



Quality Improvement

Program Plan 2021 Annual Update

Prepared By:

Sacramento County

Department of Health Services

Emergency Medical Services Agency

**SACRAMENTO COUNTY
QUALITY IMPROVEMENT PROGRAM PLAN
2021 ANNUAL UPDATE
May 4, 2022**

In accordance with State of California Code of Regulations (CCR), Title 22 – Division 9, Chapter 12, Sacramento County EMS Agency (SCEMSA) submits this Emergency Medical Services (EMS) System Quality Improvement Program Plan Update.

Quality Improvement Program (QIP)

The QIP provides comprehensive evaluations of prehospital patient care. Participants include representatives in communications, public and private Advanced Life Support (ALS) transportation, EMS training, and hospital emergency medical care. The QIP identifies, through prehospital patient care data review, areas needing improvement, implements process improvement and training/education, and recognizes excellence in performance and delivery of care.

Description of Agency

SCEMSA is located at 9616 Micron Ave, Suite 960, Sacramento, CA and oversees the hospitals' emergency departments and prehospital emergency medical providers servicing Sacramento County. SCEMSA does not hold any Exclusive Operating Area (EOA) agreements. SCEMSA is an equal opportunity county and strives for equality and transparency within the Agency.

Sacramento County EMS System providers include:

- Twenty-five (25) approved prehospital public and private Advanced Life Support (ALS) transportation EMS Providers
- Ten (10) hospitals including four (4) base hospitals and three (3) trauma centers
- Forty-eight (48) Training and Continuing Education Programs consisting of Emergency Medical Responder, Emergency Medical Technician, Paramedic, Mobile Intensive Care Nurse, Continuing Education, and CCR Title 22, Division 9, Chapter 1.5 Optional Scope program that includes Naloxone administration by Law Enforcement First Responders.

2021 Overview

SCEMSA works diligently to define consistent documentation standards and improve the quality and accuracy of data reporting capabilities to meet or exceed the State of California standards. With ten (10) different electronic patient care report (ePCR) platforms in use, every provider is submitting data to the CA EMS Information System (CEMSIS) using the latest Schematron. SCEMSA monitors documentation compliance and trend improvements via quality improvement audits and documentation dashboards in system monitoring.

2021 Update

The Technical Advisory Group (TAG)

TAG is a multi-stakeholder group that advises on the QIP. In 2021, the TAG continued to focus on optimizing data collection and documentation practices to provide the highest quality data for quality improvement by providing quarterly reports and feedback to stakeholders.

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TAG Developments / Focus 2020:

- Psychiatric Emergencies / Behavioral Crisis
- Acute respiratory illness monitoring (COVID-19)
- ePCR reconciliation
- APOT 3 - New metric

TAG Developments / Focus 2021:

- QIP compliance and evaluation method
- APOT continuous evaluation of APOT 1, 2.
- Cardiac Arrest with Return of Spontaneous Circulation (ROSC) policy change effectiveness monitored
- Quarterly system overview
- Quarterly Provider Dashboards of Specialty Services and 911 Responses

QIP Evaluation Sheet Development and Implementation

SCEMSA Policy #7600 requires participants from Sacramento County hospitals and EMS providers to submit a Quality Improvement Program Plan and annual updates. The plans were inconsistent in format and content, which proved challenging during the evaluation process. SCEMSA, in coordination with the TAG members, developed an evaluation and scoring method based on Policy #7600 to facilitate consistency in the plans. The evaluation method allows SCEMSA to identify where improvement is needed and when a provider exceeds expectations (Annex #1). Identifying both ends of the spectrum promotes sharing of good practices and opens communication in areas needing improvement. Two of the participants exceeded standards and four require some improvement.

In 2021, sixty-four percent (64%) of the EMS providers and forty-five percent (45%) of hospitals submitted QIP plans. (Figure 1). SCEMSA works with the hospital providers to increase their submissions.

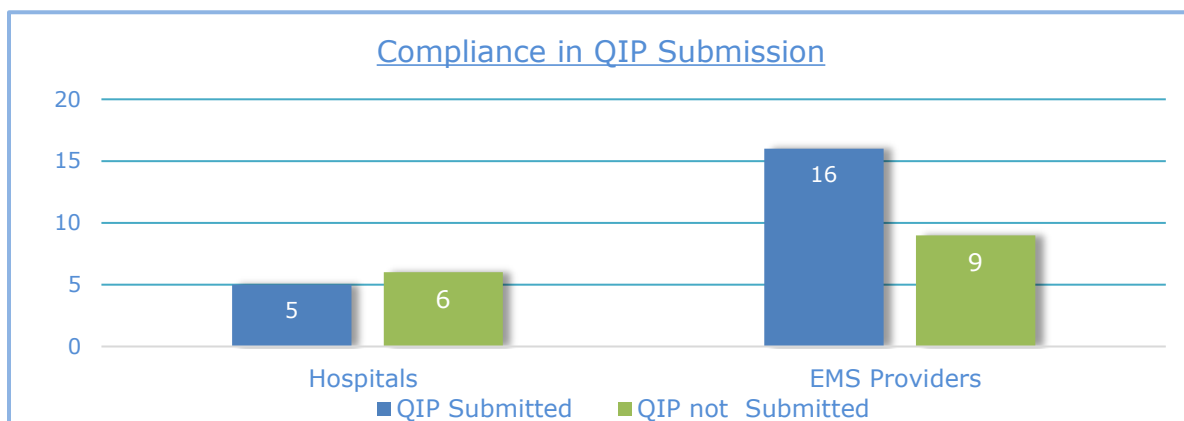


Figure- 1

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Ambulance Patient Offload Times (APOT)

Sacramento County hospitals experience some of the highest APOT times in the State, reaching new highs during COVID-19 surges. The following APOT reports are available on SCEMSA’s webpage and are updated bi-weekly:

- Ambulance Patient Offload Times (APOT) per Month for Sacramento County
- Ambulance Patient Offload Times (APOT) per Month by Hospital
- Ambulance Patient Offload Times (APOT) Previous Calendar Week per Hospital

Each report includes the APOT 90th percentile, the average and the patient count for the timeframe. In addition to making the times available, a monthly report which includes APOT 1, APOT 2 and APOT-3, is shared with stakeholders. (Figure 2). The APOT 3 metric was created by SCEMSA and is defined as total accumulated time on APOT in minutes. This measures the impact on EMS providers that takes place due to the loss of unit hours available for calls of service due to extended wait times. SCEMSA’s continuous effort to reduce APOT included the implementation of new policy #5054 Assess and Refer for low Acuity Patients during the COVID-19 Outbreak. SCEMSA developed this policy which became effective on November 16, 2021. SCEMSA continues to monitor this policy and its effects on APOT.

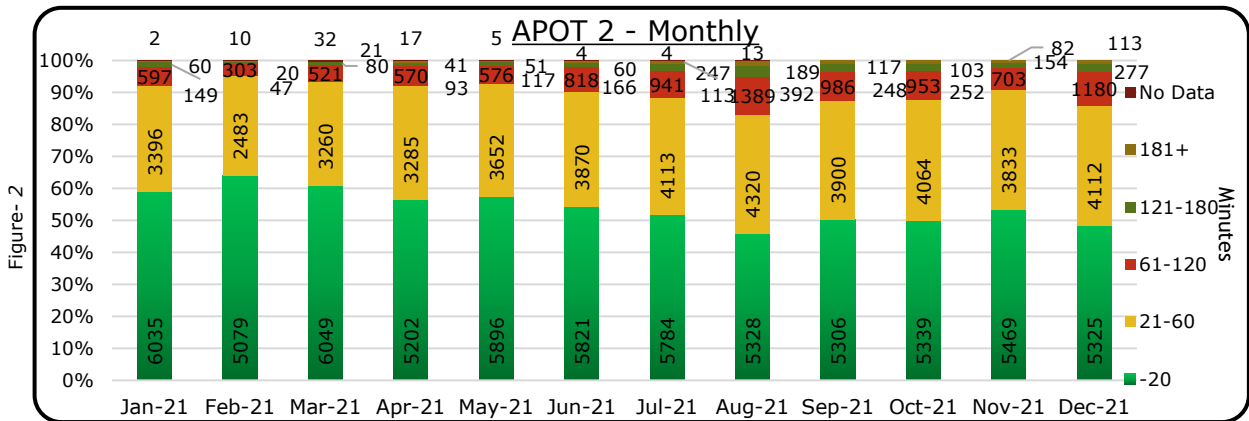
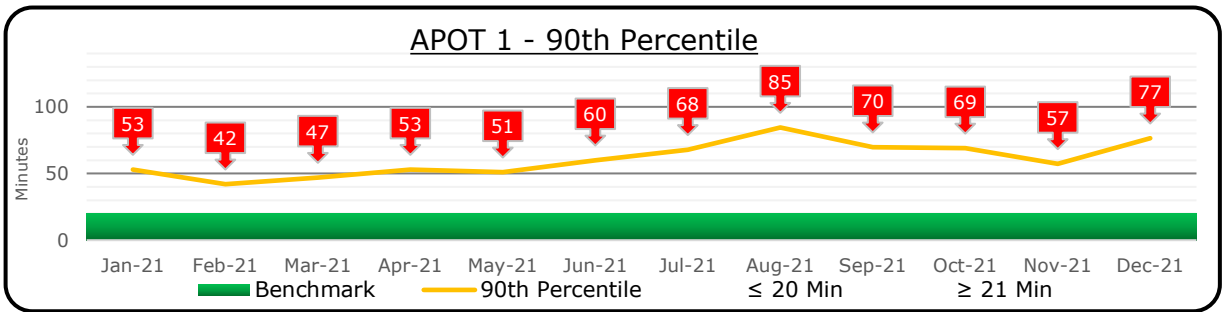
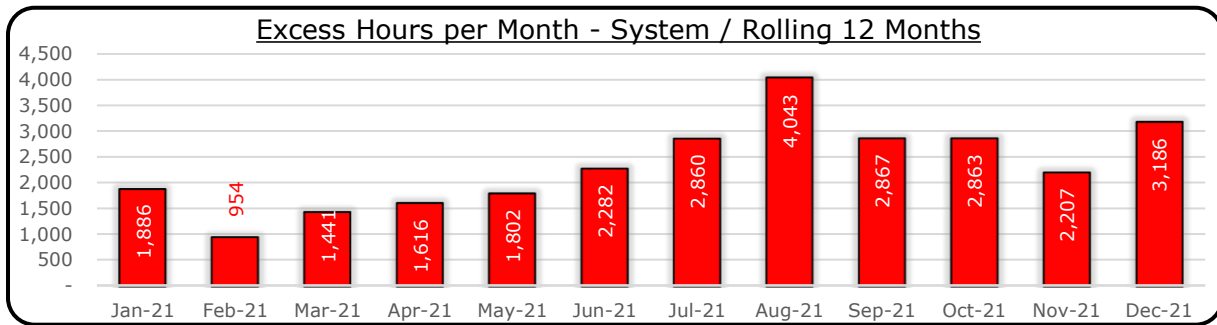


Figure- 2

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Individual Hospital Reports

SCEMSA works closely with hospitals to identify peak APOT times in an effort to reduce APOT. This includes detailed reports by hour range as illustrated in Figures 3 & 4. The reports can be expanded to illustrate day of the week to assist with hospital staffing plans.

Evaluation of APOT Times per Two Hour Range by Hospital 00:00 – 11:59

Average of APOT 90th Percentile		00:00:00 - 01:59:59	02:00:00 - 03:59:59	04:00:00 - 05:59:59	06:00:00 - 07:59:59	08:00:00 - 09:59:59	10:00:00 - 11:59:59
KHN							
Jul		0:27:26	0:25:55	0:22:50	0:25:32	0:40:23	0:43:46
Aug		0:25:07	0:24:23	0:28:00	0:36:19	0:46:09	0:59:22
Sep		0:27:43	0:25:38	0:26:03	0:26:14	0:36:15	0:40:23
KHS							
Jul		0:27:33	0:22:40	0:17:02	0:18:42	0:27:37	0:56:01
Aug		0:32:27	0:19:29	0:18:30	0:23:22	0:33:34	0:54:54
Sep		0:19:06	0:19:20	0:16:34	0:18:07	0:22:41	0:41:07
KR							
Jul		0:17:26	0:15:53	0:20:21	0:18:17	0:27:05	0:45:40
Aug		0:40:00	0:30:54	0:35:37	0:36:20	0:47:05	0:55:35
Sep		0:20:55	0:13:24	0:17:10	0:16:43	0:32:14	0:41:19
MGH							
Jul		0:34:30	0:30:53	0:24:57	0:22:07	0:35:17	0:47:13
Aug		0:46:16	0:42:02	0:39:59	0:30:20	0:44:17	0:52:51
Sep		0:31:25	0:29:26	0:19:56	0:19:57	0:31:03	0:34:23
MHS							
Jul		0:30:58	0:24:54	0:35:03	0:36:35	0:39:32	0:48:52
Aug		0:34:18	0:25:18	0:36:52	0:30:37	0:43:08	0:42:54
Sep		0:46:09	0:47:18	0:33:00	0:36:10	0:45:54	0:50:58
MOF							
Jul		0:11:40	0:10:18	0:10:26	0:14:23	0:15:42	0:18:28
Aug		0:15:38	0:19:49	0:13:40	0:16:42	0:19:27	0:17:34
Sep		0:15:59	0:15:12	0:12:46	0:18:56	0:19:42	0:19:38
MSJ							
Jul		0:31:29	0:19:19	0:18:43	0:22:30	0:49:39	1:02:16
Aug		0:37:46	0:33:19	0:23:11	0:30:29	0:52:27	1:27:17
Sep		0:31:47	0:26:31	0:20:17	0:30:39	0:47:50	0:55:38
SMCS							
Jul		0:49:07	0:27:53	0:35:38	0:29:37	0:47:28	0:58:46
Aug		0:58:29	0:41:45	0:39:25	0:34:23	0:47:30	1:06:07
Sep		0:41:21	0:44:30	0:43:42	0:43:43	0:52:38	1:03:38
SRMC							
Jul		0:18:39	0:13:56	0:17:41	0:20:33	0:18:13	0:28:17
Aug		0:21:33	0:21:37	0:23:26	0:22:56	0:28:08	0:33:16
Sep		0:19:02	0:20:11	0:22:22	0:18:34	0:19:37	0:26:41
UCD							
Jul		0:30:44	0:19:57	0:18:43	0:26:09	0:38:39	1:19:19
Aug		0:26:41	0:33:47	0:21:08	0:32:47	1:16:33	2:02:06
Sep		0:30:08	0:30:20	0:16:36	0:25:22	0:35:57	1:34:07
VA							
Jul		0:06:51	0:06:14	0:07:37	0:08:44	0:14:25	0:15:30
Aug		0:08:38	0:08:38	0:07:09	0:07:44	0:12:59	0:10:55
Sep		0:06:31	0:07:30	0:05:45	0:09:09	0:15:10	0:12:25
Grand Total		0:30:38	0:26:14	0:24:07	0:25:58	0:37:02	0:50:10

Figure- 3

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Evaluation of APOT Times per Two Hour Range by Hospital 12:00-23:59

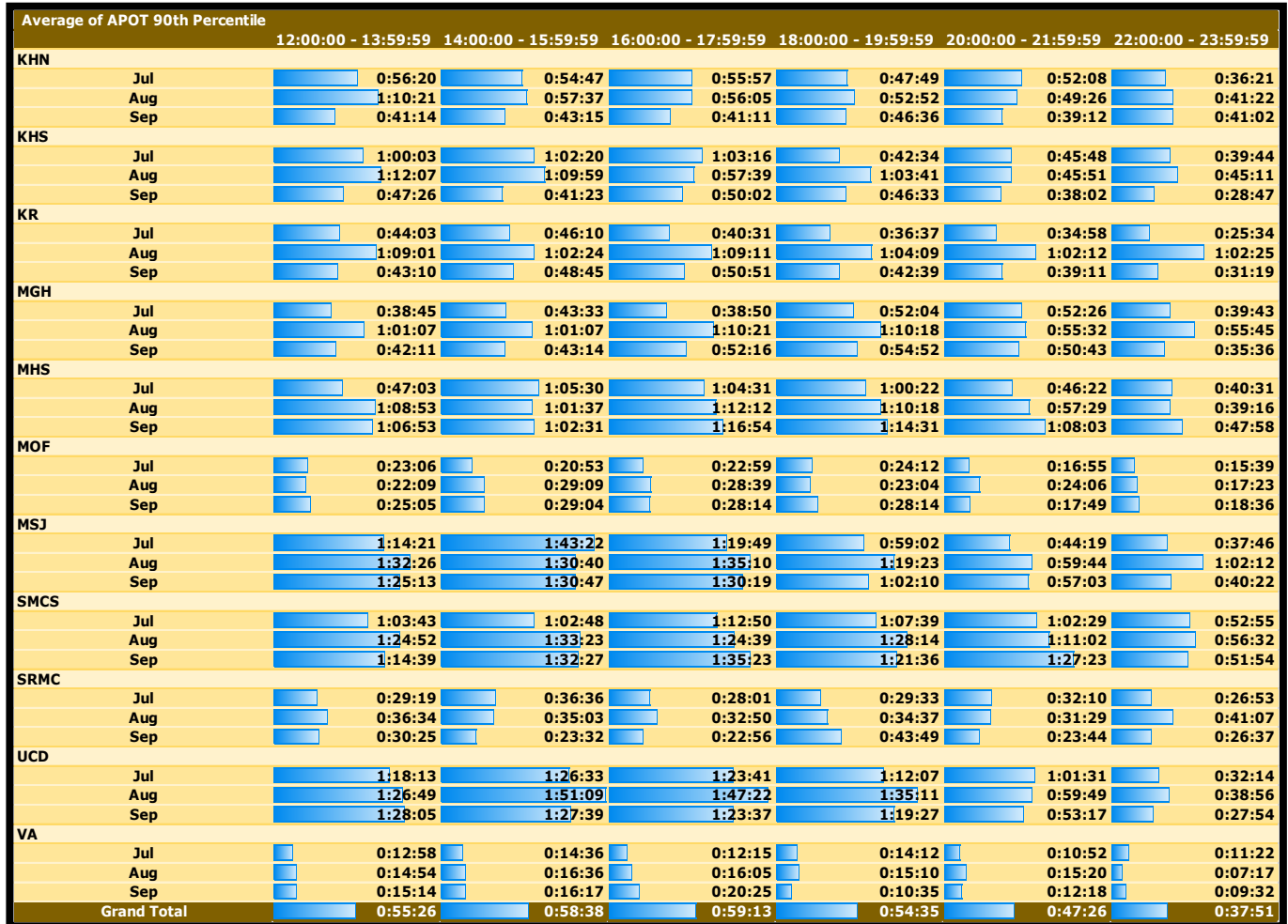


Figure- 4

Diversion

To mitigate the increased APOT times and the hospitals failure to comply with the diversion Policy # 5060 – Hospital Diversion, SCEMSA implemented a SCEMSA imposed diversion in August 2021. SCEMSA monitored the imposed diversions monthly, which remained in effect through the end of 2021 (Figure 5). These quarterly system overviews include STEMI, Stroke, Trauma, Pediatric Patients, Medical and Psychiatric Holds, Hospital Closure Hours and Intrafacility Transfers for Specialty Programs (Annex #2).

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Diversions			
Hospital	Acute Care Hospital Decompression Totals	Trauma Centers Trauma Diversions Totals	Acute Care Hospitals SCEMSA imposed Diversion
	Total Hours On Diversion Rolling 12 months	Total Hours On Trauma Diversion Rolling 12 months	Total Hours of SCEMSA Imposed Diversion August 2021- Dec 2021
Kaiser North	46.64	N/A	0
Kaiser South	190.79	61.89	3.78
Mercy General	14.85	0	2.33
Mercy Folsom	98.3	N/A	0
Mercy San Juan	56.79	2.42	4.43
Methodist	11.95	N/A	0
Sutter Medical Center	33.94	N/A	10.5
UC Davis Medical Center	181.86	1.28	9.53
VA Medical Center	2.32	N/A	0
Total	637.44	65.59	30.57

Figure- 5

Cardiac Arrest with Return of Spontaneous Circulation (ROSC) Policy Change Effectiveness

In July 2019, SCEMSA changed Policy #8031 – Cardiac Arrest language to encourage on scene resuscitation efforts to maximize chances of ROSC. Monitoring of cardiac arrests with a cardiac rhythm of Pulseless Electrical Activity (PEA) or Asystole indicate that there has been little change in practice. The TAG discussed the findings and it was noted that some departments have been utilizing High Performance CPR since 2017; this could account for the minimal change in numbers.

Discussion of social factors suggests that some paramedics may struggle morally and ethically declaring a younger individual dead. SCEMSA discussed in meetings with prehospital providers that the Sacramento County Chaplaincy and Law Enforcement Chaplaincy have training courses that may be considered to address these factors. SCEMSA continues to monitor ROSC following changes to the policy and continuing education. There was a change in how ROCS is monitored by adding additional data points to review. SCEMSA monitored ROSC in patients where Pulseless Electrical Activity (PEA) or Asystole was not documented. The illustrated chart below shows the correlation between ROSC achieved in cases that exclude Asystole and PEA. In addition, the review of scene time for ROSC patients by provider and systemwide shown is in Figure 6.

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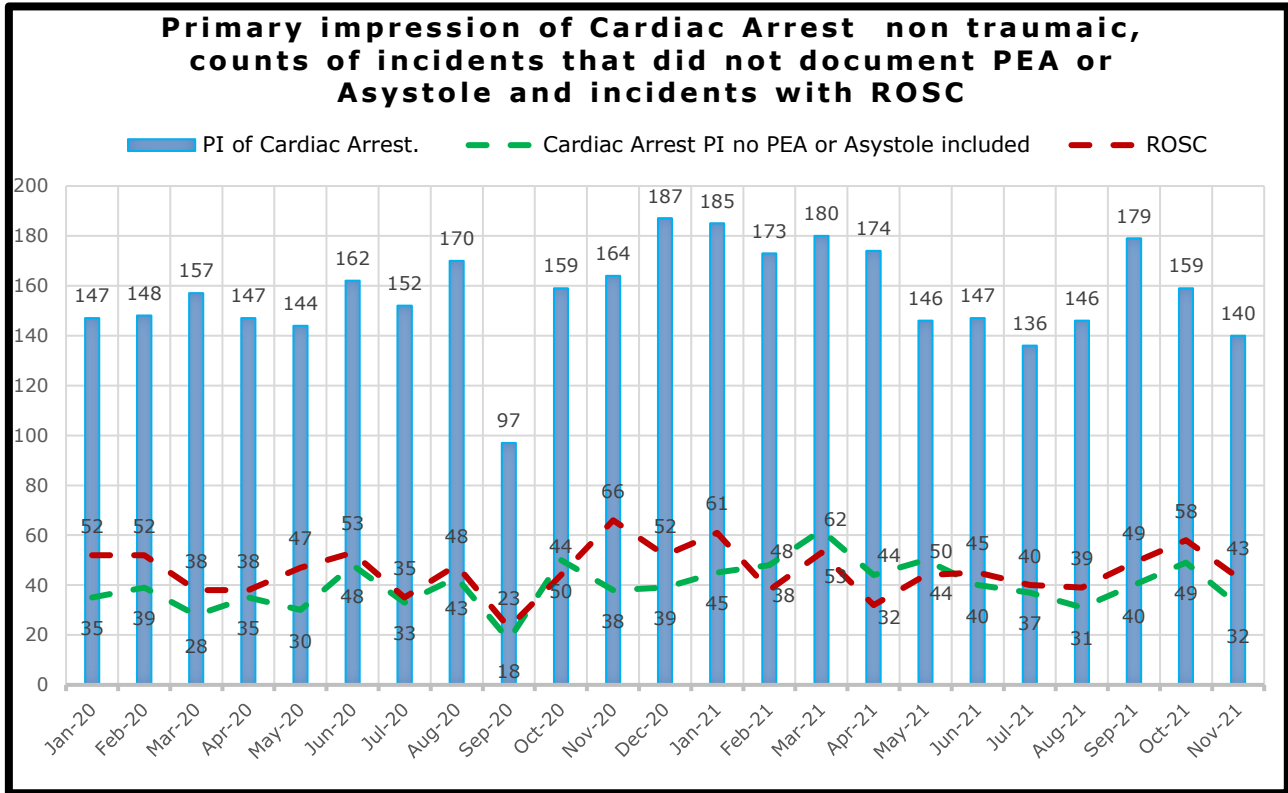


Figure- 6

SCEMSA reviewed the scene time for ROSC patients by provider and systemwide. (Figure 7). The identified scene times, reflect the “on scene treatment” practice for cardiac arrest patients does assist in maximizing ROSC.

PEA Asystole Audit 2021-1Q	SCEMSA
Patient Total PEA / Asystole	190
Patient Total PEA / Asystole without ROSC	146
Percentage of Patients without ROSC	76.84%
Percentage of Patients with + ROSC	23.16%
90th Percentile of Patients with PEA / Asystole without ROSC and scene times in min.	25:50:00
Average of Patients with PEA / Asystole without ROSC and scene times in min.	14:42

Figure- 7

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Core Measures:

SCEMSA evaluates the Core Measures on a quarterly basis and submits the annual report as required by the Emergency Medical Services Authority. Figure 8 below illustrates the Core Measures for Sacramento County prehospital providers. In addition to quarterly and annual evaluations, SCEMSA generates Core Measure individual reports for each provider to assist with identifying opportunities for improvement.

Measure ID #	Measure Name	Numerator Value (Subpopulation)	Denominator Value (Population)	Reporting Value (%)	Notes and Comments
TRA-2	Transport of Trauma Patients to a Trauma Center	918	2,771	33%	If adjusted to include Trauma center names the numerator increases to 2028 with a peercent value increase to 83%
HYP-1	Treatment Administered for Hypoglycemia	1,583	2,241	71%	
STR-1	Prehospital Screening for Suspected Stroke Patients	3,785	3,969	95%	
PED-3	Respiratory Assessment for Pediatric Patients	361	395	91%	
RST-4	911 Requests for Services That Included a Lights and/or Sirens Response	116,470	235,540	49%	
RST-5	911 Requests for Services That Included a Lights and/or Sirens Transport	11,724	131,497	9%	

Figure- 8

Quarterly Dashboards

During the 3rd Quarter of 2021, SCEMSA developed quarterly dashboards (Annex #3) to monitor and trend care provided for Trauma, STEMI, Stroke, and Pediatrics. Additionally, the dashboards trend call volume, call types and response times. SCEMSA shares the data with individual provider agencies along with the system totals for comparison.

Medical and Operational Advisory Committee (MAC/OAC)

The MAC/OAC includes all stakeholders and provides input on education, training, quality improvement, and data collection. The MAC/OAC conduct quarterly policy review which are effective on July 1st each year. When applicable, SCEMSA makes administrative edits as necessary with revised policy becoming effective immediately.

Accomplishments in 2021 include:

- Conducting all meetings via Zoom due to COVID-19 restrictions
- Addressing system challenges
- Policy reviews and updates
- Extended Optional Scope Policy Reviews
- Implementation of policies
- Education and training for new equipment

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Policy Changes and Implementation

Revisions:

- Policy #8030- Pain Suspected Cardiac Origin – Removed use of Nitroglycerin when ECG shows STEMI
- Policy #8042- Childbirth- Midwife Language added.
- Policy #9010- Pediatric Decreased Sensorium- Separated into three different policies:
 - Policy #9007- Diabetic Emergencies
 - Policy #9008- Seizures
 - Policy #9011- Suspected Narcotic Overdose
- Policy #8061- Decreased Sensorium – Separated into three different policies:
 - Policy #8002- Diabetic Emergencies
 - Policy #8003- Seizures
- Policy #8004- Suspected Narcotic Overdose

Newly Created:

- Policy #5054- Assess and Refer - effective November 16, 2021
- Policy #8032- Traumatic Arrest - created in September 2021
- Policy #9021- Pediatric Behavioral Crisis- effective June 2021

Law Enforcement Administration of Naloxone

SCEMSA monitors the administration of Naloxone. Monitoring includes:

- Ensuring law enforcement agencies train all officers in proper handling of Naloxone
- Collecting documentation and reports of incidents requiring Naloxone administration
- Tracking patient care report data to ensure proper documentation from EMS provider
- Providing feedback and continuous support to law enforcement

Figure 9 illustrates the incidents in which law enforcement administered Naloxone and the patient outcome in each documented incident. Eight (8) of eleven (11) or seventy-two percent (72%) of patients improved following Naloxone administration.

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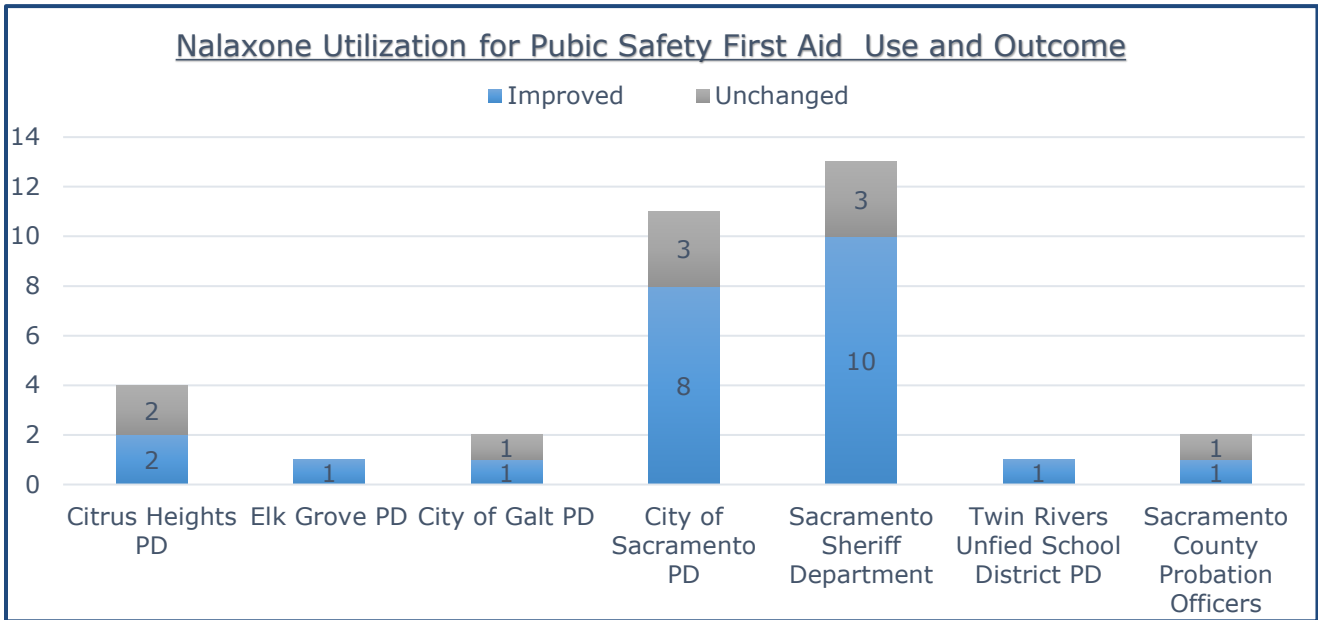


Figure- 9

2022 Plan

SCEMSA works on improving reporting capabilities and provider accountability to meet or exceed the State of California standards while continuing to build relationships with EMS providers and hospitals throughout the region. Areas of focus include:

- Monitoring APOT times
- Education
- Training
- Documentation Practices
- Monitoring of Core Measures performance indicators,
- Feedback to stakeholders.

SCEMSA will continue to collaborate with stakeholders to identify and address system needs. As well, continue to work in identifying solutions to assist in reducing APOT times in the region.

Annex 1

2021 Quality Improvement Program Evaluation Sheet



Review of Yearly QIP Plan

Agency Name:

Agency Level of Care : **ALS/BLS**

Total ePCRs
Received by
CEMSIS:
911 Response:

QIP – YEAR

202_

✘ Exceeds Requirements — | Meets Requirements — | Needs Improvement — |

Scoring :

	EXCEEDS	MEETS	NEEDS IMPROVEMENT
	83-117	49-82	0-48

Standard Indicators	Score
1. Personnel	
2. Equipment and Supplies	
3. Documentation	
4. Clinical Care and Patient Outcome	
5. Skills Maintenance/ Competency	
6. Transportation and Facilities	
7. Public Education and Prevention / Risk Management	
9. Other	

1. Personnel
2. Equipment and Supplies
3. Documentation
4. Clinical Care and Patient Outcome
5. Skills Maintenance/ Competency
6. Transportation and Facilities
7. Public Education and Prevention / Risk Management
9. Other

Standard Indicators	Score
1. Personnel	
2. Equipment and Supplies	
3. Documentation	
4. Clinical Care and Patient Outcome	
5. Skills Maintenance/ Competency	
6. Transportation and Facilities	
7. Public Education and Prevention / Risk Management	
9. Other	

TOTAL SCORE (MAXIMUM 117)



Personnel	Exceeds	Meets	N/A	N.I.										
The QI Plan describes a process for evaluation of personnel which includes:														
1. ePCRs Reviewed Count _____ (Exceeds/ Meets / Needs Improvement Percentage)	3	2	1	0										
<table border="1"> <thead> <tr> <th>Call Volume</th> <th>ePCRs to be Audit</th> </tr> </thead> <tbody> <tr> <td>1,300</td> <td>100%</td> </tr> <tr> <td>1,301 - 43,333</td> <td>25 ePCRs per week</td> </tr> <tr> <td>43,334 – 500,000</td> <td>Between 1% & 3%</td> </tr> <tr> <td>500,001 +</td> <td>1%</td> </tr> </tbody> </table>					Call Volume	ePCRs to be Audit	1,300	100%	1,301 - 43,333	25 ePCRs per week	43,334 – 500,000	Between 1% & 3%	500,001 +	1%
Call Volume	ePCRs to be Audit													
1,300	100%													
1,301 - 43,333	25 ePCRs per week													
43,334 – 500,000	Between 1% & 3%													
500,001 +	1%													
2. Direct observation (New Hires probation times)	3	2	1	0										
3. Routine evaluations (How often indicated)	3	2	1	0										
4. Performance Improvement Plan (Template to be Submitted)	3	2	1	0										
5. Designs Education plans for Individual Paramedic Deficiencies (Provide example)	3	2	1	0										

Maximum - 15

Equipment & Supplies	Exceeds	Meets	N/A	N.I.
6. Periodic equipment preventive maintenance program in place (Mention in Plan, QI coordinator to follow up with ALS coordinator to verify what was found on inspection)	3	2	1	0
7. Records of scheduled maintenance maintained and available upon request (Needs to be mentioned in plan)	3	2	1	0
8. Units with Malfunctioning equipment are removed from service until equipment is repaired or replaced (Records need to be available provide a report of incidents with plan)	3	2	1	0
9. Malfunctioning biomedical device that may have affected patient care shall be reported to the Sacramento County Emergency Medical Services Agency (SCEMSA) on the next working day. (Report of incidents for the year included in plan)	3	2	1	0

Maximum - 12



Documentation	Exceeds	Meets	N/A	N.I
The QI Plan describes a process for:				
10. Review of Patient Care Reports (ePCRs)	3	2	1	0
11. Yearly Evaluation of Quality Core measures as specified by EMSA	3	2	1	0
12. Training in the importance to capture specific elements for complaints of: Stroke/ Trauma / Sepsis / Respiratory / STEMI/ Chest Pain/ Cardiac Arrest (CARES data)	3	2	1	0
13. Proper training in documentation of SCEMSA documentation lists: Hospital Codes / Procedures / Medications / Primary Impressions, and Symptoms / Cause of Injury and Location Type	3	2	1	0

Maximum - 12

Clinical Care and Patient Outcomes	Exceeds	Meets	N/A	N.I.
The QI Plan includes:				
14. Trend Analysis for high volume calls or unusual occurrence	3	2	1	0
15. Problem - oriented (trend analysis)	3	2	1	0
16. Review of refusal of care and AMA (Provide Count of totals for each, SCEMSA QI Coordinator will compare Provider numbers to CEMSIS numbers) Provider to outline their review process.	3	2	1	0
17. Specific Audit Topics established through SCEMSA or another appropriate agency (Any QI projects required as a result of an agency specific audit conducted throughout the year to be reported in the Provider Agency specific QI plan)	3	2	1	0
18. Specific audit topics established through SCEMSA or SCEMSA Quality improvement committees	3	2	1	0

Maximum - 15



Skilled Maintenance / Competency	Exceeds	Meets	N/A	N.I.
The QI Plan includes a process for:				
19. Review and evaluation of High Risk Procedures (Define what these are / skills maintenance)	3	2	1	0
20. Review of Optional Scope / Infrequent Skills (Provide review at end of year/ make a list of what these are for your agency)	3	2	1	0
21. Establishing Policies and Procedures based on SCEMSA policies (What have you done to meet the policy and how are the policy implemented throughout your agency)	3	2	1	0
22. Tracking current required certificates for accreditation (Provide count Information. QI Coordinator will compare count to SCEMSAs records)	3	2	1	0
23. Other training as Specified by SCEMSA either through policy or contractual obligations (Provide audit of any new policy changes)	3	2	1	0

Maximum - 15

Transportation and Facilities	Exceeds	Meets	N/A	N.I.
24. Ensures ePCRs are transmitted electronically to ED when applicable. (Meets expectation is 95% / 98 is Exceeding)	3	2	1	0

Maximum - 3



Public Education and Prevention / Risk Management	Exceeds	Meets	N/A	N.I.
The QI Plan includes description of:				
25. Program in place for Public education and Prevention (Include specific agency programs = Meets expectation / No Comments = Needs Improving) Risk Management program in place (Includes mention of risk management = Meets expectation / No Comments = Needs Improving)	3	2	1	0

Maximum - 6

Other	Exceeds	Meets	N/A	N.I.
26. QIP Submitted by due date of March 31	3	2	1	0
27. Provider agency holds at least quarterly meetings internally with QI members	3	2	1	0
28. Agency representative attends SCEMSA meetings	3	2	1	0
29. The QI Plan defines state and local indicators	3	2	1	0
30. The QI Plan defines Provider Agency specific indicators	3	2	1	0
31. The QI Plan describes audits of critical skills	3	2	1	0
32. The QI plan describes a process which identifies trending issues	3	2	1	0
33. The QI Plan includes agency's improvement action plan	3	2	1	0
34. The QI Plan describes issues that were resolved	3	2	1	0
35. The QI Plan describes continuing education and skill training provided as a result of Performance Improvement Plans	3	2	1	0
36. The QI Plan describes any revisions of in-house policies	3	2	1	0
37. The QI Plan describes reports to constituent groups	3	2	1	0
38. The QI Plan lists found opportunities for improvement and plans for next review cycle	3	2	1	0
39. The QI Plan describes next year's work plan based on the results of the reporting year's indicator review	3	2	1	0

Maximum - 45



NOTES:

Annex 2

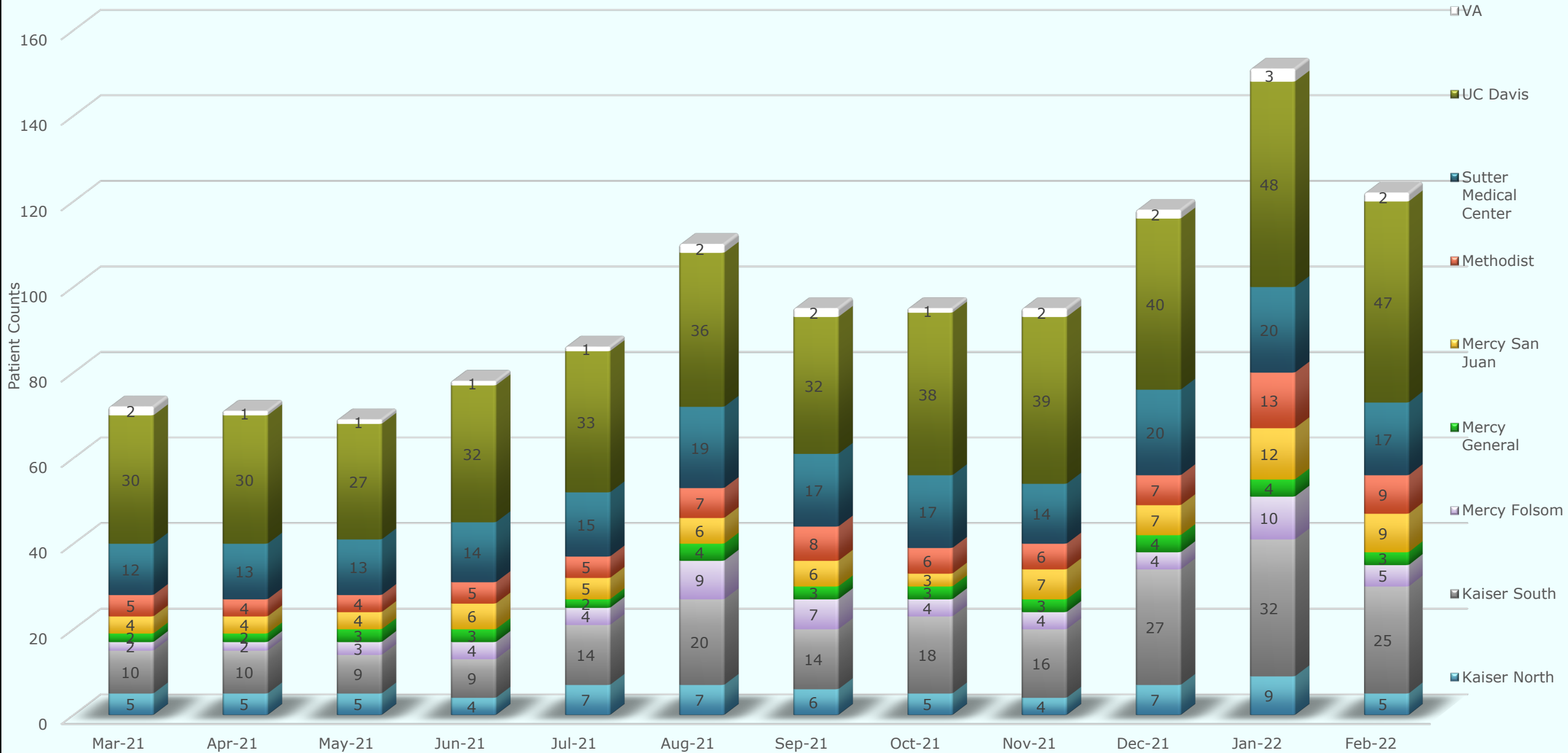
**2021
Quarterly Report
Data**

SCEMSA Quarterly Reports

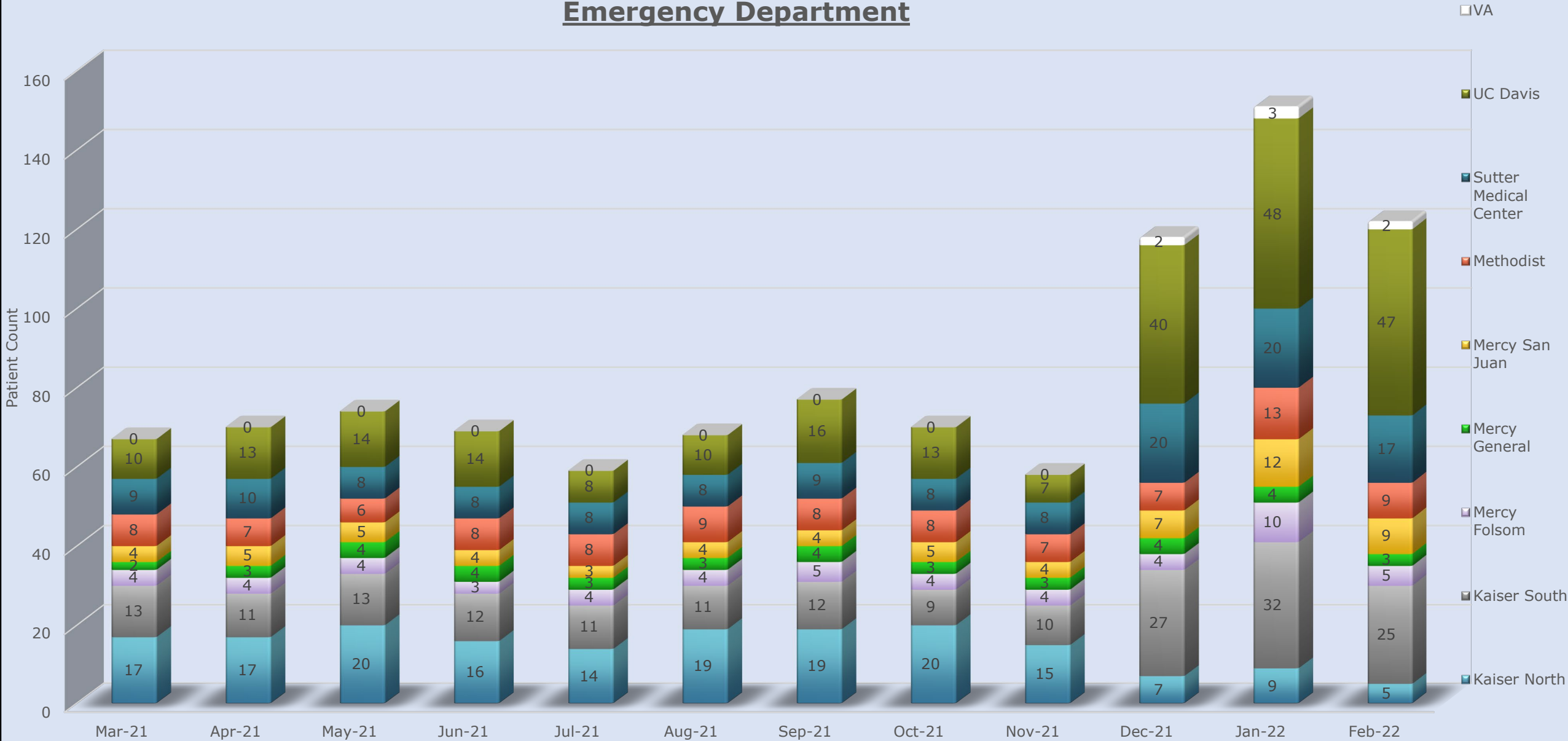
2021 - Q4

Scene Calls (911-Response) – 2021 – Q4	Incident Count	Notes
Responses (911-Response)	59622	
Average Response Time of First Unit on Scene (PSAP to Arrived Scene)	0:11:14	
Average Response Time of First Unit on Scene (Unit Notified to Arrived Scene)	0:07:55	
Treated and Transported	32844	(of Scene Calls 911-Response).
Treated and Transferred Care & Assist	5355	
Transported By Law Enforcement	1	
Coroners / Deceased	736	
Cancelled	20662	No Patient found/ No Contact / Prior to Arrival
RST -4 (Percentage of Response with Lights and Sirens)	3554	
RST -5 (Percentage of Transports with Lights and Sirens)	10.44%	
IFT's	3529	
Primary Impressions of Scene Calls Treated and Transported	Incident Count	
Traumatic Injury	4,799	
General Weakness	3,320	
Abdominal Pain / Problems (GI / GU)	2,437	
Behavioral / Psychiatric Crisis	2,132	
Non-Traumatic Body Pain	1,722	
Respiratory Distress / Other	1,674	
ALOC - (Not Hypoglycemia or Seizure)	1,422	
Pain/Swelling - Extremity - non-traumatic	1,189	
Chest Pain - Suspected Cardiac	1,167	
Nausea / Vomiting	988	
Seizure - Post	977	
Stroke / CVA / TIA	946	
Syncope / Near Syncope	847	
No Medical Complaint	733	
Respiratory Distress / Bronchospasm	728	
AMA/ Released / Refused / No Treatment of Scene Calls	Incident Count	
AMA's	4577	
Patient Refused Evaluation / Care (Without Transport)	3788	

EMS: Patients on Medical Hold per Local Hospital Emergency Department



EMS: Patients Awaiting Placement into Psychiatric Facility per Local Hospital Emergency Department



Decompression Hours per Month per Hospital

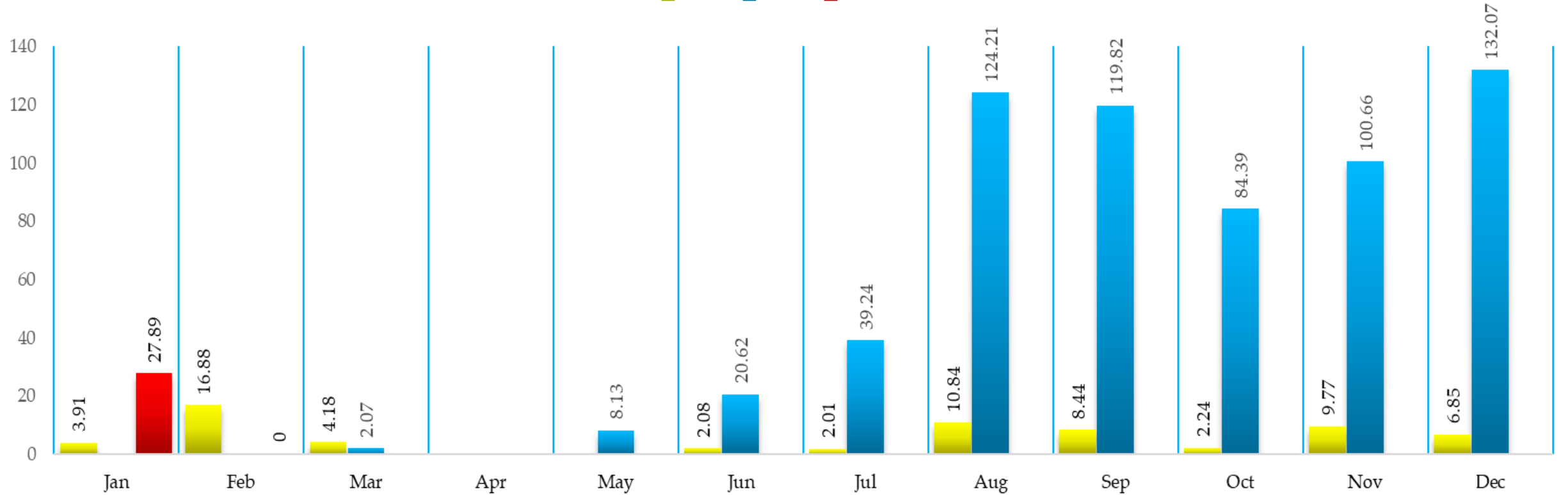
Hospital	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22
KHN			1.99		5.91	17.54	6.29		8.1	4.62		
KHS	2.07		6.09	10.35	22.98	36.31	18.37	12.23	12.33	66.02	8.13	
MGH			0.05			11.68			2.14	0.98	5.94	
MHF						19.53	40.47	17.43	11	9.87	5.29	
MSJ						13.78	4.07	5.96	22.46	10.52	8.21	
MHS					4.05	2.33	4.09		0	1.48		
SMCS						2.07	12.71	4.26	4.19	10.71		
UCD				10.27	6.3	20.97	33.8	44.51	40.44	25.57	0.32	
VA							0.02		0	2.3		
Total Hours	2.07	0	8.13	20.62	39.24	124.21	119.82	84.39	100.66	132.07	27.89	0

SCEMSA Imposed Diversion Hours per Month

Hospital	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	22-Feb
KHN							
KHS	2.89						
MGH	1.26						
MHF							
MSJ				1.04			
MHS							
SMCS	1.13	3.04	3.24				
UCD	4.61	1.02	2.06	0.98			
VA							
Total	9.89	4.06	5.3	2.02	0	0	0

DIVERSION HOURS PER MONTH- 2020 | 2021 | 2022

2020 2021 2022



Advisory Hours per Month per Hospital

Hospital	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22
KHN			6.45					0.00	72.54	0.00		
KHS	72.03		8.00	2.56	17.95	1.42	99.25	49.11	48.98	89.16		8.79
MHF							5.48	132.51	277.14	61.78	31.07	
MGH				0.73			0.78	8.50	0.00	61.66	4.10	1.07
MSJ						0.92		12.08	0.00	5.11	8.71	
MHS				0.17				0.00	0.00	9.90	0.80	
SMCS							6.08	4.05	39.08	0.00	0.00	6.17
UCD			1.51					0.00	0.00	0.00	0.00	
VA	7.41				1.79			1.59	0.00	12.58	0.00	
Total	79.44	0.00	15.96	3.46	19.74	2.34	111.59	207.84	437.74	240.19	44.68	16.03

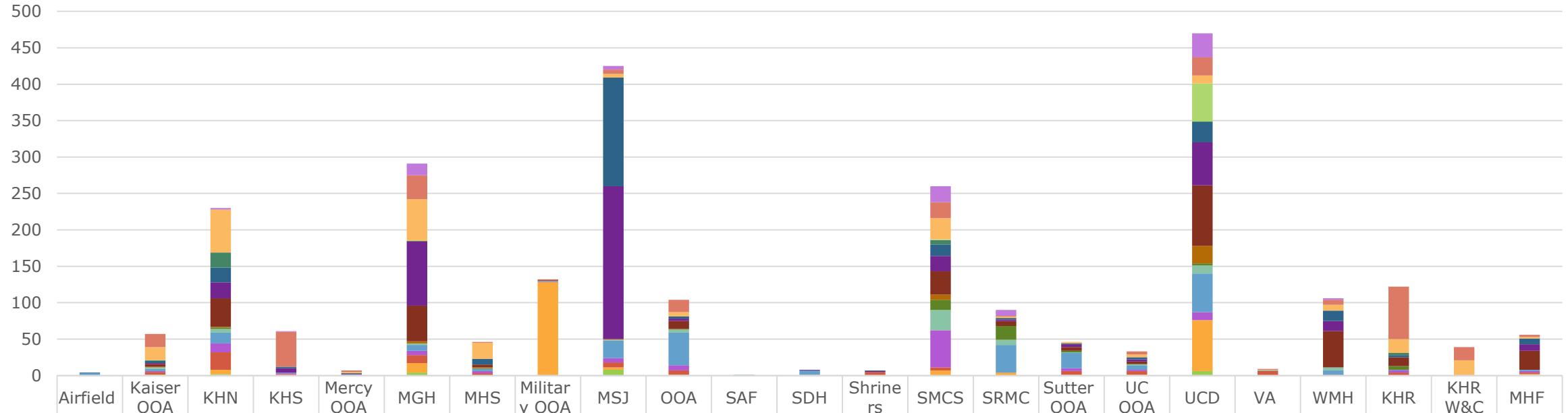
Advisory Status Represents: CT or STEMI Services unavailable / Power Outage / Main power outage, using auxiliary power

Internal Disaster Hours per Month per Hospital

Hospital	Mar-21	Apr-20	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22
KHN												
KHS		0.38										
MHF						24.02					47.92	
MGH			1.79			0.25				3.09		
MSJ												
MHS							0.33					
SMCS							1.99					
UCD								0.38				6.17
VA			3.70									
Total	0	0.38	5.49	0	0	24.27	2.32	0.38	0	3.09	47.92	6.17

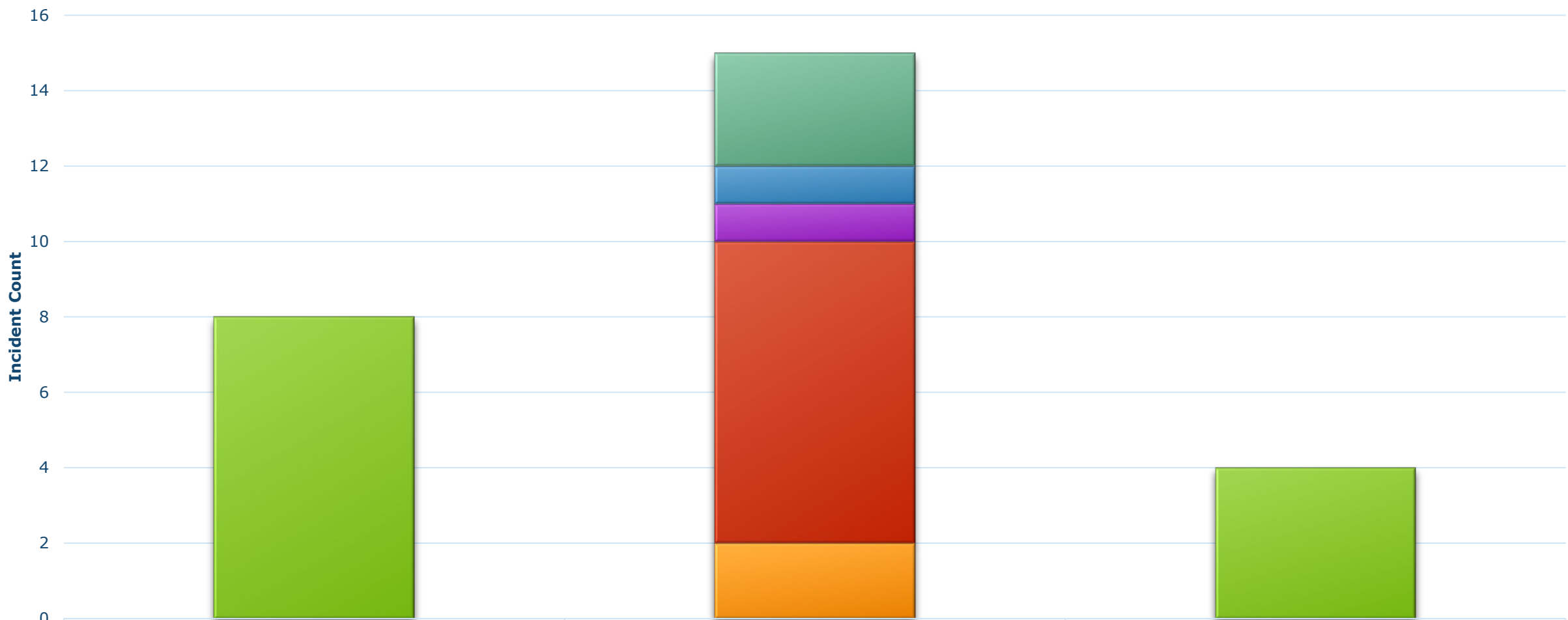
Interfacility Transports

Total IFT's Sending and Receiving Hospitals 2021- Q4 EMS Data



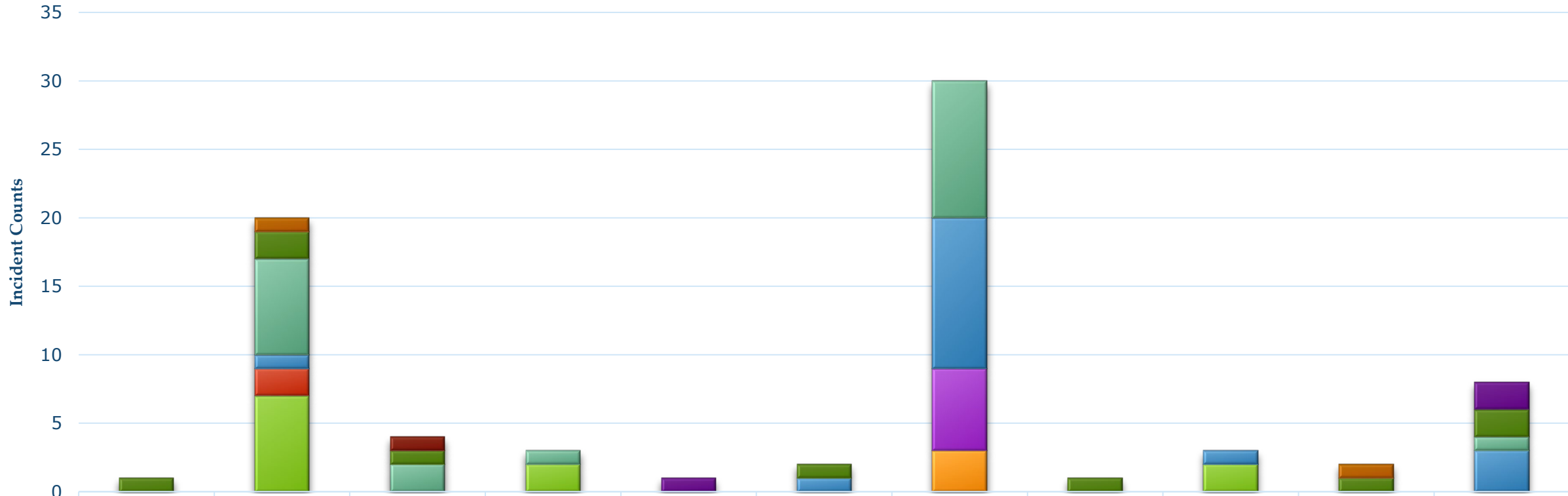
	Airfield	Kaiser OOA	KHN	KHS	Mercy OOA	MGH	MHS	Military OOA	MSJ	OOA	SAF	SDH	Shrines	SMCS	SRMC	Sutter OOA	UC OOA	UCD	VA	WMH	KHR	KHR W&C	MHF	
Airfield-Send			2	1		16			5					22	8			33		2				
KHN-Send		18		48	2	33	1	1	6	17				22	1		4	25	1	7	72	18	3	
KHS-Send		18	59		2	57	22		5	6				29	2	2	4	11	1	8	19	21	2	
Lodi-Send														1				52						
Marshall-Send		1	21			1								6				1			3			
MGH-Send	1	3	20	2	1		8		149	3			1	16	2	1	3	28		14	3		8	
MHS-Send		1	22	6	1	88			210	3		1	1	21	2	4	3	59		14			9	
MSJ-Send		4	39			49	4	1		11				32	7	5	3	83		50	12		26	
OOA-Send		1	1			3	1		1					7				24						
SAF-Send			2				1			1				14	19	2	1	3			5			
SDH-Send		2	5			2			1	4				28	7	1	1	11		4				
SMCS-Send	3	3	15	1	1	8	3	1	24	45	1	6			38	21	6	53	1	6	1		2	
SRMC-Send		1	12	1		6	3		6	7				51		4	2	11			3		2	
UCD-Send		4	24	2		11	3	1	7	6			5	4		5	5		6	1	4		2	
VA-Send			6			13		128	3	1		1		7	4	1	1	70					1	
WMH-Send		1	2			4			8									6					1	

IFT's with Primary Impression of STEMI 2021-Q4 - EMS Data



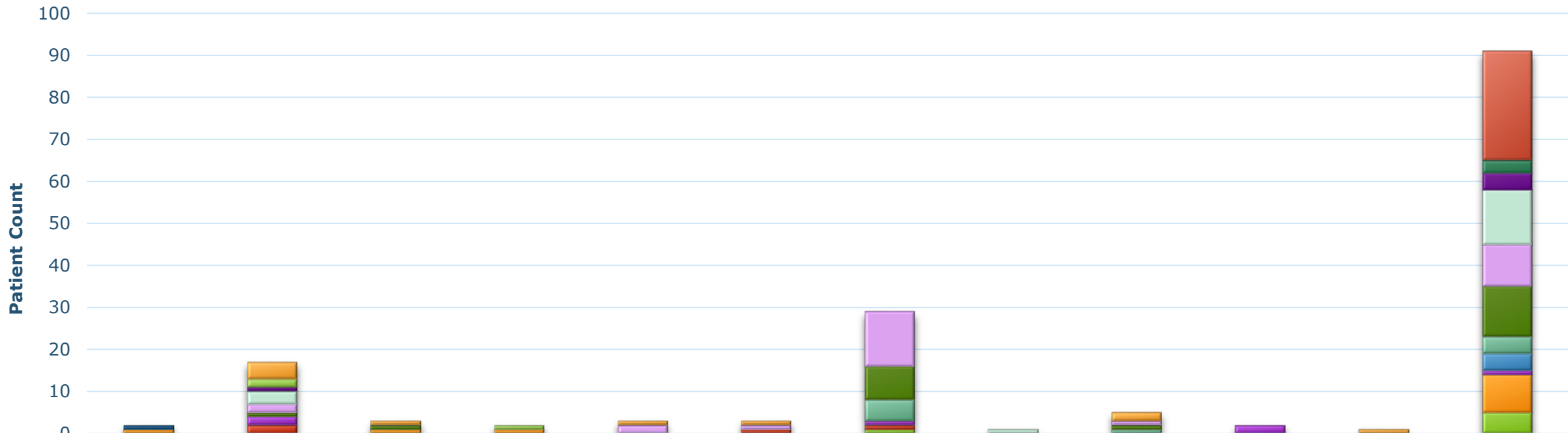
MHF-Send		3	
VA-Send		1	
MSJ-Send		1	
MHS-Send		8	
KHS-Send		2	
KHN-Send	8		4

IFT's with Primary Impression of Stroke 2021-Q4 - EMS Data



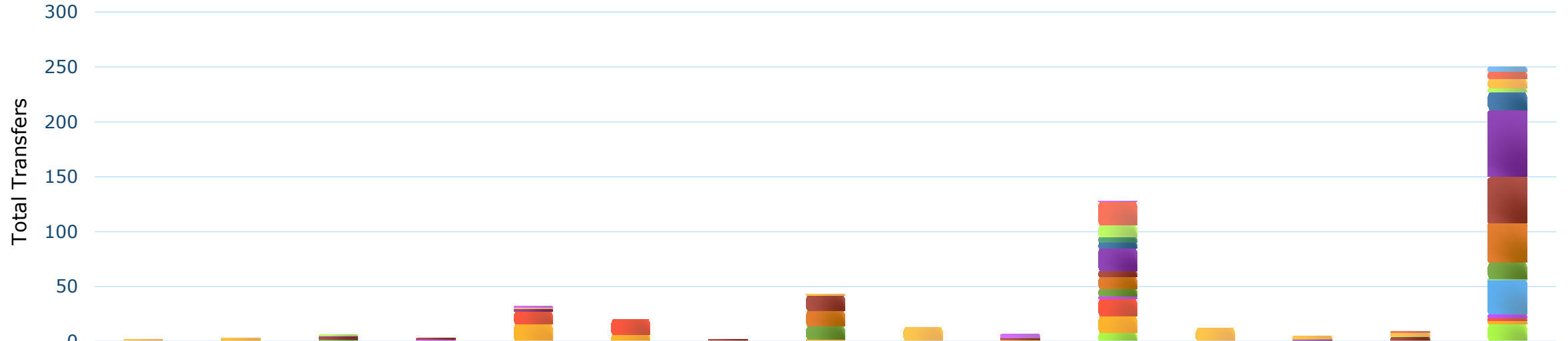
VA-Send					1						2
UCD-Send			1								
SMCS-Send		1									1
MSJ-Send	1	2	1			1					1
MOF-Send		7	2	1							10
MHS-Send		1									11
MGH-Send											6
Marshall-Send		2									
KR-Send											3
KHS-Send		7		2							2

IFT's with Primary Impression of Trauma 2021-Q4 - EMS Data



	Kaiser OOA	KHN	KHS	KR	MGH	MHS	MSJ	OOA	Shriners	SRMC	Sutter OOA	UCD
VA-Send												26
UCD-Send		4	1		1	1			2		1	
SRMC-Send		2		1								
SMCS-Send												3
SDH-Send	1											
OOA-Send		1										4
MSJ-Send		3						1				13
MOF-Send		2			2	1	13		1			10
MHS-Send		1	1				8		1			12
MGH-Send							5		1			4
Lodi-Send												4
KR-Send		2					1			2		1
KHS-Send		2				1	1					
KHN-Send	1		1	1								9
Airfield-Send							1					5

Total IFT's Patients <15 Years Old 2021-Q3 - EMS Data



	Airfield	Kaiser OOA	KHN	KHS	KR	KR W&C	MGH	MSJ	OOA	Shriners	SMCS	SRMC	Sutter OOA	UC OOA	UCD
WMH-Send															4
UCD-Send					1					4	1				
SRMC-Send											21			1	7
SMCS-Send	1	1			1			1	12			12	3	3	8
SDH-Send			1						1		11			1	4
SAF-Send											5				
OOA-Send											5				16
MSJ-Send			1		2						21		1		61
MOF-Send			2	1	1		1	14		1	5			3	42
MHS-Send								14		1	11		1		36
MGH-Send			1					12		1	7				15
Marshall-Send															1
Lodi-Send															31
KR-Send	1		1	2							2			1	4
KHS-Send					11	14	1				16				2
KHN-Send		2			16	6		2			15				3
Airfield-Send											8				16

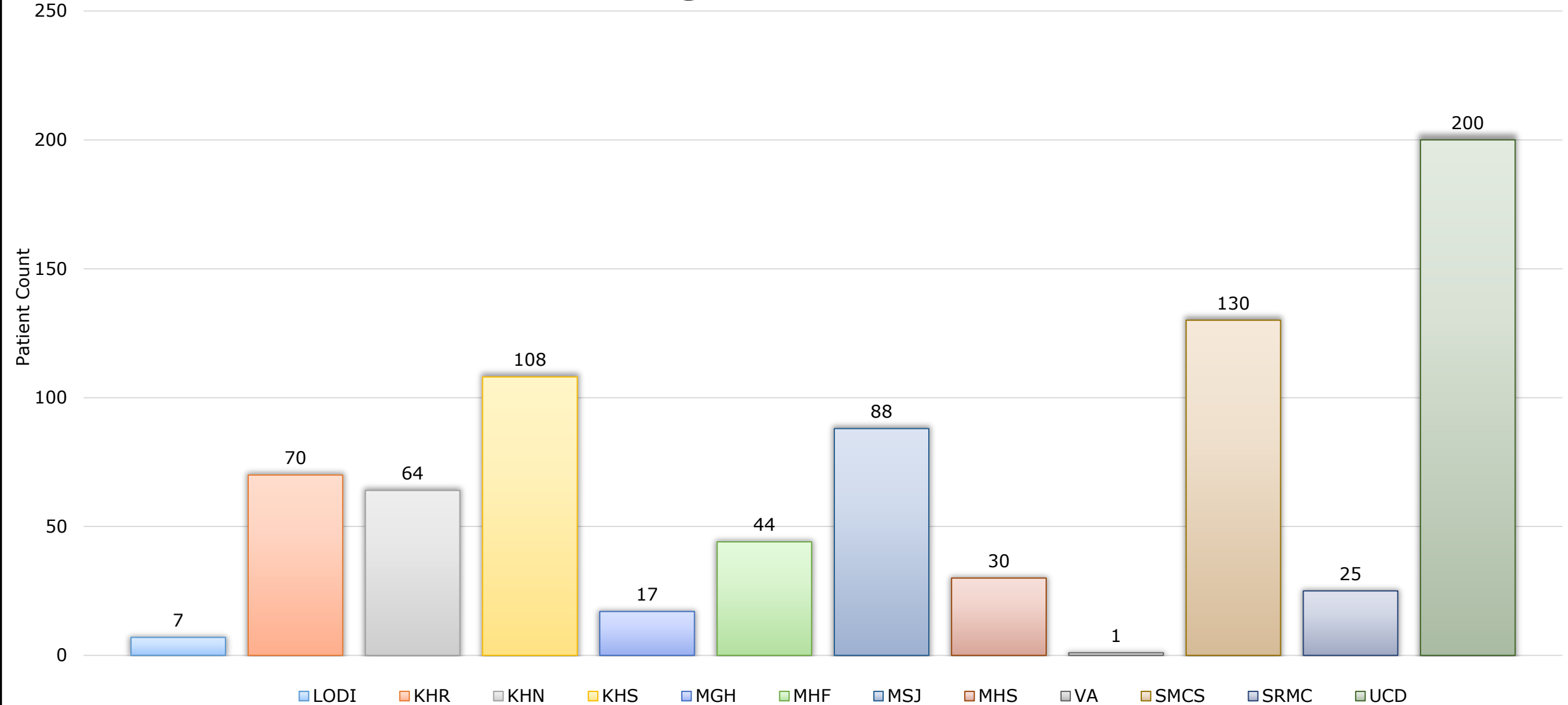
Pediatrics

Count of 911 Response (Despite Outcome) per Patient Age <15 2021- Q4 - EMS Data



Distribution of Scene Pediatric Patients to ED 2021-Q4 - EMS Data

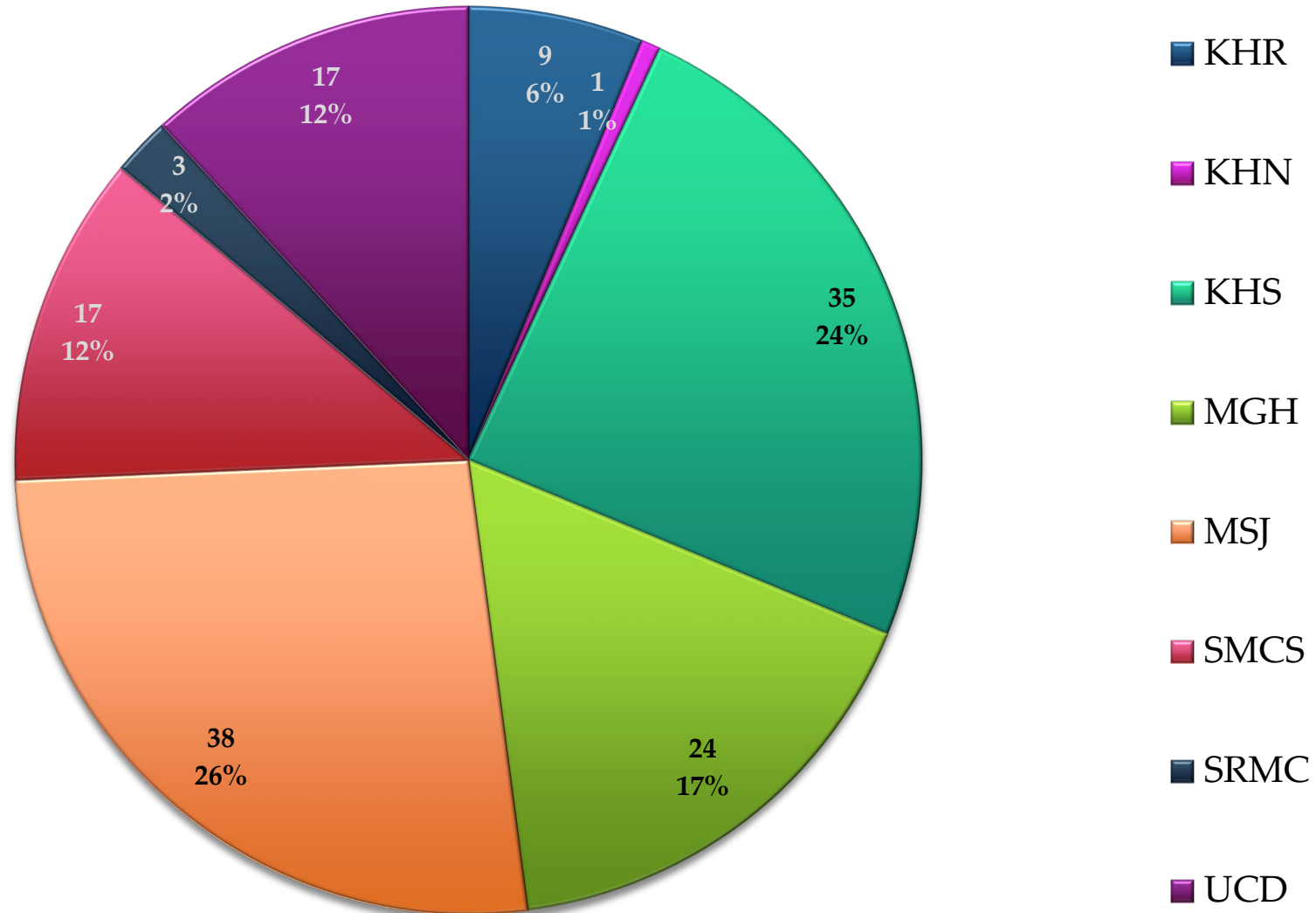
Total Transports: 784
47% of Responses



Number	Primary Impression	Count
1	Traumatic Injury	172
2	Seizure - Post	147
3	Behavioral / Psychiatric Crisis	55
4	Respiratory Distress / Other	55
5	Respiratory Distress / Bronchospasm	27
6	Allergic Reaction	26
7	Cold/Flu Symptom	25
8	General Weakness	25
9	Fever	24
10	Seizure – Active	21
11	Syncope / Near Syncope	19
12	Nausea / Vomiting	17
13	Overdose / Poisoning / Ingestion	17
14	Abdominal Pain/Problems (GI / GU)	16
15	No Medical Complaint	15
16	ALTE (BRUE)	12
17	ALOC - (Not Hypoglycemia or Seizure)	11
18	Burn	9
19	Cardiac Arrest -Non-traumatic	9
20	Newborn	9
21	Non-Traumatic Body Pain	7
22	Pain / Swelling - Extremity - non-traumatic	7
23	Airway Obstruction	6
24	Alcohol Intoxication	4
25	Anaphylaxis	4

STEMI

STEMI Patient Distribution 2021-Q4 - EMS Data



STEMI Core Measures per Quarter

Core Measure	Definition	2021 - Q3		2021 - Q4	
		Patient Count	%	Patient Count	%
ACS-01	Number of patients 35 and older treated and transported to ED with a Primary (<i>or</i>) Secondary Impression of STEMI or Chest Pain Suspected Cardiac that received ASA	1437	78.98%	1532	70.89%
ACS-04	Number of patients with Primary (<i>or</i>) Secondary Impression of STEMI or ECG of STEMI - transported to a PCI capable hospital that had a STEMI alert	161	90.06%	197	82.74
ACS-03	90th Percentile in minutes of Unit Arrived on Scene to Patient Arrived at Destination (Primary Impression of STEMI)	141	0:31:35	144	0:33:59
ACS-06	90th Percentile in minutes of Unit Arrived on Scene to First ECG (Primary Impression of STEMI)	141	0:14:34	144	0:14:48

Cares Utstein Report 2021-Q4 Sacramento vs. National Presumed Cardiac Cares Cases

Sacramento – 2021-Q4

Cardiac Etiology Survival Rates

Overall:	7.3% (313)
Bystander Wit'd:	8.6% (152)
Unwitnessed:	5.2% (135)
Utstein ¹ :	25.0% (40)
Utstein Bystander ² :	28.6% (28)

Bystander Intervention Rates³

CPR:	55.3% (244)
Public AED Use:	3.6% (28)

National – 2021-Q4

Cardiac Etiology Survival Rates

Overall:	7.0% (31000)
Bystander Wit'd:	11.2% (12073)
Unwitnessed:	2.6% (15810)
Utstein ¹ :	25.6% (3497)
Utstein Bystander ² :	29.8% (2022)

Bystander Intervention Rates³

CPR:	40.1% (23716)
Public AED Use:	12.3% (3519)

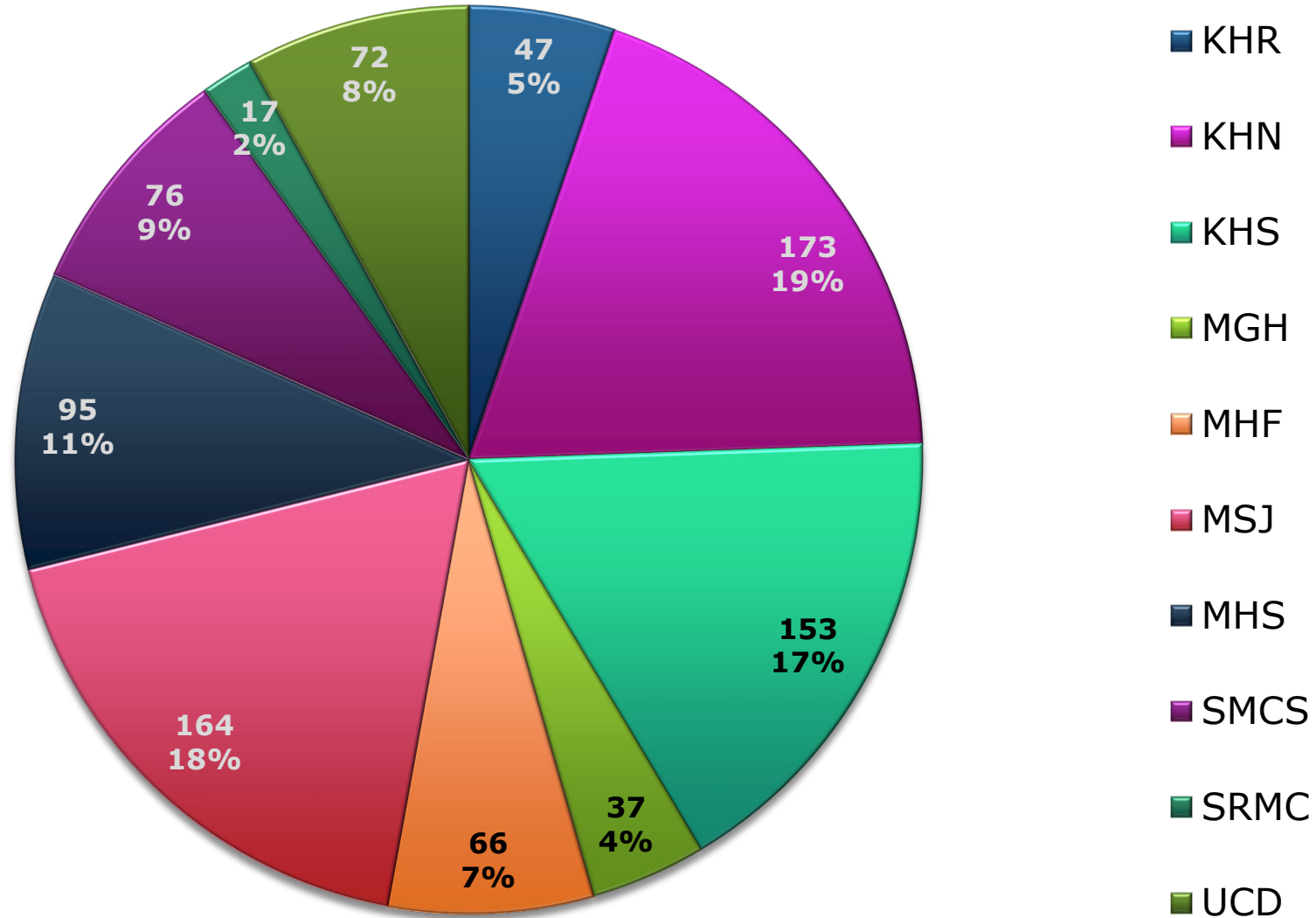
Only data from the previous calendar year is fully audited. Data from the current calendar year is dynamic.

STROKE

Stroke Core Measures per Quarter

Core Measure	Definition	2021 – Q3		2021 – Q4	
		Patient Count	%	Patient Count	%
STR-01	Prehospital Screening for Stroke Patients	971	96.70%	900	95.00%
STR-02	Glucose Testing for Suspected Stroke Patients	971	94.95%	875	97.22
STR-04	Advanced Hospital Notification for Stroke Patients with positive Stroke Scale	551	95.10%	584	94.00%

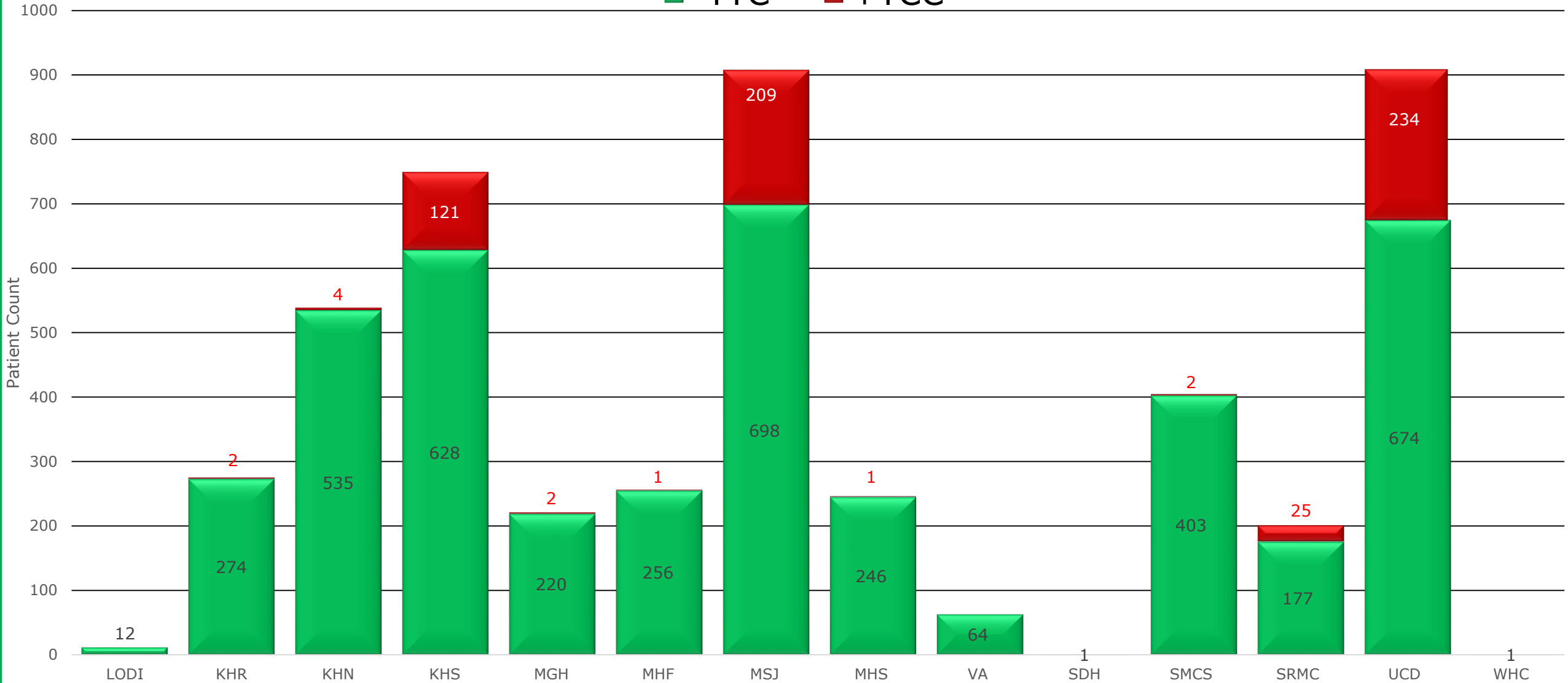
Stroke Patient Distribution 2021-Q4 - EMS Data



Trauma

Transported Patients with a Primary Impression of Trauma 2021 – Q4 - EMS Data

■ -TTC ■ +TTC



Originating County 2021-Q3 Hospital Data	Alameda	Amador	Butte	Calaveras	Colusa	Contra Costa	El Dorado	Fresno	Glenn	Humboldt	Lake	Los Angeles	Mendocino	Merced	Monterey	Napa	Nevada	Placer	Sacramento	San Joaquin	San Luis	Shasta	Siskiyou	Solano	Sonoma	Stanislaus	Sutter	Tehama	Trinity	Washoe	Yolo	Yuba	Not Recorded	Grand Total
KHS		4																156	1					1						2	26	190		
MSJ			1	1			5				1						6	2	341	1										5	55	418		
UCD	1	15	16	9	6	2	47	1	3	12	7	2	4	4	1	8	7	15	481	47	1	12	4	15	8	24	11	3	2	4	83	53	36	944
SRMC																			23															
Totals	1	19	17	10	6	2	52	1	3	12	8	2	4	4	1	8	13	17	1213	49	1	12	4	15	9	24	11	3	2	4	90	53	117	1787

Scene Time for Patients with Trauma Primary Impression 2021-Q4 - EMS Data

90th Percentile Patients with +TTC = 00:14:50

90th Percentile All Trauma = 00:18:10

12.55% of all trauma documented
+TTC

98.00% of patients with +TTC were
taken to a Trauma Center

Annex 3

**2021
Quarterly
Dashboards**

Dashboards

Responses & Transports

Total Transports 2021-Q3 911 Response (Scene) / IFTs	Associated Element	System Total 2021 – Q3	System Total 2021 – Q4
Total Transports (eDisposition.12 = Pt Treated, transported or CCT Transport)	eDisposition.12	52810	51245
IFT's (Hospital Address to Hospital Address)	eScene.15 + eDisposition.3	3675	3529
IFT's not documented as IFT's		386	196
Percentage of IFT's properly classified as IFT's	eResponse.05	89.50%	94.45%
Scene Calls eResponse.05 =911 Response (Scene) & eDisposition.21= Hospital - Emergency Department	eResponse.05 & eDisposition.21	System Total 2021 – Q3	System Total 2021 – Q4
Total Responses (Scene Calls)	eResponse.05	63493	59622
Total Transports (Scene Calls)		33782	32844
Percentage of ALL Transports that are Scene calls	Row 10 / Row4	63.97%	64.09%
Percentage of 911 Responses that resulted in transport (Scene calls)	Row 10 / Row9	53.21%	55.09%
Number of lights and sirens response		39138	36511
Number of lights and sirens response that were transported	eResponse.24	21001	20226
Percentage of responses with lights and sirens that were transported	Row 14 Row13	53.66%	55.40%
Number of responses with lights and sirens that transported with lights and sirens	eResponse.24 & eDisposition.18	3341	3245
Percentage of responses with lights and sirens that transported with lights and sirens	Row 16/Row14	15.91%	16.04%
AMAs / Refused Evaluation / Care Without Transport / Pt Treated, Released per Protocol / Assess and Refer	eDisposition.12	System Total 2021 – Q3	System Total 2021 – Q4
AMA		4910	8320
Refused Evaluation/Care Without Transport		4109	235
Pt Treated, Release per Protocol		1041	640
Assess and Refer		2	12
Combined AMAs / Refused Evaluation or Care Without Transport /Pt Treated, Released per Protocol / Assess and Refer		10062	9207
Percentage of 911 Response (Scene) Responses that Resulted in AMA	Row 22 / Row9	15.95%	15.44%

Responses & Transports

Response Time of First Unit on Scene eResponse.05 = 911 Response (Scene)	Associated Element	System Total 2021 – Q3	System Total 2021 – Q4
Count of First Unit on Scene Responses	eScene.01	35752	34506
First on Scene Response Time in Min: 90% (PSAP to unit arrived at scene)	eResponse.24	0:17:24	17:58:48
First on Scene Response Time in Min: 90% (Unit notified to unit arrived at scene)		0:13:41	13:34:48
Count of First on Scene with eResponse.24= "No lights or Sirens"		12182	12122
No Lights no Sirens: 90% Response Time in Min (PSAP to arrived at scene)		0:26:43	0:27:29
No Lights no Sirens: 90% Response Time in Min (Unit notified to arrived at scene)		0:19:25	0:19:59
Count of First on Scene with eResponse.18= "Lights and/or Sirens"		22273	21182
Lights and Sirens: 90% Response Time in Min (PSAP to arrive at scene)		0:13:16	0:12:57
Lights and Sirens: 90% Response Time in Min (Unit notified to arrive at scene)		0:10:47	0:10:34
Count of Responses (Scene Calls) Documented eResponse.24 all Responses	Row 35 Row 9	60930	33284
% of Scene Call Responses that Documented eResponse.24	%	95.96%	55.83%
Count of Transported Scene call Patients Where eDisposition.18 is DOCUMENTED (All Scene Calls transported to ED)	eDisposition.1 8	32338	31497
% of Transported Scene call Patients that DOCUMENTED eDisposition.18	Row 37 Row 10	95.73%	95.90%

Cardiopulmonary Arrest Dashboard

Cardiopulmonary Arrest (CPA)	System Total 2021 - Q3	System Total 2021 - Q4
Total CPA per Provider	427	454
Total Sustained ROSC	112	122
% Sustained ROSC	26.23%	26.87%
Number of VT / VF rhythm with ROSC who are transported	5	10
Number of VT / VF rhythm with ROSC who are transported to a STEMI center	4	8
% of VT / VF rhythm with ROSC who are transported to a STEMI center	80.00%	80.00%
Number of patients with PEA / Asystole without ROSC	104	123
Number of patients with PEA / Asystole without ROSC who are transported	31	40
90% Scene Time for patients with PEA / Asystole without ROSC	0:24:49	0:21:33

STEMI & Stroke Dashboards

STEMI	System Total 2021 - Q3	System Total 2021 - Q4
Total transported patients with Primary impression of STEMI	139	144
Total Number of Patients that received ASA or Pertinent Negative Present	125	137
90% Scene Time	0:31:41	0:16:26
Patients with a prearrival notification	139	138
% prearrival notification	100.00%	95.83%
90th % Time to First ECG (from arrival at scene to Device)	0:14:33	0:20:00
90th % ECG to Hospital Notification	0:18:20	0:14:48
Stroke		
	System Total 2021 - Q3	System Total 2021 - Q4
Total transported patients with Primary impression of Stroke	839	900
Number of patients with documented Stroke Screen	825	855
% of patients with documented Stroke Screen	98.33%	95.00%
Documented Glucose	816	875
% of documented Glucose	97.26%	97.22%
Patients with a Stroke prearrival notification	743	805
% of Stroke prearrival notification	88.56%	89.44%

Trauma / Hypoglycemia & Pediatric Dashboards

Trauma	System Total 2021 – Q3	System Total 2021 – Q4
Transported patients with Primary Impression of Trauma	4710	4790
90th % SCENE Time for Primary Impression of Trauma	0:18:38	0:18:10
Patients with Primary Impression of Trauma meeting +TTC	650	601
% Patients with Primary Impression of Trauma meeting +TTC	13.80%	12.55%
90th % Scene Time for Patients with +TTC	0:17:21	0:14:50
Transported Patients with PI of Trauma & +TTC Taken to a Trauma Center	641	589
% of Transported Patients with PI of Trauma & +TTC Taken to a Trauma Center	98.62%	98.00%
HYP-01 Documentation of Treatment for BGS less than 60	System Total 2021 – Q3	System Total 2021 – Q4
Total Incidents	586	566
Documented glucose Treatment under eMedication.03 or Pertinent Negative	386	389
Percentage of Treated Patients	65.87%	68.73%
Pediatric Equal to or Less Than 14 911- Response Scene / Hospital ED / Treated & Transported	System Total 2021 – Q3	System Total 2021 – Q4
Transported Pediatric Patients (= <14)	793	784
Pediatric Patients with Respiratory Primary Impression (J80 & J98.01)	62	82
Pediatric Patients with Respiratory Primary Impression that documented a Respiratory Assessment	61	82
% Pediatric Patients with Respiratory Primary Impression that documented a Respiratory assessment	98.39%	100.00%

Annex 4

**2020 QUALITY
IMPROVEMENT
PROGRAM PLAN
UPDATE:
APPROVAL LETTER**

EMERGENCY MEDICAL SERVICES AUTHORITY

10901 GOLD CENTER DR., SUITE 400
RANCHO CORDOVA, CA 95670
(916) 322-4336 FAX (916) 322-1441



September 15, 2021

Mr. Dave Magnino, EMS Administrator
Sacramento County Emergency Medical Services Agency
9616 Micron Avenue, Suite 960
Sacramento, CA 95827

Dear Mr. Magnino:

This letter is in response to Sacramento County's 2020 emergency medical services (EMS) plan, and the St-Elevation Myocardial Infarction (STEMI), Stroke, Trauma, and Quality Improvement (QI) plan submissions to the EMS Authority on July 2, 2021.

The EMS Authority has reviewed the EMS plan, based on compliance with statutes, regulations, and case law. It has been determined 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 transportation documentation provided, the EMS Authority has noted your Emergency Ambulance Zone as Non-Exclusive and has enclosed for reference.

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

In accordance with HSC § 1797.254, please submit an annual EMS plan to the EMS Authority on or before September 14, 2022. Please also submit an annual STEMI, Stroke, Trauma, and QI plan concurrently with the EMS plan. If you have any questions regarding the EMS Plan review, please contact Ms. Lisa Galindo, EMS Plans Coordinator, at (916) 431-3688.

Sincerely,

Tom McGinnis, EMT-P
Chief, EMS Systems Division

Enclosure

tm:lg

Sacramento County 2020 EMS Plan Ground Exclusive Operating Areas	<i>Non-Exclusive</i>	<i>Exclusive</i>	<i>Method to Achieve Exclusivity</i>	<i>Emergency Ambulance</i>	<i>ALS</i>	<i>LALS</i>	<i>All Emergency Ambulance Services</i>	<i>9-1-1 Emergency Response</i>	<i>7-digit Emergency Response</i>	<i>ALS Ambulance</i>	<i>All CCT Ambulance Services</i>	<i>IFT</i>	<i>Standby Service with Transport Auth.</i>	
ZONE	EXCLUSIVITY		TYPE			LEVEL						NOTES		
Sacramento County	X													