



Trauma Improvement Committee (TIC)
Meeting Minutes

August 15, 2024

Facilitator: Gregory Kann, M.D. KannG@saccounty.gov

Meeting Attendees:

Name	E-Mail	Name	Email
Matt Burruel	Mattb@alphaoneamb.com	Gregory Kann	KannG@saccounty.gov
Tressa D Naik	TressaNaik@Cosumnescsd.gov	Sydney Freer	Freers@saccounty.gov
Jen Fitzgerald	Jkfitzgerald@ucdavis.edu	Yvonne Newson	NewsonY@saccounty.gov
Cheri White	Cheri.white@sutterhealth.org	Amy Richards	Amy.J.Richards@kp.org
Christine Williams	Chrwilliams@ucdavis.edu	Amelia Hart	Amelia.hart@commonspirit.org
Ashwini Chand-Kumar	Ashwini.Chand-Kumar@commonspirit.org	Jenna Alexander	Alexanderjen@saccounty.gov
Brian Morr	bmorr@sfd.cityofsacramento.org	Frederick Corvi	corvifred@saccounty.gov
Jeremy Veldstra	JFVeldstra@ucdavis.edu	Jennie Gunter	Jennie.Gunter@commonspirit.org
Maureen Murphy	MRMurphy@ucdavis.edu	David Shatz	dvshatz@ucdavis.edu
Jodi Coates	jcoates@samgi.com	Kevin Mackey	kmackey@sfd.cityofsacramento.org
Adam Blitz	Blitz.adam@metrofire.ca.gov	Brynna Pink	BPink@ucdavis.edu
Shelby Resnick	Shelby.resnick@kp.org	Jacqueline Burgard	JBurgard@ucdavis.edu
Julie Carrington	JulieCarrington@cosumnescsd.gov	Amy Shoutz	AmShoutz@ucdavis.edu
Hailey Maenado	HMaenado@sfd.cityofsacramento.org	CS Cocanour	cscoanour@ucdavis.edu
Bryan Boyles	BBoyles@sfd.cityofsacramento.org	Gina Cates	GaCates@ucdavis.edu
Shelby Resnick	ShelbyResnick@gmail.com	Peter Conner	Connerp@saccounty.gov
Ho Phan	HHPhan@ucdavis.edu	Ian Brown	IeBrown@ucdavis.edu
Jonathan Kohler	JeKohler@ucdavis.edu	Garth Utter	Ghutter@ucdavis.edu
Rachael Callcut	RaCallcut@ucdavis.edu	Debbie Madding	Deborah.Madding@sutterhealth.org
John Anderson	Jtanderson@ucdavis.edu	Anamceria Robles	arobles@ucdavis.edu
Sawyer Smith	SgSmith@ucdavis.edu	Ndidi C. Okeke	NOkeke@ucdavis.edu
Sarah Lucente	SLucente@ucdavis.edu	Stephaine Bianchi	Slbianchi@ucdavis.edu
Abby Shetfield	Asheffield@ucdavis.edu	Christian Gage	Christianpgage@gmail.com
Chris McGahey	Christine.McGahey@kp.org	Adam Mckahan	AMckahan@sfd.cityofsacramento.org
Scott Zakawzny	SZakawzny@ucdavis.edu		



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Topic	Minutes	Action Items
Welcome and Introductions	Approval of Minutes: May 16, 2023 – Motion: Dr. Naik ; Second: Jen Fitzgerald	
Quarterly Data Review	<p style="text-align: center;"><u>Trauma Data Review 4th Quarter 2023</u></p> <p>I. Data Overview: A review of the fourth quarter 2023 data, with updates to include the first quarter of 2024 was reviewed.</p> <p>II. Key Metrics:</p> <ul style="list-style-type: none"> i. EMS arrivals, hospital destinations, mode of arrival, emergency department dispositions, and hospital discharge data were discussed. ii. Most EMS transports were from Sacramento Metro Fire, Sacramento City Fire, and Cosumnes. iii. UC Davis and Mercy San Juan had the highest number of trauma cases. <p>III. Trauma Triage Compliance: Discussions focused on ensuring patients meeting trauma triage criteria were transported to appropriate facilities. Some cases of patients being taken to non-trauma centers (e.g., Kaiser North) were discussed with reasons provided (e.g., documentation errors, unstable airways).</p>	
Policy Review PD# 9005.01	<p style="text-align: center;"><u>Policy Review</u></p> <p>PD# 9005.01 Pediatric Traumatic Cardiac Arrest</p> <p>I. A review of the pediatric traumatic cardiac arrest policy indicated no significant changes were proposed.</p> <p>II. Attendees were encouraged to review and comment on the policy. Discussions included equipment used for needle decompression and the effectiveness of different types of needles.</p>	None



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Topic	Minutes	Action Items
PD#8044.15	<p>PD# 8044.15 Spinal Motion Restriction (SMR)</p> <ul style="list-style-type: none"> I. Previous concerns were discussed about the potential for missed SMR in the field. II. Data was presented on pediatric spinal injuries from January 2022 to December 2023, showing that most patients arrived with appropriate spinal immobilization. III. A specific case of a missed SMR was reviewed, and it was noted that the patient was initially assessed as ambulatory with no pain, highlighting challenges in field assessments. 	None
Pre-Hospital Blood	<p>Pre-Hospital Whole Blood</p> <ul style="list-style-type: none"> I. Sacramento County submitted its Local Optional Scope of Practice documentation for pre-hospital blood transfusion, along with Los Angeles, Riverside, San Bernardino, and Ventura counties. The applications are not joint but have consistent elements to allow pre-hospital blood administration. II. Pilot Program Overview: <ul style="list-style-type: none"> i. The pilot program will focus on the use of whole blood only. ii. Indications for transfusion include traumatic injury with systolic blood pressure <70 or witnessed EMS traumatic arrest. iii. Existing protocols for controlling external bleeding and prioritizing transport will be applied. iv. The program aims to minimize scene time without compromising efficiency. v. One unit of low-titer whole blood will be administered, with TXA (tranexamic acid) administered as per county policy. 	More conversation will be had at the September MAC meeting.



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Topic	Minutes	Action Items
	<p>III. Exclusion Criteria:</p> <ul style="list-style-type: none"> i. Pediatric patients under 14 will be excluded initially, though future expansion to include this population is anticipated. <p>IV. Documentation & Consent Concerns:</p> <ul style="list-style-type: none"> i. There will be no patient consent due to the trauma nature; implied consent will be used. ii. Concerns were raised about documenting transfusions, particularly for women of childbearing age. A system to notify survivors after the fact is being discussed. Collaboration between hospitals and EMS agencies is essential to ensure patients and families are informed. <p>V. Quality Assurance:</p> <ul style="list-style-type: none"> i. Each case will undergo 100% quality improvement review, with findings shared for group discussion. 	
Case Presentations	Sacramento City Fire Department, UC Davis & the Sacramento County Coroners Office presented cases.	
Adjournment	<p>I. The next Medical Advisory Committee meeting is scheduled for September 23, 2024.</p> <ul style="list-style-type: none"> i. Policies up for review at the MAC meeting include the pediatric traumatic cardiac arrest and spinal motion restriction 	

**Next Meeting: Thursday, November 21, 2024: 1:00– 3:00 pm at Sacramento Fire Department – 3230 J St.
Case Presentations by: Cosumnes Fire and Metro Fire**



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Emergency Medical Services
Trauma Improvement Committee

2024 Meeting Dates / Presentation Schedule

Date:	5/16/2024	8/15/2024	11/21/2024	2/20/2025
KHS		X		
MSJ				X
SRMC				X
UCDMC		X		
Cosumnes Fire			X	
Folsom Fire	X			
Metro Fire			X	
Sacramento City Fire	X			

Trauma Improvement Committee

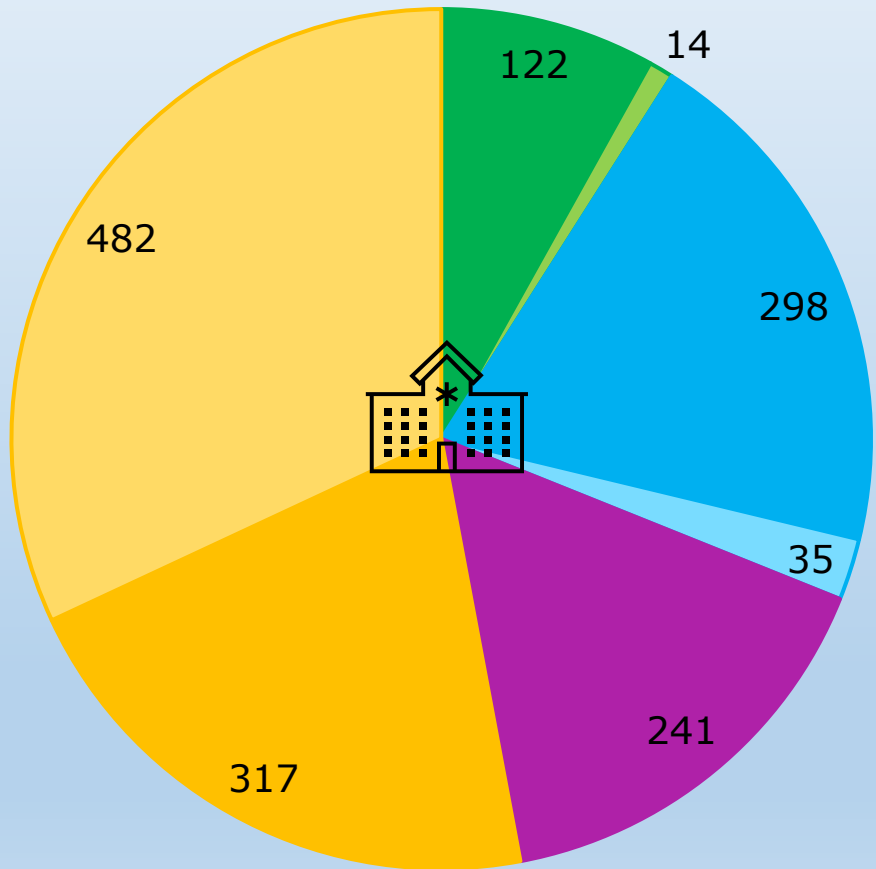
Facilitated By: Gregory Kann, M.D.

2024-1 Quarter (Jan-Mar)

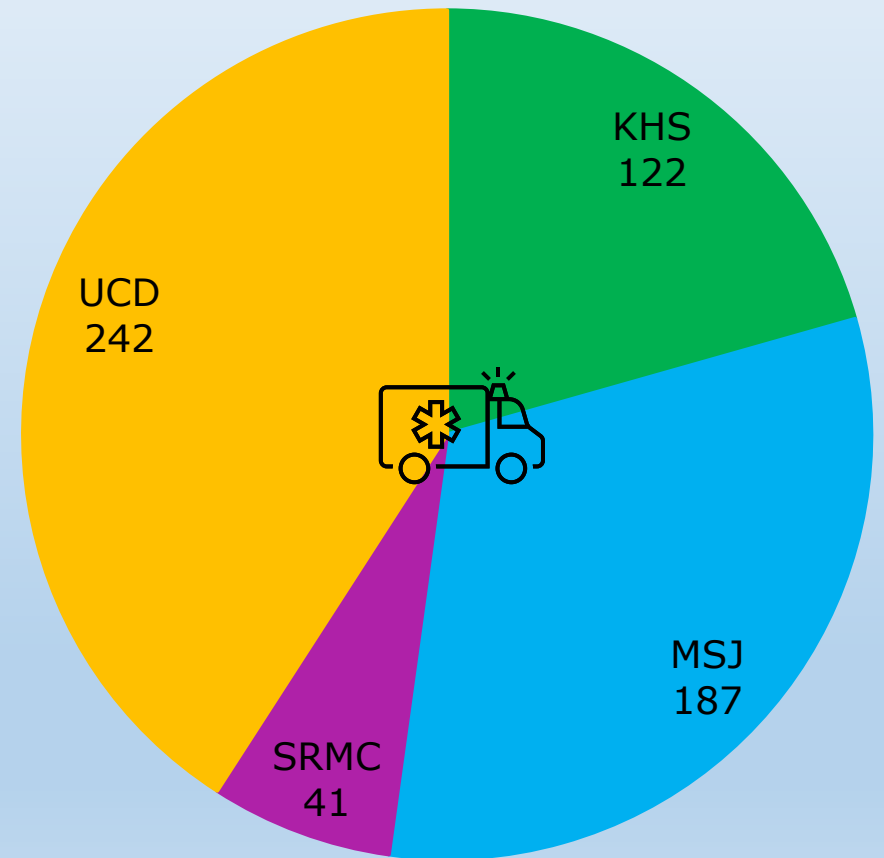
Presented August 15, 2024

Hospital Data EMS Arrivals vs EMS Data (+)TTC Destination

EMS Arrivals Hospital Data



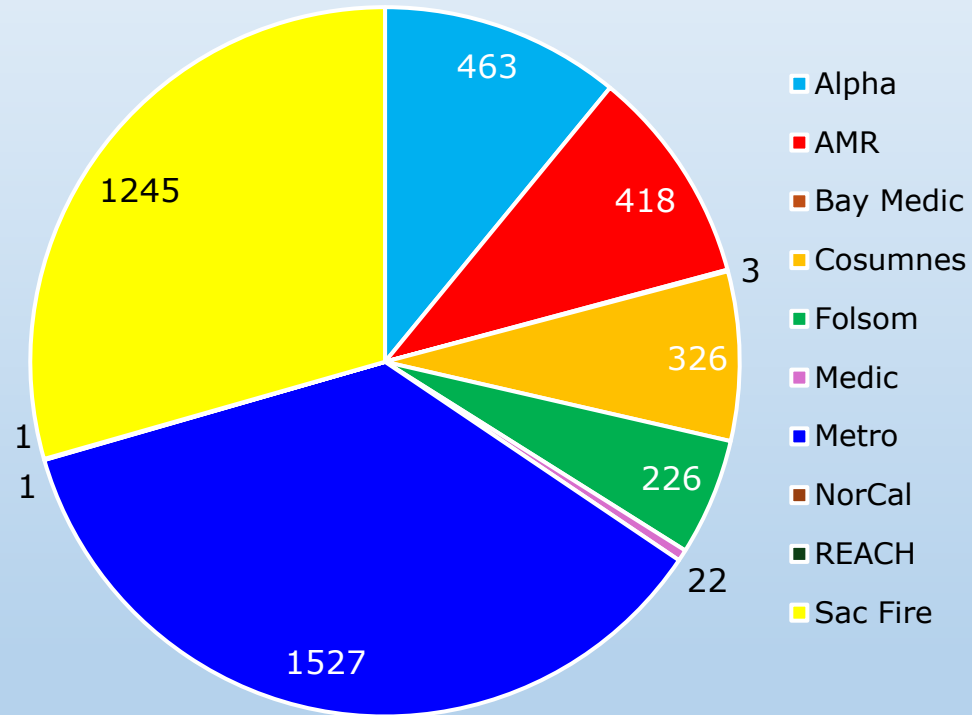
EMS Data Treated and transported to local Trauma Center ED with +TTC



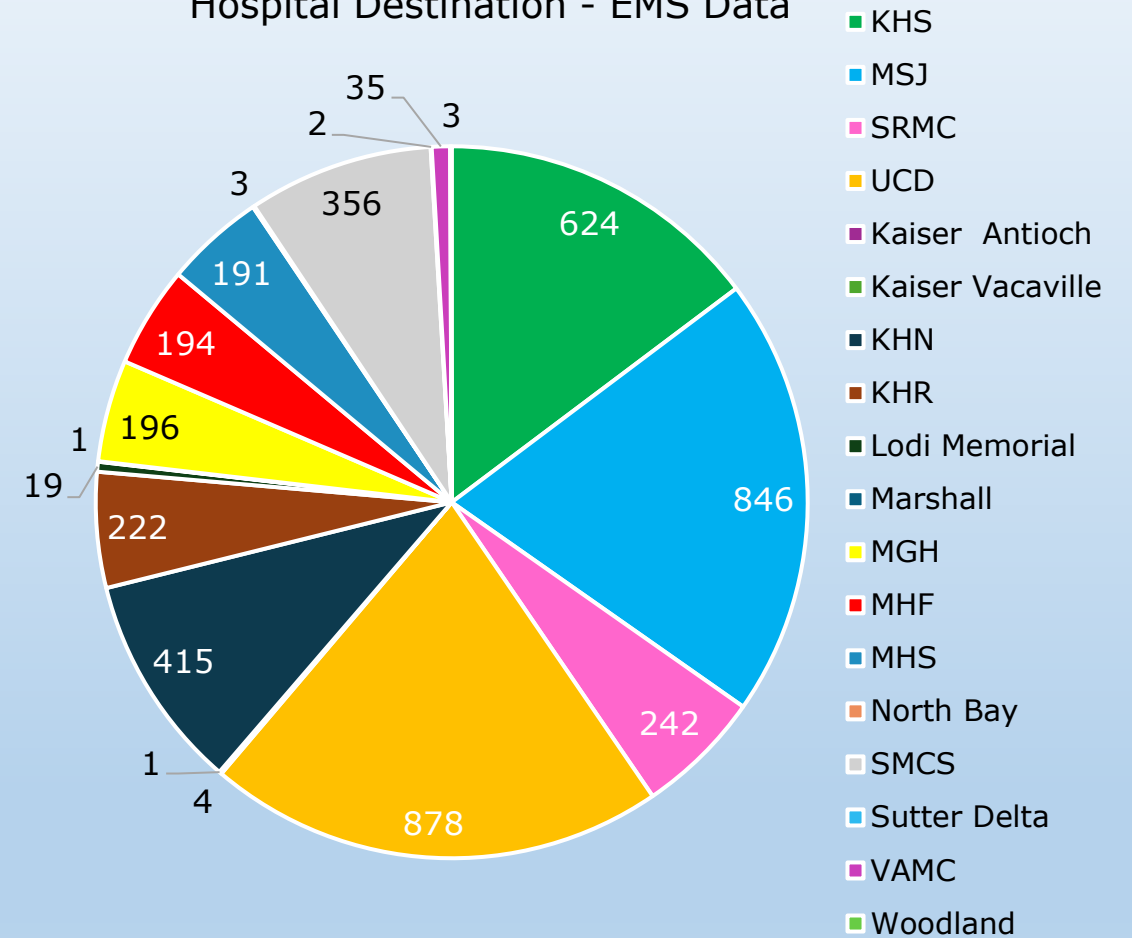
- KHS Sac
- KHS Out of County
- MSJ
- MSJ Out of County
- SRMC
- SRMC Out of County
- UCD
- UCD Out of County

Treated and Transported Patients with Primary Impression of Trauma - 2024 - 1Q

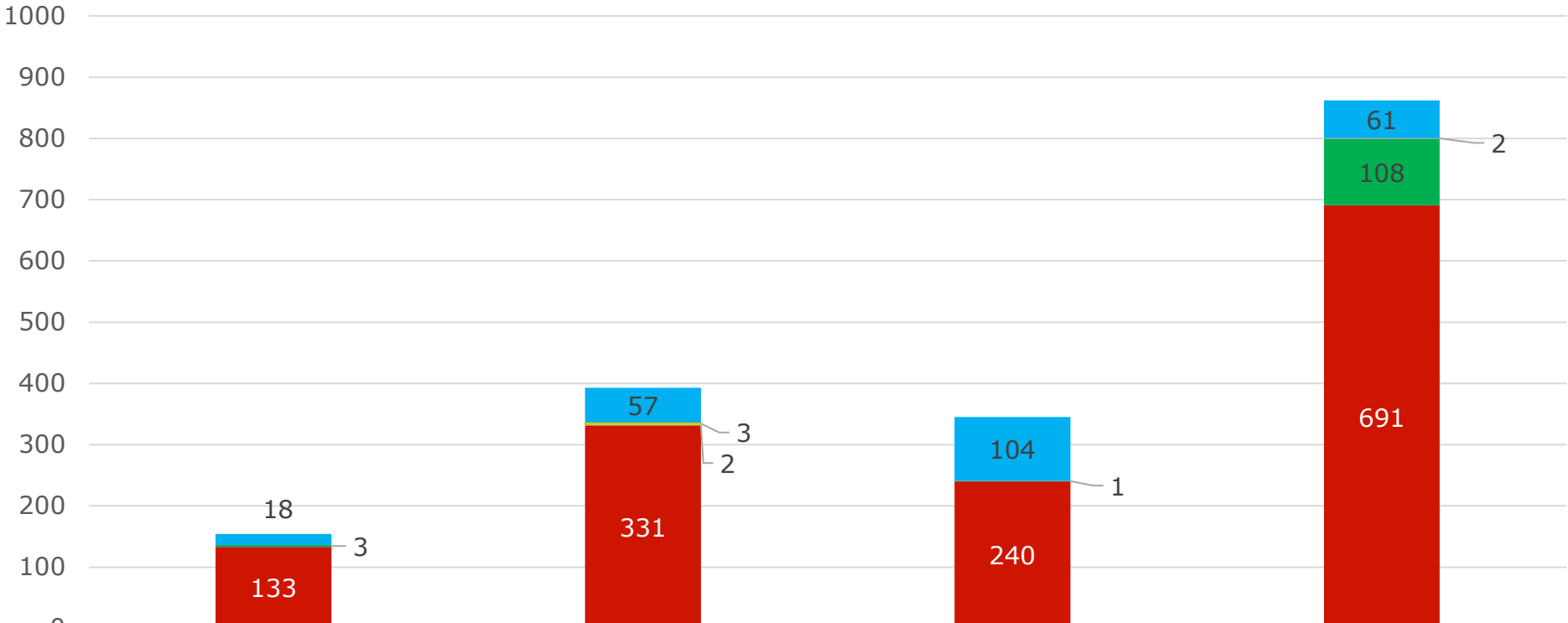
Provider Agency - EMS Data



Hospital Destination - EMS Data

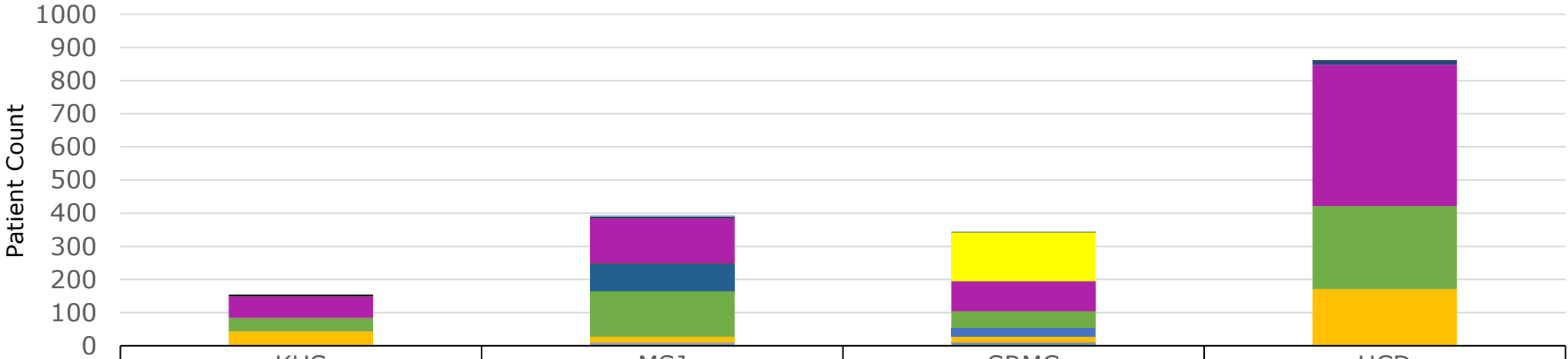


Patient Mode of Arrival per Hospital 2024-1Q



■ Private/Public Vehicle/Walk-In	18	57	104	61
■ Police		3		
■ Not Known/Not Recorded				2
■ Helicopter Ambulance	3	2	1	108
■ Ground Ambulance	133	331	240	691

Hospital Emergency Room Disposition 2024 - 1Q



	KHS	MSJ	SRMC	UCD
AMA		4	2	
Deceased/Expired	5	4	1	1
Direct Admin		1		14
ED Discharge			148	
Floor bed - General Admission	65	135	90	426
Home with services		1		
Home without services		82		
Intensive Care Unit	41	139	51	250
observation			26	
Operating room	43 28% of total	17 4% of total	17 5% of total	171 20% of total
Other (jail, institution, etc)		6		
Psychiatric			1	
Transferred to another hospital		4	9	

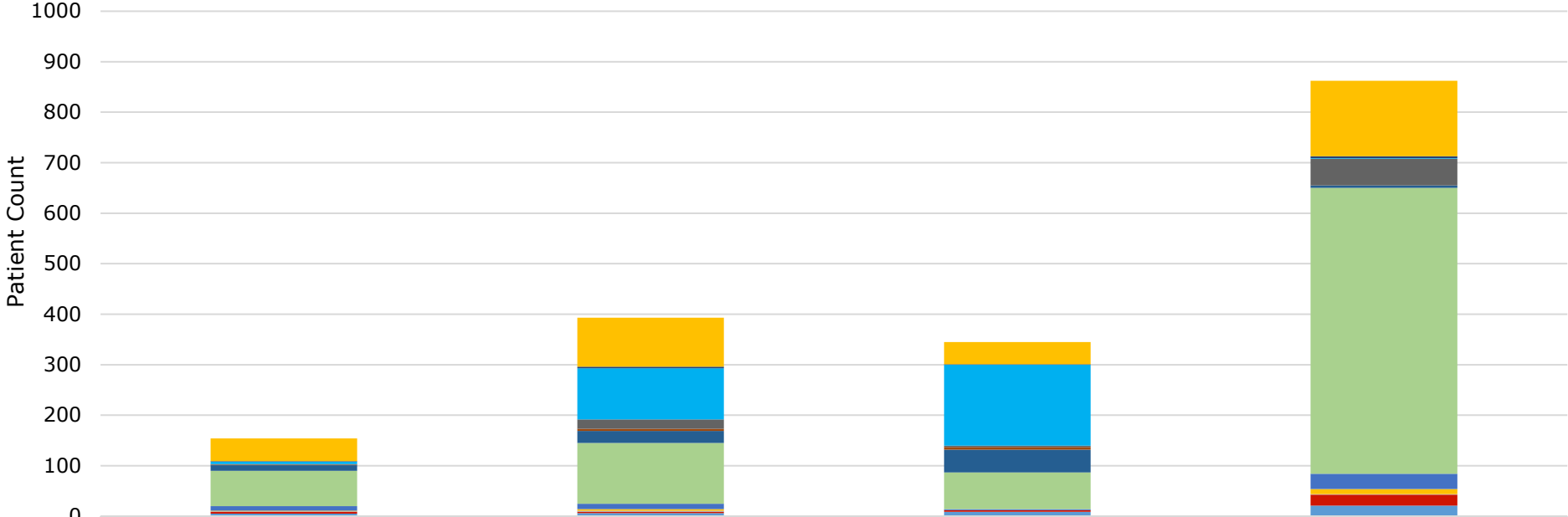


Emergency Room Disposition- Rolling 4 Quarters

Emergency Room Disposition	KHS				MSJ				SRMC				UCD			
	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2023 4Q	2024 1Q
AMA					2	1	2	4	1			2				
Deceased/Expired	3	4	1	5	3	12	5	4			2	1	5		1	1
Floor bed (general admission, non specialty unit bed)	66	73	68	65	142	114	129	135	75	80	97	90	580	599	509	426
ED Discharge					112	184	93	83	125	129	169	148				
ICU	39	48	33	41	129	125	169	139	42	54	44	51	264	261	247	250
Not Applicable (Direct Admit)					5	7	3	1	2				16	23	18	14
Observation									19	25	25	26				
Operating room	42	36	40	43	15	22	14	17	8	5	7	17	231	184	163	171
Other (jail, institution, etc)	3		1		5	1	1	6	1	1	1					
Transferred to another hospital	6	9	1		7	3	5	4	4	13	11	9				
Psych												1				
Grand Total	159	170	146	154	420	469	421	393	277	307	356	345	1096	1067	938	862



Hospital Discharge Disposition 2024 - 1Q



	KHS	MSJ	SRMC	UCD
Skilled Nursing Facility (SNF)	45	97	44	149
Psych Visit	1	3	1	4
N/A ED Disposition	5	101	160	1
Inpatient Rehabilitation Facility (IRF)	1	19	3	53
Hospice care	1	4	5	
Home with Home Health Services	11	24	45	5
Discharged to home or self-care (routine discharge)	70	120	73	566
Deceased/Expired	9	11	2	30
Correctional Facility or in Law Enforcement Custody	1	3		10
Another type of institution not defined elsewhere	1	2		1
AMA	4	3	3	22
Acute care hospital	5	6	9	21

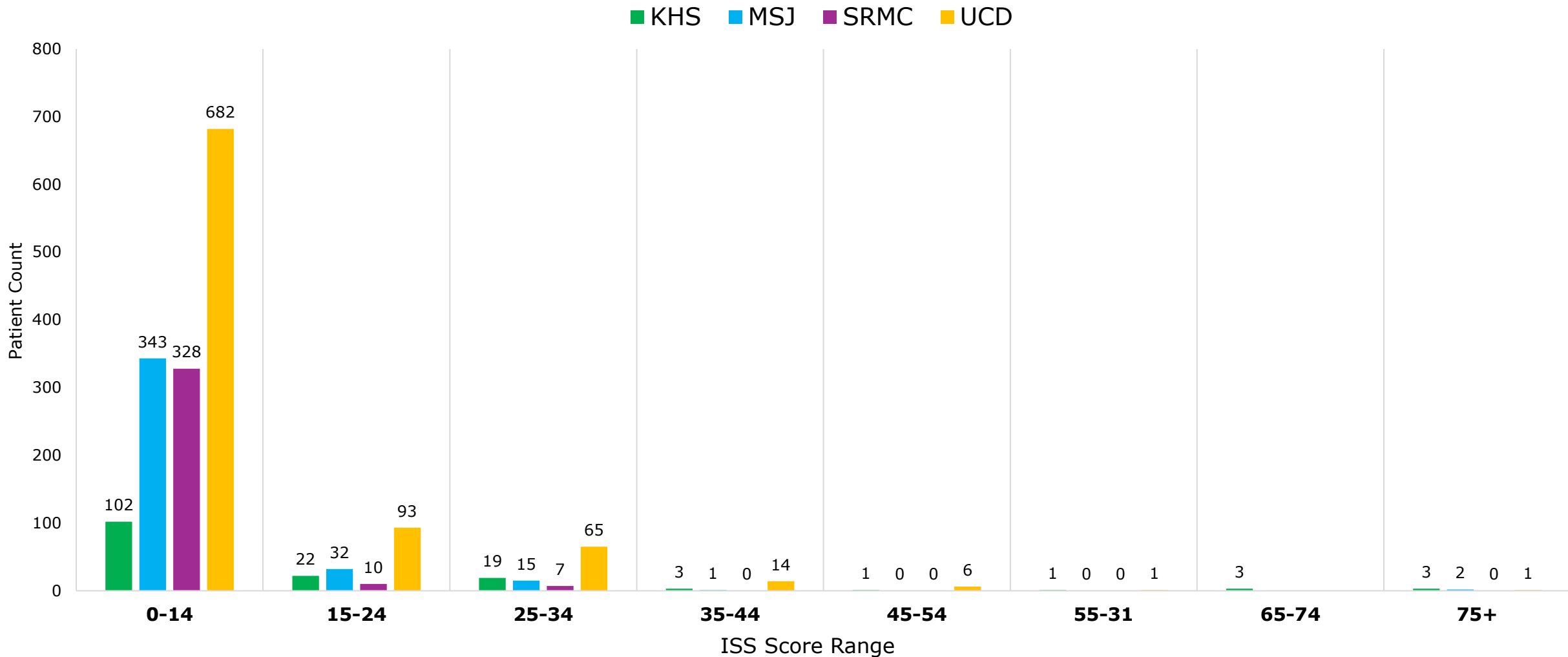


Hospital Discharge Disposition- Rolling 4 Quarters

Emergency Room Disposition	KHS				MSJ				SRMC				UCD			
	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2323 4Q	2024 1Q	2323 2Q	2023 3Q	2023 4Q	2024 1Q
Acute care hospital	6	4	7	5	8	11	3	6	6	3	5	9	17	21	13	21
AMA	2	2	4	4	9	7	8	3	3	1	1	3	37	29	10	22
Another type of institution not defined elsewhere	3	2	3	1			1	2					1	2		1
Correctional Facility or in Law Enforcement Custody		2	1	1	1	5		3		1			9	15	17	10
Deceased/Expired	5	5	5	9	14	13	16	11	1	1	7	2	33	37	20	30
Discharged to home or self-care (routine discharge)	64	80	62	70	147	140	138	120	66	78	78	73	790	726	364	566
Home with Home Health Services	21	15	8	11	24	31	25	24	24	33	38	45	5	6	1	5
Hospice care	3	4	1	1	4	5	1	4	6	3	16	5	2	4	1	
Long Term/ Intermediate/Rehab	4	4	3	1	11	13	12	19	4	7	7	3	30	42	19	53
Not Applicable (ED Disposition)	12	13	3	5	129	131	106	101	131	143	172	160	5		1	1
Psychiatric Visit		3	1	1	1	3	4	3	1	1		1	7	2	1	4
Skilled Nursing Facility (SNF)	39	36	48	45	72	110	107	97	35	36	36	44	160	183	131	149
Totals	159	170	146	154	420	469	421	393	277	307	360	345	1096	1067	938	862



Incident Severity Score (ISS) 2024 - 1Q



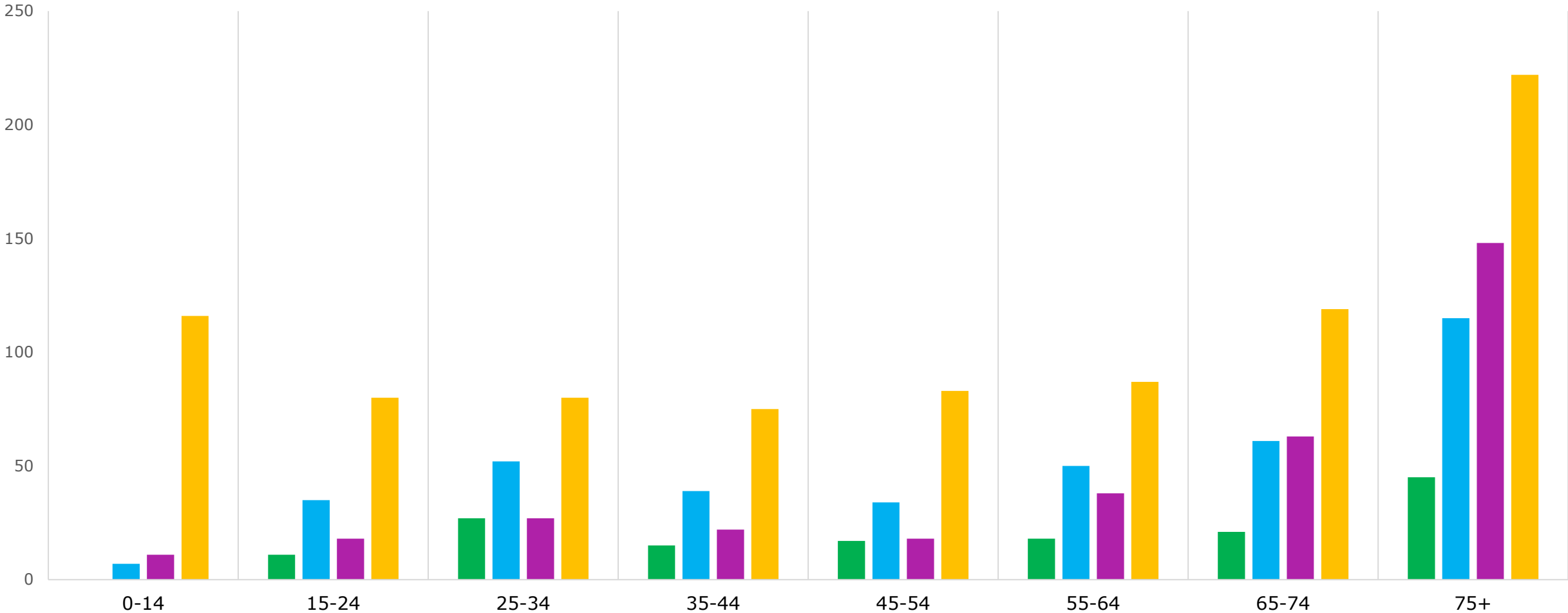
Injury Severity Score (ISS) per Hospital – Rolling 4 Quarters

ISS Range	KHS				MSJ				SRMC				UCD			
	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2023 4Q	2024 1Q
0-14	108	116	109	102	355	405	351	343	268	295	346	328	846	849	699	682
15-24	31	33	17	22	39	33	44	32	4	9	5	10	139	133	141	93
25-34	13	14	10	19	10	27	16	15	4	2	5	7	73	59	71	65
35-44	2	3	6	3	14	3	3	1				0	23	17	16	14
45-54	3	1	1	1	2		0	0				0	7	5	11	6
55-64		1	1	1			2	0		1	1	0	5		3	1
65-74		1	1	3			1						2		0	
75+	2	1	1	3		1	4	2			1	0	1	4	4	1
Totals	159	170	146	154	420	469	421	393	276	307	358	345	1096	1067	946	862



Patient Age Range by Hospital - 2024-1Q

■ KHS ■ MSJ ■ SRMC ■ UCD

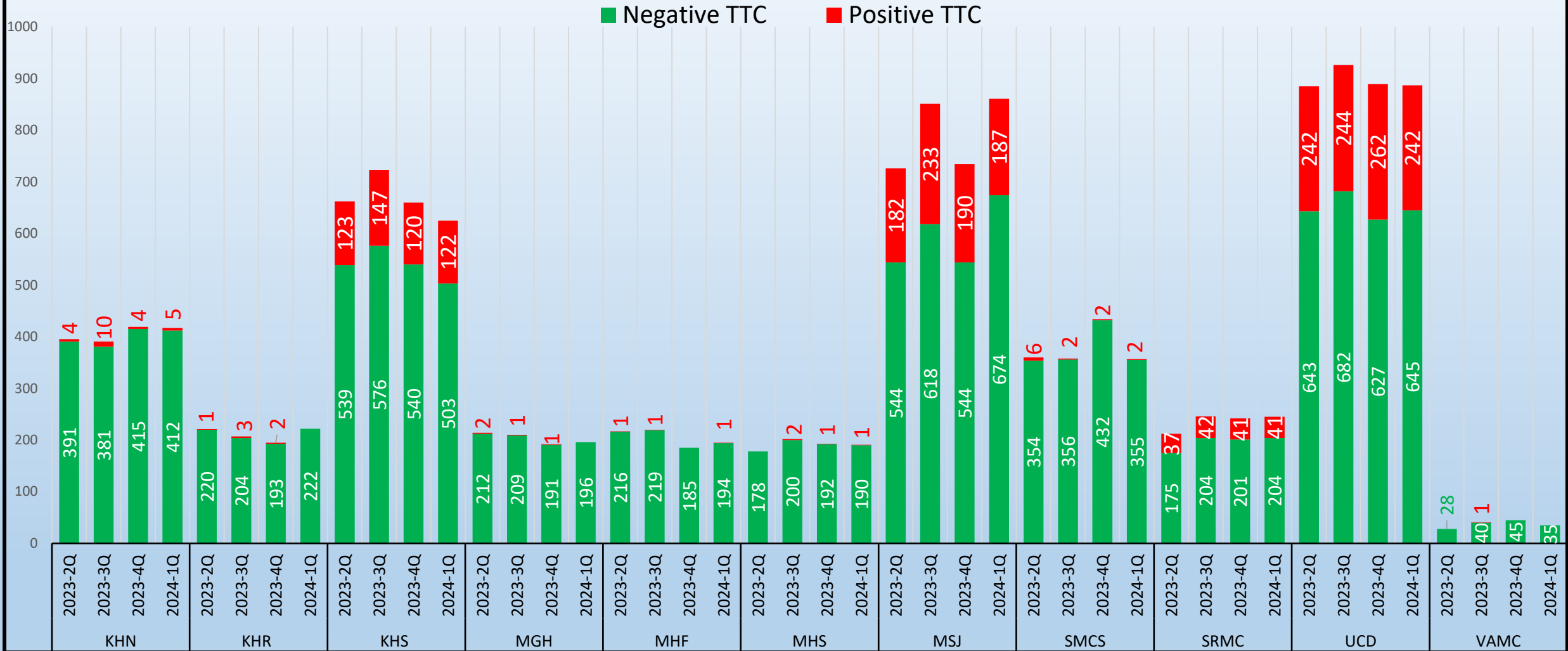


Patient Age Range per Hospital – Rolling 4 Quarters

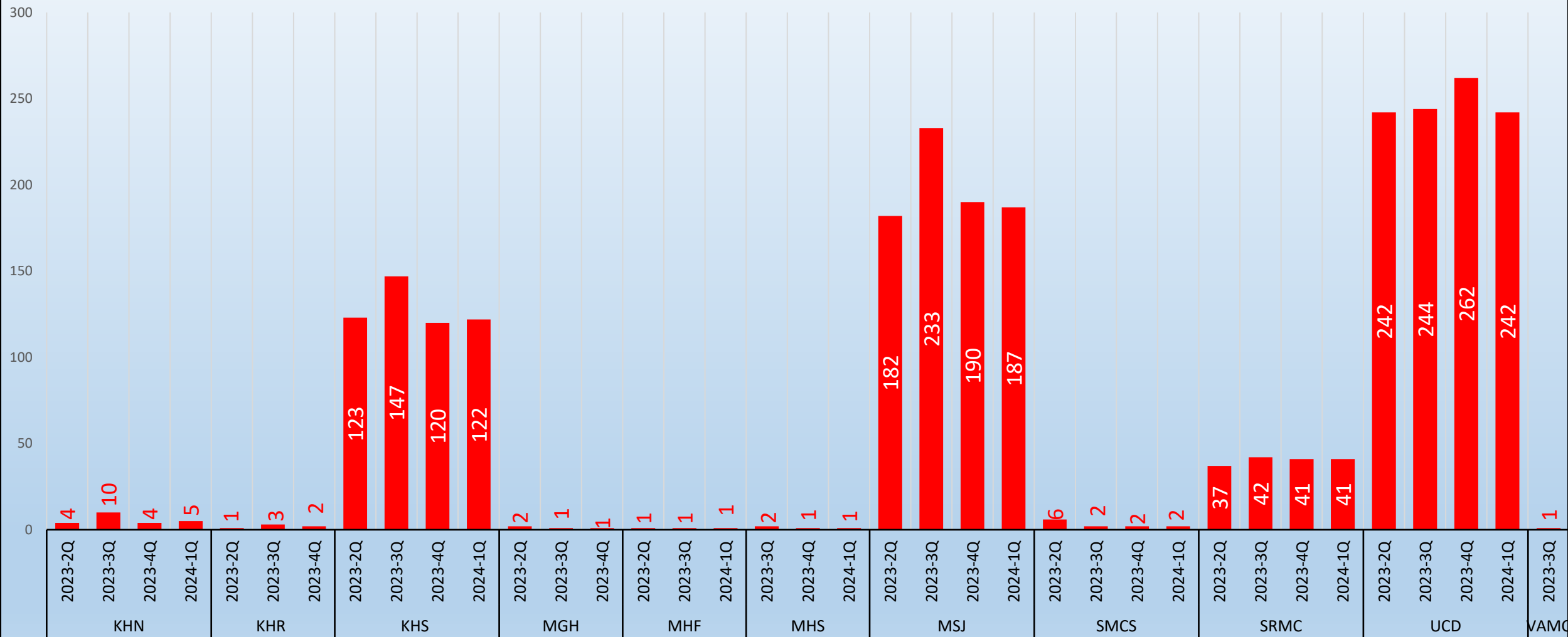
Age Range	KHS				MSJ				SRMC				UCD			
	2023 2Q	2023 3Q	2023 4Q	2024 1Q	2023 2Q	2023 3Q	2323 4Q	2024 1Q	2023 2Q	2023 3Q	2320 4Q	2024 1Q	2023 2Q	2023 3Q	2323 4Q	2024 1Q
0-14	7	5	2	0	9	8	7	7	14	11	13	11	191	159	127	116
15-24	18	19	14	11	53	49	47	35	21	18	22	18	121	104	113	80
25-34	18	17	21	27	47	59	49	52	16	17	21	27	126	123	82	80
35-44	14	18	15	15	63	53	48	39	16	15	24	22	108	114	96	75
45-54	15	21	16	17	38	47	36	34	14	28	23	18	98	97	79	83
55-64	18	23	14	18	55	52	41	50	36	40	36	38	111	105	83	87
65-74	19	21	17	21	53	79	60	61	43	56	57	63	124	132	150	119
75+	50	46	47	45	98	121	133	115	117	122	164	148	217	233	208	222
Not Recorded					4	1										
Totals	159	170	146	154	420	469	421	393	277	307	360	345	1096	1067	938	862



EMS Transported Patients with a Primary Impression of Trauma vs Records documenting a Positive Trauma Triage Criteria -Rolling 4 Quarters



EMS Transported Patients with Positive Trauma Triage Criteria -Rolling 4 Quarters



Review of Positive Trauma Triage Criteria to Non-Trauma Hospital – 2024 – 1Q

Destination Hospital	Primary Impression documented and findings	Trauma Triage Criteria
Kaiser Permanente, Sacramento Medical Center (20197)	Traumatic Injury (T14.90) MVA went to UCD Doc. Error	
Kaiser Permanente, Sacramento Medical Center (20197)	Traumatic Injury (T14.90) GSW IFT not a field call pt went to UCD. Doc. Error	
Kaiser Permanente, Sacramento Medical Center (20197)	Overdose/Poisoning/Ingestion (F19) should have been trauma destination, found unresponsive with large hematoma and eye swollen shut.	Unable to follow commands (motor GCS < 6)
Kaiser Permanente, Sacramento Medical Center (20197)	Traumatic Injury (T14.90) Fall with back pain	Age >= 65 years: SBP < 110 mmHg
Kaiser Permanente, Sacramento Medical Center (20197)	Traumatic Injury (T14.90) Fall in bathroom hit head / no LOC / back pain worse than normal	Age >= 65 years: SBP < 110 mmHg "Anticoagulants and Bleeding Disorders"
Mercy Hospital of Folsom (20282)	Syncope/Near Syncope (R55)- Found unconscious in garden with head lac / +dizziness	"Fall Adults: > 20 ft. (one story is equal to 10 ft.)"
Methodist Hospital of Sacramento (20288)	Traumatic Injury (T14.90) Fall with +LOC and Dizziness	"Fall Adults: > 20 ft. (one story is equal to 10 ft.)", "Anticoagulants and Bleeding Disorders"
Sutter Medical Center - Sacramento (20475)	Traumatic Injury (T14.90) Fall A+O x 4 / Shoulder pain / hit head	"Low-level falls in young children (age <= 5 years) or older adults (age >= 65 years) with significant head impact"
Sutter Medical Center - Sacramento (20475)	Syncope/Near Syncope (R55) Fall / A+Ox4 GCS 15 / Hit forehead + Neck pain / High Blood Sugar / Hx of fainting	"Low-level falls in young children (age <= 5 years) or older adults (age >= 65 years) with significant head impact"



Kaiser Permanente, Sacramento Medical Center (20197) – 8/9/2023	Traumatic Injury (T14.90) Patient xport to nearest ED to KNH due to unstable airway	Systolic Blood Pressure <90 mmHg , Respiratory Rate <10 or >29 breaths per minute (<20 in infants aged <1 year) or need for ventilatory support
Mercy General Hospital (20280) – 4/4/2023	Motorcycle Ejection 30-35 MPH – Pt Requested MGH and UCD MD Cleared to transport to MGH	"Auto v. Pedestrian/Bicyclist Thrown, Run Over, or > 20 MPH Impact", "Motorcycle Crash > 20 MPH"
Sacramento VA Medical Center (20549)- 8/12/2023	Traumatic Injury (T14.90)- Assault hip pain with shortening and rotation possible dislocation per ePCR	Glasgow Coma Score <= 13 'EMS Provider Judgment'

Patients with Trauma Primary Impression and (-) TTC 2024-1Q EMS Data with Destination Hospital

Hospital	Alpha	AMR	Bay Medic	Cosumnes	Folsom	Medic	Metro	NorCal	Sac Fire	Grand Total
KHS	41	15	1	155		1	107		183	503
MSJ	100	110			4		436		24	674
SRMC	26	18			26		134			204
UCD	53	59	1	10	15	1	138	1	367	645
Kaiser Antioch						4				4
KHN	55	68			1		161		127	412
KHR	36	18			36	1	127		4	222
Lodi Memorial				15		4				19
Marshall					1					1
MGH	34	14				1	31		116	196
MHF	6	14			104		70			194
MHS	18	3	1	68		1	44		55	190
North Bay						1				1
SMCS	50	18		25		1	38		223	355
Sutter Delta						2				2
VAMC	8	2				1	16		8	35
Woodland							2		1	3
Total	427	339	3	273	187	18	1304	1	1108	3660



Patients Meeting Trauma Triage Criteria 2024-1Q EMS Data with Destination Hospital

Hospital	Alpha	AMR	Cosumnes	Folsom	Medic	Metro	REACH	Sac Fire	Grand Total
KHS	4	6	44			41	1	26	122
MSJ	23	54		2	1	99		8	187
SRMC	3	3		22		12	1		41
UCD	10	32	9	17		71		103	242
Kaiser Vacaville					1				1
KHN		3	1					1	5
MHF				1					1
MHS			1						1
North Bay					2				2
SMCS			1					1	2
Grand Total	40	98	56	42	4	223	2	139	604



Patients documenting +TTC with a Non-Trauma Primary Impression 2024-1Q

Primary impression	Counts	Findings
Alcohol Intoxication (F10.92)	1	Rt arm deformity
ALOC - (Not Hypoglycemia or Seizure) (R41.82)	3	Fall / MCA unresponsive agonal Resp / ALOC lac self inflicted
Cardiac Arrest -Non-traumatic (I46.9)	1	Hit by train
Dizziness/Vertigo (R42)	1	Fall / hypotension / B/P 82/49
General Weakness (R53.1)	5	Stroke / 3 falls / MVA no intrusion /
Inhalational Injury (J68.9)	1	Burns to hands
No Medical Complaint (Z00.00)	2	Stabbing / 30 ft fall
Non-Traumatic Body Pain (G89.1)	8	Foot ran over /Assault depressed skull / Neck Laceration suicidal / 2 falls / Vehicle vs PED /
Overdose/Poisoning/Ingestion (F19)	1	Traumatic injury assault
Pain/Swelling - Extremity - non-traumatic (M79.60)	1	Dog bite
Seizure - Post (G40.909)	1	Fall seizures
Shock/Hypotension (I95.9)	1	Fall
Syncope/Near Syncope (R55)	6	Falls



UC Davis Health Pediatric Trauma Program

Spine Fractures/Dislocations and Cord Injuries
2022-2023

- Data range: January 1, 2022 through December 31, 2023
- Age range: 0 - 14 years
- Inclusion: Admitted patients, seen by the pediatric trauma team, with spine fractures, dislocations and/or spinal cord injuries.
- Transfers and local EMS

- Total = 76
- 0–5 yr-olds = 18
- 6-14 yr olds = 58
- 5 d/t NAT
- Overall spine injury rate in 0-14 age range = 5%

Age range breakdown

- 0-5 year olds
 - Total – 18
 - Cord injuries – 3
 - Spine fracture and/or dislocation/subluxation – 15
 - Injury rate – 1% (% of 0-5 yr olds in overall total admissions)
- 6-14 year olds
 - Total – 58
 - Cord injuries – 8
 - Spine fracture and/or dislocation/subluxation – 50
 - Injury rate – 4% (% of 6-14 yr olds in overall total admissions)

Number of spine injured patients arriving by EMS (non-IFT)
w/out c-spine control:

- 32 total patients arrived by EMS (air and ground combined)
- 1 arrived by ground EMS w/o documented c-collar, semi-fowlers per PCR. L4 compression fx, spinal EDH, PSF done. 11 yo.

PCR Review of the one “missed” SMR

- Primary Impression: Traumatic Injury
- Pre-Arrival Alert – Pediatric Trauma
- Narrative:

Engine and medic 46 arrived to find 2 car vehicle accident on north bound 99, both later model sedans, with moderate damage from direct impact. X2 patients transported for this call. Patient one is 11yo female restrained passenger in rear driver side of vehicle with front end damage which collided with rear end of vehicle that stopped on freeway per driver at approx 65 mph. Pt found sitting upright in rear driver side of vehicle.

Patient one is 11yo female primary complaint of lower left abdominal pain/discomfort which increases with palp/movement which she reports struck the seatbelt. Pt also found with minor cut/laceration to left brow. Pt airway open/patent, breathing reg/non-labored, I/s clear = bilat, circulation/pulse strong at radial, skin warm/pink/dry, cap refill<2sec, pupils PERRL, +CSMx4. Minor abrasion from seatbelt noted to report site of pain on abdomen. other outward trauma or pertinent findings on full head to toe other than what is noted. **Pt able to ambulate head/neck and all extremities without pain/tenderness/discomfort or limited range of motion.** Pt is able to self extricate/ambulate from vehicle to gurney without difficulty, complication, or noted deficits.

Driver of vehicle reports driving at 65 mph when she struck another vehicle head on which stopped in front of her. Driver or vehicle decline anyone being thrown around vehicle or losing consciousness.

Pt reports only complaint of pain is to lower left abdomen. Pt denies loss of consciousness, head/neck/back pain/discomfort, ha, dizziness, blurred vision, numbness/tingling, shortness of breath, chest pain, n/v, input/output changes, recent illness/injuries, or having any other pain/discomfort or abnormalities not already reported.

MSJ

Same inclusion criteria as UCDCMC

- 1 Patient: arrived in SMR

SRMC

Same inclusion criteria as UCDCMC

- 3 Patients
 - All had appropriate spinal immobilization in place on arrival
 - One had it in place, but it was not documented in the PCR. The trauma nurse documented it.