



## THE ORANGE COUNTY TRAUMA SYSTEM: 2018

ORANGE COUNTY HEALTH CARE AGENCY

EMERGENCY MEDICAL SERVICES

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Tammi McConnell, RN, MSN  
EMS Division Manager

Sam J. Stratton, MD, MPH  
EMS Medical Director

Carl Schultz, MD, FACEP  
EMS Associate Medical Director

Michael DeLaby, RN, MSN, EMT-P  
EMS Assistant Administrator

David Johnson, RN  
EMS Facilities/Specialty Coordinator

Vicki Sweet, RN, MSN  
EMS Advanced Life Support/CQI Coordinator

Laurent Repass, NRP  
EMS Information Systems Chief

## EXECUTIVE SUMMARY

The Orange County Trauma System is mature and stable. Throughout the County, both adult and pediatric trauma victims have access to specialized trauma care with transport times that are well within national standard limits. The greatest risk for trauma care in Orange County is loss of an adult trauma care center.

The Orange County Trauma System is based on emergency medical services (EMS) field identification and ambulance transport of injury victims who require specialized surgical-medical services to five County designated trauma centers:

- UC, Irvine, Medical Center
- Orange County Global Medical Center
- Mission Hospital Regional Medical Center, Mission Viejo
- Children's Hospital of Orange County (specialized pediatric trauma)
- Long Beach Memorial Medical Center

Trauma victims are transported under "real-time" direction of six Orange County Base Hospitals to any of these trauma centers by paramedics representing one of twelve 911-dispatched, fire department based advanced life support emergency medical service providers.

Pediatric trauma victims (age under 15 years-old) represent a special population in the Orange County Trauma System. Pediatric trauma victims have timely access to services throughout the County. Data collected for this report show that, at this time, Orange County has adequate pediatric trauma care resources.

Adult trauma services are accessible from throughout the County. When considering national norms and standards, adult trauma centers in Orange County are high volume service providers. Reputable research (peer-reviewed) has supported an association with higher individual trauma center volume of trauma cases and better quality care when compared to low volume centers.

Considering the current trauma system, loss of an adult trauma center would severely strain the remaining trauma system components. The loss of an adult trauma center would overwhelm remaining trauma centers and negatively alter field emergency transport times and resources. Loss of an adult trauma center is the highest risk for disruption and damaging the Orange County Trauma System.

The absorption of a new trauma center would add excess capacity to the current system yet significantly draw volume from existing trauma centers. As noted above, low trauma case volume at an existing trauma center would be a potential challenge for maintaining trauma care quality. Further, economic instability secondary to loss of trauma cases for any one of the existing centers may result in a decision to close that trauma center.

## BACKGROUND

Orange County Emergency Medical Services (OCEMS), a division of the Health Care Agency, is responsible for (“shall establish”) policies and procedures to assure medical control of the local EMS system (California Health/Safety Code, Div 2.5, sec 1797.220). Included in OCEMS responsibilities are the designation of specialty care facilities to which paramedics and ambulances transport emergency patients. Designation responsibilities involve identification of trauma centers and oversight for the countywide trauma system (California Health and Safety Code Div 2.5, sec 1798.170). The Trauma System administered by the OCEMS Agency is mature and was established in 1980. It is supported by five trauma centers: Adult/Pediatric centers at UCI Medical Center, Mission Hospital Regional Medical Center- Mission Viejo, and Orange County Global Medical Center, and a pediatric trauma center at Children’s Hospital of Orange County. OCEMS has also identified Long Beach Memorial Hospital Trauma Center as part of the County trauma system.

## OBJECTIVE

The objective for this report is to present an evaluation of the structure of the Orange County Trauma System.

## METHODOLOGY

Using U.S. national standards, the following information is presented in this report:

Orange County Trauma System Evaluation Data Elements:

- Population of Orange County (overall and distribution)
- Emergency (911-dispatch call) Transport Time from Scene to Trauma Center
- Trauma Patient Volume/Injury Acuity (overall and distribution)
- EMS Ambulance Diversion and Patient Offload times

Available cost data for operation of a trauma center is outdated (2003, 2005) and likely not applicable to 2018 due to recession beginning in 2008 and health economic changes related to the U.S. Affordable Care Act. Estimated average cost per trauma victim treated in Orange County is \$30,000 not including rehabilitation expenses (communication to committee in Orange County Trauma Operations Committee, 2017). Additionally, there is unrecovered cost for the County government in maintaining and over-seeing the Orange County Trauma System.

Not measured, as part of the methodology for this report is the availability of surgical specialist and medical staff required to operate local trauma centers. There is an established lack of vascular surgery and surgical replant (limb reattachment) capability within the Orange County Trauma System.

## RESULTS

### Population:

General rates of population growth or density affect decisions about location and designation of trauma centers. The projected population growth in Orange County is reflected in the following data:

Population of OC in 2010 = 3.02 million  
Population of OC in 2017 = 3.15 million (projected)  
Population of OC in 2020 = 3.23 million (projected)  
Population of OC in 2040 = 3.56 million (projected)

These data demonstrate a rate of growth of less than 1% increase per year (Open Data Network, Orange County Community Indicators 2017 and Orange County Economic Forecast). Assuming a 1% annual growth rate for Orange County in the near future, there is minimal population increase pressure to expand trauma care capacity.

Orange County trauma centers are located in areas of higher population density (further discussed on page 6). This suggests that community access to trauma care is matched to available trauma centers. Planned building projects and available land for development are located in the Southern area of the County, which may increase demand in that area.

The OCEMS system utilizes Base Hospitals to determine trauma center destination for field EMS units that are transporting trauma victims from accident scenes. Base Hospitals are 24/7 on-line radio control points in the OCEMS system that provide immediate, real-time support to all 911-dispatch EMS units. During times of high volume demand in the OCEMS system, Base Hospitals can immediately redistribute trauma cases among the available trauma centers such that any one center is not overwhelmed.

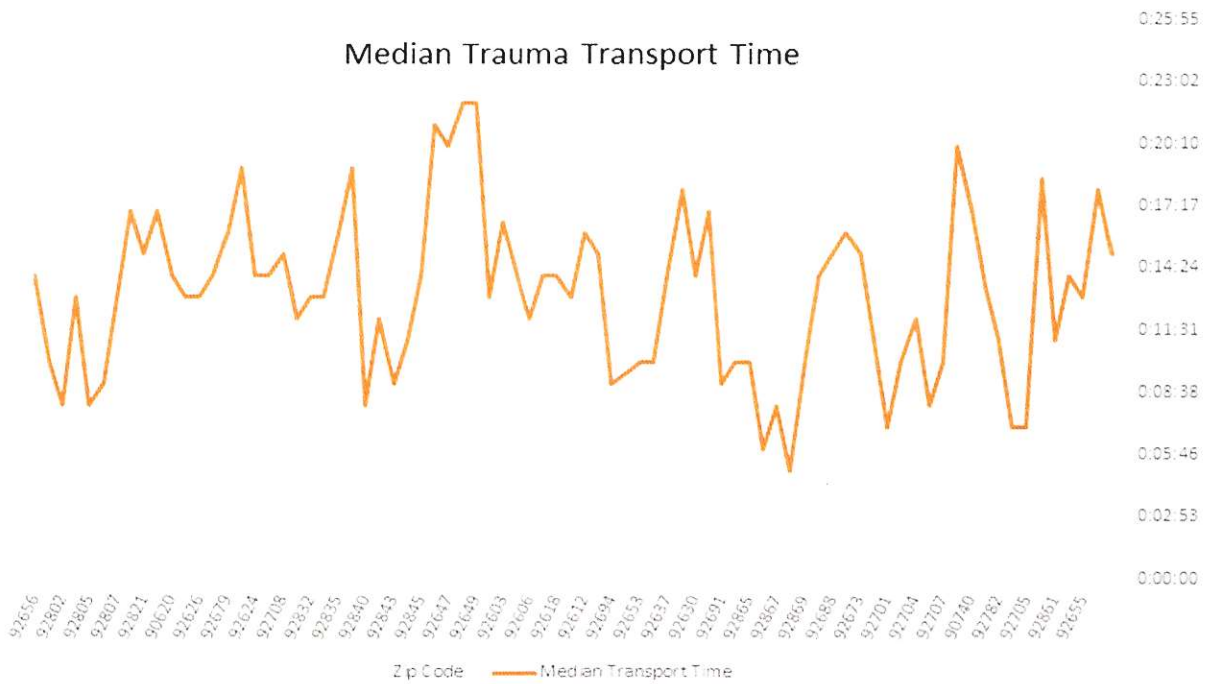
### Transport Times

Transport time is a measure of accessibility of critical medical services within a community. Transport time is defined as the time required an ambulance to transport a critical patient from the scene of an accident to the emergency department of a receiving hospital.

Studies (McCoy et al, 2013; Newgard et al, 2010) have not found urban-area transport times of less than 30 minutes to have a significant impact on trauma victim mortality. National standards for urban-area trauma cases is that victims arrive at a trauma center within a 30-minute transport time (Resources for Optimal Care of the Injured Patient, Committee on Trauma, American College of Surgeons, 2014). Using the urban-area 30-minutes maximum transport time to a designated trauma center, none of the areas of Orange County are beyond the national standard.

## THE ORANGE COUNTY TRAUMA SYSTEM 2018

The following 2017 year-based graph shows 911-dispatch call trauma transport times in zip code areas that overall represent Orange County (see Annex 1 for data on all zip code regions). Median scene transport to a trauma center time for 911 vehicles is 13 minutes with a range of 5 minutes to 22 minutes.



Data Source: OC-MEDS Database

### Volume and Injury Acuity:

A trauma patient is defined by policy in Orange County as someone with significant injury that may result in loss of life or extremity (see Annex 2: Orange County EMS Policy # 310.30). The Orange County Field Trauma Triage policy is based on standards published by the U.S. Centers for Disease Control and Prevention and the American College of Surgeons with endorsement by the American College of Emergency Physicians. In Orange County, reports of trauma patients encountered in the field are relayed to an Orange County Base Hospitals for determination of destination, which results in a “Trauma Activation” and confirmation that the case meets trauma criteria and requires trauma center care.

Research evaluating a single trauma center has suggested a bell-shaped curve exists with too small or too large a trauma case volume having a negative impact for outcomes (London JA, et al, 2002).

Trauma center case volume is conceptualized into three major categories:

1. *Trauma Activations*: All injury patients transported under Base Hospital direction to a trauma center that require evaluation by the trauma service.
2. *Trauma admissions*: The subset of trauma activations that are serious enough to require hospitalization for observation or treatment.
3. *Injury Severity Score greater than 15 (ISS > 15)*: The subset of trauma admissions that are most severely injured with high demand for medical care resources.

The Needs-Based Assessment of Trauma Systems (NBATS) tool is suggested by the American College of Surgeons Committee on Trauma as a method for needs assessment of change in trauma system design. These guidelines state:

Minimum Capacity:

At a minimum, a high-level adult trauma center (Level 1) should have at least 1,200 trauma admissions with 240 of those admissions having an ISS > 15.

Maximum capacity:

According to the NBATS tool, an adult trauma center receiving more than 4,000 to 5,000 trauma activations a year and admitting more than 500 patients with an ISS > 15 may be at maximal capacity.

Note that the volume figures provided refer to adult and adult/pediatric combined trauma centers and are not valid for pediatric trauma centers such Children’s Hospital of Orange County.

The institutional volume and acuity numbers for the trauma centers located in Orange County are,

Orange County Global Medical Center (2017 site visit data):

Total trauma activation visits:	2887 patients
Trauma admits:	2619 patients
Trauma admits with ISS > 15:	304 patients

Mission Hospital Regional Medical Center (2017 site visit data):

Total trauma activation visits:	3083 patients
Trauma admits:	1967 patients
Trauma admits with ISS > 15:	262 patients

UC Irvine Medical Center (2015 site visit data):

Total trauma activation visits:	3786 patients
Trauma admits:	1827 patients
Trauma admits with ISS > 15:	423 patients

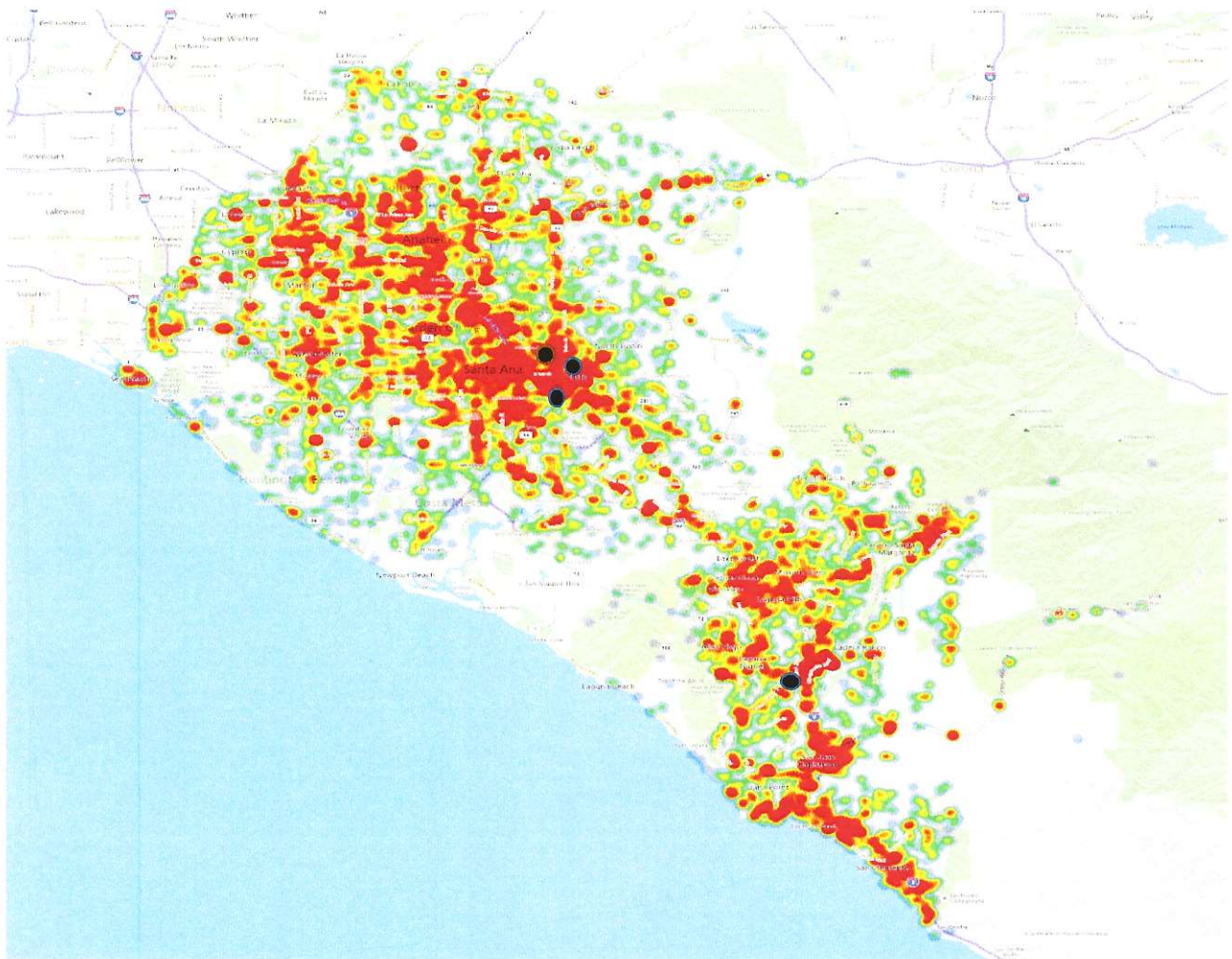
## THE ORANGE COUNTY TRAUMA SYSTEM 2018

Children's Hospital of Orange County (2017 site visit data):

Total pediatric trauma activation visits:	488 patients
Trauma pediatric admits:	452 patients
Trauma pediatric admits with ISS > 15:	21 patients

All Orange County trauma centers are within volume and injury severity targets set by the American College of Surgeons.

The following figure shows the location of Orange County trauma centers and field (911) trauma activations in the form of a heat map. The figure combines both adult and pediatric trauma field activations. Red colored areas indicate the highest numbers of trauma events, with yellow intermediate, blue-green significant transports, and uncolored areas with the least amount of events.



Data Source: OC-MEDS Database

Black dots shown in the figure are Orange County trauma center locations, with  
Farthest North = UCIMC  
East of UCIMC = CHOC  
South of UCIMC and CHOC = OC Global  
Farthest South = Mission Hospital (MV)

Trauma volume data and heat mapping show a distribution of trauma center resources and areas of trauma activation occurrence distributed along major transportation corridors. Of note is that just below 90% of trauma that occurs in Orange County is blunt in origin, caused by auto accidents, falls, and similar types of mechanisms as opposed to penetrating trauma that occurs with gunshot wounds, stabbing, and similar mechanisms.

Diversion Time /Ambulance Patient Offload Time:

When a hospital is on diversion, that hospital is beyond capacity to provide adequate medical services for further incoming patients. Hospitals in Orange County have the option to declare that they are on diversion status when it is unsafe for 911 or non-emergency ambulances to transport patients to their emergency department or trauma service due to being overwhelmed with patients or because of internal disruption of operations within the hospital.

The Orange County Emergency Medical Care Committee has established upper limits for acceptable annual total diversion time by designated trauma centers at 2% and for Emergency Receiving Centers at 6%. Elevated diversion times suggest that the institution is reaching a volume threshold that is unsafe for patients. The reported diversion times for Orange County trauma centers along with corresponding emergency department diversion are listed below:

Trauma Center Diversion Times 10/2016 to 9/2017: Metric =  $\leq 2\%$

Mission Hospital, Mission Viejo:	65 hrs, 46 mins (0.8%)
Orange County Global Medical Center:	75 hrs, 52 mins (0.9%)
UC Irvine Medical Center:	142 hrs, 38 mins (1.6%)
Children’s Hospital of Orange County:	0 hrs, 0 mins (0%)

Emergency Department Diversion Times 10/2016 to 9/2017: Metric =  $\leq 6\%$

Mission Hospital, Mission Viejo:	332 hrs, 27 mins (3.8%)
Orange County Global Medical Center:	154 hrs, 33 mins (1.8%)
UC Irvine Medical Center:	680 hrs, 0 mins (7.8%)
Children’s Hospital of Orange County:	0 hrs, 0 mins (0%)

Ambulance Patient Offload Time (APOT) is defined as the time taken from when an ambulance arrives at a hospital emergency department to the time the care of the patient has been transferred to the hospital medical staff and placed into a hospital bed. By California state standard, APOT time is measured at the 90<sup>th</sup> fractal, meaning that for 90% of occurrences, the reported APOT time is less or the same as that reported. Hospitals that are overwhelmed with patient volume or that are holding admissions in the emergency department will typically have prolonged APOT times, which results in delays for ambulances to return to service and respond to the next emergency call.



Emergency Department Ambulance Patient Offload Times for Trauma Centers:

Mission Hospital, Mission Viejo:	within 36 minutes 90% of time
Orange County Global Medical Center:	within 26 minutes 90% of time
UC Irvine Medical Center:	within 29 minutes 90% of time
Children’s Hospital of Orange County:	within 19 minutes 90% of time

Trauma victims take priority over almost all other emergencies (excluding myocardial infarction or heart attack and stroke victims). A hospital overloaded with trauma will result in delayed medical care for the majority of emergency cases presenting to that hospital. Use of emergency department beds for observation of trauma victims and use of intensive care unit beds for stabilization of trauma patients has impact on hospital capacity to provide services and when a hospital is overwhelmed (trauma cases or otherwise) this problem is illustrated, in part, by elevated diversion and APOT times.

**DATA ANALYSIS**

The population of Orange County is stable and projected to increase at slightly less than 1% a year in the next decade. A steady growth in system trauma activations directly proportional to projected population growth indicates that there will be a 1% annual increase in demand for trauma services or a total 10% increase in demand at the end of a decade. Trauma centers in Orange County are located in areas of high population density and near major transportation corridors. During times of high volume demand, the Orange County Base Hospitals can direct trauma victims to centers that are less impacted.

Field transport times from an accident scene to a trauma center are acceptable in Orange County when compared to national transport time standards for urban population centers. While there are hypothetical arguments surrounding traffic delays within the County, current data fails to support a problem with prolonged transport times within the County.

Based on national standards, trauma volume for adult patients is high at UCI Medical Center and acceptable at Mission Hospital Regional Medical Center and Orange County Global Medical Center. An issue of concern is the number of patients that arrive at an Orange County Trauma Center as a field activation that do not require hospitalization and rather are held in the emergency department area and discharged (1,959/year for UCI, 1,116/year for Mission, 268/year for Orange County Global). These non-admitted injury victims represent 34.5% of the cases transported to the adult trauma centers. While considered an acceptable over-triage rate, it is likely that developing field trauma triage protocols that are more selective than the currently used national guidelines could reduce this 34.5%.

There is excess pediatric trauma capacity in the system when considering the activations transported to Children's Hospital. In addition to Children's Hospital, the County adult trauma centers are capable of providing pediatric trauma care.

While not solely specific to the trauma system, trauma activations do directly affect hospital diversion and APOT times. Because trauma cases "bump" other emergency cases, those emergency departments that are already near capacity or near overwhelmed may become unsafe due to incoming trauma and require diversion status to stabilize. Diversion is a declaration by a hospital that it has become unsafe for incoming patients and most would consider that such a situation is unsafe for those patients already being treated or waiting to be seen. Each of the three Orange County adult trauma centers have required some diversion during the past year, but the diversion time for UCI (total of 28.3 days-time for the year) has been above the Orange County accepted standard and likely shows an impact that is partly due to high trauma volume. Associated with emergency department diversion is the amount of time that patients are observed in an emergency department bed while a decision is being made by the trauma service as to admission to the hospital or discharge from the emergency department. Conservatively estimating that this average observation time is three hours per patient, within the trauma system in Orange County during the time frame studied, there would be an estimated 10,029 hours (417.9 days) of emergency department bed time availability consumed for trauma observation.

As with diversion, APOT times directly affect ambulance availability and safety for a community. All three adult trauma centers have APOT time that are in the median range for Orange County hospitals, median = 25 minutes 90% of the time (25%, 75% IQR 20, 33.5).

## CONCLUSION

Limited land for housing development, high costs for housing, high California tax rates, and transportation limitations will limit population growth in Orange County. The current population is served by the existing trauma system and projected population growth is low. The greatest risk for the Orange County Trauma System is loss of an adult trauma center.

Data taken directly from the Orange County EMS system database system does not show current problems with transport from scene to trauma center times.

Adult trauma volume is high but managed by the three adult trauma centers. Pediatric trauma capacity within the County is good. Adults and children have access to EMS transport and trauma center services throughout the County.

One trauma center has excessive emergency department diversion time that may partly be the result of trauma volume. APOT times for trauma centers in the County are within the median and range for all hospitals.

**HYPOTHETICAL PROJECTIONS**

Assuming steady population and uniform distribution of trauma activations:

Addition of an adult trauma center in the northern part of Orange County would result in the following volume distribution projections:

Orange County Global Medical Center  
 Total trauma activation visits: 1924 patients  
 Trauma admits: 1746 patients  
 Trauma admits with ISS > 15: 203 patients

UC Irvine Medical Center  
 Total trauma activation visits: 2524 patients  
 Trauma admits: 1218 patients  
 Trauma admits with ISS > 15: 282 patients

New Designated Trauma Center, Northern County  
 Total trauma activation visits: 2224 patients  
 Trauma admits: 1482 patients  
 Trauma admits with ISS > 15: 242 patients

Addition of an adult trauma center in the southern part of Orange County would result in the following volume distribution projections:

Orange County Global Medical Center  
 Total trauma activation visits: 1924 patients  
 Trauma admits: 1746 patients  
 Trauma admits with ISS > 15: 203 patients

Mission Hospital Regional Medical Center  
 Total trauma activation visits: 2055 patients  
 Trauma admits: 1311 patients  
 Trauma admits with ISS > 15: 175 patients

New Designated Trauma Center, Southern County  
 Total trauma activation visits: 1989 patients  
 Trauma admits: 1529 patients  
 Trauma admits with ISS > 15: 188 patients

Loss of a current adult trauma center would result in the following annual volume redistributions:

Total trauma activations visits at 3 trauma centers: 9,756\*

Loss of one trauma center re-distributes 3,252 patients

Additional 1,626-trauma activation visits per remaining trauma center

Total trauma admits at three trauma centers: 6,413\*

Loss of one trauma center re-distributes 2,137 patients

Additional 1,069 trauma admits per remaining trauma center

Total trauma admits with ISS >15 at three trauma centers: 989\*

Loss of one trauma center re-distributes 329 patients

Additional 165 trauma admits with ISS >15 per remaining trauma center

\*Annual site visit data from adult trauma centers, page 7

## RESOURCES

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Newgard CD, Schmicker RH, Hedges JR, et al: Emergency medical services intervals and survival in trauma: assessment of the “golden hour” in a North American prospective cohort. *Ann Emerg Med* 2010;55:2235-246.

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## ANNEX # 1

### Trauma Transport Time for Individual ZIP Codes

<b>Scene Incident City</b>	<b>Zip Code</b>	<b>Median Transport Time</b>	
Buena Park	90620	0:14:00	
Buena Park	90621	0:13:00	
LA PALMA	90623	0:15:00	
Cypress/Los Alamitos	90630	0:19:00	
Fullerton/La Habra	90631	0:19:00	
Stanton	90680	0:13:30	
Los Alamitos	90720	0:17:00	
Seal Beach	90740	0:17:00	
Irvine	92602	0:13:00	
Irvine	92603	0:16:30	
Irvine	92604	0:14:00	
Irvine	92606	0:12:00	
Lake Forest	92610	0:18:00	
Irvine	92612	0:16:00	
Irvine	92614	0:14:00	
University of California at Irvine	92617	0:18:30	
Irvine	92618	0:14:00	
Irvine	92620	0:13:00	
DANA POINT	92624	0:14:00	
Costa Mesa	92626	0:13:00	
Costa Mesa	92627	0:14:00	
DANA POINT	92629	0:14:00	
Lake Forest	92630	0:14:00	
LAGUNA WOODS	92637	0:14:00	
HUNTINGTON BEACH	92646	0:21:00	
HUNTINGTON BEACH	92647	0:20:00	
HUNTINGTON BEACH	92648	0:22:00	
HUNTINGTON BEACH	92649	0:22:00	
LAGUNA BEACH	92651	0:09:30	
Laguna Hills	92653	0:10:00	
Westminster/Midway City	92655	0:13:00	
ALISO VIEJO	92656	0:14:00	
San Clemente	92672	0:16:00	
San Clemente	92673	0:15:00	
San Juan Capistrano/Ortega Hwy	92675	0:11:00	
Santiago/Silverado/Modjeska/Trabuco Canyon	92676	0:20:00	
Laguna Niguel	92677	0:10:00	
Coto De Caza/RSM/Trabuco Canyon	92679	0:16:00	
WESTMINSTER	92683	0:14:00	
Rancho Santa Margarita/Las Flores	92688	0:15:00	
Mission Viejo	92691	0:09:00	
MISSION VIEJO	92692	0:10:00	
Ladera Ranch	92694	0:09:00	
SANTA ANA	92701	0:07:00	



SANTA ANA	92703	0:10:00	
SANTA ANA	92704	0:12:00	
Tustin/Redhill Lemon/Cowan Heights/Santa Ana	92705	0:07:00	
SANTA ANA	92706	0:08:00	
SANTA ANA/John Wayne Airport	92707	0:10:00	
Fountain Valley	92708	0:15:00	
Tustin/Redhill Lemon/Cowan Heights	92780	0:07:00	
Tustin	92782	0:11:00	
ANAHEIM	92801	0:10:00	
ANAHEIM	92802	0:08:00	
ANAHEIM	92804	0:13:00	
ANAHEIM	92805	0:08:00	
ANAHEIM	92806	0:09:00	
ANAHEIM	92807	0:13:00	
ANAHEIM	92808	0:17:00	
Brea	92821	0:15:00	
Brea	92823	0:17:00	
FULLERTON	92831	0:12:00	
FULLERTON	92832	0:13:00	
FULLERTON	92833	0:13:00	
FULLERTON	92835	0:16:00	
GARDEN GROVE	92840	0:08:00	
GARDEN GROVE	92841	0:12:00	
GARDEN GROVE	92843	0:09:00	
GARDEN GROVE	92844	0:11:00	
GARDEN GROVE	92845	0:14:00	
VILLA PARK	92861	0:11:00	
Orange	92865	0:10:00	
Orange	92866	0:06:00	
Orange	92867	0:08:00	
Orange	92868	0:05:00	
Orange Park Unincorporated	92869	0:10:00	
Placentia	92870	0:14:00	
Yorba Linda	92886	0:18:00	
Yorba Linda	92887	0:15:00	

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## ANNEX # 2

Trauma Triage Criteria: OCEMS Policy 310.30



## TRAUMA TRIAGE

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### I. AUTHORITY:

*Health & Safety Code, Division 2.5, Sections 1797.258, 1798, 1798.160-1798.169, and 1798.2;  
California Code of Regulations, Title 22, Division 9, Chapter 7.*

### II. POLICY:

This policy identifies the types of injuries and situations that require transport of trauma victims to an Orange County EMS (OCEMS) designated Trauma Center (TC).

### III. DEFINITION OF A TRAUMA VICTIM ("MEETS TRAUMA CRITERIA"):

A trauma victim is someone who has a blunt or penetrating injury with the presence of any of the following:

#### A. Abnormal Vital Signs:

- Glasgow Coma Score (GCS) less than 14 (in the presence of head injury)
- RESPIRATION:  
Adult/Adolescent/ Children<sup>1</sup>: less than 12 per minute OR greater than 30 per minute
- SYSTOLIC BLOOD PRESSURE:  
Adult/Adolescent: less than 90  
Children<sup>1</sup>: less than 80

Note #1: A child is defined as those ages 14 years-old and younger.

#### B. Injuries:

- Penetrating or open injury of the head
- Depressed skull fracture
- Blunt head injury with loss of consciousness greater than 5 minutes
- Penetrating injury to the neck, chest, abdomen, back, or groin
- Penetrating injury to extremity above elbow or knee
- Extremity with poor circulation or without a pulse
- Paralysis or numbness of arm or leg
- Suspicion of spinal cord injury
- Flail chest
- Seat belt bruising or abrasion of neck, chest or abdomen
- Abdominal injury, blunt, with tenderness of 2 or more quadrants
- Fracture of two or more long-bones (femur, humerus)
- Pelvic pain or deformity on palpation
- Amputation above the wrist or ankle
- Crushed, degloved, or mangled extremity (excluding only fingers or toes)

#### C. Mechanism of Injury

- Falls
  - Adult/Adolescent: greater than 15 feet (one story is equal to 10 feet)<sup>2</sup>
  - Children<sup>1</sup>: greater than 10 feet or 2-3 times the height of the child<sup>2</sup>
  - Falls from a galloping horse



**TRAUMA TRIAGE**

Mechanism of Injury (continued)

- High-Risk Auto Crash
  - Passenger space intrusion greater than 12 inches where an occupant (who would be defined as a trauma victim) is sitting or any occupant in a passenger seat when there is greater than 18 inches intrusion at any site within the passenger space.<sup>2</sup>
  - Ejection (partial or complete) from automobile.
  - Person who is in same passenger compartment in which a trauma death has occurred.
- Dive and shore break injuries with suspected spinal cord injury
- Auto vs. Pedestrian / Bicyclist who is thrown any distance, run-over, or with significant (greater than 20 mph<sup>2</sup>) impact
- Motorcycle Crash greater than 20 mph<sup>2</sup>, including "laying bike down"

Note # 2. Heights, speeds and distances are best estimates

IV. SPECIAL CONSIDERATIONS:

Patients with significant injury and any of the following may benefit from specialized trauma services; contact Base Hospital for destination decision regarding those with injury and:

- Age 75 years-old or greater
- Anticoagulation<sup>3</sup> and bleeding disorders
- End-stage renal disease on dialysis
- Pregnancy greater than 20 weeks
- EMS provider judgment that transport to a TC will benefit the injury victim

Note # 3. Patient is on or states is taking a "blood thinner" or "anticoagulant" excluding aspirin

V. DESTINATION DECISIONS:

Base hospital contact is required for all patients described in this policy. Trauma victim destination is determined by the base hospital.

VI. TRAUMATIC RESPIRATORY AND CARDIOPULMONARY ARREST:

At the discretion of the BH physician, trauma patients presenting with any of the following and for who resuscitation and transport is pursued should be triaged as follows:

- |                                    |                |
|------------------------------------|----------------|
| ● Unmanageable airway              | Triage to PTRC |
| ● Traumatic cardiopulmonary arrest | Triage to PTRC |



**TRAUMA TRIAGE**

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**Approved:**

Sam J. Stratton, MD, MPH  
OCEMS Medical Director

Tammi McConnell, MSN, RN  
OCEMS Administrator

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