Mass Casualty Incident: Lessons Learned from One October Shooting in LV: Preparing for the Future

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Thank you for the opportunity to speak

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Learning Objectives

• Review the pre-hospital and hospital response to the 2017 One October Mass Shooting in Las Vegas.

• Review lessons learned to help communities prepare for a mass casualty event

9-11

• WTC, Pentagon, Pennsylvania
• 2,996 people were killed; firefighters & paramedics; 23 NYC police officers; 37 Port Authority police officers
• Disaster management planning
• Homeland Security
• Training Courses Abounded
• Las Vegas was always on the top 5-10 list of possible terrorist targets
Sandy Hook - 2012

- The Sandy Hook Elementary School shooting occurred on December 14, 2012, in Newtown, Connecticut, United States, when 20-year-old Adam Lanza fatally shot 20 children between six and seven years old, as well as six adult staff members. Prior to driving to the school, he shot and killed his mother at their Newtown home.

Las Vegas, Nevada

- “Entertainment Capital Of The World”
- 2.2 million metro population
- 150,000+ hotel rooms
- >40 million visitors per year pre-COVID
- Gaming Revenue $35.5 Billion in 2018
- 44% of workforce supported by Tourism
Physically Isolated

- Las Vegas Valley
- 20 miles by 40 miles
- Geographically isolated
- Los Angeles, Phoenix, Tucson 4-5 hours away

Southern Nevada Trauma System

- A coordinated injury response network.
- Conducts daily operations to optimize patient outcome – many large events.
- Can readily adapt to manage an influx of injured patients resulting from a mass casualty incident.
- Practices Disaster Response
Prehospital System

Assets:

- Six Public Fire Services for EMS
- Three Private Services for EMS
- One fixed wing aeromedical transport agency
- One rotor wing aeromedical transport agency

Hospital System Assets:

- 17 hospitals with emergency departments capable of caring for injured patients depending on the extent of the injuries

- 3 ACS-verified Trauma Centers:
  - Level I: University Medical Center, Pediatric Level 2, and Burn Center
  - Level II: Sunrise Hospital Medical Center
  - Level III: St. Rose Dominican Hospital
Timeline of events on One October

- 17 acre site in the middle of the Strip
- 22,000 people; 50 Metro Officers with Command Post
- 3 ambulances, 16 EMS personnel
- 10:08 pm automatic weapons fire began
- 10:21 pm the shooting stopped
- **13 minutes** more than 1,100 rounds of military grade ammunition were expended
- The crowd evacuated on their own
- **10:25 pm** – 1st patients arrives at Sunrise (II)
- **10:28 pm** 1st patients arrives at UMC (I)
- 639 treated at area hospitals; 58 deaths
- 80% were ‘self-directed’ to medical care
- More than half were visitors
Level I Trauma Center – UMC of Southern Nevada

- “Hospital within a Hospital”
- Only stand-alone trauma center in west
- Adult Level I, Pediatric Level II
- 24 hr Trauma Surgeon & ED Physician
- Treat ~ 12,000 patients annually
- Admit ~ 3,400 annually
- Joint training and readiness program with Nellis AFB “Smart Program”

Access to UMC Level I Trauma Center

- Mandalay Bay
- Concert 22,000
- Route 91 Music Festival
- 6 Miles

UMC Trauma
ED and “Main” Operating Rooms

541 Beds Total

**Adult Emergency Dept**
- 59 Beds
- Triage Area
- Multiple EM Physicians, EM Residents, PA’s

**Main Operating Rooms**
- 20 Rooms
- Endoscopy/Procedure Suites

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UMC Trauma Center

Distinct and separate from ED

**EM and Trauma Teams**

**Dedicated Resources**
- 11 Resuscitation Beds
- 14 Trauma ICU Beds
- 3 Trauma OR’s
- 4 PACU Beds
- CT Scanner
- Angio Suite
October 1, 2017

• A very busy Sunday already with multiple activations
• All providers are on 12 hour shift schedule (attendings, residents, fellows, nurses)
• At 10 pm, day team still present and finishing up patient care
• 9 of 11 trauma resuscitation beds already occupied
• “No Notice” Mass Casualty

Early Notifications & Response

• “10:15 pm Active Shooter on the Strip”
  • Night & Day Trauma Teams in House & Stayed
• First Notification
  • 5-10, then 20 patients enroute
  • Back Up Surgeon & Anesthesia Called
  • Opened OR’s
• Second Notification
  • 50-100 patients or more
  • Activated Disaster Plan
Initial Wave of Patients/3\textsuperscript{rd} Notification

• Nurse Manager moved 9 Trauma Resus patients to Trauma PACU
• Opened 3 Trauma ORs & Main ORs
• 20+ Self-transports to Trauma & ED
• 0--->40 patients in 5 minutes
• Triaged outside Trauma Center
• False notification of 2\textsuperscript{nd} Strip Shooter
• False notification of active shooter in hospital when mayor arrived

UMC Trauma Center
Created more ER Beds

- Trauma Resus 11 Beds
- Adult ED – 59 Beds
- PACU & ASU - 46 Beds
- TOTAL = 116 (+ 66%) Resuscitation/ER beds

Incident Command Center

- Initiated immediately after first patients arrived
- Team leaders across hospital to identify and respond to challenges as they arose
- Central location to disseminate information
- Operational 24/7 for several days
Disaster Plan: Mobilization of Nursing & Staff

• TR Charge nurse called clinical supervisor (off-site)
• Clinical supervisor called in 3 additional nurses, all of whom came in
• Nurses and PA’s who were in-house came to TR and the clinical supervisor put them all to work establishing IV’s and connecting them to one bag of IVF, treated pain
• Pharmacists, environmental services, administrators in-house came to TR

**Great collaboration**
• Mobilized in-house supplies

Surgeon Resident & Fellow Arrival Time

0 mins - 2 faculty in house plus 7 Surgery, 1 Ortho & multiple EM Residents
30 mins - 4 faculty (1 Nellis AFB) plus 2 ACS fellows (6 total) plus residents
1 hour - 5 faculty plus 4 ACS fellows (9 total) plus residents
2 hours - 8 faculty plus 4 ACS fellows (12 total) plus residents

Later sent folks home
Mayor, Governor, Hospital Board visited in the “wee” hours of the morning
Mobilization of Resources

- **EM physician** triaged the most critical to Trauma Resus
- Trauma - assessed and triaged to:
  - OR +/- Blood
  - Work-up in resus
- Opened Main + Trauma ORs
- Eight ORs concurrently
- Ortho, Cardiovascular, Neurosurg
- SMART program personnel
- Non-surgical services volunteered

Mobilization of Additional Spaces

- The Hall, Main PACU and ASU were set up for less critical patients & Expectant Patients
  - “Mini-Teams”
    1. Trauma Resuscitation
    2. Main PACU area
    3. Same Day Surgery area
- **Leader**: Trauma Surgeon, EM attending, Anesthesiologist, Pharmacist, Nurses, Respiratory Therapist, residents
- Families went to cafeteria
- Social Services, chaplain, TIP
Surgical Procedures

- 20+ OR’s overnight
  - Damage Control Ex Laps
  - Thoracic Surgery
  - Vascular/Ortho
  - Neurosurgery/OMFS
- Chest tubes, IO, Lines, Cric
- 8 Operating Rooms
- A dozen in the ICU
- All Monday 10/2 elective cases cancelled

The Value of Military Providers Imbedded in Trauma Center – the SMART Program

- Sustained Medical and Readiness Trained Program (SMART)
  
  Dr. Snook SMART Program Director
  Dr. Fildes Trauma Medical Director
- 6 Military surgeons part of response
- Specialty Surgeons
- Nurses, surgical techs, others
- Anesthesia, EM physicians
- Every type of healthcare provider & administrator
- Hospital CEO is USAF Reserve
264 patients transported via 128 ambulances
More than 600 patients were treated

- Centennial Hills Hospital (23 mi away)
  - 5 patients
- Desert Springs (4 miles away) not a trauma center
  - 93 patients
- Spring Valley (4 miles) – 53 patients
- Summerlin Hospital (19 miles)
  - 10 patients
- Sunrise Hospital (Level II) (4.8 miles)
  - 212 patients; 125 crash carts
- Valley Hospital (7 miles)
  - 30 patients

- St. Rose – Siena (Level 3 Trauma)
  - 58 patients
- St. Rose – San Martin (8.6 miles)
  - 23 patients
- St. Rose – de Lima (15 miles)
  - 5 patients
- UMC (Level I) (6 miles) – 104 patients
- VA – 0 patients
- Nellis AFB – 0 patients
- North Vista – 0 patients

Medical Response

- Sunrise – Level 2 Trauma
  - 212 patients
  - 64 admitted
  - 31 admitted to ICU
  - 16 deaths, 10 on arrival
  - 58 operations in 24 hrs
  - 500 units of blood products

**“That Others May Live”**
The Next Day

- Fresh Day Team (critical!)
- IM, FM, Hospitalists, MICU Service
  - Accepted non-critical patients
  - Transferred 12 ICU level patients
- Multiple active duty surgeons and non-surgeons
- Comprehensive Sign Out
  - Ensure that patient injuries were not missed
  - Tertiary survey and documentation
- Media, Community Response
- Call for Interviews, Public Officials

Media Relations

Media Relations Team

- Media interviews began almost immediately
- Brief team members on best protocol
- Prior media experience helped
- Plenty of media opportunities to go around – for many days
Community, Outreach, Donations

- Blood donations
- Water donations
- Food donations continued for 2+ weeks; schedule
- #VEGASSTRONG

Emotional Impact – Crisis Support

- Start crisis support right away
  - Available 24/7
  - Patients, families, anyone
  - Residents, hospital staff, physicians
- Resident protected time - debrief
- Prepare to be affected
- Realize that this changes everyone permanently
- Crisis support continues today
- Coroner’s office received a grant that provides support to the medical community
Three days later – White House Visit

Las Vegas Healing Gardens
Opened 5 days after the Shooting
6 Days Later
Stop The Bleed Training

• Nevada ACS Meeting Oct 7, 2017
• Brought surgeons together
• Stop the Bleed
• Over 13,000 trained by UMC since One October
• 2-10 classes/week
• Incorporated Stop the Bleed into ATLS refresher course

Hundreds of Notes from School Children
Dozens of Banners

A Team Effort – Recovery & Resilience
Remembering Those Who Did Not Survive

Recovery

- 10,000 square feet of LV Convention Center rented as a family reunification center
- Onsite counseling
- Recovery center set up for anyone to access and still offers free services
- Hospitals brought additional resources to offer 24/7
- All patients were visited by mental health professionals
Lessons Learned

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Massive Transfusion Protocol

Blood is needed emergently. Have coolers arrived from Blood Bank?

- YES
  - Primary Cooler Group arrives containing:
    - 4 units RBC
    - 4 units THAWED PLASMA
    - 1 Single Donor Platelet

  - Secondary Cooler Group arrives containing:
    - 4 units RBC
    - 4 units THAWED PLASMA

  - NO
    - Massively transfusion need continues?

- NO
  - Continue to use RESUS BLOOD REFRIGERATOR UNTIL COOLERS ARRIVE from Blood Bank

  - RESUS refrigerator Contains:
    - 5 units ABO PLASMA (ORANGE TAG)
    - 10-15 units O NEG RBC (PINK TAG)
    - 30 units O POS RBC (BLUE TAG)

  - COMPLETE, SIGN AND SEND BLOOD CARDS BACK TO BLOOD BANK ASAP FOR REPLACEMENT PRODUCTS

  - Trauma Resus Blood Refrigerator Restocked

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**BioFridge**

- Home
- About
- Products
- Contact
- Mission Statement
- Call US @ 760-2

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**UNLV School of Medicine**
Lessons Learned – LV Hospitals

- Every hospital is involved
- Triage outside of hospital – EM physician with trauma training
- Re-triage to and from trauma centers
- Security/Safety plan at every hospital
- Space plan for large # patients; repurpose space
- Communication – clear, redundant
- Tags weren’t used; single page paper; EMR was not used
- Naming of unnamed patients – have enough names!!
- Staying organized – Senior Surgeon
- Physicians of all specialties needed
- Surgeons can operate or assist outside their specialty field

Lessons Learned – Southern NV Trauma System

- Extensive disaster plan is crucial
- Realistic drills
- Planning for event coverage by EMS – valley-wide schedule
- Emergently credential all healthcare providers in state for any hospital
- Triage less injured who arrive by private transport from trauma centers to non-trauma center hospitals
- Prepare for multiple day mass casualty incidents
- Mobilize all surgeons
ASPR Visit and Additional Findings

- Robust EMS Response
- 20% transported by EMS
- Scene Safety Issues
- Surgical services should be prepared for 12 hour shifts indefinitely
- Specialty teams; all surgeons know how to stop bleeding
- Stabilize and transfer
- Damage control/delay non-life-threatening surgeries to next day
- Include anesthesia in disaster planning
- May need larger scale national training
1 October After-Action Report

August 24, 2018

- 61 Pages
- 72 observations and recommendations for each
- Communication theme
- Operations and size of Incident Command

https://nvha.net/a-day-like-no-other-case-study-of-the-las-vegas-mass-shooting/
DMEP
Disaster Management & Emergency Preparedness

• Brought the course to LV in 2009
• Focuses on hospital preparedness

UMC Foundation Funded DMEP Courses
• Over 14,000 trained since 1 October
• All Clark County Schools
• Night Clubs
• Some Casinos
• Legislature
• Army of trainers

Anniston, Alabama Training Facility FEMA

• Hospital Training Facility
• December, 2018 visit
Anniston, Alabama Training Facility FEMA

- May 6, 2019 visit to Las Vegas
- Designing “No notice mass casualty course” – penetrating trauma

What if more Victims Were Children?
WRAPEM-EM: PEDIATRIC All Hazards Preparedness

- Active Threats/MCI
- Burn
- CBRN/ID
- Deployable Assets
- Education/IS-IT
- EMSC/Peds Readiness
- Gap Analysis
- Mental Health
- Patient Movement/Tracking

- Surge
- Telemedicine
- Hospital Reception Site
- Public-Facing Website: https://wrap-em.org/index.php

Pediatric MCI Preparedness Survey
PEMNAC EM Directors
Jay Fisher, MD, Pediatric Emergency Medicine
Hospital Type

- Peds Within General - 47%
- Free Standing - 53%
CAT Tourniquets – Only Size Available

- Yes: 40%
- No: 31%
- DK: 29%

“SWAT-T” (pediatric size)

- Yes: 20%
- DK: 40%
- No: 40%
10 Peds Intubation Kits

Table Top In Last 24 Months that includes Pediatric Patients
Full Scale Exercise for Pediatric Disasters

YES 67%
No
Don't Know

Best Practices

• Several centers - “Collaborate with County/Govt Organizations”
• Pediatric Disaster charting in the EMR
• Separate ‘cach’ of specific equipment
  – Endotracheal tubes
  – Laryngoscopy blades
  – Chest tubes
  – SWAT-T (Pediatric Tourniquet)
  – Broselow Tapes
• Massive Transfusion Protocols that include pediatric patients
• Specialized course/incorporation in other disaster training courses?
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QUESTIONS?

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