

Contra Costa County EMS Agency



2015 Trauma System Plan Status Report

Contra Costa EMS Agency
1340 Arnold Drive, Suite 126
Martinez, California 94553
(925) 646-4690
Submitted: October 25, 2016




CONTRA COSTA
HEALTH SERVICES
Emergency Medical Services

SUMMARY OF TRAUMA PLAN STATUS REPORT

Developed in 1985, Contra Costa County's trauma system continues to serve the residents and visitors of Contra Costa County with a single Level II trauma center. Volume for 2015 was significantly higher than in previous years, attributed to increased prehospital provider education and adherence to trauma triage guidelines. There were no notable changes for 2015.

Organizational Structure

The Contra Costa County trauma system is an integral part of the EMS. The EMS Agency, a division of Contra Costa Health Services, is the Local EMS Agency (LEMSA) as designated by the Board of Supervisors. LEMSA staff include the EMS Director, EMS Medical Director, EMS Programs Coordinator, Emergency Preparedness Manager, seven Prehospital Care Coordinators (nurse or paramedic), and five support staff.

John Muir Medical Center was designated as a trauma center by the County in May 1986, following a request for proposal process as the County's sole Level II Trauma Center. John Muir's designation was renewed in May 1992, following a second request for proposal process providing an additional opportunity for hospitals to seek trauma center designation. The term of the existing contract extends through May 2, 2021 with conditional automatic renewal to 2031.

Although John Muir is the county's sole designated trauma center, the County also recognizes UCSF Benioff Children's Hospital of Oakland as an Alameda County designated Level I Trauma Center with specialized capability to care for pediatric trauma. The LEMSA has established mechanisms to assure that most pediatric trauma is transported directly to Children's Hospital.

The LEMSA is responsible for overall trauma system monitoring, quality improvement, and oversight of administration of the trauma center designation contract. The established trauma system quality improvement process includes a joint Alameda-Contra Costa County Trauma Audit Committee (TAC), a county-level Pre-TAC Committee, and a trauma registry maintained both by John Muir and by the County EMS Agency.

Trauma Injury Prevention Program

The John Muir Injury Prevention Program has received National Awards of Recognition for its programs and service to the community. John Muir Trauma Services has reached over 20,000 Contra Costa residents directly. In 2015, John Muir continued to implement and improve Trauma Services' Injury prevention/ intervention projects of 2010: *Beyond Violence and Alcohol Screening and Brief Intervention for High Risk Drinking Behavior*. Described below, the following projects continued in 2015:

Beyond Violence

Modeled after Highland Hospital's "Caught in the Crossfire," "Beyond Violence" is aimed at reducing retaliation and re-injury to trauma patients, ages 15-25 years that result in street violence. The program is a collaborative project between John Muir Health, Contra Costa County Health Services, Richmond's Office of Neighborhood Safety, One Day at a Time, and the Williams Group.

Alcohol Screening and Intervention for High Risk Drinking Behavior

A plethora of research has shown a strong correlation between alcohol use and risk for injury. Evidence has also shown that when at-risk drinking behavior is addressed through even a brief intervention with a health care provider, attitudes and behaviors around alcohol use can

change, effectively decreasing an individual's risk for injury. Aimed at trauma in-patients, John Muir's goal is to screen and intervene with eligible patients prior to discharge. In 2015, 80% of eligible patients were screened and intervention took place.

Childhood Occupant Protection

The primary goal of the Child Passenger Safety Program is to educate children ages 0-15 years, parents, and other care givers in the proper use of child safety restraints. Under the leadership of Carol Powers, the fitting stations and drive-through clinics of the John Muir Health Child Safety Coalition have been revitalized. There are presently 13 member agencies of the Coalition which include police and fire departments and community-based organizations throughout Contra Costa County. Since 2009, the program has provided over 100 new child restraints annually to families in need. In collaboration with John Muir Women's Health Center, the program sponsors a fitting station, which checks over 1,000 car seat installations annually and child passenger safety education program such as "Shopping for a Car Seat."

Occupant Protection for Teens

Although a variety of strategies are used to address this very high-risk population, the largest and most active project, the "Every 15 Minutes" program, is an intense two-day crash scene reenactment aimed at increasing awareness among teens and their parents of the medical, legal, social and financial consequences of drinking and driving. Under the leadership of Sherry Watkins, RN, since 2003, John Muir Health participated in programs at 6 area schools in 2014. Beyond the trauma activation reenactment, John Muir also assists in event planning and the physical (moulage) and emotional preparation of participating students. There are over 50 John Muir nursing volunteers serving the community in this emotionally engaging program.

Child Injury Prevention Network-Bay Area (CIPN)

Founded in 2007 with the aim of bringing together individuals, agencies, and organizations that share a common goal, CIPN has strived to keep children safe from injury through education and outreach in our communities. CIPN is a multidisciplinary group of individuals and agencies crossing county lines committed to building community awareness of injury as a public health priority. Trauma is a major cause of pediatric preventable injury. The group provides networking opportunities, information and data-sharing, and offers individual expertise in various areas in injury prevention. Contra Costa and Alameda counties partner with UCSF Benioff Children's Hospital of Oakland to support network activities.

Contra Costa County Pediatric and Neonatal Disaster and Medical Surge Network

This is an informal "grassroots" network of pediatric, neonatal, emergency care, and disaster professionals from all disciplines, working to support Pediatric and Neonatal Surge Preparedness efforts in our communities. There are no costs or fees. The only requirement is a willingness to participate with like-minded colleagues. A listserv connects participants

with ideas, information, resources, and strategies for supporting regional pediatric surge and disaster preparedness on the local, regional and state level. It is anticipated that in a major earthquake, more than 380 pediatric trauma victims will require care in Contra Costa County alone. The Coalition has inspired locals to engage in statewide efforts to support disaster preparedness for infants and children throughout California and regularly reports activities to the EMSAAC Disaster Committee and State EMS for Children Technical Advisory Committee.

2015 Trauma System Data

Helicopter Utilization Report - 2015

Contra Costa Patients Transported by Helicopter¹

Origin	2012		2013		2014		2015	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%
TOTAL	280		252		197		156	
East County	173	62.0%	124	49.0%	89	45%	70	44.9%
West County	82	29.0%	98	39.0%	67	34%	59	37.9%
South County	10	4.0%	20	8.0%	18	9%	10	6.4%
Central County	15	5.0%	10	4.0%	23	12%	17	10.8%

Source: Data provided to LEMSA by helicopter provider agencies.

Helicopter Transports Originating Within Contra Costa by Provider Agency¹

Provider	2012		2013		2014		2015	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%
TOTAL	280		252		197		156	
CALSTAR	163	58.0%	145	58.0%	108	55%	64	41.0%
REACH	114	41.0%	103	41.0%	84	43%	77	49.4%
CHP	3	1.0%	4	1.0%	5	2%	15	9.6%

Source: Data provided to LEMSA by helicopter provider agencies.

Helicopter Transports by Destination

Provider	2012		2013		2014		2015	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%
TOTAL	280		252		197		156	
John Muir Health	215	77.0%	192	76.0%	156	79.0%	111	71.1%
Children's	40	14.0%	38	15.0%	22	11.0%	29	18.6%
Other/Unknown	25	9.0%	22	9.0%	19	10.0%	16	10.3%

Source: Data provided to LEMSA by helicopter provider agencies.

¹ All transports originated within Contra Costa County.

Helicopter Transports by Patient Assessment²

Provider	2012		2013		2014		2015	
	Pts	%	Pts	%	Pts.	%	Pts.	%
TOTAL	280		252		197		156	
Trauma	266	95.0%	233	92.0%	182	92.0%	150	96.1%
Burn	6	2.0%	10	4.0%	5	3.0%	2	1.3%
Other	8	3.0%	9	4.0%	10	5.0%	4	2.6%

Source: Data provided to LEMSA by helicopter provider agencies.

Helicopter to Trauma Center Transports by Age and Severity (Major Trauma Victim “MTV”)

Origin	2012		2013		2014		2015	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%
TOTAL	266		233		197		126	
Adult	228	85.7%	193	82.8%	166	84.3%	104	82.5%
MTV (ISS > 15)	86	38.0%	55	30.0%	58	35.0%	47	45.2%
Non-MTV (ISS < 15)	139	62.0%	135	70.0%	91	55.0%	57	54.8%
Unknown	0	0%	3	1.0%	17	10.0%	0	0%
Pediatric	38	14.3%	40	17.2%	31	15.7%	22	17.5%
MTV (ISS > 15)	8	21.0%	6	15.0%	4	13.0%	5	22.7%
Non-MTV (ISS < 15)	30	79.0%	32	80.0%	18	58.0%	17	77.3%
Unknown	0	0%	2	5.0%	9	29.0%	0	0%

Source: Data from the Trauma Registries at John Muir Walnut Creek, Children’s Hospital, Eden Medical Center, and UC Davis Medical Center.

² All transports originated within Contra Costa County.

Base Hospital Contact Report - 2015

Base Hospital Activity Summary by Age Distribution

	2012		2013		2014		2015	
	#	%	#	%	#	%	#	%
Total Base Contacts	3,193		2,992		2,878		3,978	
Daily Average	8.7		8.2		7.9		10.9	
Adult Patients	2979	93%	2633	88%	2622	91%	3,675	92.4%
Pediatric Patients (age < or = 14)	214	7%	186	6%	138	5%	215	5.4%
Unknown			173	6%	118 ³	4%	88	2.2%

Source: Data provided to LEMSA by John Muir Walnut Creek.

Base Hospital Activity Summary by Medical Condition

	2012		2013		2014		2015	
	#	%	#	%	#	%	#	%
Total Base Contacts	3,193		2,992		2,878		3,978	
Trauma	2643	83%	2246	75%	2146	75%	3,132	78.7%
Medical	507	16%	605	20%	487	17%	580	14.6%
Arrest	43	1%	0	0%	33	1%	61	1.5%
Trauma Transfer	0	0	0	0%	212	7%	205	5.2%
Unknown	0	0%	141	5%	0	0%	0	0%

Source: Data provided to LEMSA by John Muir Walnut Creek.

³ John Muir Health System transition to EPIC EMR

Contra Costa Trauma System Report - 2015

On-Scene Triage of Patients within Contra Costa Meeting Field Trauma Criteria

	2012	2013	2014	2015
TOTAL PATIENTS TRIAGED	2,667	2,354	2,146	3,830
Transported to a trauma center	1,320	1,145	1,448*	1,968
John Muir Health, Walnut Creek	1212	1058	1125	1768
Children's Hospital, Oakland	87	74	50	169
Other trauma center	21	13	15	31
Transported to non-trauma center hospitals	1,347	1,209	1,313*	1,862
Contra Costa Regional Medical Center	98	80	76	157
Doctors San Pablo	130	99	55	0
John Muir Health - Concord	159	132	154	235
John Muir Health - Walnut Creek ⁴	251	195	370	307
Kaiser Antioch	114	132	125	204
Kaiser Richmond	90	71	87	239
Kaiser Walnut Creek	176	155	128	277
San Ramon Regional	51	42	28	39
Sutter Delta	209	161	186	244
Out-of-county	26	34	57	127
Unknown	41	108	47	33

Source: Data provided to LEMSA by John Muir Trauma Registry and Emergency Department Log.

*Transition to EPIC Charting at John Muir Walnut Creek.

Undertriage by Year

Type of Triage Error	2012	2013	2014	2015
TOTAL UNDERTRIAGES	43	53	44	39
Undertriage Rate ⁵	3.3	4.6	3.8	2.6
Undertriage % ⁶	3.2	4.4	3.6	2.2
Base Contact for Trauma Destination	16	14	17	11
Triaged by Field Personnel	27	39	27	28

Source: Data provided to LEMSA by John Muir Trauma Registry and Emergency Department Log. Note: Definition of Major Trauma Victim (MTV) modified in 2009 to include only patients with Injury Severity Score (ISS) of greater than 15.

⁴ Patients were triaged as not having major trauma but were transported to John Muir, Walnut Creek as the closest facility.

⁵ Undertriage Rate = number of under triages/number of patients triaged to trauma centers.

⁶ Undertriage Percent = number of under triages/number of patients triaged to receiving facilities.

Trauma Center Time on Trauma By-Pass by Year

2012	2013	2014	2015
0.7%	0.4%	0.8%	0.3%

Source: Data provided to LEMSA from the ReddiNet system.

Trauma Center - Activity Report 2015

All Trauma Patients Seen at the John Muir Trauma Center, Walnut Creek

	All Patients		Field Transports						Hospital Transfers	
			Total		From Contra Costa		From Another County			
	#	%	#	%	#	%	#	%	#	%
TOTAL PATIENTS	1,768		1,472		1,372		100		296	
Adult Total	1,762	99.7%	1,466	99.6%	1,366	99.8%	100	100%	296	100%
Pediatric Total	6	0.3%	6	0.4%	6	0.2%	0	%	0	0%
Injury Type										
Blunt	1,547	87.5%	1,306	88.7%	1,212	88.3%	94	94.0%	241	81.4%
Penetrating	221	12.5%	166	11.3%	160	11.7%	6	6.0%	55	18.6%
Mode of Arrival										
Air Ambulance	132	13.0%	151	10.2%	101	7.4%	50	50.0%	10	3.4%
Ground Ambulance	1,587	84.0%	1,273	86.5%	1,252	91.2%	21	21.0%	285	96.6%
Private Vehicle	47	2.5%	47	3.2%	19	1.4%	28	28.0%	0	0%
Other	1	0.5%	1	0.1%	0	0.0%	1	1.0%	0	0%
County of Injury										
Contra Costa	1,588	95.2%	1,372	96.2%	1,372	100%			216	89.3%
Solano	38	2.3%	28	2.0%			28	51.8%	10	4.1%
Alameda	15	0.9%	9	0.6%			9	16.7%	6	2.5%
Marin	9	0.5%	9	0.6%			9	16.7%	0	0%
Napa	3	0.2%	2	0.1%			2	3.7%	1	0.4%
Sonoma	1	0.1%	1	0.1%			1	1.8%	0	0%
Other	14	0.8%	5	0.3%			5	9.3%	9	3.7%
Injury Severity										
ISS >15 (Major Trauma)	390	22.2%	293	20.1%	265	19.5%	28	28.0%	97	32.9%
ISS <15 (Not Major Trauma)	1,363	77.8%	1,165	79.9%	1,093	80.5%	72	72.0%	198	67.1%
ED Disposition										
Admitted	1,240	70.4%	971	66.0%	892	65.1%	79	79.0%	269	92.8%
Expired	21	1.2%	16	1.1%	15	1.1%	1	1.0%	5	1.7%
Home	446	25.3%	430	29.1%	413	30.1%	17	17.0%	16	5.5%
Transfer	15	0.9%	15	1.0%	14	1.0%	1	1.0%	0	0%
Other	39	2.2%	44	2.8%	37	2.7%	7	7.0%	0	0%

Source: Data provided to LEMSA by John Muir Trauma Registry.

Trauma Center Activity Report

All Trauma Patients Seen at the John Muir Trauma Center, Walnut Creek by Year⁷

	2012	2013	2014	2015
All Patients	1,635	1,538	1,526	1,768
Adult	1,632	1,536	1,524	1,762
Pediatric	2	2	2	6
Injury Type				
Blunt	1,404	1,350	1,337	1,547
Penetrating	229	183	184	221
Unknown	2	0	0	0
Mode of Arrival				
Air Ambulance	301	283	203	132
Ground Ambulance	1,304	1,220	1,283	1,587
Private Vehicle	29	33	38	47
Other	0	1	1	1
County of Injury				
Contra Costa	1,400	1,293	1,346	1,588
Solano	168	160	73	38
Alameda	21	33	23	15
Marin	5	12	7	9
Napa	4	2	1	3
Sonoma	1	1	0	1
Other	22	19	13	14
Unknown	14	0	0	0
Injury Severity				
ISS >15	414	383	390	390
ISS <15	1,219	1,149	1,125	1,363
Unknown	2	0	0	
Major Trauma	25.3%	25%	26%	22.2%
Not Major Trauma	74.7%	75%	74%	77.8%
ED Disposition				
Admitted	1,182	1,164	1,129	1,240
Expired	19	11	9	21
Home	361	292	345	446
Transfer	21	14	19	15
Other	30	30	13	39
Unknown	22	0	0	0

Source: Data provided to LEMSA by John Muir Trauma Registry and Emergency Department Log.

⁷ Includes patients transported from Contra Costa County, from neighboring counties, and from hospitals within/outside of Contra Costa.