

EMERGENCY MEDICAL SERVICES AUTHORITY

11120 INTERNATIONAL DRIVE SUITE 200
RANCHO CORDOVA, CA 95670
(916) 322-4336 FAX (916) 324-2875



November 3, 2023

Chris Le Baudour, EMS Administrator
Marin County EMS Agency
1600 Los Gatos Dr., Suite 220
San Rafael, CA 94903

Dear Chris Le Baudour,

This letter is in response to Marin County Emergency Medical Services (EMS) Agency's 2020 - 2022 EMS, Trauma, St-Elevation Myocardial Infarction (STEMI), Stroke, Quality Improvement (QI), EMS for Children (EMSC) plan, and submissions to the EMS Authority on March 9, 2023.

The EMS Authority has reviewed the EMS plan, based on compliance with statutes, regulations, and case law. It has been determined that the plan meets all EMS system components identified in Health and Safety Code (HSC) § 1797.103 and is approved for implementation pursuant to HSC § 1797.105(b). Based on the transportation documentation provided, please find enclosed the ground exclusive operating area status, as compiled by the EMS Authority.

The EMS Authority has also reviewed the Trauma, STEMI, Stroke, QI, and EMSC plans, based on compliance with Chapters 7, 7.1, 7.2, 12, and 14 of the California Code of Regulations, Title 22, Division 9, and has been approved for implementation.

In accordance with HSC § 1797.254, EMS Plans are required to be submitted to the EMS Authority annually. Marin County EMS Agency will not be considered current unless an EMS Plan is submitted for each year.

Your 2023 EMS plan will be due on or before November 3, 2024. Concurrently with the EMS plan, please submit an annual Trauma, STEMI, Stroke, QI, and EMSC plan.

If you have any questions regarding the EMS Plan review, please contact Mr. Mark Olivas, Interim EMS Plans Coordinator, at (916) 204-7885, or mark.olivas@emsa.ca.gov.

Sincerely,

A handwritten signature in cursive script that reads "Tom McGinnis".

Tom McGinnis, MHA, EMT-P
Chief, EMS Systems Division

Enclosure
AW: rd

EMERGENCY MEDICAL SERVICES AUTHORITY

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Marin County 2020-2022 EMS Plan Ground Exclusive Operating Areas	Non-Exclusive	Exclusive	Method to Achieve Exclusivity	Emergency Ambulance	ALS	LALS	All Emergency Ambulance Services	9-1-1 Emergency Response	7-digit Emergency Response	ALS Ambulance	All CCT Ambulance Services	ALS IFT	Standby Service with Transport Authorization		
	EXCLUSIVITY			TYPE			LEVEL								
	ZONE														
	Paramedic Service Area A			X	Non-Competitive	X				X	X	X			
	Paramedic Service Area B			X	Non-Competitive	X				X	X	X			
	Paramedic Service Area C	X													
	Paramedic Service Area D			X	Non-Competitive	X				X	X	X			
	Paramedic Service Area E			X	Non-Competitive	X				X	X	X			

County of Marin

2020 to 2022

EMS Plan Update



1600 Los Gatos Dr., Suite 220
San Rafael, California 94903

2020-2022 EMS PLAN UPDATE SUMMARY

This EMS Plan Update for the County of Marin is intended to meet statutory requirements of California's Health & Safety Code, Division 2.5, 1797.254. It is submitted in a format suggested by the California EMS Authority. There has only been one significant change to our system in the past three years with the permitting of an additional private ambulance provider to operate in Marin County in 2022.

Medical Control

The Marin County EMS system meets all requirements of Title 22, Chapter 4, section 100170.

MHOAC and RDMHC

In compliance with Health and Safety Code Division 2.5, Chapter 3, Article 4, sections 1797.152 and 1797.153, the Marin County EMS Agency Administrator and designated EMS Specialists serve round the clock as the Medical and Health Operational Area Coordinator (MHOAC). The Marin County MHOAC program supports all 17 mandated functions of the MHOAC program while coordinating resources in the event of a disaster. In addition, the MHOAC collaborates in the development of the Marin County Medical and Health Disaster Plan. The MHOAC program in Marin is supported by two Regional Disaster Medical and Health Coordinators, Andrew Sulyma and Ryan Preston who both serve as RDMHCs for Region II. The Marin County MHOAC program works in close coordination with the RDMHC and the State Health Officer and appropriate officials when necessary.

Dispatch

The EMS Agency attests to the fact that we are operating in compliance with Health and Safety Code Chapter 4, Article 1, sections 1797.223 and 1798.8 and currently utilize the Marin County Sheriff's Office 911 dispatch center as the primary PSAP in Marin County. All requests for service are processed by trained Emergency Medical Dispatchers.

Goals and Objectives for previous reporting period:

Goal/Objective	Current Status
Update Multi Casualty Incident Plan	Completed and Ongoing
Possible Relaunch of the Community Paramedicine Pilot Project (Project Direct Connect)	Ongoing
Improve cardiac arrest survival rates by implementing initiatives supported by the Resuscitation Academy	In process
Provide Annual Community Education on Stop the Bleed techniques and Intranasal Narcan administration for suspected overdoses	Ongoing
Provide AEDs to all county buildings and libraries	Completed
Achieve designation as an EMSC county	Approved April 2021

Goals and Objectives for next reporting period:

Goal/Objective	Target Date
Develop new strategic plan for EMS Agency	Q2 2023
Develop key performance indicators for EMS system and methods for monitoring.	Q1 2023
Update and publish Public Access Defibrillation (PAD) Program Guide and associated education campaign	Q1 2023
Develop and implement formal agreement for all three pediatric receiving facilities.	Q4 2023
Conduct hospital evacuation exercise as well as surge exercise to test capacity to move patients from one facility to another with no notice.	Q3 2023
Continue to support MMRC in conducting school/community training on Stop the Bleed techniques and Hands-Only CPR to improve survival rates.	Ongoing
Update Medical Health Annex	Q3 2023
Develop and facilitate ReddiNet training and drills for all three acute care hospitals.	Q1 2023
Implement FirstWatch Tool for Quality Assurance and system surveillance.	Ongoing
Support the transition of the Marin County Sheriff's Office dispatching operations to an independent 9-1-1 dispatching center	Q4 2023

LEMSA PERSONNEL CHANGES:

In March of 2021, Christian Lombard was hired on as our full-time EMS Specialist. In June of 2022 Administrative Assistant, Liria Topuz, was increased from part-time to a full-time position.

TABLE 2: SYSTEM RESOURCES AND OPERATIONS

System Organization and Management

Reporting Year(s): 2020 - 2022

1. **Percentage of population served by each level of care by county:**
(Identify for the maximum level of service offered; the total of a, b, and c should equal 100%.)

County: MARIN

A. Basic Life Support (BLS)	<u>0</u> %
B. Limited Advanced Life Support (LALS)	<u>0</u> %
C. Advanced Life Support (ALS)	<u>100</u> %

2. **Type of agency**

- a) Public Health Department
- b) **County Health Services Agency**
- c) Other (non-health) County Department
- d) Joint Powers Agency
- e) Private Non-Profit Entity
- f) Other: _____

3. **The person responsible for day-to-day activities of the EMS agency reports to**

- a) **Public Health Officer**
- b) Health Services Agency Director/Administrator
- c) Board of Directors
- d) Other: _____

4. Non-required functions which are performed by the agency:

Implementation of exclusive operating areas (ambulance franchising)	N/A
Designation of trauma centers/trauma care system planning	X
Designation/approval of pediatric facilities	X
Designation of other critical care centers	X
Development of transfer agreements	N/A
Enforcement of local ambulance ordinance	X
Enforcement of ambulance service contracts	N/A
Operation of ambulance service	N/A
Continuing Education	N/A
Personnel Training	N/A
Operation of oversight of EMS dispatch center	N/A
Non-medical disaster planning	N/A
Administration of critical incident stress debriefing team (CISD)	N/A
Administration of disaster medical assistance team (DMAT)	N/A
Administration of EMS Fund [Senate Bill (SB) 12/612]	X

5. EXPENSES – FY 2020-2022 Actual

Salaries and benefits (All but contract personnel)	\$576,855.00
Contract Services (e.g. medical director)	\$239,658.00
Operations (e.g. copying, postage, facilities)	\$68,429.00
Travel	\$5,000.00
Fixed assets	\$45,121.00
Indirect expenses (overhead)	\$61,755.00
Other: County Interfund transfers	\$21,178.00
Other: EMSAAC Dues	\$1,650.00
Other: _____	
TOTAL EXPENSES	\$1,019,646.00

6. REVENUE - FY 2020-2022 Actual

Special project grant(s) [from EMSA]	\$0.00
Preventive Health and Health Services (PHHS) Block Grants	\$0.00
Office of Traffic Safety (OTS)	\$0.00
State General Fund	\$0.00
County General Fund	\$797,912.00
Other local tax funds (e.g., EMS district)	\$0.00
County Contracts (e.g. multi-county agencies)	\$0.00
Provider Certification Fees (EMT/Paramedic)	\$40,272.00
EMT Training Program Approval Fees	\$0.00
Continuing Education Provider Fees	\$0.00
EMS System Participation Fees	\$0.00
Trauma Center Designation Fees (MarinHealth)	\$30,000.00
Pediatric Receiving Center Designation Fees	\$0.00
Emergency Department Approved for Trauma (EDAT) Designation Fees (Kaiser)	\$5,000.00
STEMI Receiving Center Designation Fees (MarinHealth, Kaiser)	\$15,000.00
Stroke Receiving Center Designation Fees (MarinHealth, Kaiser, Novato Community)	\$22,500.00
Private Ambulance Provider Certificate of Operation Fees	\$2,700.00
Ambulance Vehicle Inspection Fees	\$3,300.00
EMS Fund (Maddy SB 12/1773)	\$98,337.00
TOTAL REVENUE	\$1,015,021.00

* Excess expenditures are covered by funds from the larger HHS budget

7. FEE STRUCTURE

Purpose	Fee
EMR Certification	N/A
EMT Initial Certification	\$15.00
EMT Recertification	\$15.00
Paramedic Accreditation	\$75.00
EMT Training Program Approval	N/A
Trauma Center Designation (Level III)	\$30,000.00
Pediatric Receiving Center Designation	N/A
STEMI Receiving Center Designation	\$7,500.00
Stroke Receiving Center Designation	\$7,500.00
EDAT Center Designation	\$5,000.00
Ambulance Provider Approval	\$675.00
Ambulance Vehicle Permits	\$275.00
Protocol Manuals	\$30.00

Table 2 - System Organization & Management

CATEGORY	ACTUAL TITLE	FTE POSITIONS (EMS ONLY)	TOP SALARY BY HOURLY EQUIVALENT	BENEFITS (%of Salary)	COMMENTS
EMS Admin./Coord./Director	EMS Administrator	1.0	\$59.67	30%	
Asst. Admin. /Admin. Asst./ Admin. Mgr.	Office Assistant III	1.0	\$32.43	30%	Expanded from part-time to full-time in June of 2022
ALS Coord. /Field Coord. / Training Coordinator	EMS Specialist	2.0	\$43.51	30%	
Program Coordinator/ Field Liaison (Non-clinical)	Program Coordinator	0.4*	\$153.00	N/A	Independent Contractor
Medical Director	EMS Medical Director	0.4*	\$150.00	N/A	Under Contract
Other MD/Medical Consult/ Training Medical Director	Assistant EMS Medical Director	0.2*	\$150.00	N/A	Under Contract

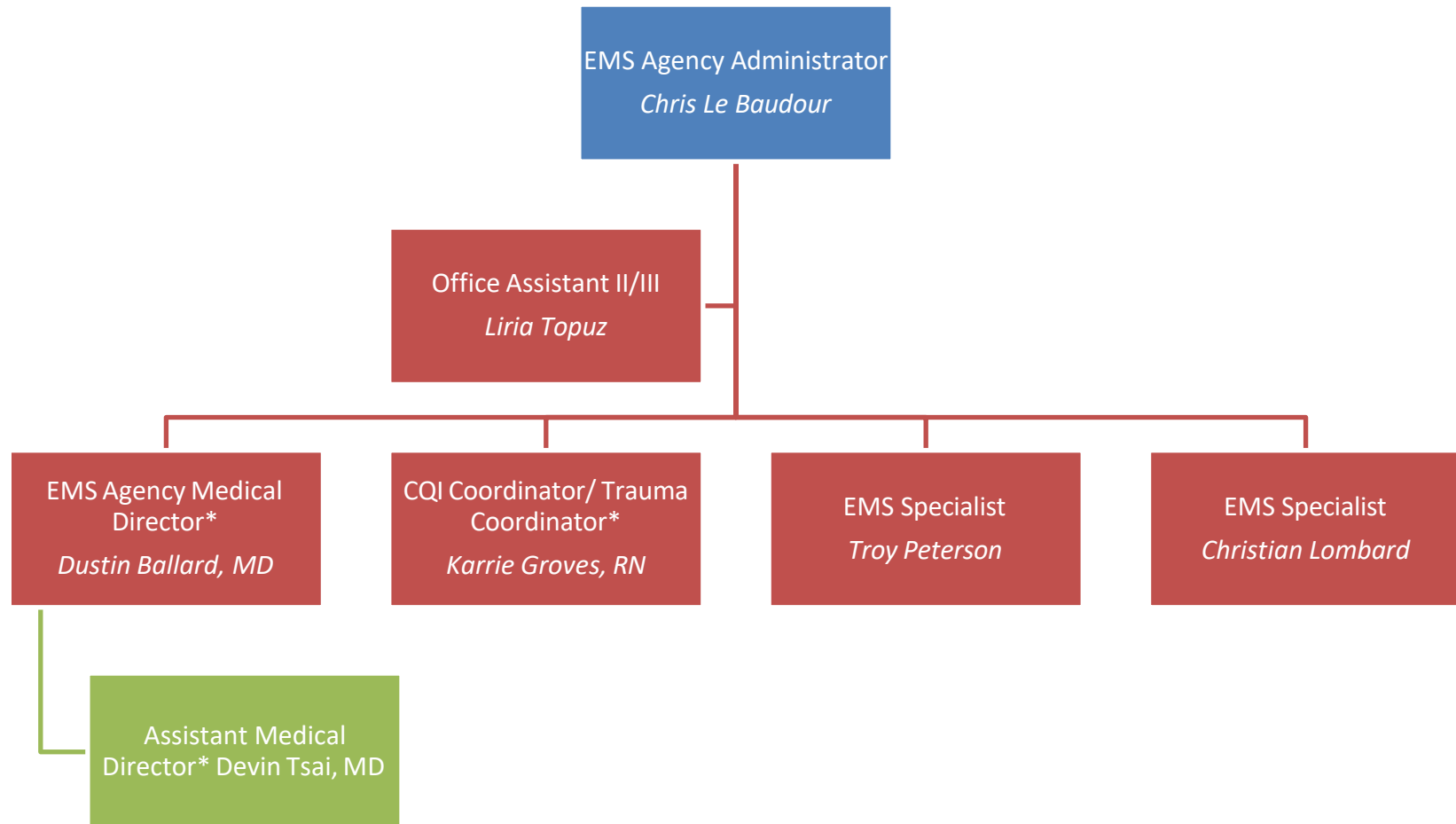
*FTEs estimated for independent contractors

Table 2 - System Organization & Management (cont.)

CATEGORY	ACTUAL TITLE	FTE POSITIONS (EMS ONLY)	TOP SALARY BY HOURLY EQUIVALENT	BENEFITS (%of Salary)	COMMENTS
Data Evaluator/Analyst					
QA/QI Coordinator	CQI Coordinator	0.4*	N/A	N/A	Independent Contractor
Other Clerical	Office Assistant III	1.0	\$32.43	30%	
Data Entry Clerk					
Other:					

*FTEs estimated only for independent contractors

Marin County EMS Agency Organization



* Part-time contract position

County of Marin Organization

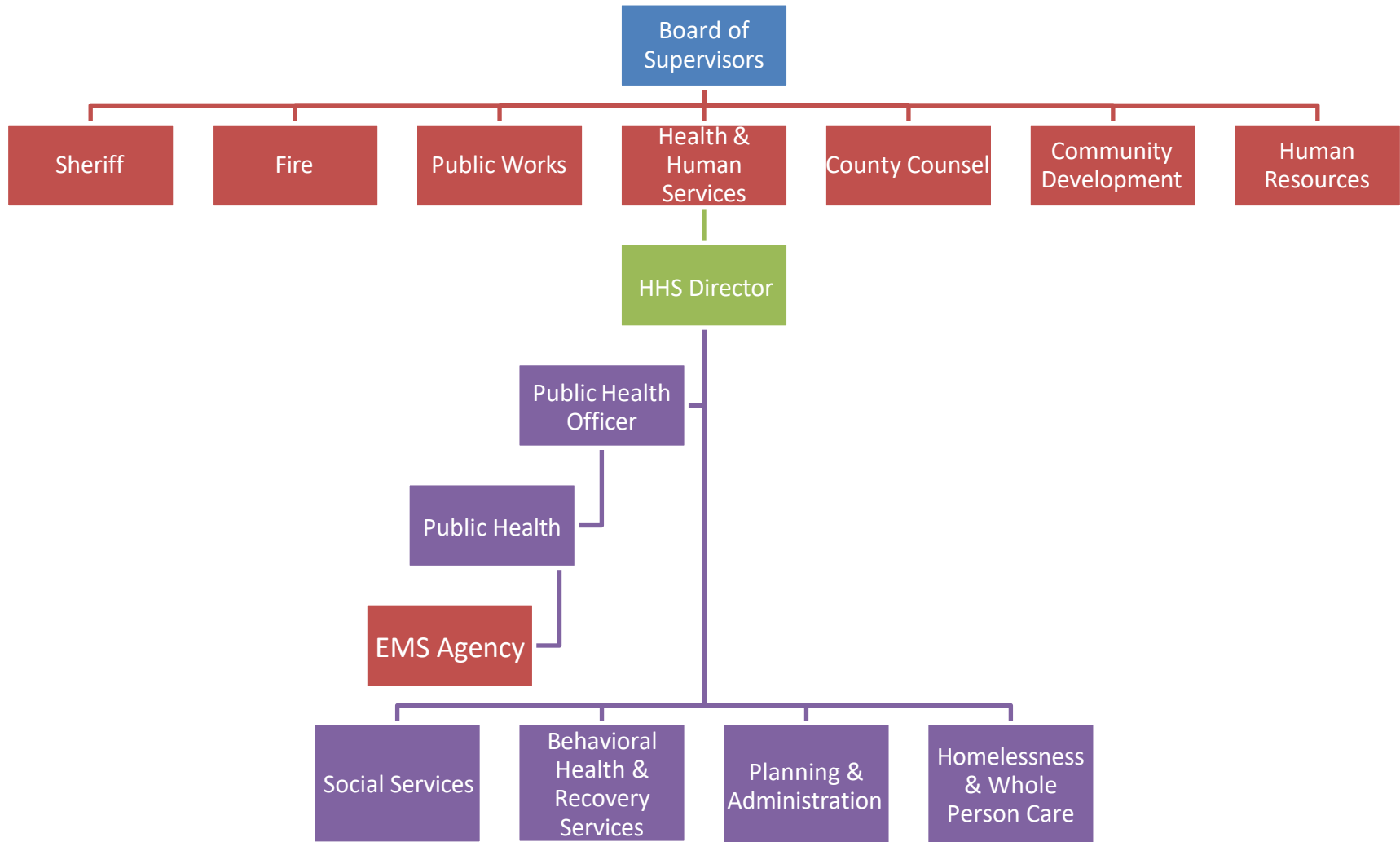


TABLE 3: SYSTEM RESOURCES AND OPERATIONS - Personnel/Training

Reporting Year: 2020 to 2022

	EMTs	Paramedics
Total Certified	189	
Number newly certified this year	51	
Number recertified this year	138	
Total number of accredited personnel on July 1 of the reporting year		243
Number of certification reviews resulting in:		
Formal investigations	1	
Probation	0	
Suspensions	0	
Revocations	0	
Denials	0	
Denials of renewal	0	
No action taken	1	

1. Early defibrillation:

- a) Number of EMT (defib) authorized to use AEDs
- b) Number of public safety (defib) certified (non-EMT)

All
N/A

2. Do you have an EMR training program

YES*

*College of Marin

TABLE 4: SYSTEM RESOURCES AND OPERATIONS – Communications

Note: Table 4 is to be answered for each county.

County: **MARIN**

Reporting Year: **2020 to 2022**

Number of primary Public Service Answering Points (PSAP)	5
Number of secondary PSAPs	2
Number of dispatch centers directly dispatching ambulances	2
Number of EMS dispatch agencies utilizing EMD guidelines	1
Number of designated dispatch centers for EMS Aircraft	1
Who is your primary dispatch agency for day-to-day emergencies?	Marin County Sheriff's Dispatch Center
Who is your primary dispatch agency for a disaster?	Marin County Sheriff's Dispatch Center
Do you have an operational area disaster communication system?	YES
<ul style="list-style-type: none">• Radio primary frequency	MERA (460 MHz trunked system)
<ul style="list-style-type: none">• Other methods	MEDS UHF
Can all medical response units communicate on the same disaster communications system?	YES
Do you participate in the Operational Area Satellite Information System (OASIS)?	NO
Do you have a plan to utilize the Radio Amateur Civil Emergency Services (RACES) as a back-up communication system?	YES
<ul style="list-style-type: none">• Within the operational area?	YES
<ul style="list-style-type: none">• Between operation area and the region and/or state?	YES

TABLE 5: SYSTEM RESOURCES AND OPERATIONS - Response/TransportationReporting Year: **2020 to 2022****Note:** Table 5 is to be reported by agency.**Early Defibrillation Providers**1. Number of EMT-Defibrillation providers **All****SYSTEM STANDARD RESPONSE TIMES (90TH PERCENTILE)**

Enter the response times in the appropriate boxes:

	METRO/URBAN	SUBURBAN/ RURAL	WILDERNESS	SYSTEMWIDE
BLS and CPR capable first responder				
Early defibrillation responder				
Advanced life support responder	10 minutes	30 minutes	ASAP	N/A
Transport Ambulance	10 minutes	30 minutes	ASAP	N/A

TABLE 6: SYSTEM RESOURCES AND OPERATIONS - Facilities/Critical CareReporting Year: **2020 to 2022****Trauma**

TRAUMA PATIENTS*	
• Number of patients meeting trauma triage criteria	1547
• Number of major trauma victims transported directly to a trauma center by ambulance	1547
• Number of major trauma patients transferred to a trauma center	1
• Number of patients meeting triage criteria who were not treated at a trauma center	1
<i>*Note: We do not break out our trauma data this way. Reporting total trauma volume only.</i>	
EMERGENCY DEPARTMENTS	
• Total number of emergency departments	3
• Number of referral emergency services	0
• Number of standby emergency services	0
• Number of basic emergency services	3
• Number of comprehensive emergency services	0
RECEIVING HOSPITALS	
• Number of receiving hospitals with written agreements	3
• Number of base hospitals with written agreements	3

TABLE 7: SYSTEM RESOURCES AND OPERATIONS - Disaster MedicalReporting Year: **2020 to 2022**County: **MARIN****NOTE:** Table 7 is to be answered for each county.**SYSTEM RESOURCES**

Casualty Collections Points (CCP)	
• Where are your CCPs located?	Pre-determined
• How are they staffed?	Medical Reserve Corps
• Do you have a supply system for supporting them for 72 hours?	YES
CISD	
• Do you have a CISD provider with 24-hour capability?	YES
Medical Response Team	
• Do you have any team medical response capability?	YES
• For each team, are they incorporated into your local response plan?	YES
• Are they available for statewide response?	YES
• Are they part of a formal out-of-state response system?	NO
Hazardous Materials	
• Do you have any HazMat trained medical response teams?	YES
• At what HazMat level are they trained?	Technician
• Do you have the ability to do decontamination in an emergency room?	YES
• Do you have the ability to do decontamination in the field?	YES

OPERATIONS

Are you using a Standardized Emergency Management System (SEMS) that incorporates a form of Incident Command System (ICS) structure?	YES
What is the maximum number of local jurisdiction EOCs you will need to interact with in a disaster?	Up to 10
Have you tested your MCI Plan this year in a:	
• Real Event	YES
• Exercise	YES
List all counties with which you have a written medical mutual aid agreement.	Cooperative Assistance Agreement with all counties in Region II
Do you have formal agreements with hospitals in your operational area to participate in disaster planning and response?	YES
Do you have formal agreements with community clinics in your operational area to participate in disaster planning and response?	YES
Are you part of a multi-county EMS system for disaster response?	NO
Are you a separate department or agency?	NO
If not, to whom do you report?	Local Public Health Officer
If your agency is not in the Health Department, do you have a plan to coordinate public health and environmental health issues with the Health Department?	N/A

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: Marin Provider: Central Marin Fire Department Response Zone: PSA "C"

Address: 342 Tamalpais Drive Number of Ambulances in Fleet: 2
 City: Corte Madera
 State/Zip: CA 94925
 Phone: 415-927-5077

Average Number of Ambulance on Duty at 1200 any given day: 1

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X	911	X	Ground	X
												Non-Transport	BLS		7-Digit		Air	
															CCT		Water	
															IFT			

Ownership				If Public				If Public				If Air		Air Classification	
Public	X	Private		Fire	X	Law		City	X	County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District				Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	

1560 Total Responses
1252 Total Emergent Responses
308 Total Non-Emergent Responses

1228 Total Transports
605 Total Emergent Transports
623 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022

County: Marin **Provider:** Marin County Fire Department **Response Zone:** PSA "E"

Address: 33 Castlerock Ave **Number of Ambulances in Fleet:** 4
City: Woodacre
State/Zip: CA 94973
Phone: 415-499-6717

Average Number of Ambulance on Duty at 1200 any given day: 2

Written Contract				Medical Director				Available 24/7				Level of Service							
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X		911	X	Ground	X
												Non-Transport	BLS			7-Digit		Air	
																CCT		Water	
																IFT			

Ownership				If Public				If Public				If Air		Air Classification						
Public	X	Private		Fire	X	Law		City		County	X	Rotor Wing		Auxiliary Rescue						
				Other				Fire District				Fixed Wing		Air Ambulance						
				Explain:				State						ALS Rescue						
								Federal						BLS Rescue						
								JPA												

1297 **Total Responses**
1021 **Total Emergent Responses**
276 **Total Non-Emergent Responses**

631 **Total Transports**
146 **Total Emergent Transports**
485 **Total Non-Emergent Transports**

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: Marin Provider: Novato Fire District Response Zone: PSA "A"Address: 95 Rowland Way Number of Ambulances in Fleet: 4City: NovatoState/Zip: CA, 94945Phone: 415-878-2690Average Number of Ambulance on Duty at 1200 any given day: 2

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X	911	X	Ground	X
												Non-Transport	BLS		7-Digit		Air	
															CCT		Water	
															IFT			

Ownership				If Public				If Public				If Air		Air Classification	
Public	X	Private		Fire	X	Law		City		County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District		X		Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	

4548 Total Responses3581 Total Emergent Responses967 Total Non-Emergent Responses3682 Total Transports1718 Total Emergent Transports1910 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: Marin Provider: Ross Valley Paramedic Authority Response Zone: PSA "C"

Address: 33 Castlerock Ave Number of Ambulances in Fleet: 2
 City: Woodacre
 State/Zip: CA 94973
 Phone: 415-499-6717

Average Number of Ambulance on Duty at 1200 any given day: 1

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X	911	X	Ground	X
												Non-Transport	BLS		7-Digit		Air	
															CCT		Water	
															IFT			

Ownership				If Public				If Public				If Air		Air Classification					
Public	X	Private		Fire	X	Law		City		County		Rotor Wing		Auxiliary Rescue					
				Other				Fire District				Fixed Wing		Air Ambulance					
				Explain:				State						ALS Rescue					
								Federal						BLS Rescue					
								JPA		X									

2474 Total Responses1986 Total Emergent Responses488 Total Non-Emergent Responses1372 Total Transports212 Total Emergent Transports1160 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: Marin Provider: San Rafael Fire Department Response Zone: PSA "B"

Address: 1375 Fifth Ave Number of Ambulances in Fleet: 4
 City: San Rafael
 State/Zip: CA 94901
 Phone: 415-485-3304

Average Number of Ambulance on Duty at 1200 any given day: 2

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X	911	X	Ground	X
												Non-Transport	BLS		7-Digit		Air	
															CCT		Water	
															IFT			

Ownership				If Public				If Public				If Air		Air Classification	
Public	X	Private		Fire	X	Law		City	X	County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District				Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	

6347 Total Responses5123 Total Emergent Responses1224 Total Non-Emergent Responses4238 Total Transports2188 Total Emergent Transports2050 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: MarinProvider: Southern Marin Paramedic SystemResponse PSA "D"

Zone: _____

Address: _____

1679 Tiburon Blvd

Number of Ambulances in

Fleet: 5City: TiburonState/Zip: CA 94920Phone: 415-435-7200Average Number of Ambulance on Duty at 1200 any given day: 3

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X	911	X	Ground	X
												Non-Transport	BLS		7-Digit		Air	
															CCT		Water	
															IFT			

Ownership				If Public				If Public				If Air		Air Classification	
Public	X	Private		Fire	X	Law		City		County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District				Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	
								JPA		X					

4755 Total Responses3791 Total Emergent Responses964 Total Non-Emergent Responses2726 Total Transports512 Total Emergent Transports2214 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: MarinProvider: Falcon Ambulance ServiceResponse Zone: ALLAddress: 3508 San Pablo Dam Road

Number of Ambulances in

Fleet: 22City: El SobranteState/Zip: CA 94803Phone: 510-223-1171Average Number of Ambulance on Duty at 1200 any given day: 10

Written Contract				Medical Director				Available 24/7				Level of Service				
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS		911	
												Transport	BLS	X	7-Digit	X
															CCT	X
															IFT	X

Ownership				If Public				If Public				If Air		Air Classification	
Public		Private	X	Fire		Law		City		County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District				Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	
								JPA							

1974 Total Responses0 Total Emergent Responses1974 Total Non-Emergent Responses1974 Total Transports0 Total Emergent Transports1974 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: MarinProvider: LIFEWest Ambulance ServiceResponse Zone: ALLAddress: 5460 Skylane Blvd, Suite ANumber of Ambulances in Fleet: 15City: Santa RosaState/Zip: CA 95403Phone: 800-222-8669Average Number of Ambulance on Duty at 1200 any given day: 10

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X	911		Ground	X
												Transport	BLS	X	7-Digit	X	Air	
															CCT	X	Water	
															IFT	X		

Ownership				If Public				If Public				If Air		Air Classification	
Public		Private	X	Fire		Law		City		County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District				Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	
								JPA							

1448 Total Responses0 Total Emergent Responses1448 Total Non-Emergent Responses1448 Total Transports0 Total Emergent Transports1448 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: MarinProvider: NorCal Ambulance ServiceResponse Zone: ALLAddress: 655 Dubois StreetNumber of Ambulances in Fleet: 19City: San RafaelState/Zip: CA 94901Phone: 866-755-3400Average Number of Ambulance on Duty at 1200 any given day: 5

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS	X	911		Ground	X
												Transport	BLS	X	7-Digit	X	Air	
															CCT	X	Water	
															IFT	X		

Ownership				If Public				If Public				If Air		Air Classification	
Public		Private	X	Fire		Law		City		County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District				Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	
								JPA							

5605 Total Responses
0 Total Emergent Responses
5605 Total Non-Emergent Responses

5605 Total Transports
0 Total Emergent Transports
5605 Total Non-Emergent Transports

Table 8: Resource Directory

Response/Transport Providers

Reporting Year: 2020 to 2022County: Marin Provider: AMR Response Zone: ALLAddress: 1300 Illinois Street Number of Ambulances in Fleet: 2City: San FranciscoState/Zip: CA 94107Phone: 855.267.5299Average Number of Ambulance on Duty at 1200 any given day: 1

Written Contract				Medical Director				Available 24/7				Level of Service						
YES	X	NO		YES	X	NO		YES	X	NO		Transport	ALS		911		Ground	
												Transport	BLS	X	7-Digit	X	Air	
															CCT	X	Water	
															IFT	X		

Ownership				If Public				If Public				If Air		Air Classification	
Public		Private	X	Fire		Law		City		County		Rotor Wing		Auxiliary Rescue	
				Other				Fire District				Fixed Wing		Air Ambulance	
				Explain:				State						ALS Rescue	
								Federal						BLS Rescue	
								JPA							

154 Total Responses0 Total Emergent Responses154 Total Non-Emergent Responses154 Total Transports0 Total Emergent Transports154 Total Non-Emergent Transports

Table 9: Resource Directory - Facilities

Reporting Year: 2020 to 2022

County: Marin

Facility: Marinhealth Medical Center

Address: 250 Bon Air Road

City: Greenbrae

State/Zip: CA 94904

Phone: 415-925-7000

Written Contract					Services												
YES	X	NO			Referral Emergency					Standby Emergency							
					Basic Emergency				X	Comprehensive Emergency							
Trauma Center		YES	X	NO		LEVEL	I		II		III	X	IV				
Base Hospital		YES	X	NO													
Burn Center		YES		NO	X												
Pediatric Receiving Center*					YES	X	NO		LEVEL	Basic		General		Advanced	X		
PICU*					YES		NO	X									
STEMI Receiving					YES	X	NO										
Stroke Receiving					YES	X	NO										
EDAT					YES		NO	X									

*Meets EMSA Pediatric Receiving Center (PedRC) Standards

**Meets California Children Services (CCS) Pediatric Intensive Care Unit (PICU) Standards

Table 9: Resource Directory - Facilities

Reporting Year: 2020 to 2022

County: Marin

Facility: Kaiser San Rafael Medical Center

Address: 99 Monticello Road

City: San Rafael

State/Zip: CA 94903

Phone: 415-444-2000

Written Contract				Services											
YES	X	NO		Referral Emergency					Standby Emergency						
				Basic Emergency				X	Comprehensive Emergency						
Trauma Center		YES		NO	X	LEVEL	I		II		III		IV		
Base Hospital		YES	X	NO											
Burn Center		YES		NO	X										
Pediatric Receiving Center*					YES	X	NO		LEVEL	Basic		General	X	Advanced	
PICU*					YES		NO	X	Kaiser San Rafael Medical Center has been designated by the LEMSA as an "Emergency Department Approved for Trauma" (EDAT). This hospital elects to maintain an active trauma program including a Trauma Program Coordinator and Trauma Medical Director. However, all patients meeting field trauma triage criteria are transported to our Level III Trauma Center.						
STEMI Receiving					YES	X	NO								
Stroke Receiving					YES	X	NO								
EDAT					YES	X	NO								

*Meets EMSA Pediatric Receiving Center (PedRC) Standards

**Meets California Children Services (CCS) Pediatric Intensive Care Unit (PICU) Standards

Table 9: Resource Directory - Facilities

Reporting Year: 2020 to 2022

County: Marin

Facility: Novato Community Hospital

Address: 180 Rowland Way

City: Novato

State/Zip: CA 94945

Phone: 415-209-1300

Written Contract					Services										
YES	X	NO			Referral Emergency					Standby Emergency					
					Basic Emergency				X	Comprehensive Emergency					
Trauma Center	YES		NO	X	LEVEL	I		II		III		IV			
Base Hospital	YES	X	NO												
Burn Center	YES		NO	X											
Pediatric Receiving Center*					YES	X	NO		LEVEL	Basic		General	X	Advanced	
PICU*					YES		NO	X							
STEMI Receiving					YES		NO	X							
Stroke Receiving					YES	X	NO								
EDAT					YES		NO	X							

*Meets EMSA Pediatric Receiving Center (PedRC) Standards

**Meets California Children Services (CCS) Pediatric Intensive Care Unit (PICU) Standards

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin **Institution:** College of Marin **Contact Name:** Angela Olmanson
Contact Phone: 415-485-9667 **Contact Email:** aolmanson@marin.edu
CEU Authorization #: 21-1002 **Expiration Date:** 09/30/2026

Address: 1800 Ignacio Blvd
City: Novato
State/Zip: CA, 94949

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public	x	Continuing Education	\$	Training Program	X
Unrestricted		EMT	\$	CE Provider	X
Restricted to Fire Personnel		EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	0	Continuing Education	0
EMR	2	EMT	2
EMT	2	EMT Refresher	2
Paramedic	0	Paramedic	0

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin

Contact Phone: 415-299-3565

CEU Authorization #: 21-1005

Institution: Farmhouse Teaching Services

Contact Email: farmhouseteaching@gmail.com

Expiration
Date: 04/30/2023

Contact Name: Michael Seybold

Address: PO Box 821

City: Nicasio

State/Zip: CA 94946

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public	x	Continuing Education	\$20 to \$150	Training Program	
Unrestricted	x	EMT	\$N/A	CE Provider	x
Restricted to Fire Personnel	No	EMT Refresher	\$N/A		
		Paramedic	\$N/A		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	45	Continuing Education	90
EMR	0	EMT	0
EMT	0	EMT Refresher	0
Paramedic	0	Paramedic	0

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin

Institution: Kaiser Permanente San
Rafael Medical Center

Contact Name: Mikayla Mersereau

Contact Phone: 831-246-2433

Contact Email: Mikayla.A.Mersereu@KP.org

CEU Authorization #: 21-0010

Expiration Date: _____

Address: 99 Monticello Rd.

City: San Rafael

State/Zip: Ca, 94903

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public		Continuing Education	\$ variable	Training Program	
Unrestricted		EMT	\$	CE Provider	X
Restricted to Fire Personnel	X	EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	12	Continuing Education	30
EMR		EMT	
EMT		EMT Refresher	
Paramedic		Paramedic	

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin **Institution:** Marin County LEMSA **Contact Name:** Christian Lombard
Contact Phone: 415-328-5910 **Contact Email:** clombard@marincounty.org
CEU Authorization #: 21-0001 **Expiration Date:** 12/31/2025

Address: 1600 Los Gamos Dr.
City: San Rafael
State/Zip: CA 94903

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public	yes	Continuing Education	\$	Training Program	
Unrestricted		EMT	\$	CE Provider	X
Restricted to Fire Personnel		EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	0	Continuing Education	0
EMR	0	EMT	0
EMT	0	EMT Refresher	0
Paramedic	0	Paramedic	0

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin

Institution: MarinHealth Medical Center

Contact Name: Rebecca Maxwell

Contact Phone: 415-925-7297

Contact Email: Rebecca.maxwell@mymarinhealth.org

CEU Authorization #: 21-0020

Expiration Date: 1/31/2026

Address: 250 Bon Air Drive

City: Greenbrae

State/Zip: CA, 94939

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public	X	Continuing Education	\$	Training Program	
Unrestricted		EMT	\$	CE Provider	X
Restricted to Fire Personnel		EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	1	Continuing Education	66
EMR		EMT	
EMT		EMT Refresher	
Paramedic		Paramedic	

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin **Institution:** Marin Search and Rescue **Contact Name:** Michael Yuan
Contact Phone: 415-845-3650 **Contact Email:** michaely@marinsar.org
CEU Authorization #: 21-0600 **Expiration Date:** 01/31/2026

Address: 1600 Los Gamos Drive Ste 200
City: San Rafael
State/Zip: CA,94903

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public		Continuing Education	\$Free	Training Program	
Unrestricted		EMT	\$	CE Provider	x
Restricted to Fire Personnel	x	EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	4-6	Continuing Education	20
EMR	1	EMT	
EMT		EMT Refresher	
Paramedic		Paramedic	

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin

Institution: Marin County Fire Dept

Contact Name: Bridget Peterson

Contact Phone: 415-302-4815

Contact Email: bpeterson@marincounty.org

CEU Authorization #: 21-0100

Expiration Date: 1/31/2025

Address: PO Box 518/ 33 Castlerock Ave.

City: Woodacre

State/Zip: CA 94973

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public		Continuing Education	\$n/a	Training Program	
Unrestricted		EMT	\$	CE Provider	X
Restricted to Fire Personnel	X	EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	125	Continuing Education	300
EMR		EMT	
EMT		EMT Refresher	
Paramedic		Paramedic	

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin **Institution:** Novato Fire District **Contact Name:** Barrett Smith
Contact Phone: 415-878-2611 **Contact Email:** bsmith@novatofire.org
CEU Authorization #: 21-0200 **Expiration Date:** 12/16/2024

Address: 95 Rowland Way
City: Novato
State/Zip: CA, 94945

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public	no	Continuing Education	\$ 0	Training Program	
Unrestricted	no	EMT	\$ N/A	CE Provider	X
Restricted to Fire Personnel	X	EMT Refresher	\$ N/A		
		Paramedic	\$ N/A		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	72	Continuing Education	142
EMR	0	EMT	0
EMT	0	EMT Refresher	0
Paramedic	0	Paramedic	0

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin

Institution: Otis Guy Teaching Services

Contact Name: Otis Guy

Contact Phone: 415-250-2585

Contact Email: otis@otisguyteachingservices.com

CEU Authorization #: 21-1004

Expiration Date: 12/31/2025

Address: 115 Ridge Rd

City: Fairfax

State/Zip: CA 94930

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public	x	Continuing Education	\$450	Training Program	x
Unrestricted		EMT	\$	CE Provider	x
Restricted to Fire Personnel		EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	5	Continuing Education	5-40
EMR	0-1	EMT	
EMT		EMT Refresher	
Paramedic		Paramedic	

Table 10: Resource Directory**Approved Training Programs****Reporting Year:** 2020 to 2022**County:** Marin**Institution:** SMEMPS (Southern Marin
Emergency Medical
Paramedic Program)**Contact Name:**Bridget Peterson**Contact Phone:** 415-302-4815**Contact Email:** bpeterson@marincounty.org**CEU Authorization #:** 21-0300**Expiration Date:** 1/31/2025**Address:** 1679 Tiburon Blvd.**City:** Tiburon**State/Zip:** CA 94920

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public		Continuing Education	\$n/a	Training Program	
Unrestricted		EMT	\$	CE Provider	X
Restricted to Fire Personnel	X	EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	0*	Continuing Education	90
EMR		EMT	
EMT		EMT Refresher	
Paramedic		Paramedic	

*This CE provider has been inactive (due to shared services with MCFD) and plan to discontinue next recert

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

County: Marin

Institution: San Rafael Fire Department

Contact Name: Jason Hatfield

Contact Phone: 415-720-9039

Contact Email: Jason.hatfield@cityofsanrafael.org

CEU Authorization #: 21-0400

Expiration Date: 2/28/2026

Address: 1375 Fifth Ave

City: San Rafael

State/Zip: Ca, 94901

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public		Continuing Education	\$0	Training Program	
Unrestricted		EMT	\$	CE Provider	x
Restricted to Fire Personnel	x	EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	20	Continuing Education	70
EMR		EMT	
EMT		EMT Refresher	
Paramedic		Paramedic	

Table 10: Resource Directory

Approved Training Programs

Reporting Year: 2020 to 2022

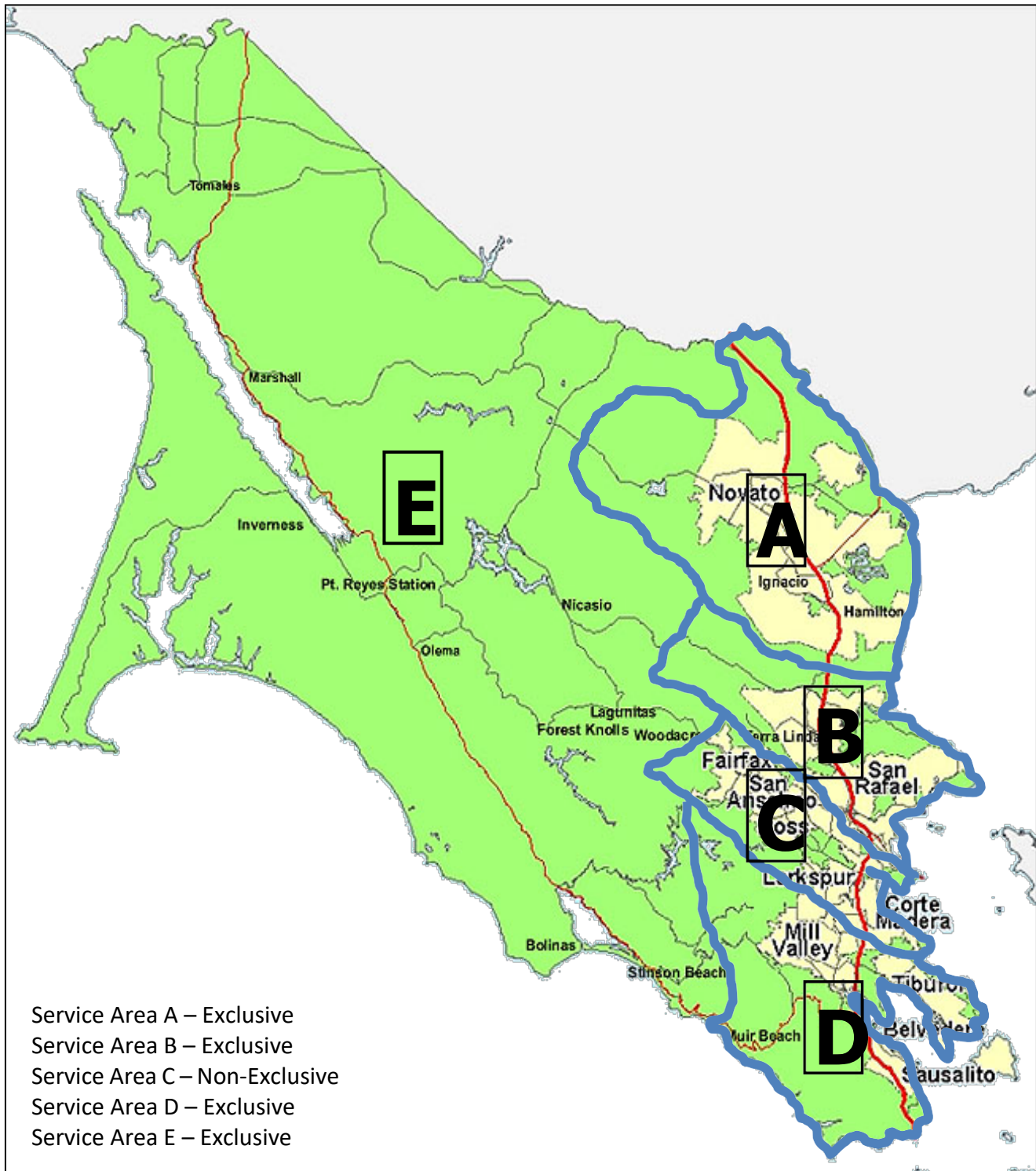
County: Marin **Institution:** CARE Medical Education **Contact Name:** Kenneth Allen
Contact Phone: 415-717-1091 **Contact Email:** caremed@gmail.com
CEU Authorization #: 21-1007 **Expiration Date:** 7/31/2023

Address: PO Box 22
City: Woodacre
State/Zip: CA, 94973

Student Eligibility		Cost of Program(s)		Program Level (Type)	
Open to Public	X	Continuing Education	\$	Training Program	
Unrestricted		EMT	\$	CE Provider	X
Restricted to Fire Personnel		EMT Refresher	\$		
		Paramedic	\$		

# of Courses Taught Annually		# of Students Completing Training Annually	
Continuing Education	0	Continuing Education	0
EMR	0	EMT	0
EMT	0	EMT Refresher	0
Paramedic	0	Paramedic	0

Marin County Paramedic Service Areas Map



**EMS PLAN
AMBULANCE ZONE SUMMARY FORM**

In order to evaluate the nature of each area or subarea, the following information should be compiled for each zone individually. Please include a separate form for each exclusive and/or nonexclusive ambulance zone.

Local EMS Agency or County Name: Marin County
Area or subarea (Zone) Name or Title: Paramedic Service Area A
Name of Current Provider(s): Include company name(s) and length of operation (uninterrupted) in specified area or subarea. Novato Fire Protection District, 1978+
Area or subarea (Zone) Geographic Description: Unchanged from previously submitted description, zone map included
Statement of Exclusivity, Exclusive or non-Exclusive (HS 1797.6): Include intent of local EMS agency and Board action. Grandfathered with no change in scope and manner of service; unchanged from previous submission. There has been no formal Board action.
Type of Exclusivity, "Emergency Ambulance", "ALS", or "LALS" (HS 1797.85): Include type of exclusivity (Emergency Ambulance, ALS, LALS, or combination) and operational definition of exclusivity (i.e., 911 calls only, all emergencies, all calls requiring emergency ambulance service, etc.). Type: Emergency Ambulance Level: 9-1-1, 7-digit, ALS Upon request, BLS backup is provided by a private provider. Does not include non-emergency interfacility transfers unless contract vendor not available; or patient condition changes to upgrade to ALS 911 service.
Method to achieve Exclusivity, if applicable (HS 1797.224): If grandfathered, pertinent facts concerning changes in scope and manner of service. Description of current provider including brief statement of uninterrupted service with no changes to scope and manner of service to zone. Include chronology of all services entering or leaving zone, name or ownership changes, service level changes, zone area modifications, or other changes to arrangements for service. If competitively-determined, method of competition, intervals, and selection process. Attach copy/draft of last competitive process used to select provider or providers. Grandfathered per 1797.224 with no change in previous plan submission.

**EMS PLAN
AMBULANCE ZONE SUMMARY FORM**

In order to evaluate the nature of each area or subarea, the following information should be compiled for each zone individually. Please include a separate form for each exclusive and/or nonexclusive ambulance zone.

Local EMS Agency or County Name: Marin County
Area or subarea (Zone) Name or Title: Paramedic Service Area B
Name of Current Provider(s): Include company name(s) and length of operation (uninterrupted) in specified area or subarea. San Rafael Fire Department, 1980+
Area or subarea (Zone) Geographic Description: Unchanged from previous submission, zone map included
Statement of Exclusivity, Exclusive or non-Exclusive (HS 1797.6): Include intent of local EMS agency and Board action. Grandfathered with no change in scope and manner of service; unchanged from previous submission. There has been no formal Board Action.
Type of Exclusivity, "Emergency Ambulance", "ALS", or "LALS" (HS 1797.85): Include type of exclusivity (Emergency Ambulance, ALS, LALS, or combination) and operational definition of exclusivity (i.e., 911 calls only, all emergencies, all calls requiring emergency ambulance service, etc.). Type: Emergency Ambulance Level: 9-1-1, 7-digit, ALS Upon request, ALS or BLS backup is provided by a private provider. Does not include non-emergency interfacility transfers unless contract vendor not available; or patient condition changes to upgrade to ALS 911 service.
Method to achieve Exclusivity, if applicable (HS 1797.224): If grandfathered, pertinent facts concerning changes in scope and manner of service. Description of current provider including brief statement of uninterrupted service with no changes to scope and manner of service to zone. Include chronology of all services entering or leaving zone, name or ownership changes, service level changes, zone area modifications, or other changes to arrangements for service. If competitively-determined, method of competition, intervals, and selection process. Attach copy/draft of last competitive process used to select provider or providers. Grandfathered per 1797.224 with no change in previous plan submission.

**EMS PLAN
AMBULANCE ZONE SUMMARY FORM**

In order to evaluate the nature of each area or subarea, the following information should be compiled for each zone individually. Please include a separate form for each exclusive and/or nonexclusive ambulance zone.

Local EMS Agency or County Name: <i>Marin County</i>
Area or subarea (Zone) Name or Title: <i>Paramedic Service Area C</i>
Name of Current Provider(s): Include company name(s) and length of operation (uninterrupted) in specified area or subarea. <i>Ross Valley Paramedic Authority, 1984+</i>
Area or subarea (Zone) Geographic Description: <i>Unchanged from previous submission, zone map included.</i>
Statement of Exclusivity, Exclusive or non-Exclusive (HS 1797.6): Include intent of local EMS agency and Board action. <i>Non-exclusive area as described in 2001 correspondence between Marin EMS and California EMS Authority. History unchanged, no Board action taken.</i>
Type of Exclusivity, "Emergency Ambulance", "ALS", or "LALS" (HS 1797.85): Include type of exclusivity (Emergency Ambulance, ALS, LALS, or combination) and operational definition of exclusivity (i.e., 911 calls only, all emergencies, all calls requiring emergency ambulance service, etc.). <i>Not applicable.</i>
Method to achieve Exclusivity, if applicable (HS 1797.224): If grandfathered, pertinent facts concerning changes in scope and manner of service. Description of current provider including brief statement of uninterrupted service with no changes to scope and manner of service to zone. Include chronology of all services entering or leaving zone, name or ownership changes, service level changes, zone area modifications, or other changes to arrangements for service. If competitively-determined, method of competition, intervals, and selection process. Attach copy/draft of last competitive process used to select provider or providers. <i>Not applicable.</i>

**EMS PLAN
AMBULANCE ZONE SUMMARY FORM**

In order to evaluate the nature of each area or subarea, the following information should be compiled for each zone individually. Please include a separate form for each exclusive and/or nonexclusive ambulance zone.

Local EMS Agency or County Name: Marin County
Area or subarea (Zone) Name or Title: Paramedic Service Area D
Name of Current Provider(s): Include company name(s) and length of operation (uninterrupted) in specified area or subarea. Southern Marin Emergency Medical Paramedic System, 1980+
Area or subarea (Zone) Geographic Description: Zone map included
Statement of Exclusivity, Exclusive or non-Exclusive (HS 1797.6): Include intent of local EMS agency and Board action. Grandfathered with no change in scope and manner of service; unchanged from previous submission. There has been no formal Board action.
Type of Exclusivity, "Emergency Ambulance", "ALS", or "LALS" (HS 1797.85): Include type of exclusivity (Emergency Ambulance, ALS, LALS, or combination) and operational definition of exclusivity (i.e., 911 calls only, all emergencies, all calls requiring emergency ambulance service, etc.). Type: Emergency Ambulance Level: 9-1-1, 7-digit, ALS Upon request, ALS or BLS backup is provided by a private provider. Does not include non-emergency interfacility transfers unless contract vendor not available; or patient condition changes to upgrade to ALS 911 service.
Method to achieve Exclusivity, if applicable (HS 1797.224): If grandfathered, pertinent facts concerning changes in scope and manner of service. Description of current provider including brief statement of uninterrupted service with no changes to scope and manner of service to zone. Include chronology of all services entering or leaving zone, name or ownership changes, service level changes, zone area modifications, or other changes to arrangements for service. If competitively-determined, method of competition, intervals, and selection process. Attach copy/draft of last competitive process used to select provider or providers. Grandfathered per 1797.224 with no change in previous plan submission.

**EMS PLAN
AMBULANCE ZONE SUMMARY FORM**

In order to evaluate the nature of each area or subarea, the following information should be compiled for each zone individually. Please include a separate form for each exclusive and/or nonexclusive ambulance zone.

Local EMS Agency or County Name: Marin County
Area or subarea (Zone) Name or Title: Paramedic Service Area E
Name of Current Provider(s): Include company name(s) and length of operation (uninterrupted) in specified area or subarea. Marin County Fire Department, 1979+
Area or subarea (Zone) Geographic Description: Unchanged from previous submission, map included.
Statement of Exclusivity, Exclusive or non-Exclusive (HS 1797.6): Include intent of local EMS agency and Board action. Grandfathered with no change in scope and manner of service; unchanged from previous submission. There has been no formal Board action.
Type of Exclusivity, "Emergency Ambulance", "ALS", or "LALS" (HS 1797.85): Include type of exclusivity (Emergency Ambulance, ALS, LALS, or combination) and operational definition of exclusivity (i.e., 911 calls only, all emergencies, all calls requiring emergency ambulance service, etc.). Type: Emergency Ambulance Level: 9-1-1, 7-digit, ALS Upon request, ALS or BLS backup is provided by a private provider. Does not include non-emergency interfacility transfers unless contract vendor not available; or patient condition changes to upgrade to ALS 911 service.
Method to achieve Exclusivity, if applicable (HS 1797.224): If grandfathered, pertinent facts concerning changes in scope and manner of service. Description of current provider including brief statement of uninterrupted service with no changes to scope and manner of service to zone. Include chronology of all services entering or leaving zone, name or ownership changes, service level changes, zone area modifications, or other changes to arrangements for service. If competitively-determined, method of competition, intervals, and selection process. Attach copy/draft of last competitive process used to select provider or providers. Grandfathered per 1797.224 with no change in previous plan submission.

Trauma Plan Update



**This plan update was prepared for the
California Emergency Medical Services Authority
Submitted September 2023**

Data reflected in this Program update is for the calendar year 2022

Program prepared by:
Marin County Emergency Medical Services Agency
1600 Los Gatos Drive
Suite 220
San Rafael, CA 94903

Trauma System Summary

Marin County's Trauma Care System serves a suburban/rural, slow-growth population of approximately 256,018 on a hilly peninsula, immediately north of San Francisco's Golden Gate Bridge. Trauma patients are transported from the field by ground to MarinHealth Medical Center, our designated American College of Surgeons Verified Level III Trauma Center in southeast Marin County. A single major freeway corridor (Highway 101), often gridlocked during commute hours, is the primary ground transport route to the Level III Trauma Center. Because Marin's trauma center does not have a helipad, our EMS aircraft policy allows transport via air ambulance to out-of-county trauma centers when estimated ground transport to the local trauma center will exceed 30 minutes. Air transport most often occurs in the rural areas of West Marin.

MarinHealth Medical Center has several clinical capabilities that exceed standard Level III criteria, including:

- 24/7 neurosurgical coverage
- Interventional radiology
- 24/7 in-house anesthesia coverage

Severely injured patients requiring a higher level of care are stabilized and can be transferred out by EMS aircraft, using an EMS landing zone located in a park across the street from the Level III trauma center.

The closest Level I trauma center is Zuckerberg San Francisco General Hospital (ZSFGH) located 17 miles south in San Francisco. Traffic delays across the Golden Gate Bridge and through the densely populated urban center preclude efficient direct ground transport from the field to Zuckerberg San Francisco General Hospital. Zuckerberg San Francisco General's Level I Trauma Center also does not have a helipad. Secondary transfers of stable patients occasionally occur from the Level III trauma center in Marin to the Level I trauma center in San Francisco by ground. UCSF Benioff Children's Hospital Oakland, UC Davis Medical Center, Stanford Medical Center, and Santa Clara Valley Medical Center are Level I referral centers accessible by air and ground.

Transfers from Marin County may also occur to Level II trauma centers in the region: John Muir Medical Center in Walnut Creek (26 miles Southeast), Santa Rosa Memorial Hospital in Santa Rosa (42 miles North), and Kaiser Vacaville (57 miles Northeast). Marin County EMS has worked with our Level III trauma center and other receiving facilities to implement a standardized rapid re-triage policy and protocol for adult and pediatric patients recommended by the Bay Area Regional Trauma Coordinating Committee.

Since 2010, the annual trauma patient volume has steadily increased in Marin County with our Level III Trauma Center treating approximately 1790 patients in 2022. Kaiser Permanente San Rafael Medical Center, our Emergency Department Approved for Trauma (EDAT) cared for an additional 23 trauma patients in 2022. Marin has the oldest demographic by age in the Bay Area with trauma due to falls accounting for 73% of all trauma patients. Eighty-seven percent of those with falls are ≥65 years old. This type of injury is likely more common in Marin due to an older median age of 47.1 years as compared to an age of 36.7 years for other California counties. A recent census shows 24.5% of Marin’s population is aged 65 years or older¹. Therefore, focus on fall prevention in the elderly is a priority for our injury prevention programs. Blunt trauma accounts for 97% of the trauma patients in the County. Motor vehicle, bicycle, and motorcycle accidents account for 19% of all causes of injury in trauma center patients. The tables below summarize the distribution of traumatic injuries in Marin for 2022:

MarinHealth Medical Center Level III Trauma Center Mechanism of Injury (N=1790)²		2022
Fall Injury		73%
Bike Injury		7%
Motor Vehicle Injury		10%
Other Blunt: Assault, Industrial, Sport		5%
Penetrating: Other, GSW, SW		2%
Motorcycle Injury		2%

MARINHEALTH MEDICAL CENTER LEVEL III TRAUMA CENTER SYSTEM RESOURCES AND OPERATIONS Facilities/Critical Care		2022
Total number of patients activated		1365
Total number of trauma consults and non-activated trauma patients		425
Total number of major trauma ³ victims received by ambulance		129
Total number of <i>all</i> trauma patients transferred to a higher level of care		60
Total number of <i>pediatric</i> trauma patients transferred to higher level of care		35

¹ Source: U.S. Census Data 2022

² Source: MarinHealth Medical Center Hospital Data

³ “Major Trauma” defined as anatomic or physiologic criteria or having an ISS≥25

KAISER PERMANENTE SAN RAFAEL MEDICAL CENTER EMERGENCY DEPARTMENT APPROVED FOR TRAUMA (EDAT) SYSTEM RESOURCES AND OPERATIONS ⁴ Facilities/Critical Care		2022
Total number of patients activated		23
Total number of major trauma victims transported to the EDAT		2
Total number of <i>all</i> trauma patients transferred to a higher level of care		3
Total number of <i>pediatric</i> trauma patients transferred to a higher level of care		1

Trauma Centers

Marin's designated Level III trauma center, MarinHealth Medical Center, has remained unchanged since our original trauma system implementation in 2001. A new ten-year designation agreement was executed between the County and MarinHealth Medical Center in December 2012. Kaiser Permanente Medical Center in San Rafael is a county-designated Emergency Department Approved for Trauma (EDAT). This designation was renewed in March of 2014. It is a designation used in Marin County to define a hospital's capabilities for treating trauma patients in this suburban/rural area. The California State EMS Authority approved this term for Marin County's Trauma Care System Plan prior to the American College of Surgeons Committee on Trauma recognition of the Level IV designation. The primary distinguishing capability for this designation is the availability of a trauma surgeon within 30 minutes of patient arrival. The designation is primarily designed in this county for surgical intervention/screening of patients who meet mechanism of injury triage criteria.

"The Emergency Department Approved for Trauma (EDAT) is a program implemented in a rural area of northeastern California that establishes minimum standards for non-trauma center designated hospitals in remote areas. It integrates these hospitals into the trauma system through transfer guidelines and agreements and participation in systemwide quality assurance/improvement programs. The EDAT program promotes both improved initial treatment of rural trauma patients and appropriate transfer of patients to designated trauma centers."

Marin's Trauma System Plan contains detailed standards for each trauma facility, including EDAT standards that meet or exceed California State Level IV standards. EDAT criteria include a Trauma Program Manager, a Trauma Medical Director, a Trauma Registry Coordinator, and a multi-disciplinary Performance Improvement and Patient Safety committee.

In October 2022, the Trauma Center at MarinHealth Medical Center successfully passed a required triennial re-verification site visit by a team from the American College of Surgeons (ACS) and is scheduled for the next verification site visit in October 2025.

⁴ Source: Kaiser Permanente San Rafael Medical Center

Changes in Trauma System

The California State EMS Authority approved Marin County's original Trauma System Plan in November 1999. The plan was implemented in 2001 following Trauma Center designations for one Level III with 24/7 neurosurgery and one Emergency Department Approved for Trauma (EDAT). Except for modifications to the Trauma Triage Tool used by field personnel and periodic efforts to improve our over-triage and under-triage rates, Marin's trauma system has remained stable and verified by the American College of Surgeons since its inception.

Trauma System Goals and Objectives

New objectives are developed and embedded within the “desired outcome” and “timeline” columns, as they continue to be relevant to the foundational objectives from 2001.

OBJECTIVE	DESIRED OUTCOME	TIMELINE	2022 UPDATE
<i>Seek on-going advice from Trauma Advisory Committee (TAC) and Physician Advisory Committee (PAC) as well as various subcommittees to facilitate the implementation of the Trauma Plan.</i>	Trauma Advisory Committee meets regularly and is informed regarding trauma system issues.	Ongoing	The Trauma Advisory Committee (TAC) meets semi-annually. The EMS Agency and trauma center is regularly represented at Bay Area Regional Trauma Coordinating Committee (RTCC).
<i>Update countywide standard for trauma triage based on revised TTT.</i>	Standardize the utilization of the TTT between field providers and hospital providers	April 2024	TAC and the Policy and Procedure Committee is currently working on incorporating changes from the 2021 National Guidelines for the Field Triage of Injured Patients into the Marin County TTT.
<i>Support trauma centers, EMS providers, and Injury prevention coalitions to implement target goals.</i>	Reduce rate of hospitalization for falls in elderly by 10%	Ongoing	Fall Prevention: A Matter of Balance was initiated in early 2019 to assist elderly patients in improving balance, strength, and activity.

Educational Links Related to Helmet Safety Campaign

<https://www.mymarinhealth.org/programs-services/emergency-trauma/injury-prevention/>
<https://www.mymarinhealth.org/documents/content-assets/emergency/Helmet-safety-children.pdf>
<https://www.mymarinhealth.org/documents/content-assets/emergency/Helmet-safety-adults.pdf>

STEMI

System of Care Plan



**This plan was prepared for the
California Emergency Medical Services Authority**

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Data reflected in this plan update is for the calendar year 2022

Plan prepared by:

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STEMI Regulation

California's Statewide STEMI Critical Care System is described in the California Code of Regulations; Title 22, Division 9, Chapter 7.1. These regulations outline the requirements of all components of the STEMI Critical Care System including the Local EMS Agency, pre-hospital providers, and hospitals.

As a requirement of the California Regulations, this document serves as the formal written plan for the Marin County Emergency Medical Services Agency STEMI Critical Care System.

Marin County Emergency Medical Services Agency STEMI Critical Care System Plan has been written in accordance with Title 22, Division 9, Chapter 7.1 of the California Code of Regulations.

STEMI Critical Care System

About 695,000 people died of heart disease in the United States in 2021. Heart disease is the leading cause of death for both men and women. Coronary heart disease (CHD) is the most common type of heart disease, killing over 366,000 people annually. According to the Centers for Disease Control, one person dies every 33 seconds from cardiovascular disease.¹ Every year, approximately 805,000 adult Americans have a heart attack. A heart attack, also known as Myocardial Infarction (MI), is a life-changing event that places a heavy burden on patients, families, and caregivers. When a patient is suffering from a cardiac event, timely intervention is critical to reverse the damage and reduce mortality, morbidity, and disability, in addition to improving survivor's quality of life.

Although many EMS agencies in California have developed STEMI systems of care, there have been no standardized statewide requirements for the development and implementation of a STEMI critical care system until recently.

The broad objective for a California STEMI Critical Care System is to improve the care of patients suffering from a life-threatening acute heart attack. More specifically, standardized statewide requirements will lead to the consistent application of standardized care, thus protecting the health and safety of the public.²

Marin County's STEMI Critical Care System is a subspecialty care component of the EMS system developed in 2006 by the Marin County Emergency Medical Services Agency. This critical care system links prehospital and hospital care to treat STEMI patients who potentially require immediate medical or surgical intervention.

¹ <https://www.cdc.gov/heartdisease/facts.htm>

² https://emsa.ca.gov/wp-content/uploads/sites/47/2018/04/STEMI_ISOR.pdf

Stakeholders

Marin County EMS Agency

Marin County is in Northern California, with a population of approximately 262,000. Marin County EMS works diligently to ensure that the communities, spread over its approximate 828 square miles, have access to STEMI treatment and services that provide quality care based on research and evidence-based medicine. Of the Bay Area counties, we have the oldest average population of 47.1 years of age. Marin County treats approximately 120 STEMI patients each year. Our door-to-balloon (DTB) times for patients transported by EMS in 2022 was 59 minutes.

EMS Agency Personnel and System Coordination

The Marin County STEMI Critical Care System is designed to provide quality care and improve outcomes for patients experiencing a STEMI through sharing information and ideas and partnering with key stakeholders.

Marin County EMS Agency coordinates components of the STEMI Critical Care System. Key personnel include:

- **EMS Administrator**
- **EMS Medical Director**
- **EMS Program Coordinator**
- **EMS Specialist**
- **The STEMI Advisory Committee**
 - EMS Agency Medical Director, Administrator, Program Coordinator, and staff
 - Base Hospital Representative(s)
 - STEMI Receiving Center Representative(s)
 - Fire Department Representative(s)
 - Private Ambulance Service Representative(s)
 - 9-1-1 Communication Center Representative(s)

Marin County STEMI Receiving Centers

The California State Regulations define a STEMI Receiving Center (SRC) as a “licensed general acute care facility that meets the minimum hospital STEMI care requirements under Section 100270.124 and can perform Percutaneous Coronary Intervention (PCI).”

Marin County EMS Agency has written agreements with hospitals that are designated STEMI Receiving Centers (SRC). Our designated SRCs employ and maintain high-quality standards to ensure that their facilities meet the requirements to maintain STEMI Receiving Center Designation.

STEMI Receiving Centers must also maintain compliance with Marin County EMS Agency designation criteria outlined in Policy [#5600](#) *Specialty Care Center Designation*. The following are designated STEMI Receiving Centers in Marin County:

MarinHealth Medical Center – Greenbrae
Kaiser Permanente Medical Center – San Rafael

Dispatch

The Communications Center of the Marin County Sheriff's Office is the primary public safety answering point for 9-1-1 calls in Marin County. Calls are answered by dispatchers with formalized training, using protocols for calls that report warning signs of a heart attack. ProQA, a dispatching software based on Medical Priority Dispatch Systems (MPDS), ensures the appropriate response priority to the 9-1-1 call and the rapid identification of patients experiencing a cardiac event.

Marin County Pre-Hospital Providers

Marin County is a Fire Department-based 9-1-1 system with private ambulance companies used primarily for interfacility transports. Ground, air, and specialty CCT transport are offered within the county. The community can access emergency transport service providers through the 9-1-1 system.

Once on scene, the first responder and ambulance transport crews coordinate their efforts to rapidly identify, treat, and transport STEMI patients to a STEMI Receiving Center. A critical component in the continuum of care is the transmission of 12-lead ECG findings. Providers electronically transmit a 12-Lead ECG to the receiving hospital and when needed, prehospital providers can contact base hospital personnel for On-Line Medical Consultation. Field crews notify the STEMI Receiving Center of the incoming patient with an *“Early STEMI Notification”* radio report to allow hospital staff to prepare for expeditious triage and treatment upon patient arrival.

Marin County Emergency Medical Services Agency has a policy describing the process in which 12-lead ECG transmission takes place. Policy [#ALS PR 12](#) *12-LEAD ECG PROCEDURE* and Policy [#C 9](#) *ST ELEVATION MYOCARDIAL INFARCTION* serve as an advanced life support skill guideline for obtaining, utilizing, and transmitting 12-Lead ECG's.

Prehospital providers work closely with the hospital staff to ensure that all pertinent information is relayed for a seamless transition within the continuum of care.

The ACS /STEMI Patient

Marin County EMS Agency believes that rapid identification, treatment and transport of STEMI patients by emergency medical personnel is a vital and valuable part of optimal care for the victims of cardiac emergencies. Morbidity and mortality rates in STEMI patients have been shown to be directly related to the degree of myocardial damage sustained due to vessel occlusion. An important determinant of outcomes for the STEMI patient is timely reperfusion of the coronary arteries. Reperfusion of the affected artery can salvage myocardium that would otherwise become necrotic. Our goal is always to ensure that patients are treated in the safest, most expedited manner to achieve reperfusion in ≤ 90 minutes from first medical contact to symptom onset when the patient is transported to a STEMI receiving center or ≤ 120 minutes if the patient was initially seen at a non-PCI capable hospital.

A STEMI diagnosis is based on electrocardiographic changes that show evidence of evolving myocardial injury, as well as the presentation of the patient. When electrocardiographic changes occur and the patient presents with pain or symptoms of suspected cardiac origin, the patient is transported directly to a STEMI Receiving Center with a cardiac catheterization laboratory for possible reperfusion treatment. Therefore, STEMI patients benefit the most from rapid coronary reperfusion therapy.³

Marin County Emergency Medical Services Agency has a Field Treatment Guideline to assist field providers in rapidly identifying a patient suffering an ST Elevation MI. Field Treatment Guideline #C 9 describes the signs and symptoms of a suspected STEMI patient and is the guideline for treatment in Marin County.

Destination

In STEMI systems of care, STEMI patients should be transported to the closest, most appropriate facility staffed and equipped to perform immediate percutaneous coronary intervention (PCI) to facilitate reperfusion. STEMI destination policies that allow emergency medical services to bypass non-percutaneous coronary intervention-capable facilities are associated with significantly faster treatment times for patients with ST-Elevation MI. Time to treatment in STEMI's is a critical determinant of patient outcomes. However, Marin County does allow a hemodynamically stable patient to be transported to their preferred SRC (SRC used by their treating cardiologist) if the estimated transport time is no longer than 15 minutes away from the nearest SRC. Reducing delays relies on a robust emergency medical system that can transport a patient directly to a percutaneous coronary intervention-capable hospital, even if it means driving past a closer hospital.⁴

In the rare situation that the closest, most appropriate STEMI center is not available to accept a STEMI patient due to an internal disaster or occupied Cath Lab suites, field providers will transport the patient to the next closest, most appropriate STEMI Receiving Center.

Marin County EMS Agency has a policy to assist field providers in determining the most appropriate SRC destination for a STEMI patient - policy document #C9 – *STEMI*. Additionally, patients resuscitated from an out-of-hospital cardiac arrest (OHCA) require ongoing cardiac resuscitation systems of care, and many require emergent angiography. Guidance is provided in policy [#C 10 - Return of Spontaneous Circulation](#), to transport all patients who have sustained ROSC (return of spontaneous circulation) after out-of-hospital cardiac arrest (OHCA) directly to a PCI-capable facility.

Communication

Studies show that EMS transportation is associated with shorter door-to-balloon time in patients with ST-segment elevation myocardial infarction. In addition to EMS transportation, when prehospital crews make notification of an incoming STEMI patient to the receiving hospital, it is again associated with shorter door-to-balloon time.

Early notification of an incoming STEMI patient allows appropriate hospital resources to mobilize before patient's arrival. Due to the time-sensitive nature of reperfusion on outcomes, the diligent practice of STEMI early notifications from the field is a vital element in the continuum of care spectrum as it is meant to communicate the need effectively and rapidly for expeditious treatment upon patient arrival.

Marin County prehospital providers utilize a radio system entitled MERA (Marin Emergency Radio Authority) to communicate with the intended receiving SRC. Both SRCs in Marin County have a dedicated line in the Emergency Department to receive radio reports, including Early STEMI Notifications.

Marin County EMS has a policy to give direction on a notification report to receiving hospitals. Policy #7001 – Hospital Report/Consult addresses the minimum acceptable information to be communicated and provides a standardized and consistent approach to prehospital notifications.

Inter-Facility Transfers

STEMI patients seen at non-STEMI receiving centers or STEMI referral centers in Marin County and adjacent counties occasionally require emergent transfer to a STEMI receiving center. For this reason, Marin County STEMI receiving centers have developed plans that include pre-arranged agreements with STEMI referral centers for the transfer of patients. STEMI referral centers utilize 911 to transfer patients having a STEMI to the closest/preferred STEMI receiving center. STEMI referral and STEMI receiving centers meet to discuss cases and any identified quality improvement issues. The STEMI referral centers include:

Novato Community Hospital – Novato
Sonoma Valley Medical Center – Sonoma
Petaluma Valley Hospital - Petaluma

Marin County EMS Agency has a policy in place to provide guidelines for ambulance transport of patients between acute care hospitals. Policy #GPC5 – *Interfacility Transfer Procedure*. If a critical care ambulance is not immediately available, 9-1-1 is utilized for expeditious transportation.

Data Collection

Prehospital and hospital STEMI data is collected on a semi-annual basis and compiled into a database developed by the Marin County EMS Agency. The pre-hospital data points were derived from national standards. Hospital outcome quality measures meet the American Heart Association (AHA) guidelines and standards. Among the data points we collect are First Medical Contact (FMC) to Intervention Time, field 12-lead acquisition time, SRC arrival time, hospital 12-lead acquisition time, door to dilatation (D2D) time, and reasons for delays in invasive management. STEMI receiving centers provide follow up information on all patients taken to the cardiac catheterization lab.

Marin County has recently purchased FirstWatch, an automated EMS-centric reporting and real-time, web-based data visualization tool.

STEMI Advisory Committee

As the delivery of cardiac care evolves to become more interconnected, coordinating care between prehospital providers, nurses, physicians, and other disciplines has become increasingly important. In its simplest form, interprofessional collaboration approaches patient care from a team-based perspective.

The Marin County EMS Agency STEMI Advisory Committee (SAC) meets biannually to review performance data, identify areas needing improvement, and carry out and monitor improvement efforts. Attendees include the SRC Medical Directors, SRC Program Managers, data specialists, EMS Agency personnel, and EMS stakeholders (fire and private providers). EMS data is collected via our electronic medical record-keeping program, ImageTrend. The SRC Program Managers/Data Specialists collect hospital data, vet it through their internal processes, and present it to SAC committee members. All records that include Protected Health Information (PHI) as defined by the Health Insurance Portability and Accountability Act (HIPAA) are handled confidentially per the statute. If a hospital or the EMS Agency identifies a need for improvement, an EMS Event Reporting Form may be generated, and a performance improvement action plan will be developed by the EMS Medical Director and/or STEMI Advisory Committee.

From 2006 to 2013, paramedics activated STEMI alerts based on their ECG interpretations. Even with much prehospital education, our system contended with many false positive STEMI alerts and a high rate of over-activations of our cath labs. Early on, “machine reads” were infrequent and inconsistent. As technology developed and confidence increased, our system began activating Early STEMI Notifications on machine-read interpretations beginning in July 2013. Since that time, our rate of over-activating the cath lab has dropped significantly.

Education and Outreach

Cardiac care public education and outreach has a strong presence in the Marin County STEMI Critical Care System. In addition to internal education efforts by our SRCs (skills days, learning modules, case reviews, etc.) for their staff members, the Medical Directors of both SRCs provide our STEMI Advisory Committee members with educational opportunities biannually on a range of topics including STEMI mimics, LVADs, Impella Heart Pump, Extracorporeal Membrane Oxygenation (ECMO) CPR, vest defibrillators, and refractory ventricular fibrillation.

Both of our SRCs employ physicians who, in addition to their responsibilities as emergency department clinicians, act as fire department medical directors and train the majority of our prehospital personnel. With this benefit to our LEMSA, CQI is frequently done in “real time” as patients are being delivered to their respective emergency departments.

The SRCs also promote individual patient education through several programs, including the Phase Program, Living Heart Healthy, Ways to a Healthier Heart for Cardiac Rehabilitation, newsletters to the general public on their STEMI programs, heart disease awareness for women, nutritional programs, and smoking cessation programs.

Since 2010, the Marin County EMS Agency has organized an annual “Sidewalk CPR and Stop the Bleed” community education event. Partnering with our local hospitals, fire departments, private ambulance services, and the Marin Medical Reserve Corps, we provide free education to the community on hands-only CPR and stop the bleed techniques. We have trained well over 10,000 residents and visitors on these life-saving skills. Last year, we included intranasal Narcan education to address the growing number of overdoses in our county and nationally. In collaboration with the Marin County Office of Education, we have also trained numerous middle school and high school students in these valuable skills.

Neighboring EMS Agencies

Marin County EMS works with neighboring counties to ensure the same standard of STEMI care is provided when our EMS providers take patients to out-of-county facilities. Due to the geography of our county and the potential for lengthy ground transports from West Marin, prehospital responders will utilize local air ambulances (e.g., REACH, CHP) to expedite care. Marin County does not have an approved helipad at any of our facilities. Instead, patients are transported out of Marin to STEMI Receiving Centers in neighboring counties.

Data is obtained for patients transported to out-of-county hospitals in the same manner as our in-county hospitals. Out-of-county hospitals are typically utilized during air ambulance transportation. Out-of-county STEMI-receiving hospitals include the following:

John Muir Medical Center – Walnut Creek
Santa Rosa Memorial Hospital – Sonoma County

Both Alameda and Sonoma counties have recognized STEMI Systems of Care, with existing policy and field treatment guidelines and quality improvement activities that support the treatment and destination of STEMI patients.

2022 Goals

Objective #1 Review STEMI Receiving Center Policy

Specific:

- The Current STEMI Designation process was implemented at the beginning of the STEMI system in 2006.
- With the addition of the STEMI Critical Care System Regulations, existing STEMI Designation process may be out of date and new regulations will need to be added

Measurable:

Current STEMI Designation processes will be updated to meet the requirements of the new STEMI Critical Care System regulations.

Attainable:

STEMI Center Designation will be reviewed during annual Policy Review.

Relevant:

Policies outline and guide the development of new and existing STEMI Receiving Centers. Having the most up to date information incorporated into our Designation Policy provides clear direction for hospitals wishing to continue as a designated STEMI receiving center.

Time:

Policy and contract will be updated by March 2023.

Objective #2 Develop local STEMI educational initiatives with STEMI system stakeholders to increase awareness of coronary artery disease and MI, including identifying barriers or limitations to positive health behaviors

Specific:

- Identify and engage with at risk populations within Marin County.
- Review innovative projects aimed at promoting positive health behaviors.
- Create or implement an already existing community awareness project.

Measurable:

Success of community awareness and education will be measured through improving behavioral responses to warning symptoms, STEMI treatment rates, mortality and use of 911.

Attainable:

This will be an ongoing project incorporated into already existing oversight of the STEMI system.

Relevant:

Heart Disease is the leading cause of death in the United States. Heart disease crosses most racial and ethnic groups in the United States. About ½ of Americans have one of the three major risk factors for heart disease. These include high blood pressure, high blood cholesterol and smoking.

Time:

Continuous.

Outcome:

Develop new partners and work with existing stakeholders in the development of an innovative and sustainable CAD/MI community awareness and education program.

Objective #3 Implement STEMI Bundle of Care using FirstPass

Specific:

- Implement FirstWatch and possibly FirstPass, a responder QA/QI tool, and implement a STEMI Bundle of Care based on the Marin County STEMI Protocol.
- Measure clinical quality and protocol compliance utilizing measures that have proven to make a difference in the outcome of the patient, including transport to a STEMI receiving center and pre-notification of incoming STEMI patients.

Measurable:

Marin County is in the beginning phases of using FirstWatch. We expect to be able to identify areas of improvement and incorporate them into the LEMSA and STEMI quality improvement programs.

Attainable:

Ongoing.

Relevant:

Consider implementing FirstPass and the STEMI Bundle of Care to support identified State and National Core Measures in real time.

Time:

Implementation of FirstWatch for Marin County Providers is a relatively new tool to our system. Once up and running, bundle of care compliance can be reviewed on a daily basis by EMS Provider agencies with data being incorporated into semi-annual reports to the LEMSA.

Outcome:

Improved protocol compliance and clinical quality.

References

[STEMI Field Treatment Guideline](#)

[EMS STEMI Receiving Center Designation Policy](#)

[STEMI Destination Policy](#)

[STEMI Inter-facility Transfer Procedure](#)

EMS Agency and Facility Contacts

Facility Name	Designation	LEMSA SRC Agreement Exp. Date	STEMI Medical Director	STEMI Program Manager
<u>Kaiser Permanente San Rafael Medical Center</u>	SRC	12/31/2023	Alicia Romero, MD	Itamar Bitzker, RN
<u>MarinHealth Medical Center</u>	SRC	12/31/2023	Robert Sperling, MD	Jessica Gonzalez-Romero, RN
<u>Novato Community Hospital</u>	STEMI Referral Center	N/A	N/A	N/A

<i>EMS Service Provider</i>	<i>Paramedic Service Area</i>
Novato Fire Protection District	A
San Rafael Fire Department	B
Ross Valley Paramedic Authority	C
Marin County Fire Department	C & E
Central Marin Fire Department	C
Southern Marin Emergency Medical Paramedic System	D
NorCal Ambulance	All*
Falcon Critical Care Transport	All
LIFEWest Ambulance Service	All
Eagle Ambulance Service	All
Royal Ambulance Service	All
American Medical Response	All

**May provide back-up ALS services upon request to all zones*

STROKE CRITICAL CARE SYSTEM

Marin County Emergency Medical Services Agency



**This plan was prepared for the
California Emergency Medical Services Authority**

Submitted September 2023

Data reflected in this plan update is for the calendar year 2022

Plan prepared by:

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Introduction

Purpose

The primary goal of the Marin County's EMS Stroke Critical Care System is to reduce disability and death in patients suffering from a stroke, whether through vascular occlusion or hemorrhage, by optimizing the care that is provided.

Prehospital and hospital providers of emergency services in Marin County are a dedicated group of professionals who work together to deliver care to the public whenever and wherever the need arises. Any 9-1-1 call to activate the Marin County EMS System generates a focus on delivering the best possible care to those in need and improving services where possible to render optimal care.

To deliver the best possible stroke care for those suspected or diagnosed with stroke symptoms, we must routinely evaluate and re-evaluate our standards of care and identify our strengths and weaknesses using relevant and measurable indicators. By doing so, we can systematically evaluate and improve our key processes and foster our organizational learning and knowledge sharing.

We are committed to a robust Stroke Critical Care System encompassing all Marin County EMS system participants. Therefore, we make every effort to ensure continued high-quality patient care, utilizing our knowledge of best practices, and always striving for improvement.

Stroke Critical Care System - Hospital and Prehospital Information

Hospitals

Marin County has three acute care receiving hospitals that serve our community. MarinHealth Medical Center, Kaiser Permanente San Rafael Medical Center, and Novato Community Hospital - all of which have been designated by The Joint Commission and our LEMSA as Primary Stroke Receiving Centers (PSC) and meet the requirements according to the California EMS Authority. Each PSC has a clinical stroke team available 24/7, comprised of a Stroke Medical Director and Stroke Program Manager, board-certified neurologists, neuro-interventionalists, neurosurgeons, anesthesiologists, emergency medicine physicians, registered nurses, pharmacists, technologists, and additional ancillary staff to provide systematic evaluation to ensure excellence. All three facilities have telehealth capabilities. All three provide public education on stroke and illness prevention. Additionally, MarinHealth Medical Center has on-site neurosurgical coverage 24/7. Neuro-imaging services are available 24/7 at each facility.

In the rare case of a mechanical failure of an imaging machine, a "CT Diversion" policy is activated to divert patients to the closest facility with a working CT scanner. This diversion is initiated via ReddiNet, and information is disseminated throughout the county to all providers via the Communications Center.

Prehospital

In Marin County, there were 409 patients transported by 911 in 2022 as a stroke alert. Emergency medical services in Marin are delivered through multiple fire departments, including response and ambulance transport. Non-emergent ambulance transport is accomplished primarily through permitted private ambulance providers. The EMS Agency Medical Director and EMS Agency Stroke Program Coordinator oversee the system and collaborate with individual prehospital care providers. All fire departments and private providers have medical directors, educators, and liaisons responsible for overseeing their organizations and reporting to the Marin County EMS Agency biannually and as requested. Prehospital stroke care assessments and interventions are based on acceptable standards of care supported by written policies, protocols, and online medical control.

Stroke Critical Care System - Plan

Marin County EMS Agency is mandated by the California Health and Safety Code and the California Code of Regulations, Title 22, Social Security, Division 9. Prehospital Emergency Medical Services, Chapter 7.2, Stroke Critical Care System, to fulfill the following responsibilities of our Stroke Critical Care System Plan.

Marin County EMS Agency initiated its Stroke Critical Care System in March 2014. The system is overseen by the EMS Agency Administrator, the EMS Agency Medical Director, and the EMS Agency Stroke Program Coordinator in collaboration with our prehospital stakeholders (fire departments and private ambulance companies) and our three Primary Stroke Centers. The list of names and titles of the EMS Agency personnel and Primary Stroke Center hospitals are listed in Exhibit A.

Upon activation of EMS, patients are identified as suspected stroke patients via Marin County Sheriff's Communication Center dispatchers who utilize the Medical Priority Dispatch System. Dispatcher-assisted care is immediately rendered using the stroke diagnostic tool while field personnel are enroute. The goal is to improve patient outcomes to decrease the time from symptom onset to definitive treatment.

Prehospital personnel utilize standing protocols, including the Marin County EMS Agency policies "Routine Medical Care BLS" and "Stroke/TIA [N4](#)" to initiate treatment, determine the appropriate destination, and rapidly transport to one of our PSCs. If there is a high suspicion of rapidly progressive intracranial bleeding, providers will transport to MarinHealth Medical Center, which has on-site 24/7 neurosurgical coverage. Due to the geography of our county and the potential for lengthy ground transports from West Marin, prehospital responders will utilize local air ambulances (e.g., CONAIR or California Highway Patrol) to expedite care. Marin County has no approved helipad at any of our

three PSC facilities. Instead, patients are flown out of Marin to PSCs or Thrombectomy-Capable Stroke Centers in nearby counties.

Since the inception of our system, we have utilized the Cincinnati Prehospital Stroke Scale (CPSS) as our prehospital screening tool. However, evidence reveals this scale is not 100% sensitive for all anterior and posterior circulation strokes. In March 2019, based on our CQI process, which discovered four false negative cases in 2018, we incorporated additional assessments ([visual fields exam and cerebellar assessment](#)) to increase the chances of capturing posterior strokes. We are continuously auditing the sensitivity and specificity of this supplemental assessment tool using data obtained from ImageTrend and our PSCs.

In addition to reviewing posterior stroke cases, we monitor our false positive (prehospital stroke alert, but hospital diagnosis is not stroke/TIA) and false negative patients (no prehospital stroke alert, but patient received thrombolytics). We support a large safety net for those cases considered false positives. Examples of false positives include sepsis, encephalopathy, Covid, and migraines. If a false negative is discovered, our PSC stroke coordinators immediately notify the LEMSA for review. In 2022, we had only one false positive case.

EMS personnel alert the PSC with an *Early Stroke Notification* 10 minutes prior to arrival (or as soon as possible if transport time is less than 10 minutes) to help the hospital prepare and expedite time-sensitive treatment. Communication includes their unit number and transport code, age and gender of the patient, pertinent findings, and estimated arrival time. In a case of confusing or complex findings, the paramedic is encouraged to initiate a "physician consult" for assistance with treatment.

Upon arrival at the PSC, patients are quickly evaluated by the stroke team, and care proceeds according to standardized policies and procedures for thrombolytic stroke services, which may include the administration of IV thrombolytic treatment or transfer of care to a thrombectomy-capable stroke center (see exhibit A). For suspected hemorrhagic strokes, our prehospital policy, N4 CVA, provides direction to field personnel accordingly:

- *"If high suspicion of rapidly progressive intracranial bleed (sudden, witnessed onset of coma or rapidly deteriorating GCS especially in setting of severe headache) transport to MarinHealth Medical Center."*

Should a hemorrhagic stroke be diagnosed at Novato Community Hospital or Kaiser Permanente San Rafael Medical Center, rapid transfer to MarinHealth Medical Center can occur for neurosurgical evaluation and possible intervention.

Stroke Critical Care System - Data Management and Quality Improvement

Both prehospital and hospital programs have several components to ensure a high level of quality care. These include:

- Structure
- Data collection and reporting (audits, benchmarking, etc.)
- Evaluation of EMS system indicators
- Action to improve
- Training and education
- Definition of a problem
- Re-evaluation and iterative feedback

The Marin County EMS Agency Stroke Advisory Committee (STAC) meets biannually to review our stroke program and the relevant performance data. Members include the PSC Medical Directors, PSC Stroke Program Managers, EMS Agency personnel, and EMS stakeholders (fire and private providers). EMS data is collected via our electronic medical record-keeping program, ImageTrend. The PSC Program Manager collects hospital data, is vetted through their internal processes, and presents it to STAC committee members (see exhibit B). All records that include Protected Health Information (PHI) as defined by the Health Insurance Portability and Accountability Act (HIPAA) are handled confidentially per the statute. If a hospital or the EMS Agency identifies a need for improvement, an EMS Event Reporting Form may be generated, and a performance improvement action plan will be developed by the EMS Medical Director and/or STAC committee.

As the LEMSA, our agency provides oversight and system integration for Stroke Critical Care System Quality Improvement activities, including:

- Creating and updating a CQI Plan to include stroke care for approval by EMSA
- Developing or revising specific stroke care policies, procedures, and protocols
- Receiving and responding to EMS Event Notification Forms pertaining to stroke care
- Reviewing performance improvement plans for issues identified by CQIP
- Producing and distributing stroke data reports
- Reviewing annual CQIP updates from hospitals and EMS service providers
- Scheduling and staffing EMS stakeholder STAC meetings

The effectiveness of the Stroke Critical Care System can be directly related to the effectiveness of training received by all constituents. Administrative and medical oversight is heavily involved at all training levels. Our LEMSA comprises six fire service base providers, all with full-time medical directors. Prehospital education on stroke care is provided on an ongoing and as-needed basis throughout the year, guided by data and our process improvement activities.

The STAC committee has identified three significant issues that we are currently working on for process improvement.

1. *Identification of and time-to-treatment for posterior circulation stroke patients.* Patients were assessed and did not meet positive criteria on the CPSS but were found to have posterior strokes by imaging. Our Stroke/TIA policy was revised, and an educational video was produced to include new assessment skills more specific to detecting posterior strokes.
2. *Interfacility transportation for large vessel occlusion intervention.* In prior years, a shortage of private ALS and/or critical care ambulances for IFT from our PSCs to a thrombectomy capable center has at times delayed IFTs from occurring rapidly. This shortage required occasional use of our 9-1-1 providers to transport these patients from Marin County to San Francisco or Redwood City. Over the past two years we have facilitated arrangements between county-approved private providers and our hospitals to ensure timely IFT responses for stroke patients requiring transfer out of county. We continue to collaborate with our private ambulance companies to come up with a working solution to improve patient care.
3. *Scene time.* Based on the American Heart Association Guidelines, the goal for EMS on-scene time is ≤ 15 minutes. Reviewing our data, the majority of our prehospital scene times are 15-20 minutes. Knowing that time is brain and the importance of getting the patient to a stroke center for definitive treatment is critical, our prehospital quality improvement providers are reviewing data and emphasizing education to reduce scene times. We will continue to monitor our progress with the goal of reducing scene times to improve care.

Hospital Destination	Total Stroke Alerts Transported 2022	Total Stroke Alerts Scene Time >15'
MarinHealth	273	96 (35%)
Kaiser	105	23 (22%)
Novato Community	31	1 (3%)

Facility	Level of Stroke Center	LEMSA Stroke Agreement Expiration Date	Stroke Program Medical Director	Stroke Program Manager
Kaiser Permanente San Rafael Medical Center	PSC	12/31/23	Suzanne Bourque, MD	Allison Uppendahl, RN
MarinHealth Medical Center	PSC	12/31/23	Ilkan Cokgor, MD	Nicole Pacha, RN Denise Lynch Iannelli, RN
Novato Community Hospital	PSC	12/31/25	Nobl Barazangi, MD	Sharon Marshall, RN
UCSF Medical Center	Comprehensive			
Kaiser Permanente Redwood City Medical Center	Comprehensive			
California Pacific Medical Center	Comprehensive			

Marin County EMS Primary Stroke Center: Monthly Worksheet v Sept2019

[illegible]

CONTINUOUS QUALITY IMPROVEMENT PROGRAM (CQIP)



**This plan update was prepared for the
California Emergency Medical Services Authority
Submitted September 2023
Data reflected in this Program update is for the calendar year 2022**

Program prepared by:
Marin County Emergency Medical Services Agency
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San Rafael, CA 94903

Introduction

The primary goal of Marin County's EMS System is to reduce death and disability from injuries and/or illnesses. Providers of emergency and disaster medical services in Marin County are a dedicated group of professionals who work together to deliver care to the public whenever and wherever the need arises. Any 9-1-1 call to activate the Marin County EMS System generates a focus on delivering the best possible care to those in need and improving services where possible to render optimal care.

To deliver the best possible care, we must routinely evaluate and re-evaluate our standards of care and identify our strengths and weaknesses using relevant and measurable indicators. By doing so, we can systematically evaluate and improve our key processes and foster our organizational learning and knowledge sharing.

The EMS Agency is committed to a diligent quality assurance (QA) process supported by a desire for Continuous Quality Improvement (CQI) for all EMS system participants and stakeholders.

Quality Assurance (QA)

Quality assurance is the process of monitoring and maintenance of a desired level of quality in all aspects of the EMS system, including, but not limited to, the delivery of prehospital medical care. The EMS Agency, through the established Quality Council and associated specialty program committees, defines the minimum quality standards for our prehospital providers through the development of patient care protocols and policies.

Continuous Quality Improvement (CQI)

Continuous Quality Improvement (CQI) is a progressive incremental improvement of processes, safety, and patient care. The goal of CQI may include improvement of operations, outcomes, systems processes, improved work environment, or regulatory compliance. Process improvement may be "gradual" or "breakthrough" in nature. A CQI program has several components. These include:

- Clearly defined organizational structure (See section 1 below)
- Data collection and reporting (audits, benchmarking, etc.)
- Defining and evaluation of system indicators
- Deliberate action to improve

- Training and education
- Definition of a problem
- Re-evaluation and iterative feedback

Mandates

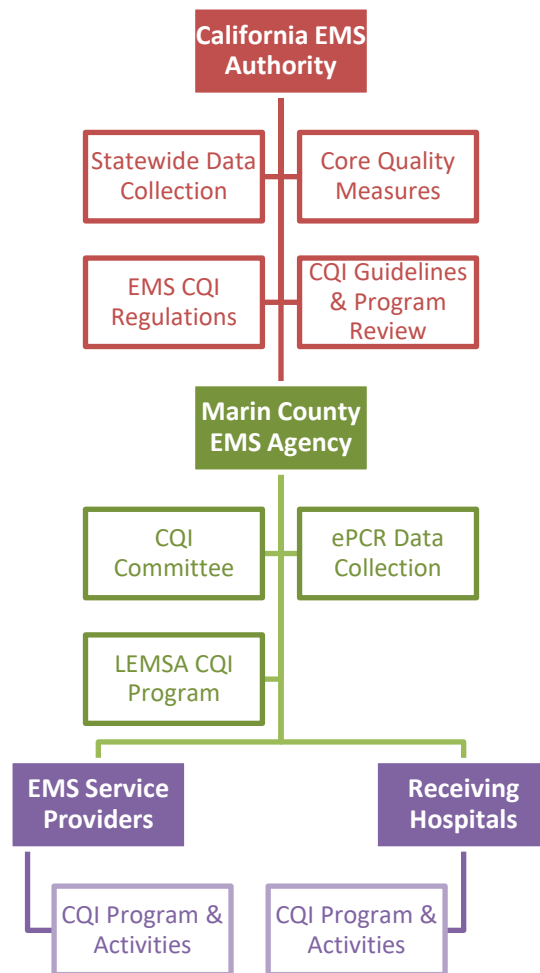
Marin County EMS Agency is mandated by the California Health and Safety Code and the California Code of Regulations, Title 22, Division 9 to fulfill the following responsibilities:

- Plan, implement, and evaluate an EMS system under the provisions of this part, consisting of an organized pattern of readiness and response services based on public and private agreements and operational procedures (*Health and Safety Code Division 2.5 – 1797.204*)
- Develop and implement, in cooperation with other EMS system participants, a system-wide written EMS CQI program, as defined in Chapter 12 of the California EMS Regulations (*Title 22, Division 9, Section 100400*). Such programs shall include indicators, as defined in Section III and Appendix E of the Emergency Medical Services System Quality Improvement Program Model Guidelines, which address, but are not limited to, the following:
 - Personnel
 - Equipment and supplies
 - Documentation
 - Clinical care and patient outcome
 - Skills maintenance/competency
 - Transportation/facilities
 - Public education and prevention
 - Risk management
- Review system-wide EMS CQI Program annually for appropriateness to the system and revise as needed.
- Develop, in cooperation with appropriate personnel/agencies, a performance improvement action plan when the EMS CQI Program identifies a need for improvement. If the area that needs improvement includes system clinical issues, collaboration is required with the EMS Agency Medical Director.
- Provide the EMS Authority with an annual update, from the date of approval and annually thereafter, on the local EMS Agency's EMS CQI Program, which addresses the program indicators.

The Marin County EMS Agency CQI Program intends to comply with [EMSA #166: Emergency Medical Services System Quality Improvement Program Model Guidelines](#) (Rev. 3/04), incorporated herein by reference, and shall be approved by the EMS Authority. This is a dynamic model which will develop over time. CQI is tailored to Marin County's quality improvement needs and depends on available resources for our CQI Program.

SECTION I

Organizational Structure



There are three distinct organizational levels for EMS CQI:

- The California Emergency Medical Services Authority (EMSA)
- Marin County Emergency Medical Services Agency (LEMSA)
- Receiving Hospitals and EMS Service Providers*

Organizations at these three levels have demonstrated an effective network capable of providing patient care in the prehospital setting through the implementation and management of existing programs. Levels should be mutually dependent on each other for an EMS CQI Program to be successful. While each level has defined roles and responsibilities in achieving its program goals, there is also a shared responsibility with all other levels in achieving EMS system goals.

** Other EMS system participants may include, but are not limited to: Training Programs, Dispatch Agencies, and Specialty Care Centers*

EMSA

The California EMS Authority promulgates regulations and guidelines for EMS quality improvement. The Authority reviews and approves the CQI Program developed and submitted by the local EMS agency. In addition, EMSA annually collects specific data from each LEMSA and publishes a summary report on statewide [EMS Core Quality Measures](#).

LEMSA

Marin County EMS Agency is the Local Emergency Medical Services Agency (LEMSA) for Marin County. As the LEMSA, our agency provides oversight and system integration for EMS System Quality Assurance and Quality Improvement activities, including:

- Creating and annually updating a CQI Program for approval by EMSA
- Developing or revising local EMS policies, procedures, and protocols
- Receiving and distributing EMS Event Forms
- Reviewing performance improvement programs for issues identified by CQIP
- Producing and distributing data reports
- Conducting PCR audits for air and ground transports
- Reviewing annual CQIP updates from hospitals and EMS service providers
- Scheduling and staffing EMS stakeholder advisory committee meetings for:
 - CQI
 - Trauma
 - Stroke
 - STEMI
 - Physician Medical Directors
 - Policies & Protocols
 - Pediatrics

Receiving Hospitals

Acute care services in Marin County are provided by three receiving hospitals:

- Marin Health Medical Center, a designated Level III trauma center with enhanced capacity for neurosurgical care and a designated Pediatric Receiving Center (Advanced);
- Kaiser San Rafael Medical Center, designated as an Emergency Department Approved for Trauma (EDAT) as well as a designated Pediatric Receiving Center (General);
- Novato Community Hospital designated as a Pediatric Receiving Center (General).

These hospitals provide Base Hospital services including online medical control and participate in all EMS system-related activities. All three hospitals are approved Joint Commission certified Primary Stroke Centers and receive EMS transports of acute stroke patients. MarinHealth Medical Center and Kaiser San Rafael Medical Center have also been designated by our LEMSA as STEMI Receiving Centers (SRCs).

The responsibilities of these hospitals shall include, but are not limited to, a written hospital-specific EMS CQI Program, as defined by Title 22, Division 9. The hospitals' EMS CQI Program should involve all EMS system participants including, but not limited to: dispatch agencies, ALS and BLS providers, other receiving hospitals, and specialty care centers.

Each Marin County hospital is responsible for developing and implementing, in cooperation with the county EMS CQI Program, a hospital-specific written EMS CQI Program as defined by Title 22, Division 9 (including indicators). All hospitals will participate in Marin County EMS Agency's CQI Program which may include making available mutually agreed upon relevant records (e.g., trauma data, ST Elevation Myocardial Infarction – "STEMI" data, and stroke data) for program monitoring and evaluation. If either the hospital or the EMS agency identifies a need for improvement, a performance improvement action Program will be developed by the hospital.

An annual CQIP update of mutually agreed upon criteria will be provided to Marin County EMS Agency regarding the hospital's EMS CQI Program. This update will summarize how the hospital's EMS CQI Program addressed the program indicators. In addition to the annual review of indicators addressed, the hospital EMS CQI Program shall be reviewed by Marin County EMS Agency at least every five years.

EMS Service Providers

“EMS Service Provider” refers to an organization employing certified EMT and/or licensed paramedic personnel in the delivery of emergency medical care to the sick and injured at the scene of an emergency, during transport, or during interfacility transfer.

The configuration of Marin’s EMS system has been relatively stable since the EMS Program’s first inception in 1995. There are five Paramedic Service Areas or geographic zones where fire departments provide 9-1-1 emergency advanced life support (ALS) ambulance service.

Table 1 below lists current ALS providers authorized in Marin County:

<i>EMS Service Provider</i>	<i>Paramedic Service Area</i>
Novato Fire Protection District	A
San Rafael Fire Department	B
Ross Valley Paramedic Authority	C
Marin County Fire Department	C & E
Central Marin Fire Department	C
Southern Marin Emergency Medical Paramedic System	D
NorCal Ambulance	All*
Falcon Critical Care Transport	All
LIFWest Ambulance Service	All
Eagle Ambulance Service	All
Royal Ambulance Service	All
American Medical Response	All

**May provide back-up ALS services upon request to all zones*

In addition to the above, prehospital care providers include:

- Volunteer Fire Personnel
- Dispatchers
- Air Ambulance Personnel
- Law enforcement Personnel
- Trauma Center Personnel
- Receiving Hospital Personnel

Each EMS Service Provider’s CQI Program involves EMS system participants including, but not limited to: dispatch agencies, Marin County EMS Agency, EMS training programs, hospitals, specialty care centers, and other EMS providers. A regional approach, with collaboration between EMS service providers, is incorporated through a Statewide written medical mutual aid agreement.

Until Marin's Trauma Center has a helipad, it is likely that out-of-county aeromedical transport for some trauma patients will continue. Marin requires transport time via ground ambulance to exceed 30 minutes to utilize air ambulance resources for trauma patients. This limits most of Marin's air transports to the geographically isolated area of coastal West Marin. Air Ambulance providers forward a copy of their patient care report for each patient transported by air for review by our CQI coordinator. All providers are responsive to inquiries from the EMS Agency regarding CQI follow-up.

Each Marin County EMS Provider is responsible for developing and implementing, in cooperation with other EMS system participants, a provider-specific written EMS CQI Program as defined by state regulations for EMS System Quality Improvement, including indicators from the [EMSA Core Quality Measures](#). All EMS Service Providers will participate in Marin County EMS Agency's CQI Program, which may include making available mutually agreed upon relevant records for program monitoring and evaluation. All such records that include Protected Health Information (PHI) as defined by the Health Insurance Portability and Accountability Act (HIPAA) will be handled as confidential in accordance with the statute. When the EMS Service Provider identifies a need for improvement, a performance improvement action plan will be developed by the Provider.

An annual Continuous Quality Improvement Program (CQIP) update will be provided to Marin County's EMS Agency regarding the provider's EMS CQI Program. This update will summarize how the provider's EMS CQI Program addressed the program indicators. In addition to the annual review of indicators addressed, the Provider's EMS CQI Program shall be reviewed by Marin County EMS Agency at least every five years.

SECTION II

Data Collection and Reporting

The purpose of data collecting and reporting is to improve the EMS system and, ultimately, patient outcomes. Information must first be collected, reported, and then evaluated. Accurate and complete data collection is the first necessary component of every process or outcome evaluation and requires participant consensus.

Aspects of care that are identified as important are monitored despite the possible complexity of necessary data or challenges associated with the data collection. All reliable sources of information are utilized in the evaluation of our system's performance, whether they are paper-based or electronic.

Marin County provides EMS data quarterly to the State of California to allow for statewide data collection. [Statewide Core Quality Measures](#) provide for comparative analysis between similar EMS providers/LEMSAs as well as statewide system evaluation. Additionally, we collect data elements and code sets in our county to focus on our own local issues and concerns.

Marin County utilizes an electronic patient care record system called ImageTrend, which is used to collect prehospital information. Detailed statistics and quality improvement functions can be performed, trended, and monitored. Multiple ImageTrend weekly reports are configured for surveillance purposes, including cardiac arrest dispatches and pediatric patient transports. These reports are reviewed regularly by the LEMSA CQI team and are available on a provider-specific basis for provider agencies.

The current Trauma Registry, using the proprietary trauma registry software *Trauma One* by ESO, has demonstrated the value of systematic data collection. Under the provisions of Marin County [EMS Policy #4615](#), our Level III Trauma Center and EDAT both participate in Trauma Registry data collection.

Another means by which information is reported in our county is the [EMS Event Reporting Form](#)*. This form provides a single mechanism by which any system participant can request the attention of the CQI contact for the appropriate provider agency and the EMS agency to a specific situation with the goal of system quality improvement. If the situation is specific to personnel, this data shall only be exchanged between the personnel and provider levels. If the situation presents a danger or a potential danger to public health and safety, the EMS Medical Director and EMS Administrator are notified immediately.

**EMS Reporting Form is in the process of revision*

Organizational reporting in our county occurs at all levels: EMSA, LEMSA, hospitals, and all EMS service providers. Each level submits information to their respective advisory group. Data collection and reporting is done in the form of summary reports to the LEMSA Quality Council.

SECTION III

Evaluation of EMS System Indicators

A Quality Council has been formed per state guidelines and fulfills the role of the technical advisory body on EMS system quality-related activities. There is broad system participation and interest in this process. All EMS hospital and prehospital stakeholder groups are represented. The Quality Council is responsible for decision-making regarding evaluation and quality improvement. The Council meets quarterly.

This Council is responsible for establishing minimum standards and developing indicators that address, but are not limited to, the following:

- Personnel
- Equipment and supplies
- Documentation
- Clinical care and patient outcomes
- Trauma System
- STEMI Receiving Centers
- Stroke Receiving Centers
- Pediatric Receiving Centers
- Skills maintenance/competency
- Transportation/facilities
- Public education and prevention
- Risk management
- Equity and disparities

According to the Joint Commission on Accreditation of Healthcare Organizations, an indicator is *“a quantitative performance measure...a tool that can be used to monitor performance and direct attention to potential performance issues that may require more intensive review within an organization.”* In other words, an EMS indicator measures the degree of conformance to a reasonable expectation defined by the community served. Indicators may be related to structures (people, places, things), processes (activities occurring in a system), and outcomes (the results of the structures and activities within a system). The three types of indicators (structure, process, and outcome) are all related and dependent upon one another. Hence the following equation:

STRUCTURE + PROCESS = OUTCOME

Changes in structure may affect the process and outcome. Likewise, changes in the process may affect the structure and outcome. Indicators, in short, are a way to simplify information so that data can be digested more efficiently and in a meaningful way.

Statewide EMS [Core Quality Measures](#) (CQMs) have been developed and adopted by the EMS Authority, which we incorporate in our CQI Program to allow comparison of Marin County to other counties within the state. These indicators were developed through a statewide consensus process and supported by the statewide data system.

In addition to the required CQMs, the Marin Quality Council members obtain feedback from their organizations and choose performance measures to evaluate as needed. These may be evaluated for long or short term or on an ad hoc basis depending on the group's goals.

With this ongoing data collection, the Council will analyze the results to include measurements appropriate for rapid interpretation by evaluators. The results and measurements of these processes are presented to the Quality Council during a formal process and regularly scheduled meetings. During these presentations, the objectives of each indicator will be identified, and a comparison of our performance with established goals, benchmarks, and evidence-based research will be made known. Peers and colleagues are expected to discuss these findings and determine whether improvement or further evaluation is needed. A post-decision action plan will then ensue.

In the last two years (2022 and 2023), the Quality Council has recommended the evaluation of the following performance measures:

- 12-lead EKG transmission for STEMI patients
- Dispatcher-Assisted CPR
- Bystander CPR intervention on cardiac arrests
- Review and integration of data for out-of-hospital cardiac arrest with hospital discharge outcome data
- Narcan administration for suspected opioid overdoses
- Sepsis identification and patient management
- Appropriate use of child and infant restraint in EMS transport
- Appropriate and complete documentation of release at scene and against medical advice patients
- Appropriate use of tools to communicate with patients with a language barrier

SECTION IV

Action to Improve

Once valid information has been presented and is deemed reliable, the decision to take action or to solve a problem lies within the responsibility of our Quality Council. The group will choose an improvement method that is systematic and based upon evidence-based research. The approach to improvement is team oriented. Initial improvement projects were simple and based upon a strong consensus within the Quality Council, with the goal that improvement will benefit all – small wins are sometimes the basis for the larger wins. This group is also able to delegate action to subcommittees or task forces. These subcommittees and task forces are sub-groups of the Quality Council and can be established to develop and implement action plans. These sub-groups will work on only one project and are responsible for reporting back to the larger oversight group.

Our performance improvement program uses a standardized approach. We intend that with each process evaluated, we will use the same performance improvement format. The following components assist us with the standardized improvement process:

- Establish criteria for measurement and evaluation
- Evaluate information
- Utilize a Just Culture approach to evaluating performance-improvement initiatives
- Make a decision to take action to improve
- Establish criteria for improvement
- Establish an improvement plan
- Measure the results of the improvement plan
- Standardize or integrate change into the system
- Establish a plan for monitoring future activities

SECTION V

Training and Education

Effectiveness of the EMS CQI Program can be directly related to the effectiveness of training received by all constituents. Administrative oversight and medical oversight are heavily involved at all training levels. To successfully implement a Performance Improvement Program, Marin County's Quality Council oversees the content and delivery methods of related training and education.

The Marin County EMS Agency has authorized one local EMT training program and several continuing education (CE) providers. The Agency is also responsible for program approval of one Emergency Medical Dispatch program. These training and education programs provide review and/or reinforce information on selected, possibly infrequently used skills, as well as new or revised policies being implemented into the county system.

Once the Performance Improvement Program has been successfully implemented, the *Policies and Procedures Committee* is responsible for standardizing the changes within the appropriate policies, procedures, and protocols. When appropriate, the EMS CQI Program will ensure that staff have completed the training and educational components of the program. To finalize the steps in integrating change into the system, continuing education will be scheduled at appropriate reoccurring intervals and re-evaluate the original EMS system key performance indicators.

Our *Policy and Procedures Committee* reviews and updates EMS system policies, procedures, and protocols annually. A standardized training package is developed for delivery by each EMS Provider as mandatory "Annual Policy Updates" training. Verification of attendance at this annual training is also required for continuous accreditation of licensed paramedics practicing in Marin County.

Local Annual CQIP Update Guidelines

An annual CQIP update will be submitted to the EMS Agency by each Marin County EMS system participant. It should summarize the progress of each organization's CQI Program activities (see Section I). Marin County EMS system participants include but are not limited to:

- EMS Service Providers
- Receiving Hospitals
- EMS/Fire Dispatch Center

Requirements for CQIP Annual Updates

In compiling the annual update, refer to the criteria below established by the Quality Council:

Description of the Agency - The description should include an organizational chart showing how the EMS CQI Program is integrated into the organization.

Statement of EMS CQI Program goals and objectives - Describe processes used in conducting quality improvement activities. Were goals and objectives met?

List and define indicators utilized during the prior reporting year:

- Define state and local indicators
- Define provider-specific indicators
- Define methods to retrieve data from receiving hospitals regarding patient diagnoses and disposition
- Audit critical skills
- Identify issues for further system consideration
- Identify trending issues
- Create improvement action plans (what was done and what needs to be done)
- Describe issues that were resolved
- List opportunities for improvement and plans for the next review cycle
- Describe continuing education and skill training provided as a result of Performance Improvement projects
- Describe any revision of in-house/departmental policies
- Report to EMS system stakeholders
- Describe next year's work plan based on the results of the reporting year's indicator review

Glossary of Terms

- **Continuous Quality Improvement (CQI)** - *a progressive incremental improvement of processes, safety, and patient care*
- **Continuous Quality Improvement Program (CQIP)** -
- **Quality Assurance (QA)** - *the monitoring and maintenance of a desired level of quality*
- **Key Performance Indicator (KPI)** - *a quantifiable measure used to evaluate the success of a process, system, or organization in meeting objectives for performance*
- **Service Provider** – *a department or agency that provides direct patient care services within the EMS system*
- **Trauma Registry** - *a specialized set of data focusing specifically on adult trauma injuries. Trauma receiving hospitals submit local trauma data to these registries*
- **ESO** – *The parent company that owns and operates two of the most widely utilized trauma registries here in the U.S.*
- **ImageTrend** – *the electronic health record (EHR) vendor utilized by all EMS system prehospital providers*
- **Benchmarking** - *the process of measuring products, services, and processes against those of organizations known to be leaders in one or more aspects of their operations*
- **Quality Council** – *the group of Marin EMS system stakeholders responsible for the oversight of quality assurance and quality improvement in Marin County*
- **Emergency Medical Services Authority (EMSA)** – *the state entity responsible for the oversight and regulation of EMS systems*
- **Local EMS Agency (LEMSA)** – *the local entity responsible for oversight and coordination of the county EMS system*
- **Receiving Hospital** – *any one of our three licensed acute care hospitals with emergency departments*
- **Core Quality Measures** - *national standards of care for common conditions. These standards are based on research, reduce patient complications and improve outcomes*
- **Patient Care Report (PCR)** – *the electronic record of patient care*
- **Emergency Department Approved for Trauma (EDAT)** – *a designation supported by specific standards in training and operations that ensure a hospital emergency department is prepared and equipped to care for a subset of trauma patients*
- **STEMI** – *ST elevation myocardial infarction*

EMERGENCY MEDICAL SERVICES FOR CHILDREN (EMSC) PLAN



**This plan was prepared for
the California Emergency Medical Services
Authority**

Submitted September 2023

Data reflected in this plan update is for the calendar year 2022

Plan prepared by:

Marin County Emergency Medical Services Agency
1600 Los Gatos
Suite 220
San Rafael, CA 94903

Program Mission

Reduce child and youth mortality and morbidity caused by severe illness or trauma. Marin's EMS for Children Program aims to ensure that:

- State of the science emergency medical care is available for the ill and injured children in Marin;
- Pediatric services are well integrated into an emergency medical services system backed by optimal resources; and
- The entire spectrum of emergency services, including primary prevention of illness and injury, acute care and rehabilitation is provided to the children in Marin, no matter where they live, attend school, or travel.

Program Objectives

1. Strengthen the pediatric readiness of Marin's three acute care hospitals.
2. Increase Marin's Emergency Medical Services Prehospital Pediatrics capabilities.
3. Reduce the incidence of pediatric illness and injury throughout the County.

The Marin County EMS for Children Plan has been written in accordance with Title 22, Division 9, Chapter 14 of the California Code of Regulations.

EMS – System Overview

Marin County, with a current population of 256,018 residents, has the oldest population in the Bay Area, with an average age of 47.1 years. Only 4.1% of all EMS transports are those under 18. In 2022, there were 1141 pediatric 9-1-1 calls, resulting in 637 transports. Forty-two of those transported were activated as trauma patients due to meeting our pediatric trauma triage criteria. Given the limited exposure to pediatric patients and the rarely encountered seriously ill or injured pediatric patient, it is critical to continuously prepare our personnel to effectively manage this population by being prepared, organized, and knowledgeable to handle any emergency.

Local Emergency Medical Services Agency (LEMSA)

EMS AGENCY PERSONNEL

Name	Title
Chris Le Baudour	EMS Administrator
Dustin Ballard, MD	EMS Medical Director
Devin Tsai, MD	Assistant EMS Medical Director
Karrie Groves, RN	EMSC Program Coordinator
Troy Peterson	EMS Specialist
Christian Lombard	EMS Specialist

Marin County has three acute care receiving hospitals that serve our community – MarinHealth Medical Center, Kaiser Permanente San Rafael Medical Center, and Novato Community Hospital. Two of these facilities – MarinHealth Medical Center and Kaiser Permanente San Rafael - were designated by the Marin County EMS Agency in 2019 as Pediatric Receiving Centers. Our third acute care facility, Novato Community Hospital, was designated as a Pediatric Receiving Center in November 2021.

Prehospital Providers

Emergency medical services in Marin are delivered by our fire department-based advanced life support providers. This system is further supported by several private ambulance providers with BLS, ALS, and CCT capabilities. The EMS Agency Medical Director and EMSC Program Coordinator oversee the system and collaborate with individual prehospital care providers. All fire departments and private providers have independent medical directors, educators, and liaisons responsible for overseeing their individual organizations and report to the Marin County EMS Agency biannually and as requested. Prehospital pediatric care is supported by written policies, protocols, pediatric specific equipment, and on-line medical control whenever needed.

Marin County Pediatric Receiving Centers

California State Regulations define a Pediatric Receiving Center (PedRC) as a licensed general acute care hospital with, at a minimum, a permit for standby, basic, or comprehensive emergency services that has been formally designated as one of four types of PedRCs pursuant to sections 100450.218 through 100450.222, by the local EMS agency for its role in an EMS system.

MarinHealth Medical Center (Advanced Pediatric Receiving Center and ACS Verified Level III Trauma Center), Kaiser Permanente San Rafael Medical Center (General Pediatric Receiving Center), and Novato Community Hospital (General Pediatric Receiving Center) provide exceptional care to our pediatric population. Each PedRC has a robust pediatric care committee and clinical team that includes board-certified pediatricians, board-certified emergency medicine physicians, registered nurses (all with PALS certification and many with ENPC certification), respiratory therapists (all with PALS certification), pharmacists, and additional ancillary staff trained to provide specialized pediatric care. Pediatric intensivists are available 24/7 via telehealth. Additionally, MarinHealth Medical Center employs a full-time Child Life Specialist who works with children and their families to help them cope with the challenges of hospitalization, illness, and injury.

For children who are critically ill or who require specialty care, our PedRCs have established agreements with regional Comprehensive Pediatric Receiving Centers to ensure that every ill or injured child can be transferred to a facility that can meet their specialized needs.

Marin County EMS for Children Program Plan

The Marin County EMS Agency began its pursuit of official EMSC status in mid-2019. Our first joint meeting with stakeholders to discuss our goals and objectives and assess our needs was facilitated in February 2020. Shortly thereafter, our advancement to have an EMSC program was halted by the coronavirus pandemic. Fortunately, our PedRCs have made major advancements in pediatric care as their facilities sought and obtained status as Emergency Departments Approved for Pediatrics. The program is overseen by the EMS Agency Administrator, the EMS Agency Medical Director, and the EMSC Program Coordinator, collaborating with our prehospital stakeholders (fire departments and private ambulance companies) and our three PedRCs. More detailed information regarding our system data, as well as the list of names and titles of the EMS Agency personnel and PedRCs are listed in Exhibit A.

Upon activation of EMS, injured or ill pediatric patients are identified by our Marin County Sheriff's Communication Center dispatchers who utilize the Medical Priority Dispatch System (MPDS). Dispatcher pre-arrival instructions are immediately provided while field personnel are enroute.

Prehospital personnel utilize Marin County EMS Agency protocols to initiate treatment, assess stability, and determine the most appropriate destination. Due to the geography of our county and the potential for lengthy ground transports – particularly from West Marin - prehospital responders may utilize local air ambulance resources (e.g., REACH, CHP). When necessary, pediatric patients are flown out of Marin County to Advanced and Comprehensive Pediatric Receiving Centers in nearby counties.

To expedite care, EMS personnel notify the emergency department as soon as possible of an incoming pediatric patient. Communication includes their unit number, transport code, age, gender, chief complaint, mechanism of injury, treatments, vital signs, and estimated time of arrival. Additionally, all pediatric patients transported via Advanced Life Support are measured with a color-coded length-based tape, the corresponding-colored band is applied, and the color is reported to the receiving facility prior to the patient's arrival. This allows enhanced preparation for the emergency department team.

For medical and minor injury complaints, patients may be transported to any one of our three acute care facilities with one caveat: neonates (≤ 28 days) with signs of shock must be transported to the Advanced Pediatric Receiving Center due to their enhanced capabilities. Any injured pediatric patient with anatomic or physiologic findings based on the Marin County Trauma Triage Tool is transported to Oakland Children's Hospital if the estimated time of arrival is 30 minutes or less. Otherwise, the patient is transported to the Level III Trauma Center at MarinHealth Medical Center. For pediatric patients meeting the mechanism of injury or additional factors criteria, prehospital personnel will transport to the Level III Trauma Center. Should a severely injured child arrive at Kaiser San Rafael or Novato Community Hospital, Marin has a [trauma re-triage procedure](#) to expedite transfer of care to the appropriate trauma facility.

As an Advanced Pediatric Receiving Center, MarinHealth Medical Center is a licensed provider for Neonatal Intensive Care. None of our PedRCs have pediatric intensive care capabilities. All critical care and behavioral health care pediatric patients are treated, stabilized, and transferred to Comprehensive Pediatric Receiving Centers and behavioral health facilities, that each acute care hospital has transfer agreements. Specialty care is available either on-site or via telehealth 24/7.

EMSC – Data Management and Quality Improvement

Both prehospital and hospital programs have several components to ensure a high level of quality care. These include:

- Structure
- Data collection and reporting (audits, benchmarking, etc.)
- Evaluation of EMS system indicators
- Action to improve
- Training and education
- Definition of a problem
- Re-evaluation and iterative feedback

The Marin County EMS Agency Pediatric Receiving Center (PedRC) Committee meets biannually (and more frequently as we build our program) to review performance data, identify areas needing improvement, and carry out and monitor improvement efforts. Attendees include the PedRC Medical Directors, PedRC Program Managers, EMS Agency personnel, and EMS stakeholders (fire and private providers), and quality improvement personnel from our local Comprehensive Pediatric Receiving Centers. EMS data is collected via our electronic medical record keeping program, ImageTrend. The PedRC Program Managers collect hospital data - vetted through their internal processes - and in coordination with the EMS Agency share aggregate data with committee members. All such records that include Protected Health Information (PHI) as defined by the Health Insurance Portability and Accountability Act (HIPAA) are handled confidentially per the statute. If a hospital or the EMS Agency identifies a need for improvement, an EMS Event Reporting Form may be generated, and a performance improvement action plan will be developed by the EMS Medical Director and/or PedRC Committee.

Data elements collected include the following:

1. Baseline data from pediatric ambulance transports, including, but not limited to:
 - a. Arrival time/date to the emergency department
 - b. Date of birth
 - c. Transport Mode
 - d. Gender
 - e. Primary impression
2. Basic outcomes for EMS quality improvement activities, include but are not limited to:
 - a. Admitting hospital (if applicable)
 - b. Discharge or transfer diagnosis
 - c. Time and date of discharge or transfer
 - d. Disposition from the Emergency Department
 - e. Cause of injury
 - f. Type of Injury

g. Residence zip code

EMSC – Injury and Illness Prevention Planning

Effectiveness of the EMSC Program can be directly related to the effectiveness of training received by all constituents. Administrative and medical oversight is heavily involved at all training levels. Our EMS system comprises six fire service-based providers, all with full-time medical directors. Prehospital education on pediatric care, guided by data and our process improvement activities, is provided on an ongoing and as-needed basis throughout the year.

Before our current EMSC program, the EMS Agency had promoted and formally addressed pediatric injury and illness prevention activities via prehospital, hospital, and public education.

1. Since 2010, we have provided free public education on Hands-Only CPR and Stop the Bleed, working closely with the Marin County Office of Education to bring these programs and tools directly to our schools (grades 5-12).
2. In 2019, several of our PedRC committee members became trainers for the [Impact Teen Driving](#) Program. Unfortunately, the coronavirus pandemic halted our efforts as we were ramping up to bring more of this education to our community. However, a local non-profit organization – [Marin Healthy Youth Partnerships](#) – provides resources for parents and students on Impact Teen Driving as well as a multitude of other topics including underage drinking, drug use, and mental health.
3. [Community Health and Prevention](#) is an important aspect of injury and illness prevention. Our EMS partners have formalized several plans to improve the health of our youth via programs such as oral health, nutrition wellness, and substance use prevention. One such program is [Concussion Smart Marin](#), in which committee members meet every other month to update concussion guidelines for Marin hospitals and providers with a goal of ensuring consistent practice measures/protocols for those providing care.
4. The Trauma Center at MarinHealth Medical Center introduced a bicycle helmet safety program, assisting in providing helmets to those who cannot afford them and those who present without one. Helmets are free and range from toddler (2-4 years of age) to a large teen/adult size.
5. Noting an inconsistency in how pediatric patients were transported in our county via ambulance, the Marin County EMS Agency's Policy and Procedure committee (led by one of our fire department paramedic educators) researched, developed education, and implemented a [Pediatric Patient Transport Policy \(GPC 16\)](#) mandating restraining devices (e.g., car seats or child restraint systems) specifically for ambulance stretcher use.

6. Adding onto safe pediatric transportation, we support and work with our local California Highway Patrol office who provide education and free safety [inspections for child safety seats](#).
7. Working in partnership with [Project ChildSafe](#) - a national firearms safety education program – several of our law enforcement agencies implemented educational programs on firearm safety and responsible gun storage and provide free firearm safety kits to our residents.
8. The Marin County DUCKS Program, a movement to save lives by educating students on the signs and symptoms of an acute stroke, was implemented by personnel from MarinHealth Medical Center and AHA/ASA. The program was presented to nine local elementary schools resulting in over 10,000 students, staff, and community members receiving education on the B.E.F.A.S.T. stroke symptom recognition tool.
9. Many of our prehospital personnel educators are TNCC, ACLS, and PALS certified instructors and provide training and education to their respective departments. Additional weekly and monthly education is done via newsletters, medical director lead training, and guest pediatrician lectures.
10. The EMS Agency, along with the Marin County Office of Education joined forces to obtain grant money for purchasing Intranasal Narcan Kits and providing education to school staff. At current writing, all of our high schools and middle schools have several kits on campus for distribution.
11. After its PedsRC designation in 2022, Novato Community Hospital, offered free [STABLE](#) courses to our prehospital and hospital personnel. They have also developed and exercised a pediatric surge plan at their facility.

The Marin EMS Agency provides oversight and system integration for Pediatric Receiving Center Quality Improvement activities including:

- Creating a Pediatric Receiving Center designation plan, to include specialized pediatric care, for approval by the LEMSA
- Developing and revising specific pediatric policies, procedures, and protocols
- Following up on all EMS Event Form Reports received pertaining to pediatric care
- Reviewing and approving performance improvement plans
- Collecting data and distributing pediatric data reports
- Reviewing annual CQIP updates from designated PedRCs and EMS service providers
- Scheduling and facilitating EMS stakeholder PedRC meetings
- Establishing future goals and objectives using evidence-based practice with our stakeholders' input. In addition, we will:
 1. Support and promote our existing illness and injury prevention programs
 2. Support the Trauma Center's internal Trauma Triage Tool addition using the [ESCAPE module](#) for assessing Non-Accidental Trauma (NAT)

3. Focus on ensuring the appropriateness and accuracy of prehospital pediatric medications by educating our prehospital providers to utilize a pediatric dosing guide tool prior to the administration of medications.

Pediatric Surge Planning remains an area we continue to discuss and revise with our Healthcare Preparedness Program (HPP). Included in our planning is the Marin County Public Health Officer and Deputy Public Health Officer, EMS Agency (including the Medical Director), Public Health Preparedness, HHS Epidemiology Program, Office of Emergency Services, the Coroner (as related to family reunification), and our three acute care hospitals. This plan is an Annex to our Healthcare Preparedness Program (HPP) Response Plan Summary Document, which references the Marin County Response Plans that provides a summary of the Marin County Medical Health Operational Area Coordinator (MHOAC) Program plans and procedures that would be activated to support the healthcare facility response in an emergency. Prehospital providers can easily reference the [Marin County MCI Plan](#) for guidance if a pediatric surge incident occurs.

Exhibit A
2022 Transport Destinations

Destination Name	Total Transports
Children's Hospital and Research Center Oakland	2
CPMC-Van Ness	1
John Muir Medical Center (Walnut Creek)	1
Kaiser San Francisco	1
Kaiser San Rafael	156
Kaiser Santa Rosa	2
Marin Health Medical Center	380
Novato Community Hospital	88
Petaluma Valley Hospital	2
St. Mary's Medical Center San Francisco	1
UCSF Benioff Children's Hospital	2
UCSF Medical Center at Mission Bay	1
Total	637

MARIN COUNTY LOCAL AND TRANSFER FACILITIES

Facility Name	Designation	LEMSA PedRC Agreement Exp. Date	PedRC Medical Director	PedRC Program Manager
Kaiser Permanente San Rafael Medical Center	General Pediatric Receiving Center	12/31/2023	Kristen Swann, MD	Tina Vitale- McDowell, RN
MarinHealth Medical Center	Advanced Pediatric Receiving Center	12/31/2023	David Hoffman, MD	Adrian McNally, RN
Novato Community Hospital	General Pediatric Receiving Center	10/31/2025	Eric Scher, MD	Kim French, RN
UCSF Benioff Children's Hospital San Francisco	Comprehensive Pediatric Receiving Center			
UCSF Benioff Children's Hospital Oakland	Comprehensive Pediatric Receiving Center			
Lucile Packard Children's Hospital, Stanford	Comprehensive Pediatric Receiving Center			
UCSF Benioff Children's Hospital San Francisco Lucile Packard Children's Hospital, Stanford	Pediatric Rehabilitation Facilities			
Kaiser Permanente San Francisco	General Pediatric Receiving Center			
Kaiser Permanente Santa Rosa	Advanced Pediatric Receiving Center			
Kaiser Permanente Oakland	Comprehensive Pediatric Receiving Center			

<i>EMS Prehospital and IFT Care Providers</i>	<i>Affiliation</i>
Novato Fire Protection District	Fire
San Rafael Fire Department	Fire
Ross Valley Paramedic Authority	Fire
Marin County Fire Department	Fire
Central Marin Fire Department	Fire
Southern Marin Emergency Medical Paramedic System	Fire
NorCal Ambulance	Private
Falcon Ambulance	Private
American Medical Response	Private
LIFWest Ambulance	Private
Royal Ambulance	Private
Eagle Ambulance	Private

Exhibit B

Marin County EMS Pediatric Receiving Center Meeting Data – 2022 Data

Snapshot Obtained from our three PedRC Centers

January-December 2022

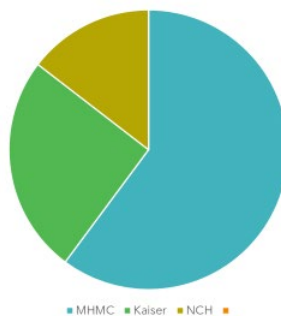
+ Total: TBD* (no data from Kaiser p 9/21/22)

Disposition	
Discharged	TBD
Admitted (floor or Tele)	22
Admit - ICU	3
Admit - NICU	4
Transferred	128
LWBS +++	68
AMA	10
Deaths	2*
OR	14

+ DEATHS: MarinHealth - 1 (12yo male, cardiac arrest, genetic testing being done for his twin); (15yo male brain tumor)

+ Transfer Facilities: CHO, UCSF, St. Francis, KPO, CPMC, Stanford Lucille Packard, JMMC Behavioral Health, MarinHealth CSU (Crisis Stabilization Unit)

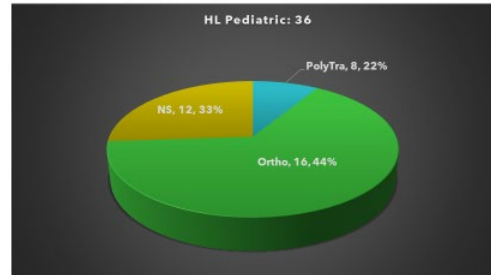
PedRC Receiving Centers



MHMC
Trauma Registry data for Pediatrics: 75

Full: 11
Limited: 42
Consults/No act: 21

Interfacility Transfers Out: 36



Missed Trauma Alerts – MarinHealth Medical Center (undertriaged)

21 non activations transferred out for HLOC

2 undertriage

- 9 year old arrived POV s/p fall from one level to another
 - Transferred to CHO with multiple thoracic and lumbar fx
 - ISS 18
- 7 month old male arrived by ambulance s/p fall while being carried
 - Transferred to CHO with ICH
 - ISS 9
- Both cases were reviewed internally and deemed not to be undertriaged/no opportunity for improvement

Missed Trauma Alerts – Kaiser Permanente Medical Center (undertriaged)

- + 5/10/22: Arrived by PVT; 13yo male, fell on back 6 days earlier; new onset gait abnl and lower limb numbness; transferred to KP Oakland PICU
- + 5/29/22: Arrived by PVT; 14yo male, dizzy post carnival ride and THC, fell with 2' +LOC; small epidural, temporal bone fx, basal skull fx; transferred to KP Oakland PICU
- + Both cases were reviewed internally and deemed not to be undertriaged

Transported Pediatric Patients by Age

Patient	Age	Number of Runs	Percent of Total Runs
1	99	8.20%	
2	82	6.79%	
3	55	4.56%	
4	59	4.89%	
5	51	4.23%	
6	45	3.73%	
7	56	4.64%	
8	46	3.81%	
9	34	2.82%	
10	41	3.40%	
11	46	3.81%	
12	44	3.65%	
13	86	7.13%	
14	105	8.70%	
15	98	8.12%	
16	114	9.44%	
17	146	12.10%	
Total: 1,207		Total: 100.00%	