



Trauma Improvement Committee (TIC)
Meeting Minutes

November 9, 2023

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

Minutes: Sydney Freer FreerS@saccounty.gov

Attendees: EMS Group

Topic	Minutes	Open Items
Welcome and Introductions	Approval of Minutes: Not needed due to previous meeting being the Hospital Group	
Quarterly Data Review	<p><u>2023 2Q and 3Q Data</u></p> <p>Slide 11: Jeremy Veldstra: Following the San Juan Road call, each trauma center received pediatric patients. UC Davis is working on changes in terms of the volume of specific pediatric patients we can take at any one time. My goal is to be able to take ten pediatric patients from one scene.</p> <p>Slide 18: Dr. Kann: The hospital trauma teams have asked about adding the shock index to our trauma triage criteria. These are people whose vital signs could be misleading. We dived into this, looking at what if we added a shock index of one; what would happen to our trauma volume? That is the number you see in orange. What are your initial thoughts here?</p>	



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	<p>Brian Morr: Did you account for how many of these we did not trauma activate, but we happened to take to one of the four trauma hospitals anyway?</p> <p>Sydney Freer: We did not.</p> <p>Jeremy Veldstra: Any increase in the number of patients will have an impact. It would be hard to say the true impact for us because I would have to look at our internal algorithm and see if those patients fall within our algorithm. Because we get a lot of trauma patients that don't end up meeting our trauma algorithm.</p> <p>Dr. Kann: We were asked to see what the numbers would be, but I think the next step would be that kind of analysis.</p> <p>Amelia Hart: We would have to look at our actual triaging of patients and our percentage.</p> <p>Jeremy Veldstra: My main question would be, how does this affect the patients? Have we seen negative outcomes because we are not using this? Speaker: By this metric, how many who went to a non-trauma needed to be transferred to a trauma facility?</p> <p>Dr.Kann: This is all the stuff we need to look into.</p> <p>Amelia Hart: The new trauma criteria does say, "Their heart rate is greater than their systolic blood pressure," so even though you are not giving them a shock index, you have it built in there.</p>	<p>SCEMSA to send patient information to hospitals for outcomes</p>



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	<p>Dr. Kann: Skipping forward a little, the new structure of the TIC includes two meetings with this group and two with the hospitals. You can attend the hospital meetings, but they will be more hospital-focused discussions. In the next TIC, when the hospital-based discussion is, maybe we can discuss this shock index question a bit more. We can look at whether these patients would meet the internal algorithms to see the impact on the hospitals.</p> <p>Slide 19: Dr. Kann: We were asked to look at TXA because our numbers are very low. We looked at this year's first and second quarters, and those 12 patients are it. In the last MAC meeting, I decided to move from single-gram TXA administration in the field, with the second gram given at the hospital within 24 hours, to two grams in the field. Following this decision, the hospitals said we are worried people will have blood clots. I asked the hospitals to provide that information for patients given TXA. We saw twice out of these 12 that there was.</p> <p>Amelia Hart: I would be interested in seeing the hospital rate when we give TXA because we give TXA a lot.</p> <p>Dr. Kann: This is something I want to continue to track. The take-home message for the providers from this slide is that we need to look for patients who meet the criteria for TXA because it is very underutilized.</p> <p>Dr. Naik: What kind of things are stopping medics from giving it?</p>	



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	<p>Brian Wells: When we are in a situation where we are about to give it or need to because of dropping blood pressure, I found that we are doing things more immediately to stop the loss of pulses. Starting CPR, trying to get an accurate BP, and when we are at that point of 2 – 3 paramedics that hands-on, having one person stop to get the TXA out, unless it is a smooth trauma operation, it is not aforethought to grab it easily.</p> <p>Hailey Machado: I am looking for the opportunity to give TXA, but we are so busy prioritizing other things that it keeps falling down the priority list, and then we are at the hospital.</p> <p>Brian Wells: Has there been any thought to administering TXA in a syringe versus a drip? As far as shortening the process in the back of the ambulance, we are talking about the time it takes, and I know in the army on the ground, they administer TXA as a push dose.</p> <p>Dr. Kann: It is a good point, but I don't know what the studies will say regarding push dose. We will continue to track these numbers and look at what we can do about push dose.</p>	
<p>Policies Review: PD# 9017 – Pediatric Trauma</p>	<p>Dr.Kann: If you haven't looked at this one yet, we encourage you to do so before the MAC/OAC meeting. We have no comments on it yet so far.</p>	
<p>New Items/ Discussion:</p>	<p>Sacramento City Fire: Firefighter Paramedic Jake Hohloch presented two trauma cases, and Jeremy Veldstra provided hospital outcome information.</p>	



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<p>Case Presentations:</p>	<p>Case One: Presented with a patient who had been shot in the face. I called for orders to give nebulized TXA, but I was denied, so I had to sit there and lean her forward and catch blood. Transport time was 12 minutes.</p> <p>Jeremy Veldstra: She went to the OR with trauma and ENT very quickly. The first blood pressure at UC Davis was 80 palpated. She required a few surgeries but made a good recovery.</p> <p>Case Two: Dispatched to a patient coughing up blood post-tonsillectomy. It is hard to understand her because of the amount of blood coming from her airway. I called for base physician orders for nebulized TXA, which was approved. I sprayed TXA directly on both surgical sites in the back of her throat. When we got to the hospital, she was talking in complete sentences with no blood coming out of her mouth. ENT had her in the OR within a couple of hours, and she was discharged the next morning.</p> <p>Metro Fire: Adam Blitz presented one call—a motorcycle accident off of Scott Road at approximately 50 mph. Long transport time allowed medics time to give TXA.</p> <p>Discussion:</p> <p>Jeremy Veldstra: Our MICNs are now working at the top of their license, so ideally, they are not calling physicians over for every order. Physicians only have to be on the line for termination of resuscitation, nerve agent antidote activation, and order to operate outside of protocol (giving nebulized TXA, like in this case, would be that). Ideally, with this change, our physicians will be on the phone quickly. I am also encouraging our nurses not to ask so many</p>	



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	<p>questions. As long as they have the information they need to get the right resources to the patient upon arrival, stop asking questions. We will ask questions that will change the type of resources, like the respiratory rate of trauma patients. I am hoping you will start to see fewer questions.</p> <p>Jake Hohloch: If you could give us something that says what you need us to prioritize for that, like a GCS first, a blood pressure, a respiratory rate, and then stop, we could do that because we don't currently have an outline.</p> <p>Amelia Hart: I am working with my physicians and MICNs to do the same, Jeremy. I would encourage medics and the nurses to have these conversations after you get there.</p> <p>Jeremy Veldstra: I can put something together and send it to you. If you look at our algorithm compared to county trauma criteria, it is almost identical, and there are just a few nuances. For trauma patients, respiratory rate is the most important because less than ten or greater than 29 makes it our highest activation, so we always ask for that one if we don't get it. You will also have us asking if you have had a blood pressure of less than 90 at any point in the call. That is because we will activate based on the lowest blood pressure. Looking at it from a resource allocation standpoint, we see that as being behind if we have to upgrade a patient's activation status after arrival.</p> <p>Dr.Kann: Another comment about TXA: I brought up nebulized TXA at the last MAC meeting. It was shot down, and the comment was made that maybe we put this in as a base hospital request for oral facial bleeding, which is reasonable.</p>	



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	<p>Jeremy Veldstra: If it is written in policy as a “base hospital order,” then MICNs can give the order. If we use “base physician order,” we must get the physician on the phone.</p> <p>Dr. Kann: I am happy to do that as a base hospital order.</p> <p>Jeremy Veldstra: Most Sacramento County physicians don’t know the SCEMSA Protocols. The nonsense of “just follow your protocol” is unacceptable. I am trying to get my physicians away from that. As long as it is within your scope of practice, the physicians can give orders, and I am trying to get them used to that.</p> <p>Amelia Hart: I am working on the same thing at MSJ.</p> <p>Dr. Kann: I think it is great, and as hospital representatives, we need to be having these conversations with our ED groups. We need to help them understand that when that phone call comes in, you’ve already exhausted your protocol, you need something more, and as long as it is within your scope, the base hospital physicians can give orders to do more. I think the best strategy would be to ask for that order from the physician if you have an idea that is within your scope and you have the equipment.</p>	
Adjournment	<p>Dr. Kann: We will see this group in 2 quarters, but we would also love to see some EMS representation even at the primarily hospital-based meetings.</p>	

Next Meeting: Thursday, February 15, 2024: 1:00 pm – 3:00 pm: Hospital Group



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**Emergency Medical Services
Trauma Improvement Committee**

2024 Meeting Dates

Day	Date	Time	Location
Thursday	February 15, 2024	1:00 PM – 3:00 PM	TBD
Thursday	May 16, 2024		
Thursday	August 15, 2024		
Thursday	November 21, 2024		

Attendance is by Invitation Only.

Trauma Improvement Committee

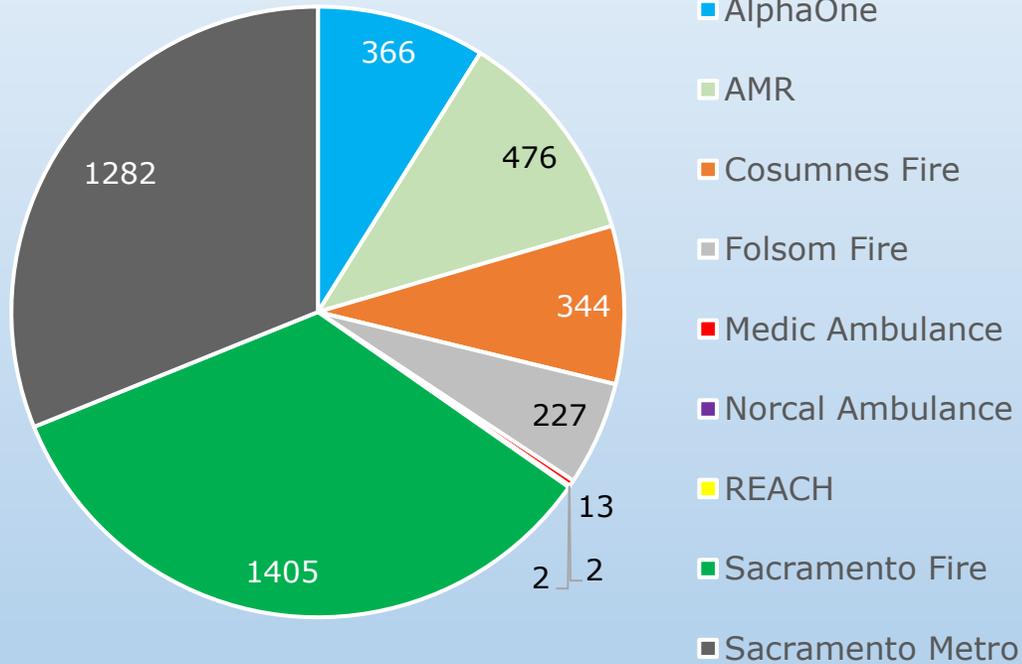
Facilitated By: Gregory Kann, M.D.

2023 – 2Quarter (April-June)

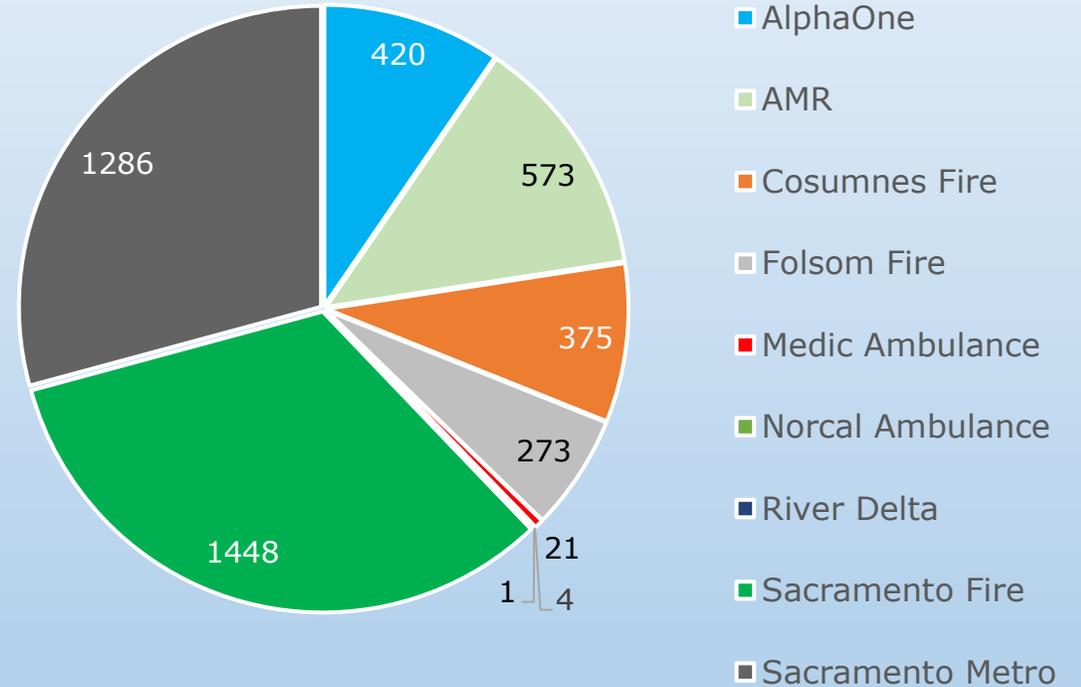
Presented November 9th, 2023

Trauma Incident Counts per Provider for 2023 2Q and 3Q

2nd Quarter



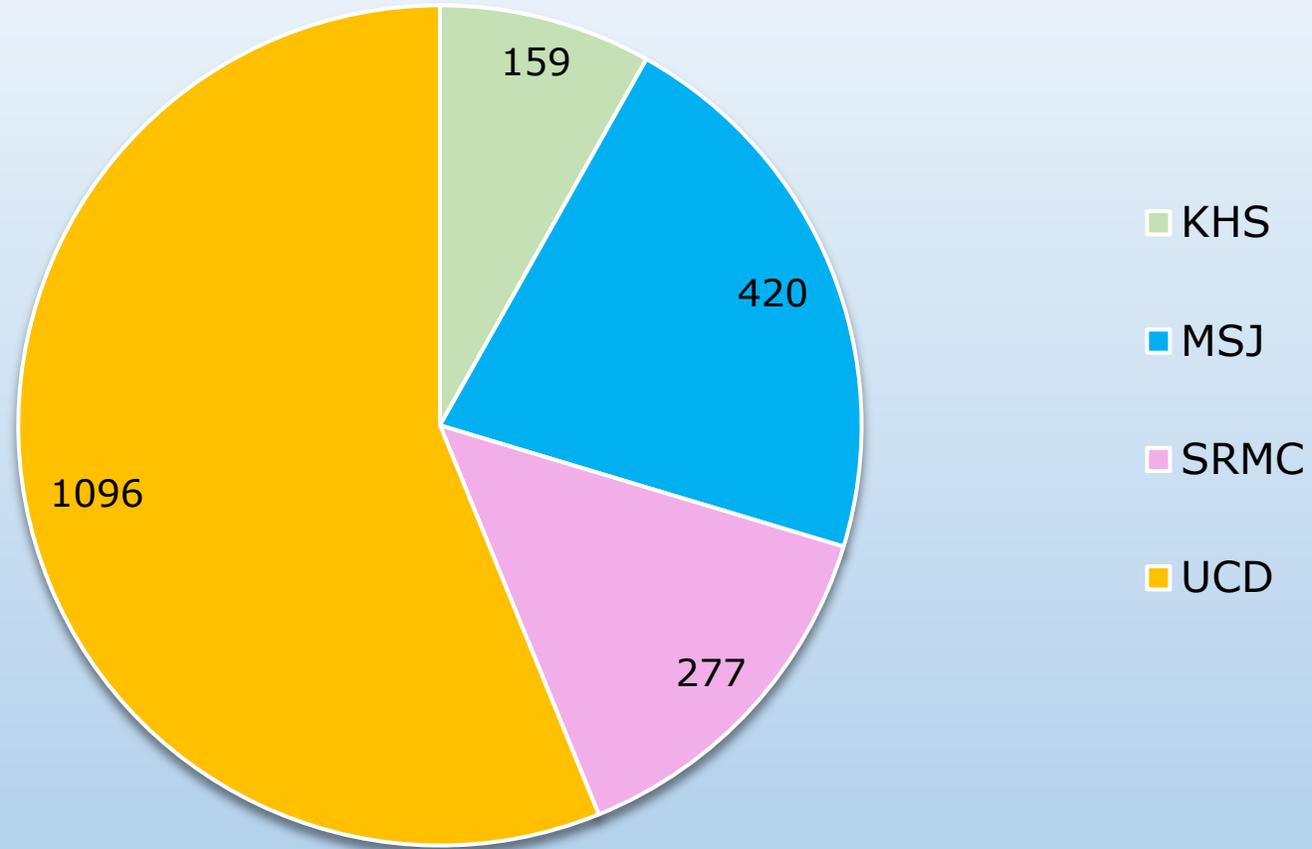
3rd Quarter



CEMSIS EMS Data



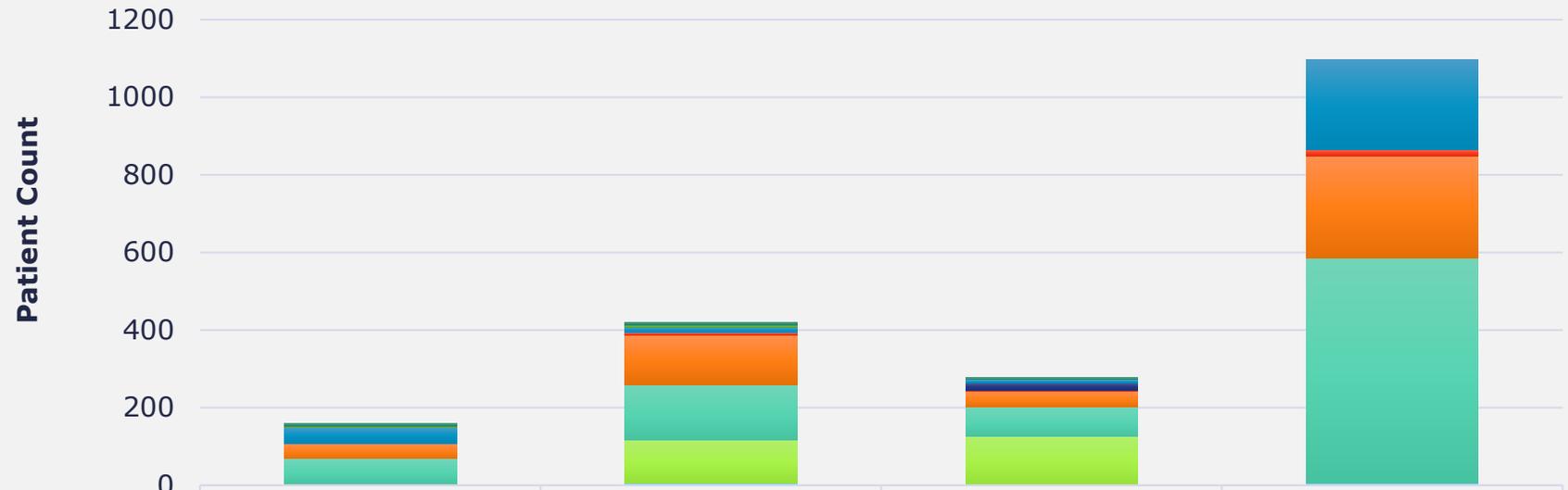
Total Patients per Hospital - 2023 2Q



Patient Registry and Hospital Data



Emergency Room Disposition 2023 2Q- per Hospital



	KHS	MSJ	SRMC	UCD
Transferred to another hospital	6	7	4	
Other (jail, institution, etc)	3	5	1	
Operating room	42	15	8	231
Obervation			19	
Not Applicable (Direct Admit)		5	2	16
ICU	39	129	42	264
Floor bed (general admission, non specialty unit bed)	66	142	75	580
ED Discharge		112	125	
Deceased/Expired	3	3		5
AMA		2	1	

Patient Registry and Hospital Data



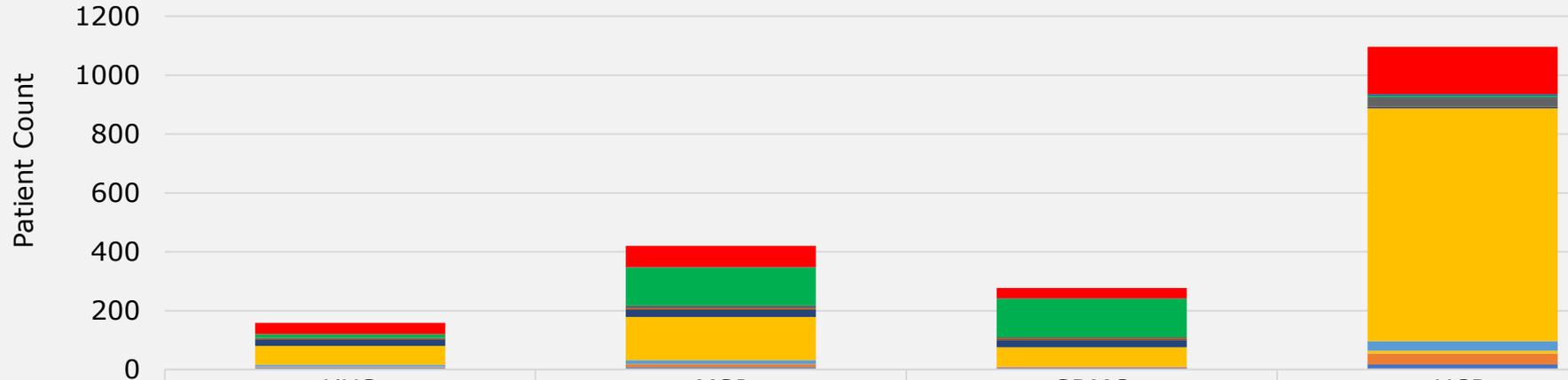
Emergency Room Disposition- Rolling 4 Quarters

Emergency Room Disposition	KHS				MSJ				SRMC				UCD				Grand Total
	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	
AMA					3	1	1	2	2		1	1					11
Deceased/Expired	6	10	5	3	5	5	4	3					1	4	2	5	53
Floor bed (general admission, non specialty unit bed)	65	72	67	66	154	140	134	142	71	82	87	75	498	535	431	580	3,199
ED Discharge					134	96	69	112	133	128	106	125					903
ICU	43	31	46	39	137	154	121	129	1	37	41	42	284	246	249	264	1,864
Not Applicable (Direct Admit)		1	1		2	5	2	5	21	4	7	2	25	25	13	16	129
Observation									4	32	25	19					80
Operating room	24	17	27	42	18	24	12	15	3	9	13	8	232	146	157	231	978
Other (jail, institution, etc)		2		3	4	3	3	5	9			1					30
Transferred to another hospital	2	3	5	6	3	3	1	7		7	8	4					49
Grand Total	140	136	151	159	460	431	347	420	244	299	288	277	1040	956	852	1096	7,296

Patient Registry and Hospital Data



Hospital Discharge Disposition 2023-2Q



	KHS	MSJ	SRMC	UCD
■ Skilled Nursing Facility (SNF)	39	72	35	160
■ Psychiatric Visit	4	1	1	7
■ Not Applicable (ED Disposition)	12	129	131	5
■ Long Term/Intermediate/Rehab Facility	3	11	4	30
■ Hospice care	3	4	6	2
■ Home with Home Health Services	21	24	24	5
■ Discharged to home or self-care (routine discharge)	64	147	66	790
■ Deceased/Expired	5	14	1	33
■ Correctional Facility or in Law Enforcement Custody	0	1	0	9
■ Another type of institution not defined elsewhere	3	0	0	1
■ AMA	2	9	3	37
■ Acute care hospital	6	8	6	17

Patient Registry and Hospital Data



Hospital Discharge Disposition- Rolling 4 Quarters

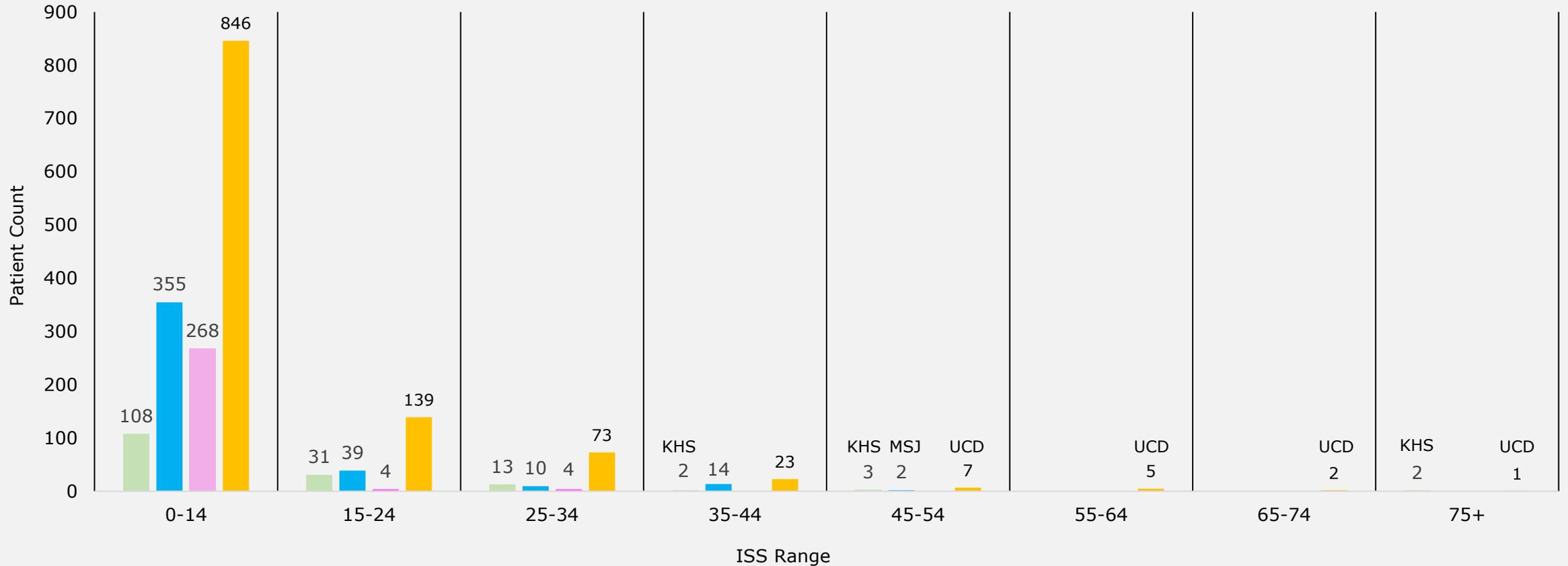
Emergency Room Disposition	KHS				MSJ				SRMC				UCD				Grand Total
	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	
Acute care hospital	2		3	6	12	4	5	8	2	5	16	6	22	21	9	17	138
AMA	1	5		2	13	13	5	9	2	1	6	3	32	13	19	37	161
Another type of institution not defined elsewhere	2	2	3	3	1								2	1	1	1	16
Correctional Facility or in Law Enforcement Custody	1	1	1		5	2	2	1					18	12	17	9	69
Deceased/Expired	5	4	13	5	14	15	15	14	4	1		1	30	28	31	33	213
Discharged to home or self-care (routine discharge)	63	60	72	64	136	135	111	147	58	75	82	66	735	658	582	790	3,834
Home with Home Health Services	14	9	15	21	29	34	25	24	26	31	24	24		2	2	5	285
Hospice care	2	2	2	3	2	6	4	4	6	5	4	6	2	2	1	2	53
Long Term/Intermediate/Rehab	6	1	3	4	18	8	17	11	2	4	7	4	37	26	28	30	206
Not Applicable (ED Disposition)	8	15	10	12	149	108	78	129	112	133	107	131	1	4	2	5	1,004
Psychiatric Visit	1		2		1	5		1				1	2	4	4	7	28
Skilled Nursing Facility (SNF)	35	37	27	39	80	101	85	72	32	44	42	35	159	185	156	160	1,289
Totals	140	136	151	159	460	431	347	420	244	299	288	277	1040	956	852	1096	7,296

Patient Registry and Hospital Data



ISS Range per Hospital – 2023 2Q

■ KHS ■ MSJ ■ SRMC ■ UCD



Patient Registry and Hospital Data

Trauma Review Committee



IS Score per Hospital – Rolling 4 Quarters

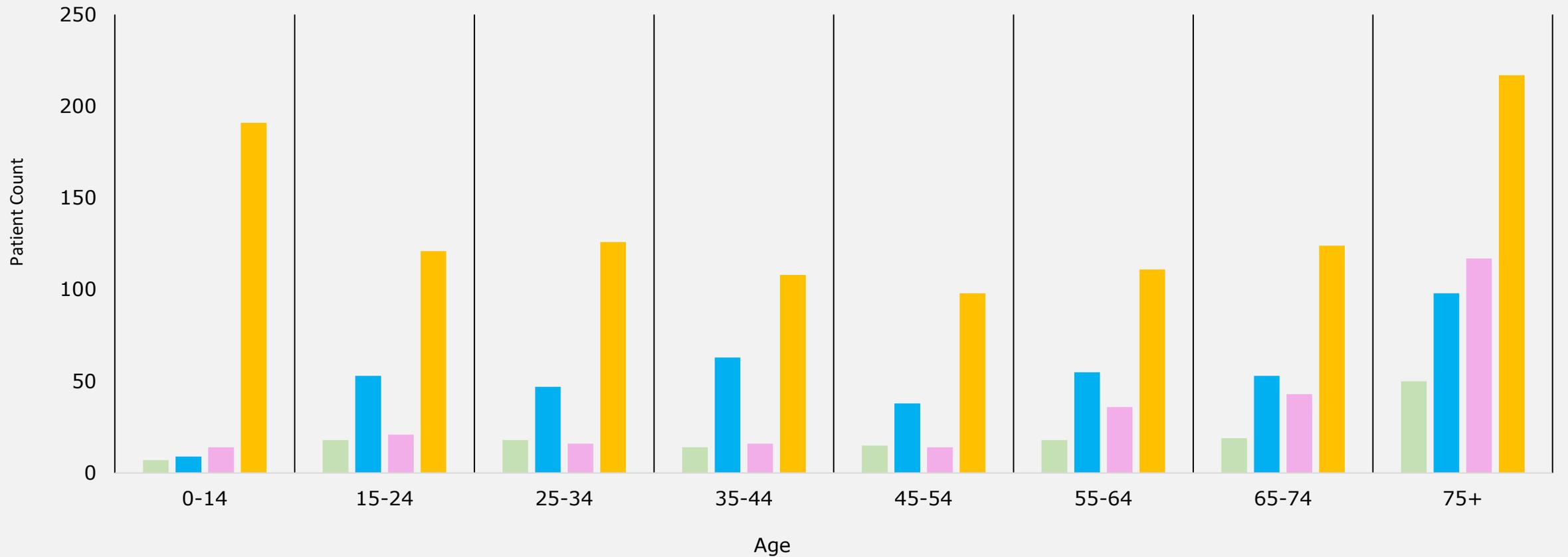
ISS Range	KHS				MSJ				SRMC				UCD				Grand Total
	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	
0-14	90	95	99	108	405	370	292	355	234	287	273	268	753	713	638	846	5,826
15-24	28	20	19	31	39	34	33	39	7	5	12	4	139	144	128	139	821
25-34	17	14	25	13	10	21	17	10	2	6	1	4	103	78	68	73	462
35-44	2	3	7	2	2	6	2	14		1	1		28	13	15	23	119
45-54		1		3			1	2	1		1		12	6	3	7	37
55-64	1	1			2								4	1		5	14
65-74	1	1	1										1	1		2	7
75+	1	1		2	2		2									1	9
Totals	140	136	151	159	460	431	347	420	244	299	288	276	1040	956	852	1096	7,295

Patient Registry and Hospital Data
 *Note: One Record ISS not Documented



Patient Age Range per Hospital – 2023 2Q

KHS MSJ SRMC UCD



Patient Registry Hospital Data

Trauma Review Committee



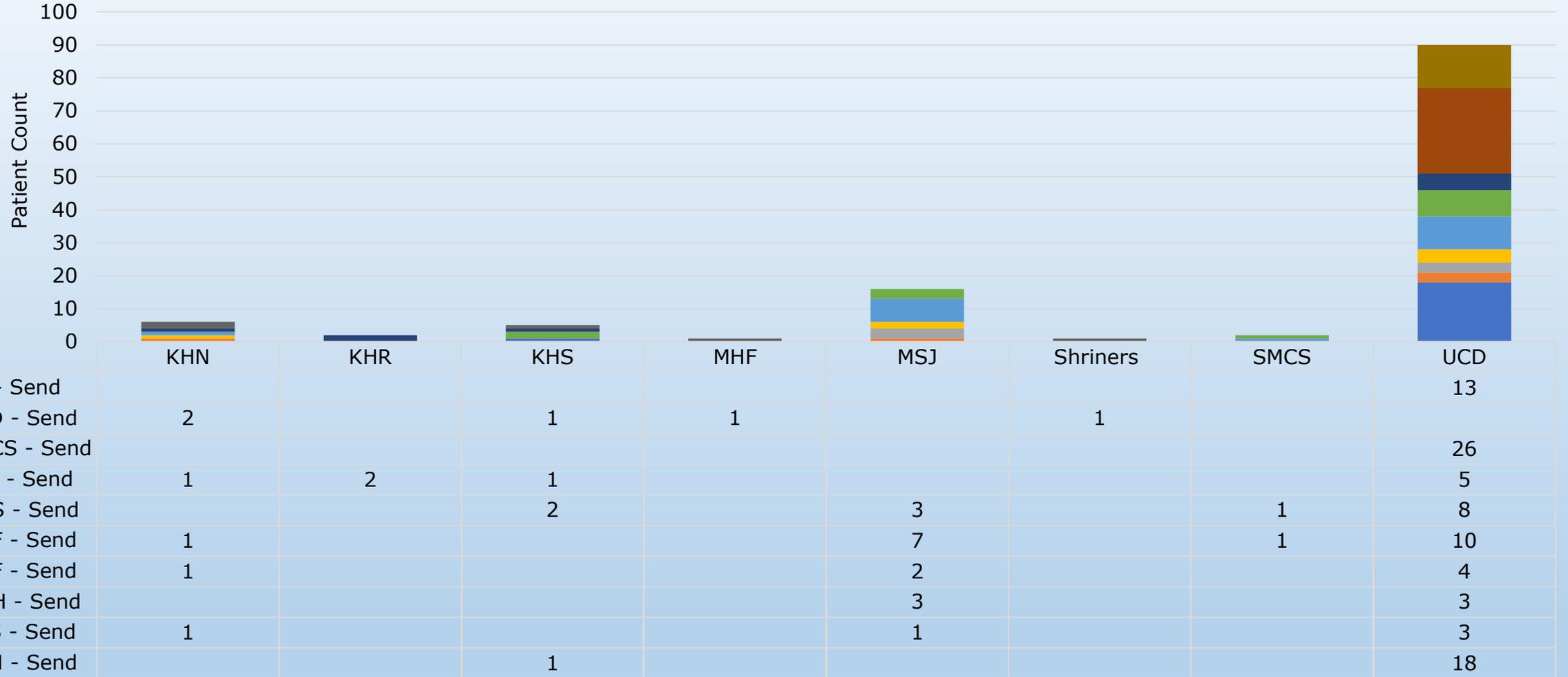
Patient Age Range per Hospital – Rolling 4 Quarters

Age Range	KHS				MSJ				SRMC				UCD				Grand Total
	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	2022-3Q	2022-4Q	2023-1Q	2023-2Q	
0-14	1	2	5	7	4	5	7	9	7	6	3	14	172	66	59	191	558
15-24	15	4	13	18	43	46	25	53	17	17	22	21	106	112	94	121	727
25-34	19	22	17	18	61	50	40	47	18	21	14	16	124	105	93	126	791
35-44	8	20	11	14	53	63	26	63	14	19	17	16	118	97	102	108	749
45-54	11	12	19	15	58	41	41	38	19	27	17	14	91	81	76	98	658
55-64	20	16	18	18	80	50	49	55	25	23	34	36	111	107	92	111	845
65-74	17	17	18	19	66	62	44	53	41	53	54	43	130	142	107	124	990
75+	49	43	50	50	95	112	114	98	103	133	127	117	188	246	229	217	1,971
Not Recorded						2	1	4									7
Totals	140	136	151	159	460	431	347	420	244	299	288	277	1040	956	852	1096	7,296

Patient Registry and Hospital Data



2023 2Q IFTs with Primary Impressions of Trauma EMS Data

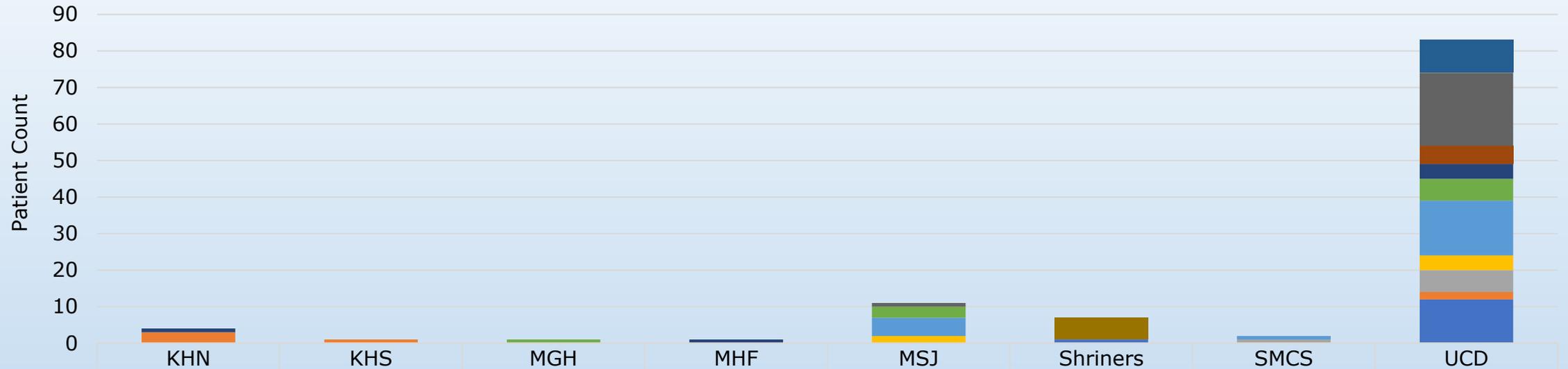


Patient Registry and Hospital Data

Trauma Review Committee



2023 3Q IFTs with Primary Impressions of Trauma EMS Data



- VA - Send
- UCD - Send
- SMCS - Send
- Shriners - Send
- MSJ - Send
- MHS - Send
- MHF - Send
- MGH - Send
- KHS - Send
- KHR - Send
- KHN - Send

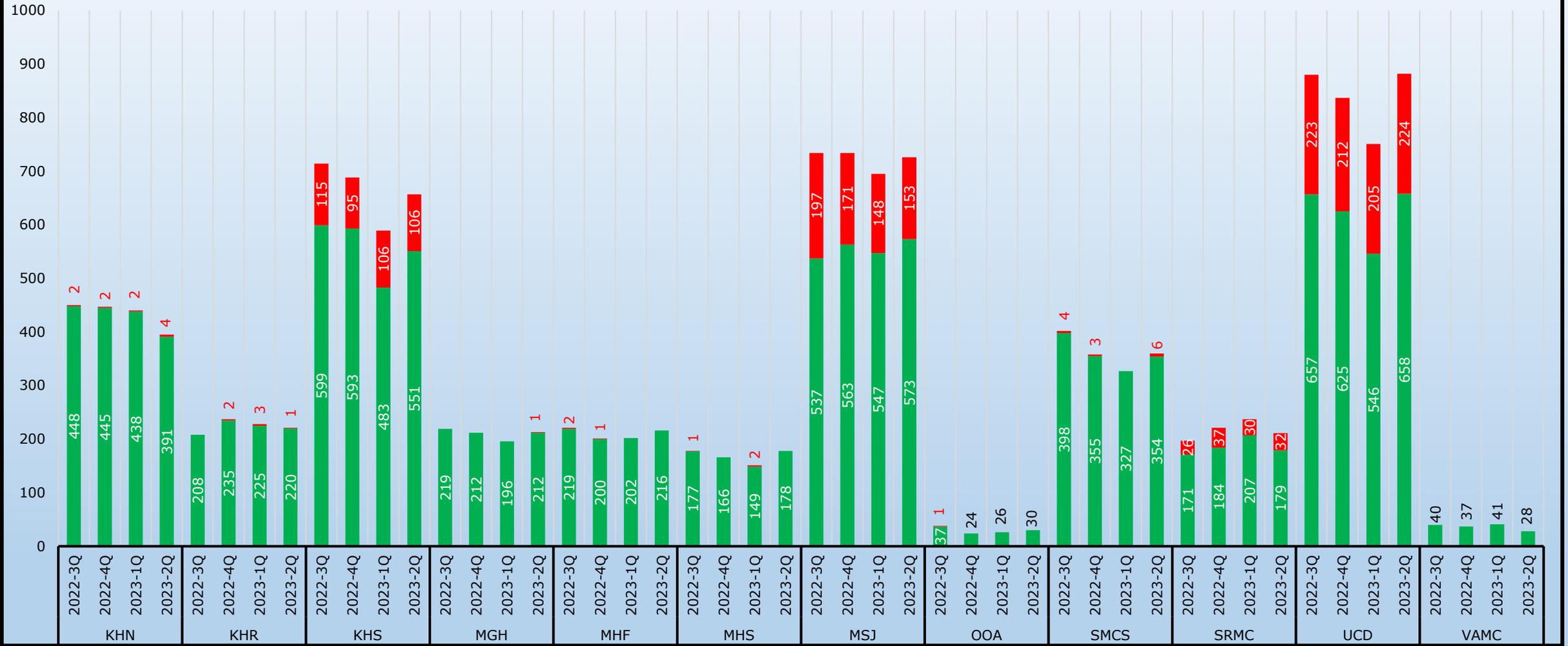
	KHN	KHS	MGH	MHF	MSJ	Shriners	SMCS	UCD
VA - Send								9
UCD - Send						6		
SMCS - Send					1			20
Shriners - Send								5
MSJ - Send	1			1				4
MHS - Send			1		3			6
MHF - Send					5		1	15
MGH - Send					2			4
KHS - Send							1	6
KHR - Send	3	1						2
KHN - Send						1		12

Patient Registry and Hospital Data



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

■ Negative TTC ■ Positive TTC

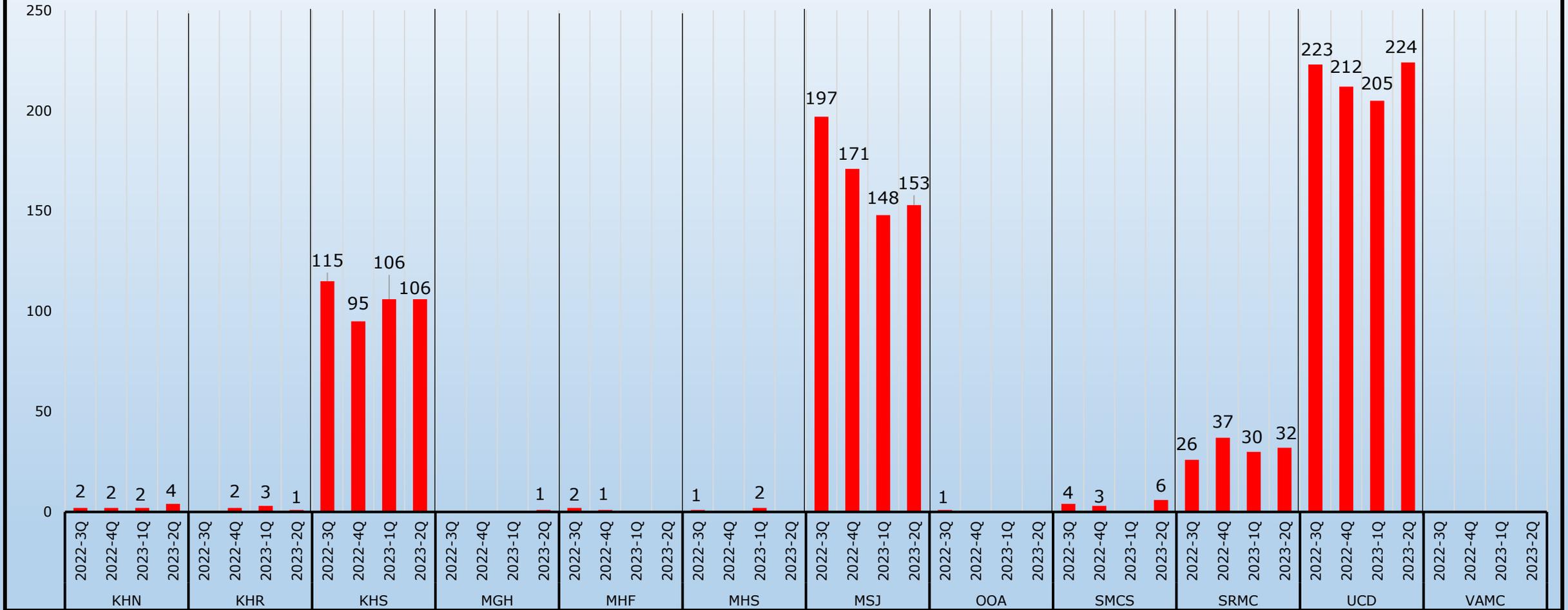


CEMIS EMS Data

Trauma Review Committee



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

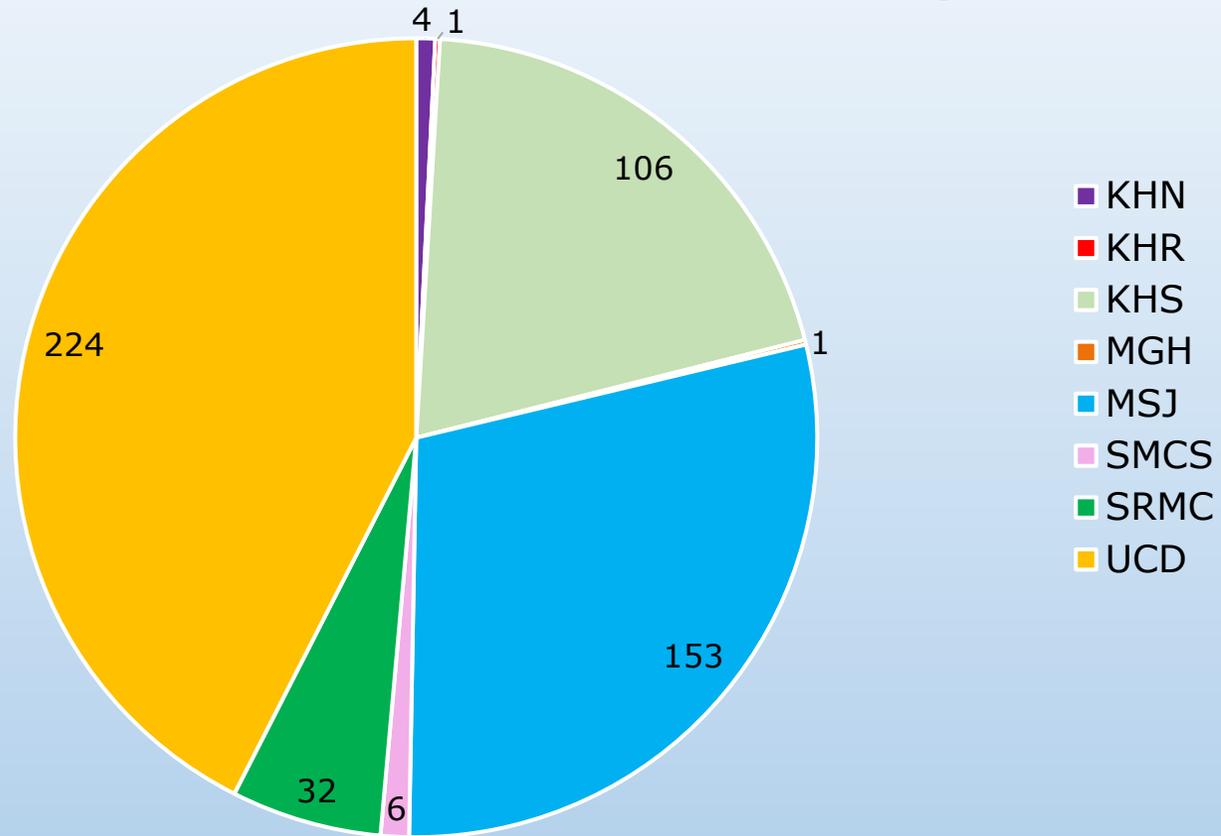


CEMSIS EMS Data

Trauma Review Committee



EMS Transported Patients Meeting Trauma Triage Criteria- 2023 2Q



CEMSIS EMS Data



Review of Positive Trauma Triage Criteria to Non-Trauma Hospital – 2023 2Q

Documented Trauma Triage (Drop down box)	Findings (ePCR Narrative)
•All Penetrating Injuries	•GSW (+) TTC, Transported to MSJ (Documentation Error)
•Death in Same Passenger Compartment	•MCI (+) TTC, Instructed to SMC by the Disaster Control Facility
•Death in Same Passenger Compartment	•MVA (+) TTC, Instructed to SMC by the Medical Control Facility
•Motorcycle Crash > 20 MPH	•Motorcycle Crash (+) TTC, Cleared by Med Control for MGH
•All Penetrating Injuries	•Puncture Wounds/Dog Bite (-) TTC
•Auto Vs Pedestrian/Bicyclist Thrown	•MVA, Patient Request for SMCS (-) TTC
•Fall Adult > 20ft	•Ground Level Fall (-) TCC
•Fall Adult > 20ft	•Ground Level Fall with Laceration to the Face (-) TTC
•Pelvic Fracture	•Ground Level Fall with Possible Hip Dislocation (-) TTC
•Pelvic Fracture	•Ground Level Fall with Possible Hip Dislocation (-) TTC
•Resp Rate < 10 or > 29 RR or Need for Ventilatory Support	•Ground Level Fall (-) TTC
•Resp Rate < 10 or > 29 RR or Need for Ventilatory Support	•Ground Level Fall (-) TTC

CEMSIS EMS DATA



Shock Index Classification for EMS Transported Patients with a Negative Trauma Triage Criteria 2023 2Q

Shock Index Classification	Value
No Shock (< 0.6)	1112
Moderate Shock (≥ 0.6 to < 1.0)	2240
Severe Shock ($1.0 \leq$)	214
No Shock Value	24
Total	3590

CEMSIS EMS Data



Outcome of Field TXA Patients 2023- 1Q and 2Q

Field TXA Patient	Field Blood Pressure	Destination Blood Pressure	Blood Products Received	Destination TXA Administered	VTE/PE Present
Patient 1	80/30	108/65	Yes	Yes	No
Patient 2	No Documentation	104/91	Yes	No	No
Patient 3	No Documentation	CPR	No	No	No
Patient 4	65/50	66/P	Yes	Yes	Yes-PE
Patient 5	0	90/P	Yes	No	No
Patient 6	90/40	90/P	Yes	No	No
Patient 7	80/40	UTA	Yes	No	Yes-PE
Patient 8	181/105	162/94	No	No	No
Patient 9	74/45	102/64	Yes	No	No
Patient 10	86/58	66/35	Yes	No	No
Patient 11	70/37	90/p	No	No	No
Patient 12	70/60	80/P	Yes	Yes	No

CEMSIS and Hospital Data

Hospital Data - County of Origin Out of Area vs Sacramento County

Hospital	Out of Area	Sacramento County	Unknown	Total
KHS	13	132	14	159
MSJ	23	361	36	420
SRMC	0	277	0	277
UCD	333	430	333	1096

Patient Registry and Hospital Data

