County of Orange
Health Care Agency
EMERGENCY MEDICAL SERVICES
405 W. Fifth Street, Suite 301A
Santa Ana, CA 92701

Trauma Plan System Status Report

2019

Reviewed and updated December 2019

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Contains Provider Data for CY 2012-18

2019 ORANGE COUNTY EMERGENCY MEDICAL SERVICES
TRAUMA PLAN SYSTEM STATUS REPORT
December 2019

SUMMARY

One of the first comprehensive systems of care in the United States, Orange County's Trauma System is unique and inclusive with the overall delivery of emergency medical services. Evaluation of the injured patient is viewed as an entire community problem, with four designated hospitals that are committed to trauma care. The Orange County Trauma Care System (Title 22 § 100247) is fully implemented with sufficient capacity to care for all designated trauma patients and demonstrates the maturity of a well-established system that addresses all aspects of trauma care.

In January of 2015, Orange County Emergency Medical Services (OCEMS) designated Children's Hospital of Orange County (CHOC) as a Level II Pediatric Trauma Center (PedTC), adding a fourth designated trauma center along with the three previously designated Trauma Centers (TC's) in Orange County. University of California Irvine Medical Center (UCIMC), Orange County Global Medical Center (OCGMC) previously known as Western Medical Center Santa Ana, Mission Hospital (MH), and Children's Hospital of Orange County (CHOC) along with one Los Angeles County designated hospital, Long Beach Memorial Medical Center (LBMMC), ensure complete county coverage. Orange County Emergency Medical Services (OCEMS) and the trauma centers have a collegial relationship and work collaboratively to provide the highest quality of care for trauma patients.

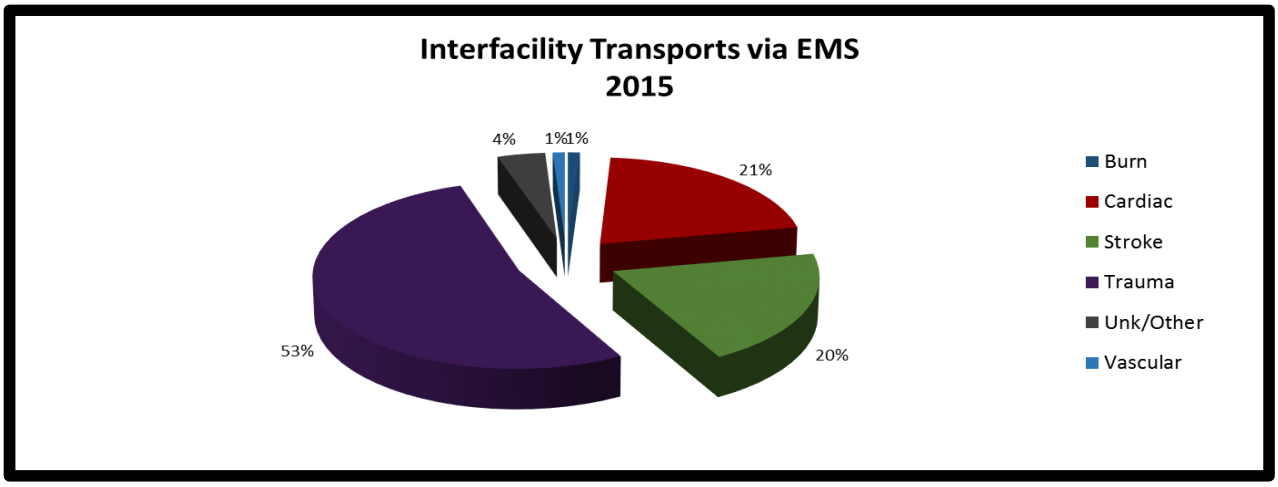
UCIMC, a Level I trauma center and OCGMC, a Level II trauma center receive trauma patients from the northern, western and portions of the central/eastern sections of the county. Mission Hospital, also a Level II trauma center, receives most of its trauma patients from the southern sections of the county (Map, Appendix 1). CHOC, a Level II pediatric trauma center receives pediatric trauma patients from all areas within the county and serves as a regional resource for pediatric trauma patients. In addition, Orange County's Trauma system incorporates UCI, OCGMC and Mission Hospital as trauma centers with capabilities of managing pediatric trauma patients and also serve as trauma centers for pediatric traumas within the county. The following table describes the total number of trauma patients the system cared for from 2012-2018.

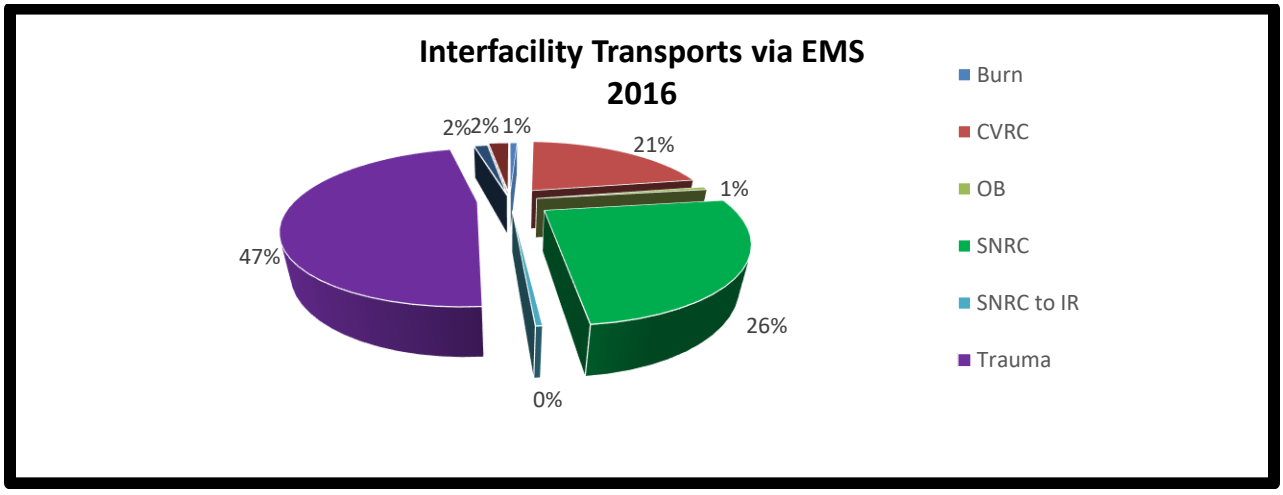
Orange County Trauma	2012	2013	2014	2015	2016	2017	2018
Adult	5500	6100	6000	7250	8307	6610	6607
Pediatric	525	450	400	480	536	858	872
Total	6025	6500	6400	7730	8843	7468	7479

CHANGES

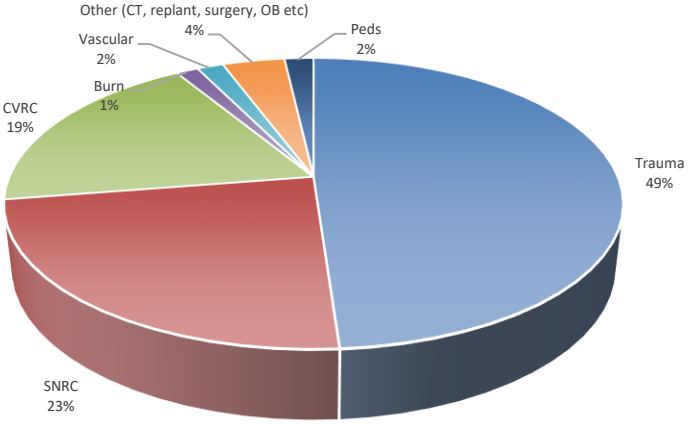
There exists in Orange County an Emergency Receiving Center (ERC) system (Title 22 §100243: Receiving Hospital) that is designed to care for the mild to moderately injured patient. Up until the spring of 2011, mild to moderately injured patients presenting in the prehospital setting could be classified as a Moderate Trauma Victim (MTV). Depending upon the paramedic responding agency, the patient could be transported to an ERC. Once transported to the ERC, the patient would be evaluated/treated and if deemed to be medically necessary, the patient could be secondarily transported to a trauma center, utilizing the 9-1-1 re-triage policy. If the patient was severely injured, the paramedics could designate the patient as a critical trauma victim (CTV) and transport the patient to the nearest TC.

In 2011, Orange County Emergency Medical Services (OCEMS) implemented a revised Field Triage Decision Scheme in response to system-wide identification of under-triage of trauma patient subgroups. The revised Field Triage Decision Scheme fully implements the national standard guidelines developed by the American College of Surgeons and the Centers for Disease Control and Prevention. The use of this trauma triage criterion has led to the majority of patients being accurately and effectively transported to the most appropriate facility. Interfacility transport rates in the past years indicated a decrease in the number of secondary transfers for trauma care. In 2012, there were a total of 440 patients secondarily transferred to trauma centers. While the number of patients secondarily transferred to trauma centers were 353 patients for 2013, 400 patients for 2014, 502 for 2015 467 for 2016, and 567 for 2017. The OCEMS trauma field triage decision scheme was updated in 2015 and again in 2018 based on identified data elements to address system triage needs for the care of the injured patient.

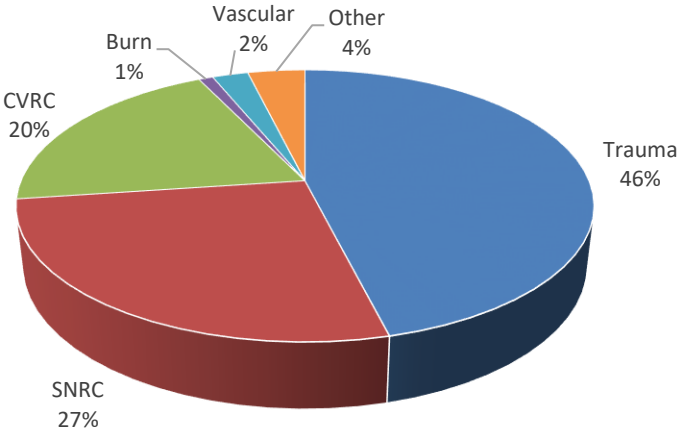




Interfacility Transports via EMS 2017



Interfacility Transports via EMS 2018



A table is provided below to summarize updates for each trauma center

	Orange County EMS		American College of Surgeons (ACS)
	Designation	Term	
CHOC	Pediatric Trauma Center[1]	2018-2021	Pediatric Level II
Mission	Trauma Center[2]	2017-2020	Adult Level II & Pediatric Level II
OC Global	Trauma Center[2]	2017-2020	Adult Level II
UCI	Trauma Center[2]	2018-2021	Adult Level I & Pediatric Level II

[1] Trauma center meets designation criteria for Pediatric Trauma Center (PedTC) per OCEMS #620.01
[2] Trauma center meets designation criteria for Trauma Center (TC) per OCEMS #620.00

Children's Hospital of Orange County (CHOC)

In January of 2018, Children's Hospital of Orange County (located in Orange) underwent a successful American College of Surgeons (ACS) verification process for Level II Pediatric Trauma Center. Subsequently, Orange County Emergency Medical Services (OCEMS) granted a three (3) year designation status to Children's Hospital of Orange County as a Level II Pediatric Trauma Center (PedTC) (term 2018 – 2021). Children's Hospital of Orange County will undergo an ACS Consultative Review in January 2020 to become a Level I Pediatric Trauma Center at their 2021 ACS site visit.

Mission Hospital (MH) Mission Viejo

In 2017, Mission Hospital (MH) in Mission Viejo underwent the ACS survey process for re-verification as an Adult Level II trauma center and initial verification for Level II Pediatric trauma center. Mission Hospital (MH) also received a three (3) year designation from Orange County EMS as a Level II Trauma Center (TC) for term 2017 – 2020.

Orange County Global Medical Center (OCGMC)

Also in 2017, Orange County Global Medical Center (OCGMC) underwent the ACS survey re-verification process for Adult Level II trauma center. Orange County Global Medical Center also received a three (3) year designation from Orange County EMS as Level II Trauma Center (TC) for term 2017 – 2020.

University of California Irvine Medical Center (UCIMC)

In May of 2018, University of California Irvine (UCIMC) successfully underwent the American College of Surgeons (ACS) re-verification process for Level I Adult trauma center as well as Level II Pediatric trauma center. Subsequently, Orange County EMS granted UCIMC trauma center re-designation status as a Level I Trauma Center (TC) for a three (3) year period for the term 2018 – 2021.

Orange County Emergency Medical Service Trauma Center (TC) designation recognizes and allows trauma care for both adult and pediatric patient populations and Pediatric Trauma Center (PedTC) designation recognizes and allows trauma care for pediatric populations.

The addition of the Pediatric Trauma Center designation allows Orange County Emergency Medical Services to evaluate and analyze various models for the development of pediatric trauma triage protocols for trauma triage and destination decisions. OCEMS will consider three potential models for pediatric trauma triage and destination decisions as outlined in the White Paper of 2014, "Analysis of Pediatric Utilization of Orange County Emergency Services and Secondary Health Impact Analysis of Pediatric Trauma" (Appendix #4). Once complete, Orange County Emergency Medical Services will revise the

current trauma plan and system policies and procedures to operationalize a model that provides the most optimal care for the pediatric trauma patient population.

Another project affecting the trauma system was the introduction of an electronic Prehospital Care Report (ePCR) system that has been phased in over the past several years. Beginning in 2006 with a multidisciplinary EMS Data Taskforce group whose members included private and public stakeholders, an EMS Data Standards and Policies was developed in 2009 and a scope of work itemized along with a request for Urban Areas Securities Initiative (UASI) grant funding. In 2010 this culminated in a successful RFP process. In 2016, through a collaborative process among EMS stakeholders, comprehensive data standards for patient care reporting by EMS personnel and provider agencies was developed and implemented.

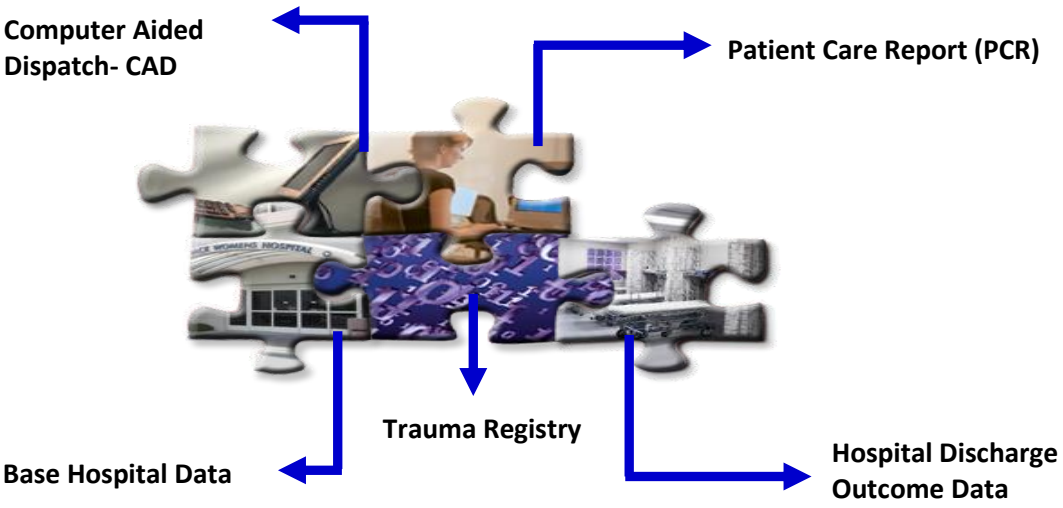
As of January 1, 2017 one hundred percent of 9-1-1 ALS providers were documenting within the ePCR and submitting data into the Orange County Medical Emergency Data System (OC-MEDS). All EMS system personnel and provider agencies operating in Orange County are now submitting data based on current standards as identified by the National EMS information System (NEMSIS) and California EMS Information System (CEMSIS).

Some of the major accomplishments (as shown in the image below) of the Orange County Medical Emergency Data System (OC-MEDS) hosted by ImageTrend™ are: the replacement of the paper-based PCR; an interoperable network which will provided an electronic method in which to receive PCR's from EMS personnel; powerful web-based reporting/visual informatics and data mining to facilitate CQI; HIPPA/Health Information Technology for Economic and Clinical Health (HITECH) Act 2014 compliant; ability to perform syndromic surveillance and identify medical surge in real-time; a web-based patient registry for use by all hospitals to facilitate the reporting of Hospital Discharge Data Summaries (HDDS) and all specialty care patients (STEMI/Stroke/Pediatric/Trauma).

In 2018, OCEMS began the process of contracting with American College of Surgeons to conduct a system evaluation of our current Trauma System. This included submission of a Pre-Review Questionnaire (PRQ), request for public feedback from all stakeholders, soliciting stakeholder participants per ACS recommendations and undergoing a week long onsite survey. The ACS Trauma System Consultation was conducted by a multi-disciplinary review team of Trauma Surgeons, Emergency Physicians, Trauma Program Manager and Technical Advisors in July 2019. A final report was received 3 months later with a comprehensive analysis of the current Orange County Trauma system, recommendations for system improvements and priority recommendations in areas requiring focused attention.

After review with County leadership and its stakeholders, the high priority issues will be identified and incorporated into our OCEMS Trauma Plan in the future.

ORANGE COUNTY MEDICAL EMERGENCY DATA SYSTEM (OC-MEDS)



OBJECTIVES

One of the primary goals of the Orange County trauma system is to have in place trauma guidelines that identify the trauma patient; reduce field scene time; and prevent delay in the transport of the critically injured patient to the nearest trauma center for definitive care. This focus will ensure optimal medical care in a timely fashion.

The purpose of objectives is to present annual mileposts that a program needs to achieve in order to accomplish system goals. Trauma Plan Section VI: Objectives has been evaluated and a Status Update of the seven objectives statements which have been revised to meet current system standards is provided (Appendix #2).

PERFORMANCE IMPROVEMENT

Orange County Emergency Medical Services (OCEMS) maintains a system-wide continuous quality improvement program to monitor, review, evaluate and improve the delivery of prehospital and trauma care services. Region-wide efforts are ongoing to define the system through data collection, committee based review and system evaluation expectations. Orange County Emergency Medical Services has standardized performance criteria review which integrates the following elements:

- Internal quality improvement processes for each trauma center
- External quality improvement processes for regional trauma care
- Trauma center and system review

Internal Quality Improvement

- Each trauma center must have a formal written internal quality improvement program for its trauma service.
- As part of the internal quality improvement process, each trauma center employs a trauma medical director and trauma program manager who performs case audits and reviews for their own facility.
- Specific audit topics are forwarded to the Regional Trauma Operations Committee (RTOC) for evaluation and review.

External Quality Improvement

- Regional Trauma Operations Committee (RTOC) provides clinical practice and performance improvement discussion. The mission of the committee is to optimize the quality of care and outcomes for all EMS trauma patients including injury prevention and reducing injury severity and death.
- The RTOC performs confidential trauma case study, education, data analysis, and regional studies.
- The RTOC provides recommendations to EMS regarding the care provided within the trauma system.
- The Quality Assurance Board (QAB) monitors, investigates, studies and makes recommendations to EMS regarding the quality of care provided by the EMS providers and includes the trauma system.
- Each trauma center participates in EMS regional trauma studies and audits of Trauma Center and Systems Review
- Designated Trauma Center Reviews:
  Periodic review is performed by the EMS Agency to assure trauma center contract compliance. The audits may include random chart reviews, trauma registry data review, and review of other records and documents. Reviews are both announced and unannounced.
- Verification of Trauma Centers/Trauma System:
  Reviews conducted every three years by out of county trauma specialist, allow for independent evaluation for verification of trauma centers and effectiveness of the trauma system. The reviews are designated to evaluate the quality of care rendered by the trauma centers and to review the trauma centers compliance with both California regulations and local requirements of the trauma system.

Performance improvement processes allow for ongoing standardized medical review of trauma care and include, but are not limited to, trend analysis and review of:

- High risk, high volume, problem oriented calls, and calls requested to be reviewed by OCEMS.
- Specific audit topics established through the Quality Assurance Board.
- Specific audit topics established through the Regional Trauma Operations Committee.
- Evaluate medical care delivered by prehospital care providers based on information available to them with respect to protocols.
- Identify trends in the quality of medical control delivered by the base hospital MICNs and BHPs.
- Identify trends in the quality of field care delivered by EMTs and Paramedics.

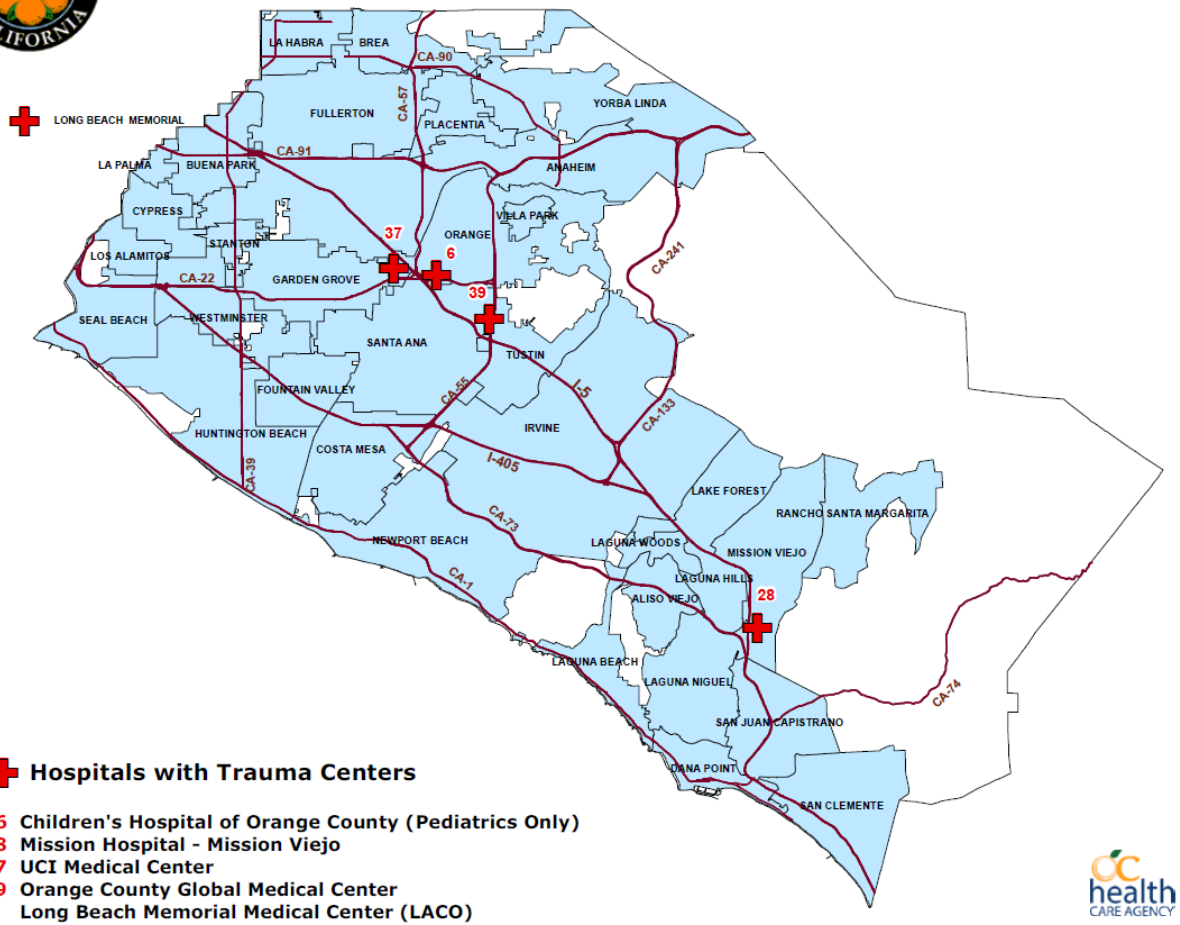
CONCLUSION

The Orange County Trauma System has been an integral component of the Orange County Emergency Medical Services Plan since its inception. Orange County Emergency Medical Services in collaboration with regionally designated trauma centers and other partners monitor factors influencing the trauma system and make accommodations to meet current system standards and needs. An updated version of the Trauma Plan Section VII: Implementation scheduled is included (Appendix 3). Upon acceptance of this status report, EMSA recommendations will be considered and the updated plan submitted for review and approval to the appropriate committees.

APPENDIX 1

MAP

Designated Trauma Centers
Orange County, California



Hospitals with Trauma Centers

6 Children's Hospital of Orange County (Pediatrics Only)
28 Mission Hospital - Mission Viejo
37 UCI Medical Center
39 Orange County Global Medical Center
Long Beach Memorial Medical Center (LACO)

OC health CARE AGENCY

Health Policy - Research, January 2019

APPENDIX 2

SECTION VI:
OBJECTIVES

OBJECTIVES

The purposes of this section is provide a status update and to put forward revised objectives that represent annual mileposts that the program will strive to achieve in order to accomplish its five year goal. One of the primary goals of the trauma guidelines is to identify the trauma patient, reduce field scene time and prevent delay in the transport of the critically injured patient to the nearest trauma center for definitive care. This will ensure optimal medical care in a timely fashion. Optimal care of Orange County trauma patients will occur by meeting of the following objectives:

1. ***Continue trauma system coordination.***

On a quarterly basis, the OCEMS Facilities Coordinator will scheduled and commence the Regional Trauma Operations Committee (RTOC) and in keeping with the committees' mission, will publicize in a timely manner, approved meeting minutes on the county website so that the entire system is aware of trauma-related issues and activities.

Timeline*: Ongoing*

STATUS UPDATE:

Objective met. Orange County EMS Facilities Coordinator continues to schedule quarterly meetings with the RTOC. The RTOC committee includes participation from all TMDs and TPMs from the 4 OC TCs and neighboring Long Beach Memorial TC as well as the EMS Medical Director, Program Administrator, Facilities Coordinator, QI Coordinator and other EMS staff as needed.

2. ***Assure the availability of rapid and consistent access to citizens in order to maintain short scene times and timely transportation to the nearest trauma center.***

With the transition from paper to electronic patient care records and a patient registry system capable of consolidating the data into one system and with all 9-1-1 ALS providers currently documenting the ePCR within the OC-MEDS system, OCEMS is able to reconcile and evaluate time data. The report is presented to the RTOC for review and discussion to identify potential care issues, develop strategies for the provision of education and to track for consistency. This monitoring of continuous quality improvement with proper reporting and analysis validates this objective.

Timeline: *Ongoing audits of prehospital response times/scene times/transport times.*

STATUS UPDATE:

Objective met. The inadequacies of the previous data system prevented an accurate depiction of prehospital times. Data from multiple databases sources made the reconciliation of data difficult. The transition from paper to electronic patient care records and a patient registry system capable of consolidating data into one system has facilitated the audit and evaluation of prehospital response times, scene times and transport times. With 100 percent of 9-1-1 ALS providers currently documenting the patient care record within the OC-MEDS system, OCEMS is able to reconcile and evaluate data needed to evaluate prehospital response times, scene times and transport times.

3. ***Work collaboratively with each trauma center to assure quality improvement activities within each center.***

June of 2012, OCEMS facilitated formalizing a method for the RTOC to share trauma center specific QI processes and outcomes. The RTOC provides the forum for addressing QI processes and presenting outcomes data among trauma centers. October of 2015, OCEMS facilitated a trauma data standards subcommittee to review and develop trauma data reporting standards.

Timeline: *Annual LEMSA reviews of each trauma center, a biennial system review, along with tri-annual ACS re-verification visits.*

STATUS UPDATE:

Objective ongoing. Currently, each trauma center shares case studies within the Clinical Practice Discussion of RTOC. Additionally, as ACS-verified trauma centers, each has presented samplings of their quality improvement (QI) processes. Trauma triage guidelines including Pediatric Trauma Standing Order guidelines were discussed and ultimately endorsed and approved. Each TC participates in the ACS PIPS program and this is reviewed internally at OCEMS. Currently, each trauma center has a trauma program manager and a trauma registrar representative on the trauma data standards subcommittee who participate in the review and development of trauma data reporting standards. The trauma data standards subcommittee finalized the OCEMS Trauma Registry Inclusion Criteria which will standardize the trauma data definition dictionary and define the inclusion and exclusion criteria across all trauma centers in the system.

4. ***Ensure the accuracy of trauma triage guidelines and ensure trauma patients are transported to an appropriate facility.***

On a quarterly basis evaluate data and quality systems to determine the appropriateness of trauma triage guidelines and transport of patients meeting trauma criteria to trauma centers.

Timeline: *Ongoing continued assessment of in-hospital QI process.*

STATUS UPDATE:

Object met as OCEMS is continuing to monitor and evaluate system impacts based on field trauma triage criterion. With the 9-1-1 ALS providers documenting the ePCR within the OC-MEDS system, OCEMS will continue to reconcile and evaluate data needed to assess the accuracy of trauma triage guidelines and ensure those patients meeting trauma triage criteria are being transported to designated trauma centers. This information is shared with the RTOC and discussed as necessary for updating trauma triage criteria.

5. ***Evaluate system function and design improvements as needed.***

By March 2012, publish findings from a well-defined study focusing on the application of the newly revised trauma triage policy (#310.30) and contrast with patient outcomes.

Timeline: *Ongoing.*

STATUS UPDATE:

Objective postponed. On March 28, 2011 in response to increasing rates of interfacility transports of trauma patients from non-trauma hospitals to trauma centers, OCEMS implemented a revision to filed trauma triage based upon national trauma triage guidelines developed by the American College of Surgeons and the Centers for Disease Control and Prevention. Essentially, the policy eliminated the terms Moderate Trauma Victim (MTV) and Critical Trauma Victim (CTV) and requires all victims of trauma with specific conditions be called into a base hospital for medical direction. This has been a major operational change within the trauma system and was introduced over a three-month period through mandatory educational sessions performed by the base hospital and fire EMS Coordinators. As a result of this change, the system anticipated an increase in trauma volume and we are currently evaluating the decision-making process by the base hospitals when determining destination of patients.

By mid-year 2012, program priorities and resources were re-evaluated and shifted to support implementation of electronic prehospital care record (ePCR), thereby postponing the study. By mid-year 2014, program priorities were shifted to support the implementation of a new NEMSIS 3 electronic prehospital care record and conversion to ICD-10 codes. Program priorities have continued to focus on the implementation of NEMSIS 3 compliant electronic prehospital care record systems and the development of comprehensive data standards for patient care reporting by EMS personnel and provider agencies.

Two system white papers have been completed and presented to the EMS system over the last 3 years. One on Pediatric Trauma (Analysis of Pediatric Utilization of Orange County Emergency Medical Services and Secondary Health Impact Analysis of Pediatric Trauma) and one OC Trauma System Overview. Both have been submitted to EMSA in previous plans.

6. ***Reduce accidental injuries/deaths and increase community awareness regarding potential safety hazards in the home/school/office for pediatric and adult age groups through implementation of effective injury prevention programs.***

Evaluate the current injury prevention efforts on an annual basis to ensure that seasonal and annual injury prevention programs coincide with common injury patterns identified through data analysis. Current program include seasonal press releases are put out in conjunction with the trauma centers and other County agencies addressing seasonal injury patterns. The trauma center coordinators are also involved in a variety of injury prevention programs such as red light running, fall prevention, winter press releases on holiday fall prevention, and spring and summer press releases on pediatric window falls.

Timeline: *Will vary depending upon current injury prevention programs. This will be ongoing in conjunction with other County groups.*

STATUS UPDATE:

Mission Hospital has two active programs to educate OC residents and visitors (1) South County Safe Rides - a program designed to provide anonymous safe rides homw to any high school student in need. The goal is to prevent driving while under the influence or getting in a car with a driver that is under the influence. (2) Mission Hospital also works collaboratively on "Down With Falls" a group of professionals that come together to reduce falls throughout Orange Couny. The three adult trauma centers participate in this coalition. They are responsible for educational seminars for both community members and health professionals. The coalition also coordinates the "Matter of Balance Classes, which is an evidence based fall prevention class. OC Global conducts fall prevention seminars and has connected with assisted living facilities to help implement elderly prevention programs. They also provide an over the hump bicycle helmet safety program as well as an ongoing every fifteen minutes program targeting teen texting and drinking and driving prevention. UCIMC implemented the "Stop The Bleed" program and has conducted classes regularly for community groups with over 1000 people trained. UCI has also partnered with the OC Court System to provide a court mandated "Youth Drug & Alcohol Deterrence (YDAD) program. UCIMC pediatricians, the OCEMS Medical Director and the Orange County Fire Authority conduct yearly drowning and water injury prevention fairs within the community during which water safety is encouraged, including prevention of diving and water sports injuries. This committee provides direct advice to the Superintendent of Orange County Schools on matters related to student safety in schools, including injury prevention during routine school activities and sporting events.

7. ***Develop and implement an advanced computer tracking system to better collate, collect and review data from each trauma center.***

Initiate quarterly analysis and review of trauma data within OC-MEDS. The development and implementation of OC-MEDS allows for comprehensive data management and analysis. The system also supports the ability to obtain outcome data and to corroborate data from the EMS system, trauma receiving centers and base hospitals.

Timeline: *Ongoing.*

STATUS UPDATE:

Objective met. An Ad HOC Trauma Data Registry Subcommittee was created and includes Trauma Managers, Trauma Registrars and OCEMS Staff to look at Trauma Data Criteria and Trauma Data Dictionary to better align trauma data collection and reporting among all OC Trauma Centers. This Subcommittee meets quarterly and reports to the RTOC. OCEMS provides oversight and ensures that data elements selected are also compliant with California EMS Information Systems (CEMSIS) and the National EMS Information Systems (NEMSIS) and with the National Trauma Data Bank (NTDB).

APPENDIX 3

SECTION VII:
IMPLEMENTATION SCHEDULE

IMPLEMENTATION SCHEDULE

The Orange County trauma care system plan has been fully implemented with sufficient capacity to care for all designated trauma victims since June of 1980. This well-established trauma system addresses all aspects of trauma care. Ongoing evaluation of this system occurs on a regular basis and is accomplished with the cooperation and commitment of the long-standing designated trauma centers. Trauma plan objectives with timeline are included in Section VI. Each trauma center abides with Orange County EMS Policy #660.00: Agreement to Provide Services as Trauma Center.

In order to appreciate the detailed planning and expertise that has been afforded to the Orange County Emergency Medical Data System (OC-MEDS) project, a detailed timeline is presented to itemize the progress.

The vision and design for this project has been a major undertaking for OCEMS beginning in 2006 with the formation of a multidisciplinary EMS Data Taskforce group whose members included private and public stakeholders. The purpose of this project was multi-faceted and came about as a result of the determination in 2005 that the current data system was not meeting system needs, was not compliant with NEMSIS/CEMSIS nor prepared for the intentions of the 2014 HITECH Act. Additionally, because of the dependency on the paper-based PCR, the system was unable to perform timely CQI and most importantly link patient outcomes to specific complaints.

In 2009, EMS Data Standards and Policies were developed and a scope of work itemized along with a request for Urban Areas Securities Initiative (UASI) grant funding. This culminated in 2010 with a successful RFP process.

In late 2010, Vendor negotiations began and a phased implementation was developed and distributed to system stakeholders. The phased implementation has been ongoing with significant progress being made in developing and implementing the system. Below is a status update for each of the phases previously submitted.

In 2012, the electronic patient care records system was implemented and advanced life support system providers initiated implementation of the electronic patient care record.

In 2015, OCEMS started the implementation of the NEMSIS 3 Data Standards with the expectation that all EMS System personnel and providers would be submitting NEMSIS 3 compliant data by January 1, 2017. This was successfully completed on January 1, 2017.

Phases with timeline include:

- ❖ Phase I — Development of Web-based Infrastructure
  (October 2010-March 2011)
  Status: *Completed*
- ❖ Phase II — Integration of Software and Base Hospital Hardware
  (October 2011-March 2012)
  Status: *Completed*
- ❖ Phase III — Selection Public EMS Provider Agencies Hardware with Software Integration
  (June 2011-July 2013)
  Status: *Completed*
- ❖ Phase IV — Integration of Mobile Web Connectivity
  (June 2011)
  Status: *Completed*
- ❖ Phase V — Hospital Integration
  (2015)
  Status: *Completed*

APPENDIX 4

Trauma Triage Algorithm #310.31

TRAUMA TRIAGE ALGORITHM: BLUNT OR PENETRATING INJURY

ABNORMAL VITAL SIGNS

Any one of:
1. Failure to follow commands
2. Respiratory rate < 12 or > 30 per min 3.Systolic BP: <90 (Adult/Adolescent)
< 80 (Child)

→ Base Contact; Meets Trauma Triage Criteria

INJURY IS SIGNIFICANT

- Penetrating or open injury of the head / Depressed skull fracture
- Blunt or penetrating head injury with observed loss of consciousness, focal neurologic deficit, asymmetric pupils, or vomiting
- Penetrating (appears to penetrate all skin layers) injury to the neck, chest, abdomen, back, groin, extremity above elbow or knee
- Extremity injury with poor circulation or without a pulse
- Paralysis or paresthesia of arm or leg due to injury
- Blunt chest injury with abnormal respiration as defined above
- Seat belt bruising or abrasion of neck, chest or abdomen
- Blunt abdominal injury with palpable tenderness
- Fracture of two or more long-bones (femur, humerus)
- Pelvic rim pain or deformity on palpation
- Amputation (partial or complete) above the wrist or ankle
- Crushed, degloved, or mangled extremity (excluding only fingers or toes)
- Pregnant woman with blunt or penetrating abdominal injury
- Blunt head injury with bruising in area of injury and known to be taking anticoagulants or platelet inhibitors ("blood thinners") excluding aspirin; or known to have hemophilia or be a dialysis patient

→ Base Contact; Meets Trauma Triage Criteria

MECHANISM OF INJURY

- Falls:
  - Adult/Adolescent: Greater than 15 feet
  - Children: Greater than 10 feet or 2-3 times the height of the child
  - Adult/Adolescent/Child: Fall from a galloping horse
- High-Risk Auto Crash
  - Passenger space intrusion greater than 12 inches where an occupant is sitting or any occupant in a passenger seat when there is greater than 18 inches intrusion at any site within the passenger space.
  - Ejection (partial or complete) from automobile.
  - Passenger in vehicle in which a trauma death has occurred.
- Diving 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) impact
- Motorcycle Crash greater than 20 mph, including "laying bike down"

→ Base Contact; Meets Trauma Triage Criteria

EMS Provider judgment that transport to a Trauma Center is appropriate → Base Contact

Does not meet any of above criteria → Transport to appropriate ERC