOU Signatories

San Joaquin Unit of California Disaster Healthcare Volunteers (DHVs)

SJCEMSA manages more than 650 registered volunteers. These DHVs come from a wide variety of occupations. Examples include a full range of medical personnel, clergy, translators, computer specialists, law enforcement, and social workers.² SJCEMSA and the DHVs participated in the quarterly statewide DHV drills in 2023.

Significant Disaster Planning and Response Activities during 2023

Updated and conducted a tabletop exercise of the San Joaquin Operational Area Healthcare Coalition Emergency Operations Plan (EOP) to test the addition of a Pediatric Surge Annex.

Developed a dataset of names and addresses of all at-risk Medicare beneficiaries (4,418) living within San Joaquin County, through the U.S. Department of Health and Human Services emPOWER program³.

This dataset is essential for flood evacuation planning to help identify individuals with access and functional needs.

² All deployed volunteers are provided with state funded workers' compensation protection, in accordance with the California Disaster Services Workers Volunteers Program

³ <https://empowerprogram.hhs.gov/>

Coordination of medical and health mutual aid deployment of:

- EMS personnel and resources to the Asia-Pacific Economic Cooperation (APEC) Summit.
- EMS personnel and resources to Lake County to provide support for a hospital evacuation.
- EMS personnel and resources to support the State of California's Winter Storm 2023 response.
- Mutual aid resources to healthcare coalition member organizations:
 - 21,160 COVID-19 Rapid Antigen Tests
 - 1,100 Isolation Gowns
 - 2,525 COVID-19/Influenza A/B Rapid Antigen Tests
 - 24 Portable Medical Beds

Conclusion

2023 proved to be a year of collaboration and improvement. SJCEMSA and its system partners focused on ensuring the proficient delivery of emergency medical services for the San Joaquin County community and its visitors. Through hospital engagements, opportunities were expanded to include non-emergency ambulances providing basic life support (BLS), advanced life support (ALS), and specialty care transportation (SCT) services to patients. These services assisted with bed availabilities in the emergency departments and ambulance patient offload times (APOT). SJCEMSA hopes to continue improving the system by utilizing Healthcare Strategist to provide a system assessment. SJCEMSA is continuing to work with providers to bring a Paramedic Training Program to San Joaquin County and centralize all data. In 2024, SJCEMSA plans to continue to collaborate with EMS personnel, hospitals, stakeholders, and community members to identify areas of growth.

SJCEMSA would like to thank Inspironix for assisting in the creation of this report. Thank you to the 18 fire departments, 7 hospitals, 2 air ambulance providers, and the 10 ground ambulance providers for their contribution to this report.

