Sunrise Hospital & Medical Center

Response to October 1 Mass Casualty Event

#VegasSTRONG
About Sunrise Hospital & Medical Center

- 692-bed adult & children’s hospital
- Level II Trauma at Sunrise Hospital
- 2,070 trauma activations 2017 year-to-date
- 692-bed adult & children’s hospital
- Regional center for tertiary care
- 170,000 ER visits annually
- Closest hospital to Las Vegas Strip
- 1,926 adults and 144 pediatric cases
- 46% admissions, 25% to critical care units
- Level II Trauma Center
SUNRISE HOSPITAL OVERVIEW 2016

- 31,926 admissions
- 12,913 Obs. visits
- 167,420 ER visits
- 25,490 ER admits
- 5,000 births
- 917 NICU admits
- 14,656 surgeries
- 716 open hearts

- 12,913 Obs. visits
- 25,490 ER admits
- 917 NICU admits
- 716 open hearts
Sunrise Hospital Trauma Center Physician Team

Trauma Surgeons:
- Christopher Fisher, TPD MD FACS, Trauma Surgeon (2004)
- Stefan Chock, MD, Trauma Surgeon (2005)
- Matthew Johnson, MD, Trauma Surgeon (2013)
- Kitae Kim, MD, FACS, Trauma Surgeon (2005)
- Alan D. MacIntyre, DO, Trauma Surgeon (2010)
- Sheri Stucke, Ph.D, APRN, Trauma Nurse Practitioner (2005)

Emergency Team Leadership:
- Dr. Scott Scherr – ER Medical Director
- Dr. Jaime Primerano – Assistant ER Medical Director
- Dr. Kevin Menes – Attending Physician, night shift

Graduate Medical Education, Surgery Residents
- Paul Nelson, MD, FACS Surgery Residency Program Director
- 22 Surgery Residents, PGY 1-4
Our Proximity to the Incident...

- Las Vegas Blvd
- Site of MCI
- University Medical Center 6 miles
- Sunrise Hospital 4.8 miles
- Desert Springs Hospital 4.4 miles
Our Proximity to the Incident

Tropicana Avenue – first major east/west corridor from venue

Maryland Parkway – first major north/south corridor from Tropicana and a direct path to Sunrise Hospital
212 patients treated (identified) + at least 30 still unidentified
92 patients arrived with no identification
64 admissions to floor, 31 to ICUs and 34 observation stays
≈ 100 physicians & over 200 nurses responded to assist
83 surgeries performed
516 blood products administered
50 crash carts deployed in 1 hour

Together, we are a community dedicated to healing.
**Patient Breakdown**

- **124 Gun Shot Wounds**
- **58 surgeries in first 24 hours**
  - 5 Thoracic
  - 15 Abdominal
  - 5 Cranial and Cervical
  - 17 Orthopedic
  - 2 Vascular
  - 9 Multi system
- **83 total surgeries to date**
  - 7 additional Cranial and Cervical
  - 15 additional Abdominal
  - 6 additional Orthopedic
  - 2 additional Multi system
- **16 Mortalities (initial review)**
  - 10 DOA
  - 4 Unsalvageable
  - 1 Intra-Operative
  - 1 Withdrawal of care (Brain Death)
- **516 Blood Products**
  - 222 units of PRBC
  - 100 units of Cyroprecipitate
  - 119 units of FFP
  - 42 units of single donor platelets
  - **Waste**
    - 5 single donor platelets
    - 21 units of PRBC
    - 7 units of FFP

- **58 surgeries in first 24 hours**
  - 5 Thoracic
  - 15 Abdominal
  - 5 Cranial and Cervical
  - 17 Orthopedic
  - 2 Vascular
  - 9 Multi system
- **83 total surgeries to date**
  - 7 additional Cranial and Cervical
  - 15 additional Abdominal
  - 6 additional Orthopedic
  - 2 additional Multi system
- **16 Mortalities (initial review)**
  - 10 DOA
  - 4 Unsalvageable
  - 1 Intra-Operative
  - 1 Withdrawal of care (Brain Death)
- **516 Blood Products**
  - 222 units of PRBC
  - 100 units of Cyroprecipitate
  - 119 units of FFP
  - 42 units of single donor platelets
  - **Waste**
    - 5 single donor platelets
    - 21 units of PRBC
    - 7 units of FFP
Preliminary Event Timeline

22:05
MCI near Mandalay Bay

22:25
First POV patients arrive

22:29
First ambulance arrives

22:45
On call administrator arrives

22:59
Five surgeries completed

23:00
First patient triaged to ICU

23:31
Code Triage Called

01:12
100+ physician respond

01:12
200+ nurses respond

02:00
First patient triaged to ICU

02:47
ER census: 228 patients

04:51
167 discharges from hospital

05:45
Clark County Coroner arrives

11:00
ER operations return to normal

18:00
Code Triage Cleared

22:05
MCI near Mandalay Bay

00:00
56 surgeries completed
Triage, Assessment and Treatment

• Utilized Emergency Room for Initial Stabilization and Evaluation

• Color Coded System for Triage
  • Black, Grey, Red, Orange, Yellow, Green
  • Grey and Red first priority for Trauma Team
  • ED managed and addressed Orange and Yellow
  • Green after triage, evaluated by additional ED staff on arrival

• Routed to Trauma Bays for Initial Treatments with major injuries

• Emergency Room areas dedicated to specific treatments
  • Major Injuries to Trauma Space (RED)
  • Overflow into ED care areas, avoided spaced with poor line of sight
  • Minor injuries to Pediatric Space (GREEN)

• Activated hospital staff to pair one RN to one patient until handoff to OR, ICU or Floor

• Dedicated RT for intubation support and supply pack creation in ED

• Dedicated ED pharmacy resources to ensure adequate medication supplies

• Temporary Morgue to handle expanded numbers of victims
• Pre-operative unit dedicated for isolated orthopedic injuries
• Dedicated team to Pre and Post Operative Care Unit to manage immediate post-op recovery while assigning ICU bed
• Transitioned patients to ICU to complete evaluations
  • Trauma Surgeon, Anesthesiologist, Intensivist and support team in each ICU
  • Moved as soon as hemodynamically stable
  • Mobilized Hospitalists and Intensivists to ensure open ICU beds (184 discharges in 15 hours)
Triage, Assessment and Treatment

• Created Temporary Morgue in Endoscopy for appropriate management and preservation of evidence

• Ensured Sterile Processing had rapid turn around of high need trays
  • All staff responded to call in
  • Transported Equipment required from local hospital partners (HCA facilities)

• Dedicated Additional Staff for OR room turn around

• Grouped pods of OR rooms for specific types of cases

• Ensured sufficient anesthesia coverage to operate all available rooms (capacity of 20)
Hospital Wide Efforts

- Logistics
  
  - Blood Bank ensured shifting of supplies from hospitals not impacted
  - Ensured Environmental Services team dedicated to all spaces
  - Support from local HCA hospitals to ensure all supplies available at all times
  - Created dedicated supply chains for pharmacy, surgical and general needs
  - Created additional inpatient bed capacity thru returning beds to service
  - Ensured security engagement to control campus
Incident overview:
ICS was activated after initial wave of patients. The ICS structure functioned well with the individuals who had HICS training. Able to coordinate with the HCA resources to ensure those providing direct care services and support to families and staff were well supplied and responses were structured. Managed through the initial response phase and through recovery phase.

Best Practices:
- Training in using ICS Structure, Communications with Division and Corporate Resources
- Managed both injured and family response including identification

Areas to Improve:
- More rapid stand up and assessment of utility needs.
- Communication to entire medical and hospital staff to mobilize resources
- Command Center Resources

Notable Actions:
- Improve Emergency Command Center resources (Cellular back up, Data, Land Line)
Emergency Department

Incident overview:
Emergency Room responded to over 230 patients and families during initial response. Provided Triage and Routing of patients for immediate management of airway, bleeding and those requiring immediate surgical intervention. ED implemented color based triage and re-evaluation to ensure rapid initial evaluation and staging. Specialized knowledge of ED physician on duty in gunshot mechanisms of injury improved initial triage. Partnership with trauma team and appropriate cohorting of patients improve throughput. Use of portion of Peds ED for low acuity patients staffed by hospital medicine providers (with appropriate privileges) and additional ED providers who responded maintained flow.

Best Practices:
Use of Color based triage (see earlier slides), location and cohorting of patients and mindfulness of “blind” areas for patient placement.
Use of iMobile (in house communication system on wifi) to mobilize staff from across all units to support surge in the ED.

Areas to Improve: More supplies for MCI- tagging, documentation gaps

Notable Actions
Trauma Services

Incident overview: Level II trauma team with full compliment of services in specialty care. Complete team response resulted in immediate availability. Surgeon on duty with military background assisted with identification and triage skill. See slides for further input. Trauma services managed patients using additional resources (physicians) and assistance from residency program at Mountain View Hospital (market partner).

Best Practices: see initial presentation

Areas to Improve: see opportunities- Communication, Regional Partnership

Notable Actions- Physicians took on support roles during surge (typical nursing or respiratory functions)
Registration

Incident overview: At the determination of the Mass Casualty event, registration processes were amended and our trauma alias system was used. Registration was overwhelmed and paper was used to capture information and then registration systems entered information that was available. Given the mass numbers without identification the trauma alias system had challenges with duplication. Also given the rapidity of triage of low acuity patients, some were cleared prior to registration occurring.

Best Practices: Cohorting and Labeling of patients to ensure all were registered with hours of presentation. Management of a master patient list that could be used to track all individuals that were treated. This allowed for accurate coding and data collection.

Areas to Improve: Trauma Alias system under evaluation for mass casualty events. More staff required.

Notable Actions: Use of separate lists of alias for each registrar to avoid duplication.
Radiology / Imaging

Incident overview: During event all imaging technologies were available for MCI. Modalities utilized were X-ray and CT scan. Additional staff called in and current staff from all Imaging areas supported X-ray and CT Scan. Flexed up teleradiography capabilities for faster exam interpretation. IR teams ready on call to respond but were not utilized during the event.

Best Practices:

- Radiologist, ED physician and Imaging Technologist rounding patient to patient with Digital portable and radiologist completing real time exam interpretations immediately after X-ray was taken.
- Trauma surgeon located in the main CT and immediately looking at CT exams on monitor to assist with prioritizing care.

Areas to Improve:

- Getting images into PACS quicker so they were available for surgeons in the OR. Due to initial registration issues, some delays experienced with getting images into PACS.

Notable Actions

Support from nursing to monitor patients that were lined up outside of CT Scan in the main department.
Blood Bank

Incident overview: Blood bank managed over 500 units during the initial phase. Location adjacent to the ED enhanced communication and well developed TEP/TXA protocols that had recently been adopted improved utilization. Additional staffing provided for quick turn around of blood testing and protocols for use of O+ blood improved outcomes. Coordination of local leadership with the regional Blood Services increased supply and provided for near seamless transfusions.

Best Practices: Local Coordination, Strong Documentation

Areas to Improve: Patient Registration, Use of Non RBC products- TXA protocol

Notable Actions: Work by blood back to realign supply and manage patient selections when using O-POS PRBC products.
Laboratory

Incident overview: Laboratory Services managed challenges with specimen labeling due to paper processes and trauma alias utilization. Addition of resources and well trained technologists provided for prompt responses. POC tested was used when appropriate.

Best Practices: Appropriate Use of Imaging Technologies

Areas to Improve:
- Rapid Scanning Communication and Documentation when registration is questionable.
- Work with admitting to admitting to improve patient trauma ID process to expedite phlebotomy.
- Consider algorithm to eliminate need for already busy docs to place orders into computer e.g. trauma panels for all to expedite initial testing.

Notable Actions: Improved paper documentation forms.
Surgical Services

Incident overview: Over 100 physicians responded to the initial call out. All trauma support liaisons (ortho, urology, ENT, plastics, CV, Neurosurgery, general surgery) provided response. On site team managed initial influx and arrival of management support created system to use room and rotate to additional space to allow for turn around. Management tracked each patients using manual “board” documentation to avoid any duplication or inaccuracy in the computerized system due to registration challenges. OR Staff flexed up to run up to 20 rooms simultaneously. Surgeons provided assistance in all types of cases and OR teams worked across specialties.

Best Practices:
- Team work of surgeons and staff to move patients quickly through the system
- Centralized communication on operational management with lead Anesthesiologist (Stephanie Davidson) and VP Surgical Services (Mike Kelly) between the ER and OR.
- Room turnover support from surgical technologist, EVS, anesthesia technologist and surgeons within 5 minutes or less.

Areas to Improve:
- Call back system to manage staff response.
- Development of a specific Trauma Pack to allow for quick set up of disposable items
- Identifying specimens collected from cases from patients without identification
- Radiology techs for intraoperative fluoroscopy – short supply initially
- Confirming physician privileges before surgery

Notable Actions:
- Pediatric general and CV surgeons responding and intervening in adult trauma procedures.
- Surgical staff from sister facilities responding without being called
Anesthesia Services

Incident overview: After identification of need, on site trauma team and backup activated call tree and USAP Anesthesia team responded with over 30 anesthesiologists. These physicians assisted in the Operating Rooms, in the ICU and in PACU. They also provided stocking and transportation assistance. The providers also were integral in the support of the OR team and ED teams as they flexed to assist ICU physicians in managing vents on ICU patients.

Best Practices:

- Immediate response in force to assist physician workforce, supported in all facets including transportation and other critical care assistance.
- Anesthesiologists worked with pre and post op staff to write pain medication orders on a rotating basis
- Assisted with distributing pharmaceuticals to the correct locations to ensure providers had all the meds they needed

Areas to Improve: Over response to Sunrise by physicians

Notable Actions: USAP has new coordination process for market and proactively cancelled elective cases
Pre-Op / Post-Op Services

Incident overview: During Event, Pre-Op and Post-Op services were repurposed for ED patients and to assist in recovery and continued treatment of patients post surgery. Use of these locations expanded ED capability for those patients with controlled orthopedic or non traumatic moderate injuries. Staff also flexed PACU into ICU level care for immediate post operative patients who were waiting for ICU assignment. Anesthesia staff augmented management.

Best Practices:
- Use of pre-op area for patients awaiting surgical treatment of moderate orthopedic injuries in first few hours.
- Identification system of patients and medications given Site for triaging moderate injuries was controlled and orderly.
- Constant communication and engagement with physicians to ensure all patient care needs were met.

Areas to Improve
- Need trauma trifolds in PACU
- Call system needed to phase in staff and retain some for following shifts

Notable Actions
- Early collaboration with admitting to align accounts and patient identification
Incident overview: During event, most supplies had already been reprocesses for the day. Staff focused on thoracotomy tray and on vascular trays. SPD manager used robotic trays to back up others as they share the same core equipment. Use of IUSS remained very low and all reprocessing was monitored. Cancellation of usual scheduled allowed for time to reset and resume normal operations on 3 October.

Best Practices:
- Knowledge and use of alternate trays
- Constant communication with room staff to ensure trays were turned over and reprocessed without delay

Areas to Improve:
- More thoracotomy trays, chest trays, glide scopes, pulse ox, monitors, suction

Notable Actions
- First day for newly recruited SPD Manager who jumped in to help staff reprocess trays without formal orientation.
Respiratory Services

Incident overview: Respiratory services adjusted staffing model and utilized addition staff and nursing support to move respiratory therapists into ED to support all 4 pods of care and to support ED physician intubation. Support from anesthesia augmented response and addressed needs in ICU and assisted with vent management. Use of 2 patients per vent with setting adjustments increased supply available and coordination with local market partners allowed for a rapid response with additional ventilators.

Best Practices: Regional Coordination to enhance Vent availability, Coordination with Anesthesia to improve management, use of 2:1 vents.

Areas to Improve: Improve paper MCI respiratory documentation to more check box to improve time to document.

Notable Actions
Incident overview: To support needs, pharmacy usually has 24/7 ED presence, this was augmented by call in staff within 1 hour. Additional Technicians were also called up. Supplies were maintained using the ED pharmacist to identify need and in house technologies (iMobile) communicated this. Pyxis units were placed in override to ensure basic supplies were present. Standardization of intubation medications improved supply management. Staff also developed geographic patterns for restocking and leadership focused on moving supplies from alternate sites within the local market. This maintained all critical medications throughout the response and limited any loss of controlled substances.

Pharmacy also managed resuscitation carts and turned over 100 in the additional hours. The usual volumes handed daily readied the team to have an assembly process to quickly return carts to service. Floor based carts were deployed and replaced to keep focus on ED/OR/ICU.

Best Practices: Stocking of areas using a rounding model and large supply drop offs.

Areas to Improve: Management of large volumes of controlled substances, medication documentation paper record enhancement required (more detail and specific locations)

Notable Actions: Addition of cameras over Pyxis stations to enhance visualization and documentation.
Incident overview: As soon as event was identified, med/surg staff focused on immediate discharge of existing patients to accommodate alternate patients. House Supervisor identified that 2 units could surge to double capacity and additional nursing resources were aligned to allow for this doubling of patients in each room. Over 160 patients, in collaboration with the hospital medicine service, were discharged in the first 12 hours. This allowed for our ICU staff to downgrade to Med/Surg and optimize ICU patient capacity. Within 12 hours, all doubled rooms had been returned to single use only and all surge beds closed. Management with HCA bed management system improved coordination and use of a Nursing Operations Lead Separate from ED and OR maintained focus.


Areas to Improve: Coordination of Services with OR to improve PACU to floor times

Notable Actions: Table Top Drills
Environmental Services

Incident overview: EVS was on site and able to flex up to meet needs of managing ED, OR and patient bed turnover. All staff supported the team. Using location based assignments and addition of resources, by 10am on October 2\textsuperscript{nd} the ED returned to usual operations without any evidence of the MCI. EVS also turned our ICU beds over 2-3 times within the trauma team and the OR Services flexed up to manage room terminal cleaning.

Best Practices:  Strong local leadership to assigned individuals to geographic coverage areas. Leadership ensured supplies were available and backup teams relieved individuals timely

Areas to Improve

Notable Actions: Dedicated inpatient floor technicians assigned to specific trauma bays to ensure constant cleanliness of these key areas
Patient Transport Services

Incident overview: During MCI transport services focused on movement from ED to OR or ED to ICU, OR to ICU. All other transports were reassigned to additional nursing staff that responded to facility. Transport teams managed with available wheelchairs and gurneys; however, supplies were limited due to cleaning needs. Additional transporters responded by early AM and relieved staff. All staff were aware of transportation needs and provided the required backup services.

Best Practices: Team work of all employees providing transport.

Areas to Improve: Flex plan to surge wheelchairs to ED or OR.

Notable Actions
Hospital Wide Efforts

• Family/Staff Support
  • Assigned Chaplain and Social Worker Resources to manage concerned families
  • Created Dedicated Family Space allowing treatment space to not be disturbed
    • On Ward family brought to bedside
    • Staff to managed visits in the operative and trauma areas
  • Regular communications to update on status
  • Dedicated Nutrition Teams to keep staff hydrated and fed
  • Immediate Deployment of Crisis Counselors from HCA, Department of Veterans Affairs and Local Teams
Public Safety – Security Operations

Incident overview: Immediately on notification of the MCI, security worked with our vendor support to secure campus. No incidents were noted of individuals on campus without a purpose. Families were escorted to the family management location in the auditorium.


Areas to Improve: Table top drills on where employee entrance is during MCI.

Notable Actions
Mass Fatality Operations

Incident overview: Usual morgue holds only 4 bodies at a time optimally. A temporary location was designated by the ICS to house bodies. The endoscopy suite was not in use and located between the ED and the Operative Suites. This location was clean and large enough to handle all victims and also provided a location for family identification and to house the honor guard for a fallen police officer.

Best Practices: Temporary Location in Endoscopy optimal

Areas to Improve: Identification earlier to move fatalities out of ED into a controlled location. Confusion initially lead to less than optimal initial management.

Notable Actions: Location being integrated into MCI plans
Family Support Services and Family Reunification

Incident overview: Managed by HR and Case Management Services, families were located in our auditorium and resources were dedicated to ensure that as conditions became stabilized, families were re-united within the inpatient and critical care units. Support services also managed families of patients who only received ED based care to reduce persons within the Emergency Room. Case Management and HR assisted with connection to Community Resources for Housing and with Volunteer services for clothing. Team assisted with identification of family, including use of descriptors (pictures), body art and body piercings to match given the high number of individuals without identification.

Best Practices: Clothing Closet to assist with fresh clothes. Coordination with community resources for housing. Use of body art to match patients and families.

Areas to Improve: Dedication of more case management resources as initial response was greater than anticipated.

Notable Actions
Public Information – Media Relations Management

Incident overview: During event, briefings were provided by Media Team. However, with delayed coroner response, ability to update on death toll was hindered for 6 hours. Media response continued to be coordinated with division resources over the next 2 weeks with a 24/7 media center and twice daily updates to patient condition and patient counts.

Best Practices: Provision of expert staff for interviews and to engage patients in sharing their personal stories.

Areas to Improve: Local Coverage bias

Notable Actions
Behavioral Health Services / Mental Health

Incident overview: Given event, mental health services were provided to patients from resources within the medical staff. Hospital based social workers and psychologists adjusted duties from usual substance use disorder focus to grief response and family support. Department of Veterans Affairs/Vet Center staff also provided family support.

Best Practices: Integration of Pastoral Services into Mental Health Team with activation of community clergy

Areas to Improve: Earlier Identification of Need, Backfill of social work services staff to maintain usual activities.

Notable Actions
Volunteer & Donation Management

Incident overview: During and for a period of 2 weeks after the event, donations were being offered to both staff and patients within the hospital. Immediately on activation of the command center, a role was identified to manage this influx. Coordination with volunteer services ensured no interference with hospital operations. A separate location was created from conference space to manage perishable and non-perishable gifts and to coordinate cards and other recognition.

Best Practices: Identification of space and resources early in the process to manage

Areas to Improve: Enhanced communication with the community to clarify what is needed and what is not.

Notable Actions: Coordination with regional trauma system on Victims Assistance Center activation earlier in Mass Casualty Response to accept these donations and unburden local teams.
What Went Well

✓ Preparation and Practice with Complex Events: New Years Eve, airport incident and regular drills
✓ Strong Physician Leadership from Emergency Room and Trauma Physicians
  ✓ ED leader & Trauma leaders with experience
  ✓ Color triage predicted needs of patients to allow for allocation of resources
✓ RN Engagement with patients (1:1 in ED area)
✓ Outstanding Anesthesia and Trauma Call Panel Support
✓ Use of the Residents from Mountain View
✓ Bed Flow Process (ED Triage-Trauma-OR-Treatment) & Use of ICUs
✓ Logistics Management (Incident Command) and Division Support
✓ Family / Decedent Management

Initial Lessons Learned

✓ Communication Mechanism with our Staff
✓ Communication Mechanism with Medical Staff
✓ Documentation Templates for MCI
  ✓ ED Specific notes
  ✓ OR Specific templates in EMR
✓ Registration Process for MCI requires more flexibility
✓ Greater Detail to Surge Policies
✓ Improved communication with community resources
  ✓ Managing Community Support
  ✓ Coordination of Efforts
  ✓ Ongoing Media Engagements
“Everyone just focused on taking care of the patients and doing their job.”

“We had all the supplies and staff we needed”

“The whole hospital came together”

“We maintained a calmness throughout the chaos”
Sunrise Hospital & Medical Center
Response to October 1 Mass Casualty Event

#VegasSTRONG