San Diego Trauma, Surgery and Critical Care Workshop
Friday, May 4, 2018

Courtyard by Marriott Liberty Station
2592 Laning Road San Diego, CA 92106

Presented by:
UC San Diego Division of Trauma, Surgical Critical Care, Burns & Acute Care Surgery
and
San Diego – Imperial Chapter, American College of Surgeons

Las Vegas: Maximizing Survival after Mass Trauma

American College of Surgeons
Inspiring Quality:
Highest Standards, Better Outcomes
100+years

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UMC TRAUMA

Disclosures

Deborah A. Kuhls MD FACS

Disclosures

I do not have any relevant financial relationship(s) with any commercial interest that pertains to the content of this presentation.

Thank you for the opportunity to share our experience

Las Vegas, Nevada

- “Entertainment Capital Of The World”
- 2 million metro population
- 150,000 hotel rooms
- 42 million visitors in 2017
- Gaming Revenue $9.9 Billion in 2017
- 44% of workforce supported by Tourism

Physically Isolated

- Las Vegas Valley
- 20 miles by 40 miles
- Geographically isolated
- Los Angeles, San Diego and

  Phoenix 4-5 hours away

Southern Nevada Trauma System

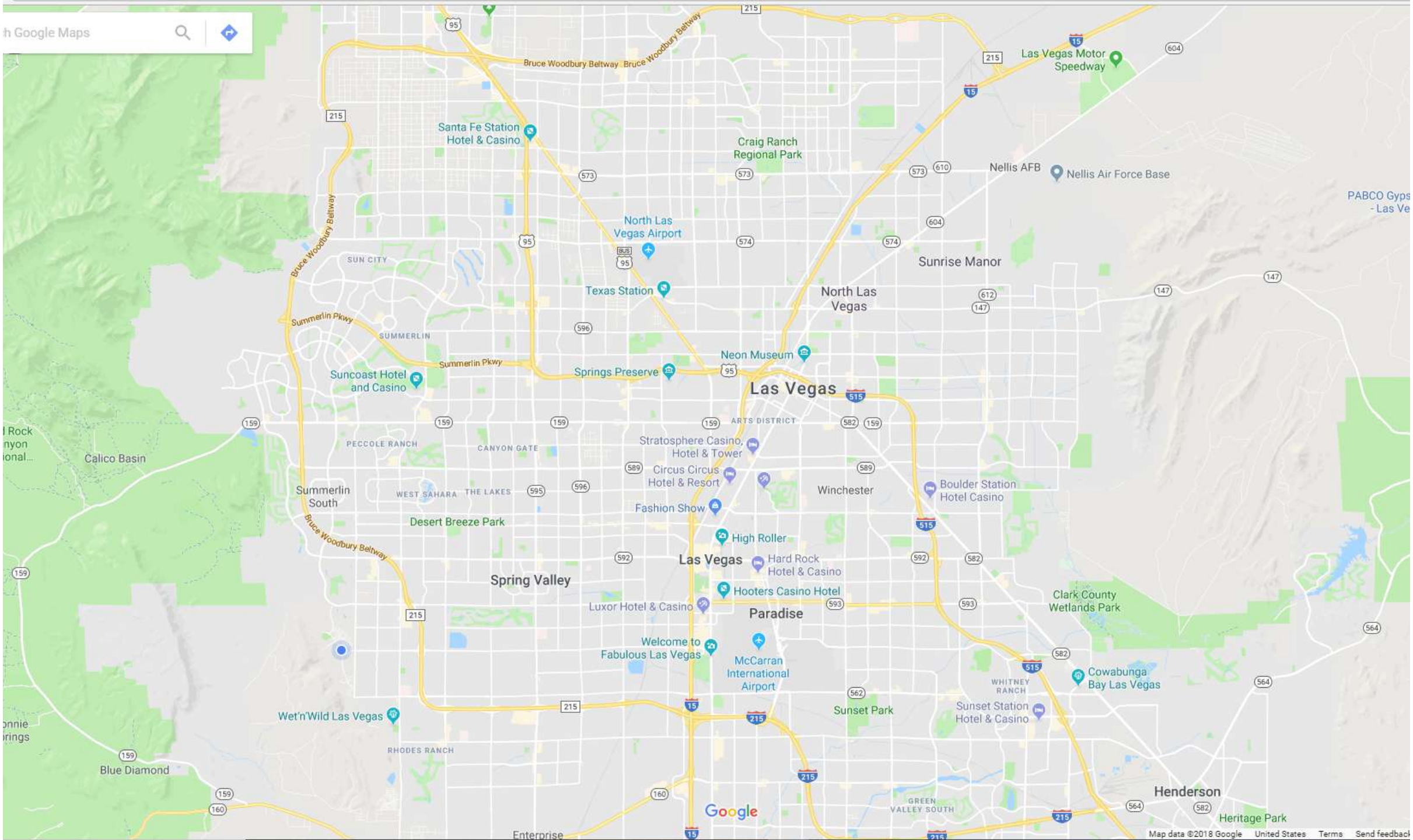
- A <u>coordinated</u> injury response network.
- Conducts <u>daily operations</u> to optimize patient outcome.
- Can <u>readily adapt</u> to manage an influx of injured patients resulting from a mass casualty incident.
- <u>Practices</u> Disaster Response
- There is a plan to care for injured and ill for every major event in LV

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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Bruce Woodbury Beltway
Santa Fe Station Hotel & Casino
Craig Ranch Regional Park
Las Vegas Motor Speedway
Nellis AFB
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North Las Vegas Airport
SUN CITY
Texas Station
Sunrise Manor
North Las Vegas
Summerlin Pkwy
SUMMERLIN
Neon Museum
Springs Preserve
Suncoast Hotel and Casino
Las Vegas
ARTS DISTRICT
PECCOLE RANCH
CANYON GATE
Stratosphere Casino, Hotel & Tower
Circus Circus Hotel & Resort
Calico Basin
Summerlin South
WEST SAHARA
THE LAKES
Winchester
Boulder Station Hotel Casino
Fashion Show
Desert Breeze Park
High Roller
Las Vegas
Hard Rock Hotel & Casino
Spring Valley
Hooters Casino Hotel
Luxor Hotel & Casino
Paradise
Clark County Wetlands Park
Welcome to Fabulous Las Vegas
McCarran International Airport
WHITNEY RANCH
Cowabunga Bay Las Vegas
Sunset Park
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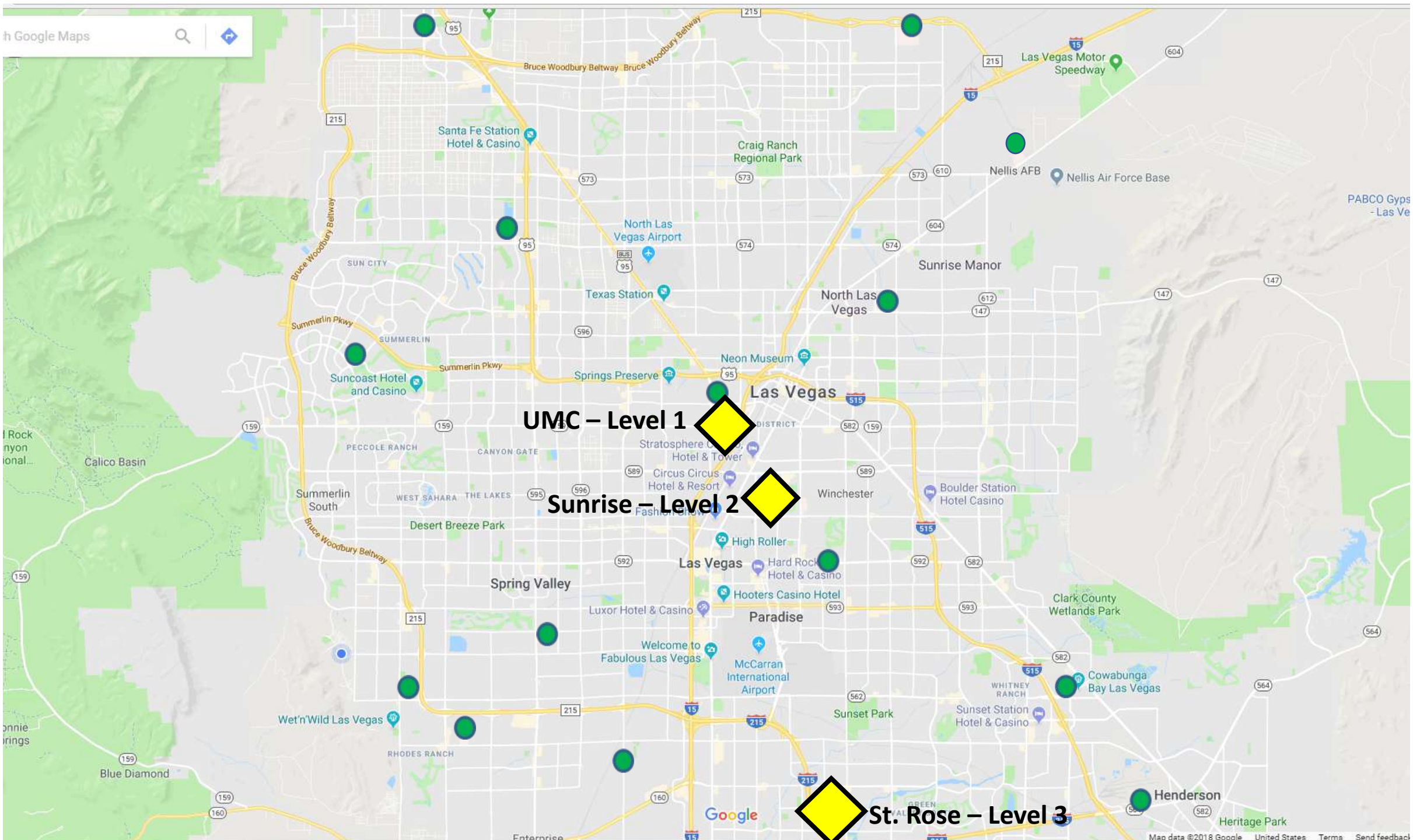
UMC – Level 1
Sunrise – Level 2
St. Rose – Level 3
Las Vegas
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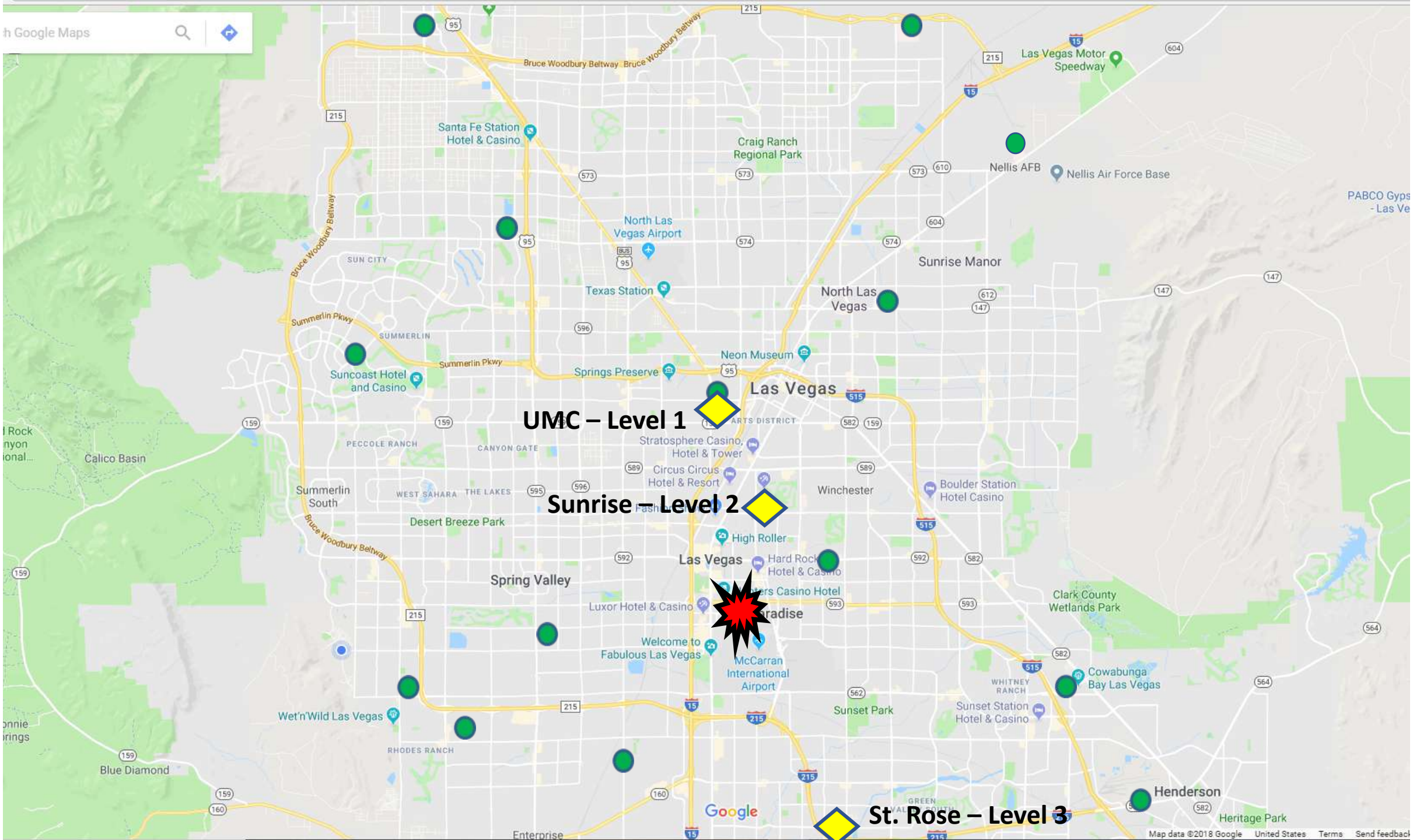
Henderson
Paradise
Spring Valley
Sunrise Manor
Summerlin South
Winchester
Enterprise
Google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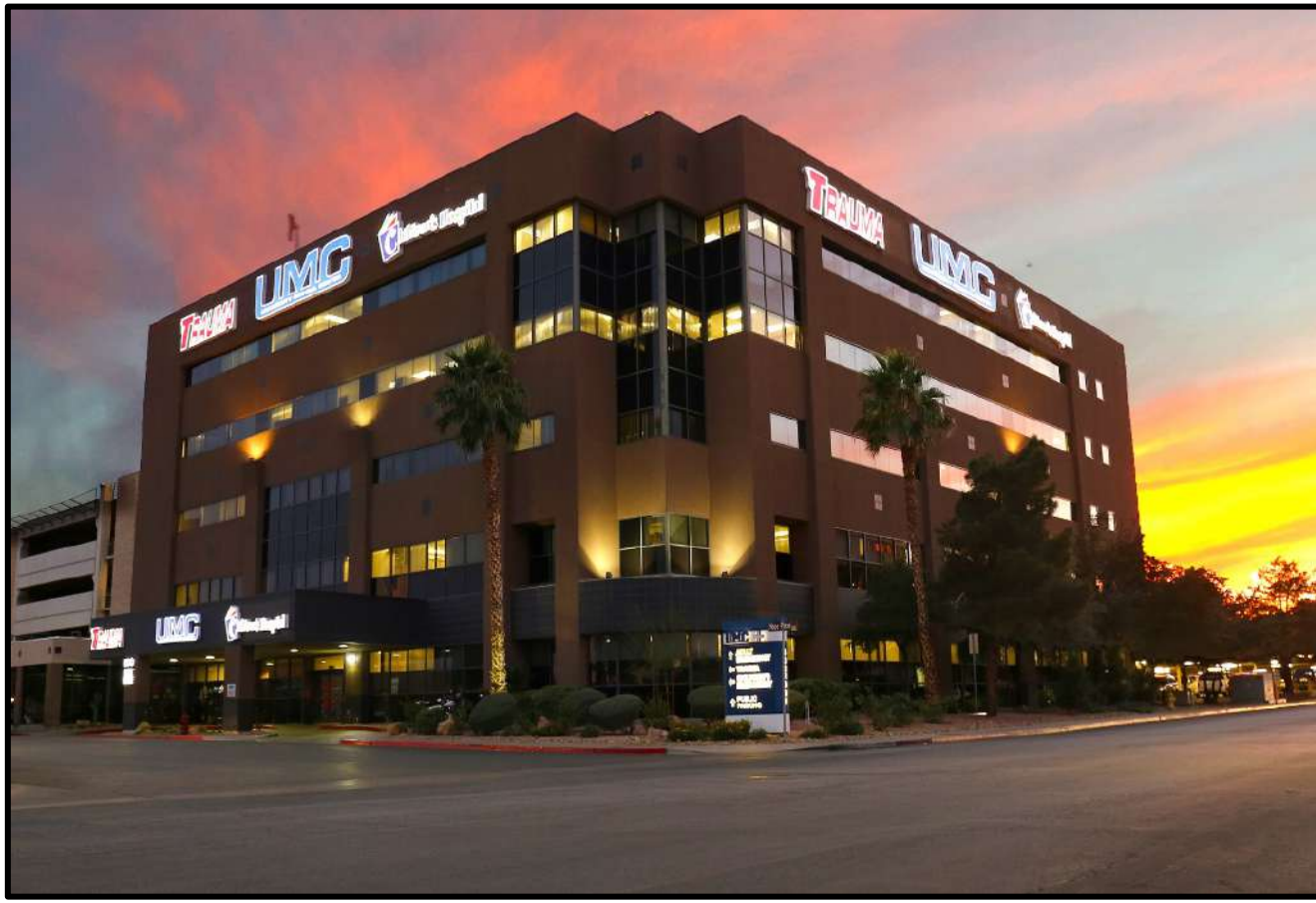
UNIVERSITY MEDICAL CENTER

Timeline of events on One October

- 7 acre site in the middle of the Strip
- 22,000 people
- 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 patient arrives at Sunrise (II)
- 10:28 pm 1st patient 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"
- Purpose-built facility
- Only stand-alone trauma center in west
- Adult Level I, Pediatric Level II
- 24 hr Trauma Surgeon & ED Physician
- Treated 12,500 patients in 2016
- Admitted 3,400 in 2016
- Joint training and readiness program with Nellis AFB "Smart Program"



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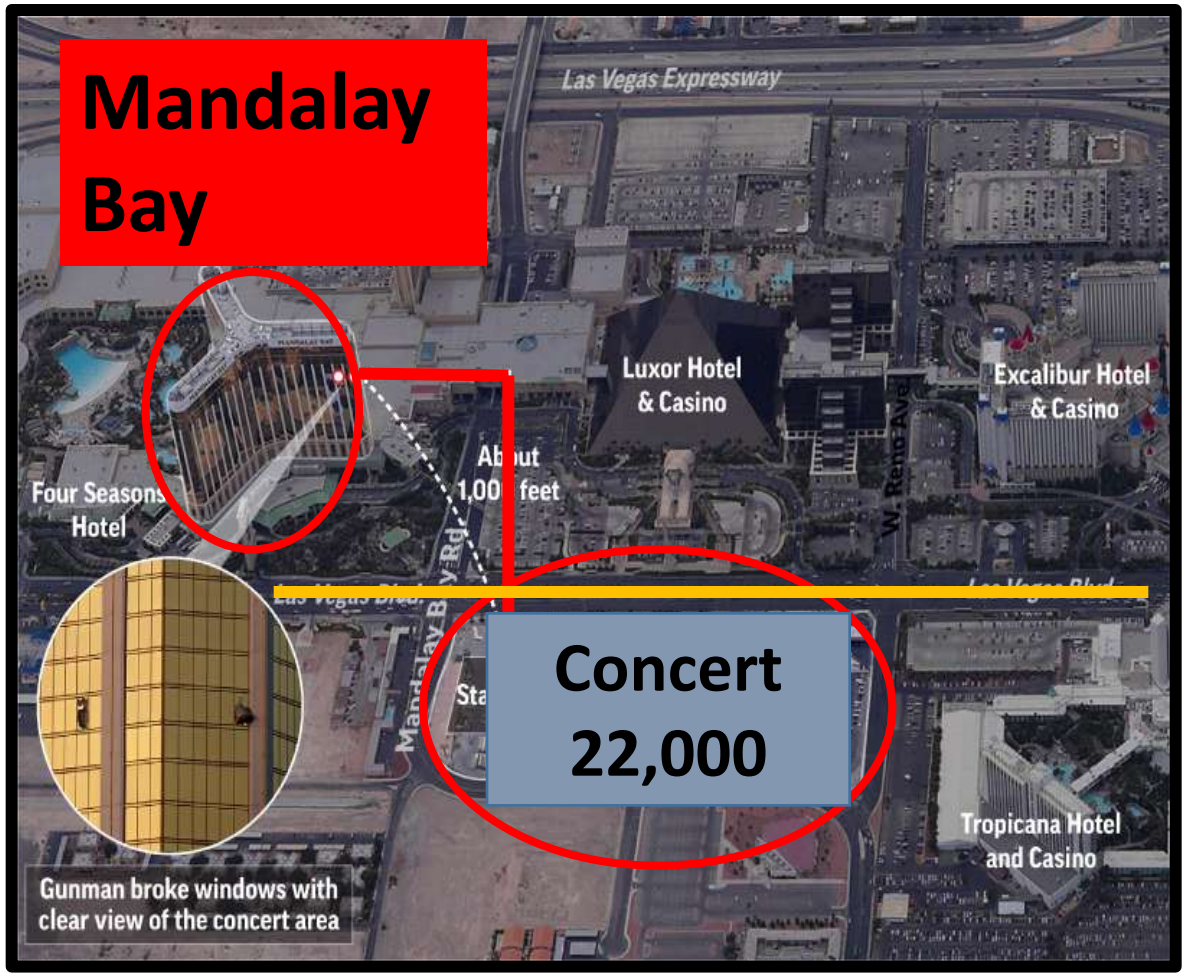
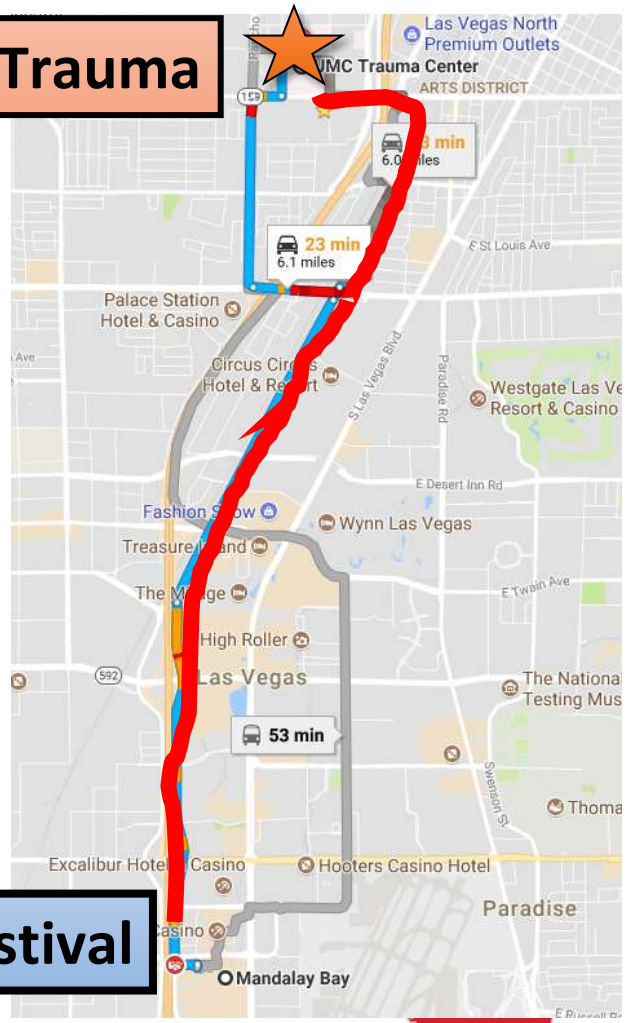
Access to UMC Level I Trauma Center





6 Miles

Route 91 Music Festival

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ED and “Main" Operating Rooms

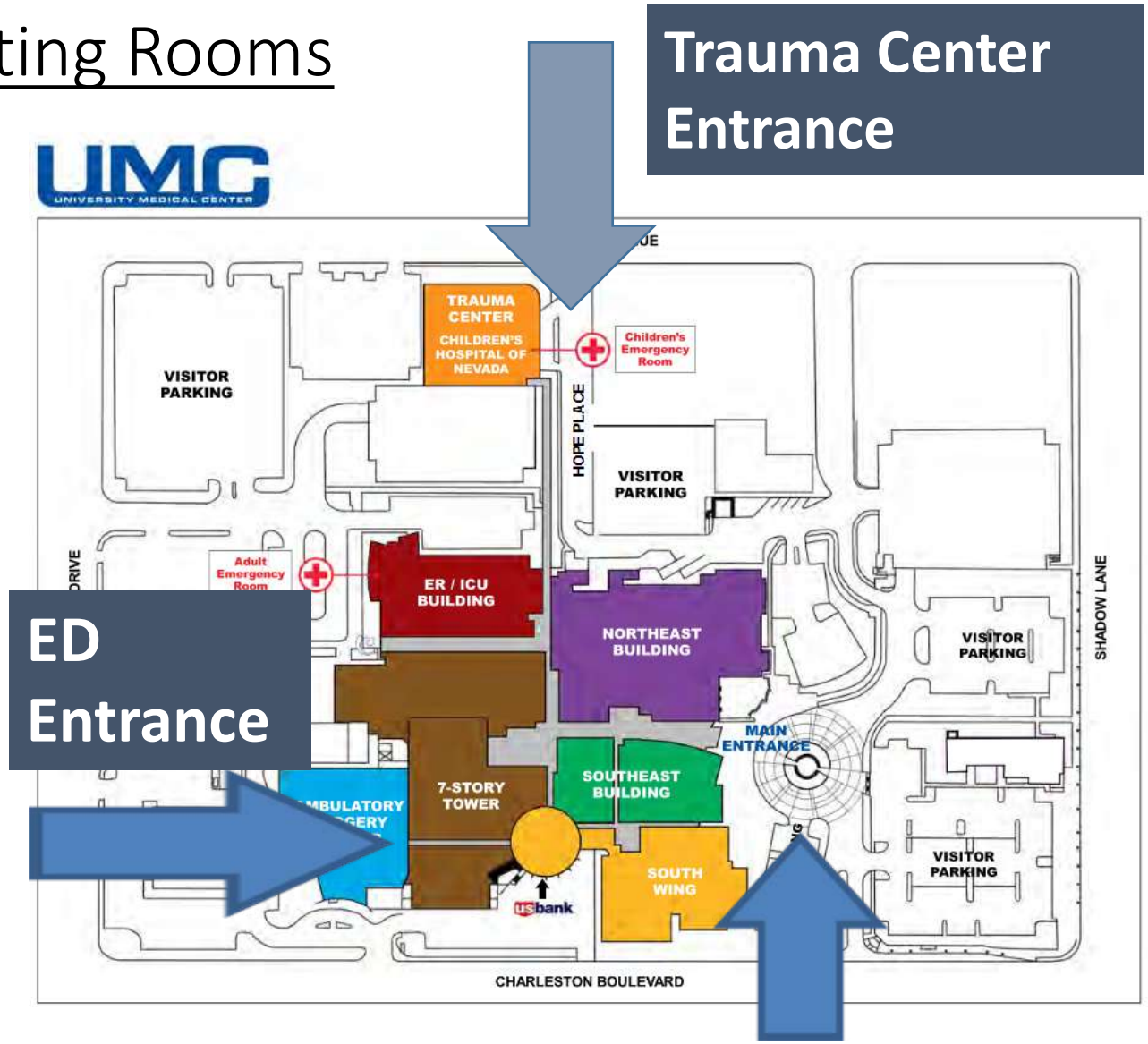
541 Beds Total

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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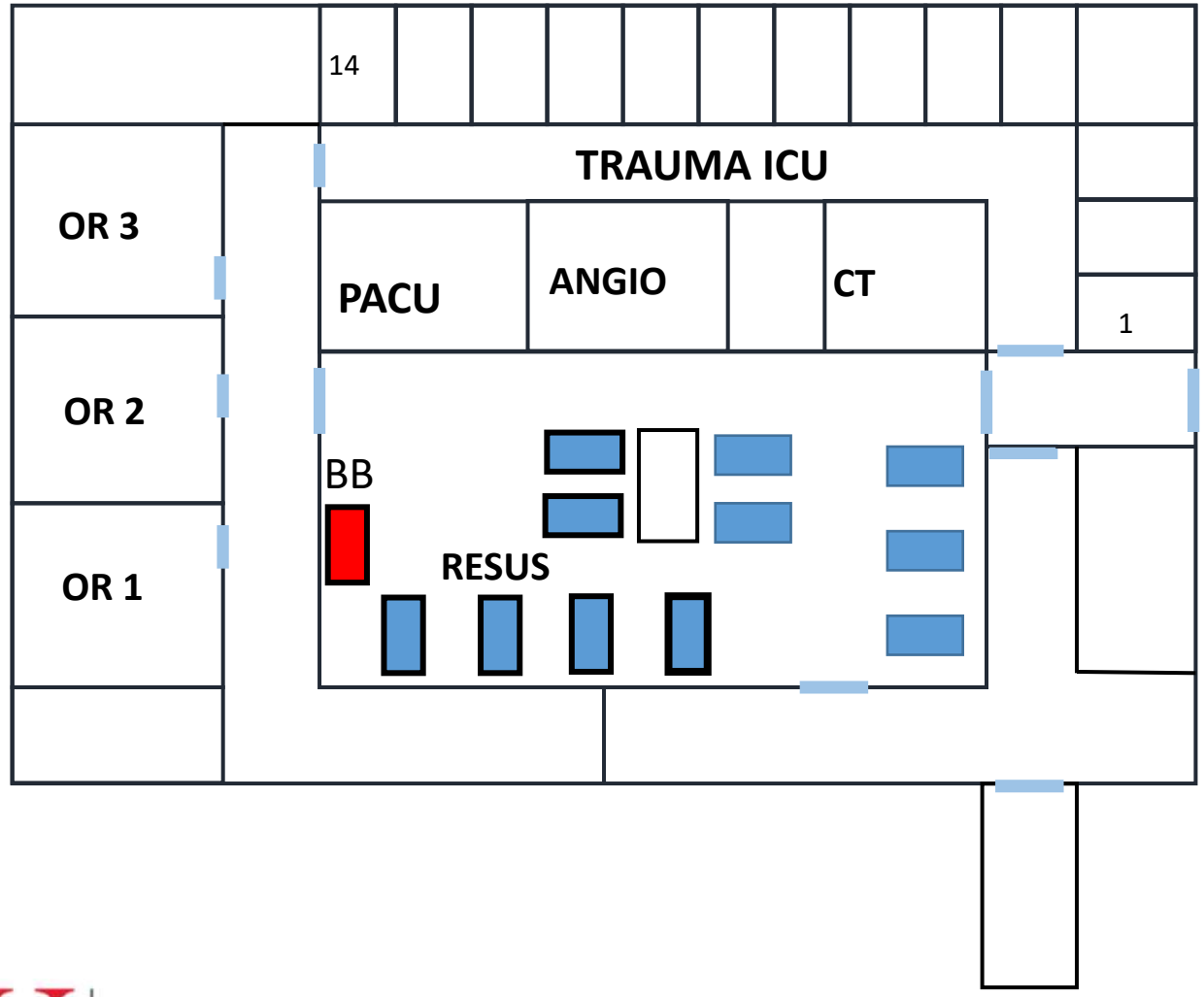
UMC Trauma Center



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

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October 1, 2017

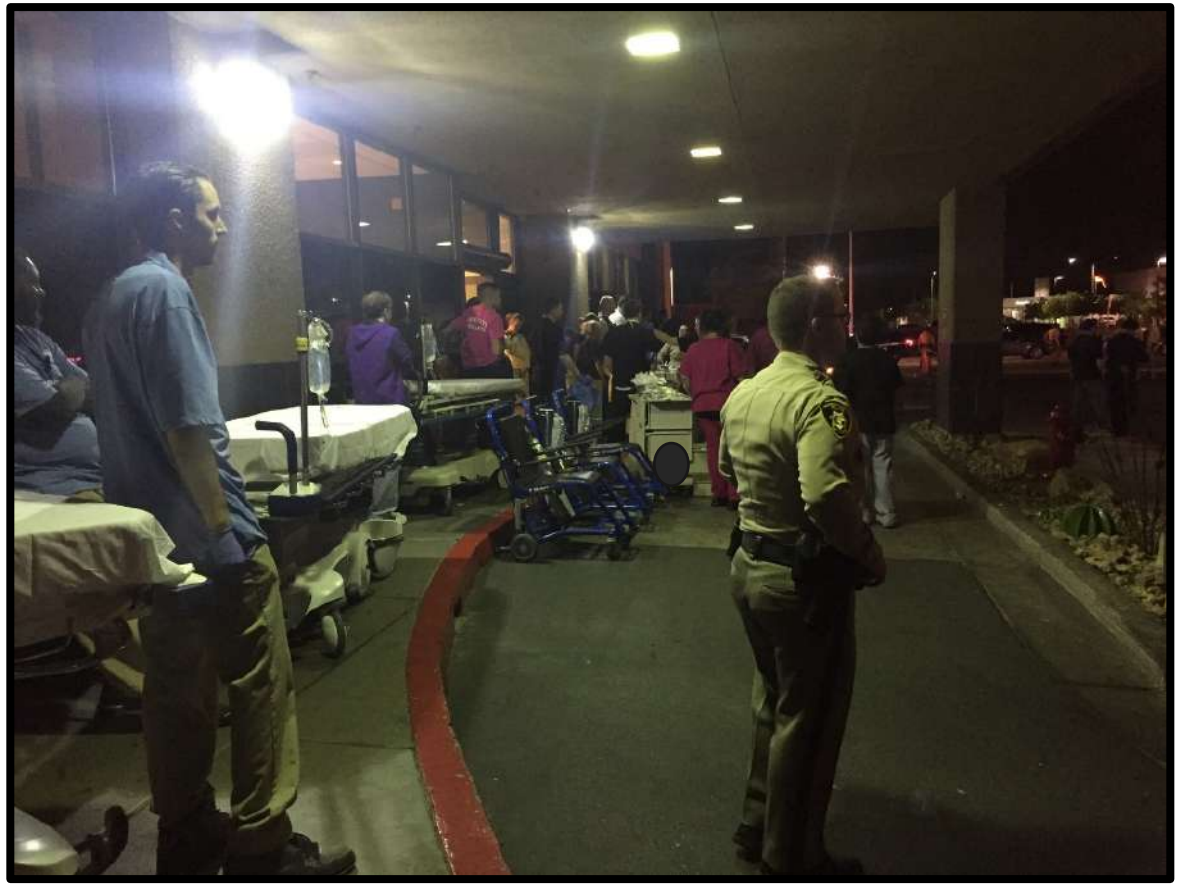
- A very busy Sunday already with multiple activations
- All providers are on 12 hour shift schedule (attendings, residents, fellows)
- At 10 pm, day team still present and finishing up patient care
- Most beds in trauma center already occupied
- "No Notice" Mass Casualty

First Notification & Response

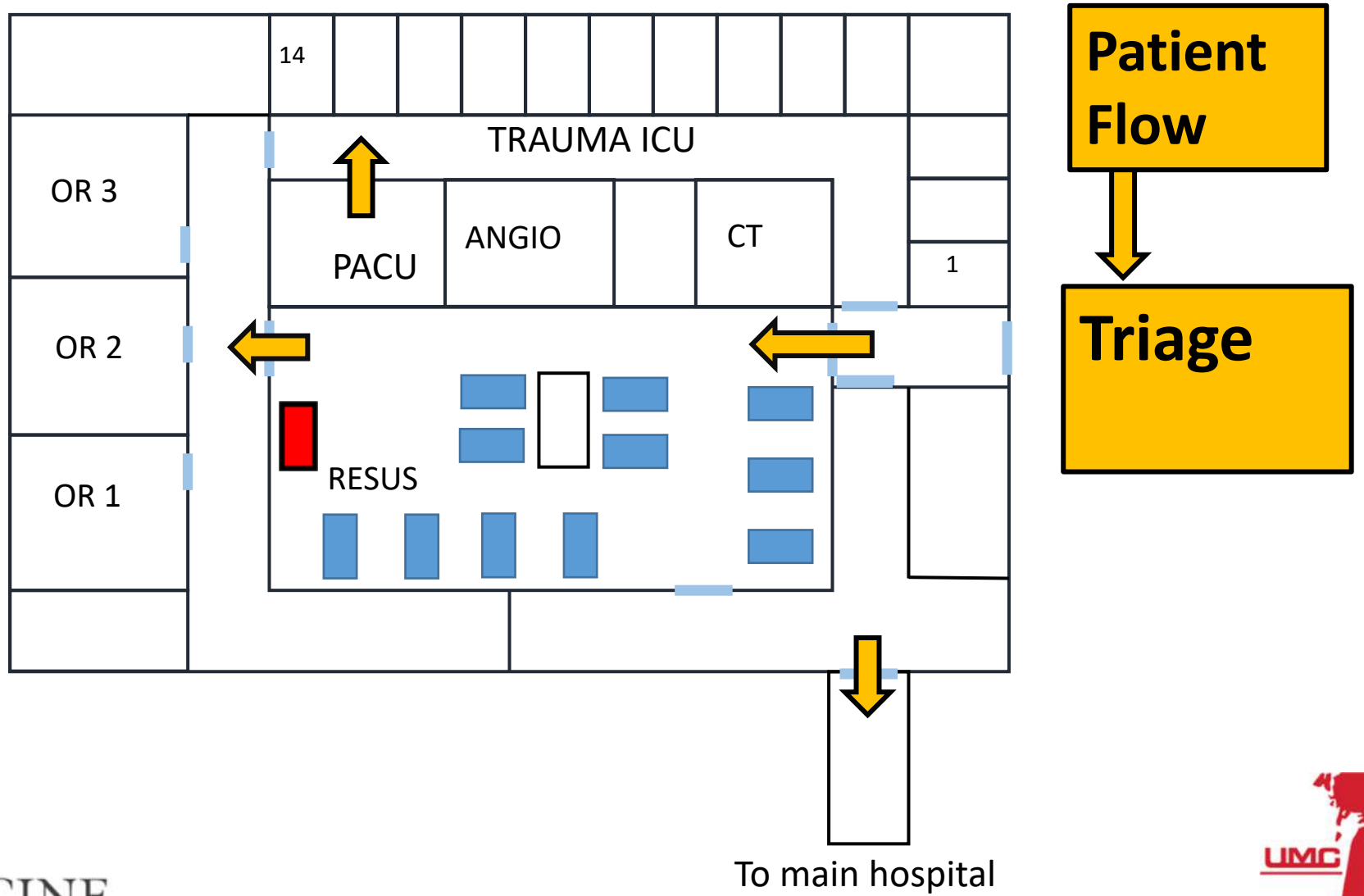
- **“10:15 pm Active Shooter on the Strip”**
  - Night & Day Trauma Teams in House & Stayed
- **First Notification**
  - 5-10, then 20 patients enroute
  - Back Up Surgeon & Anesthesia Called
- **Second Notification**
  - 50-100 patients or more
  - Activated Disaster Plan

Initial Wave of Patients/3rd Notification

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

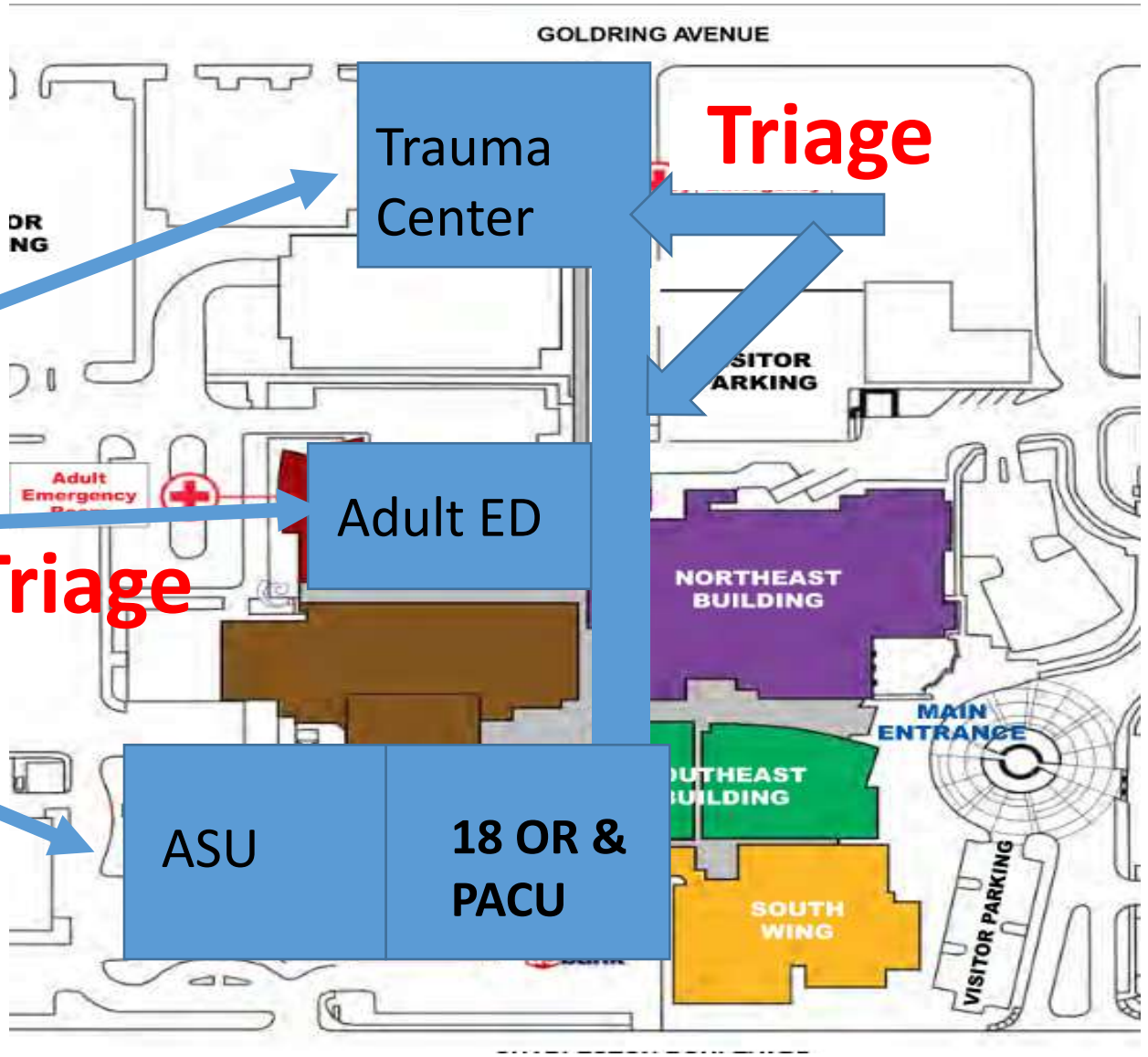


UMC Trauma Center



Created more ER Beds

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

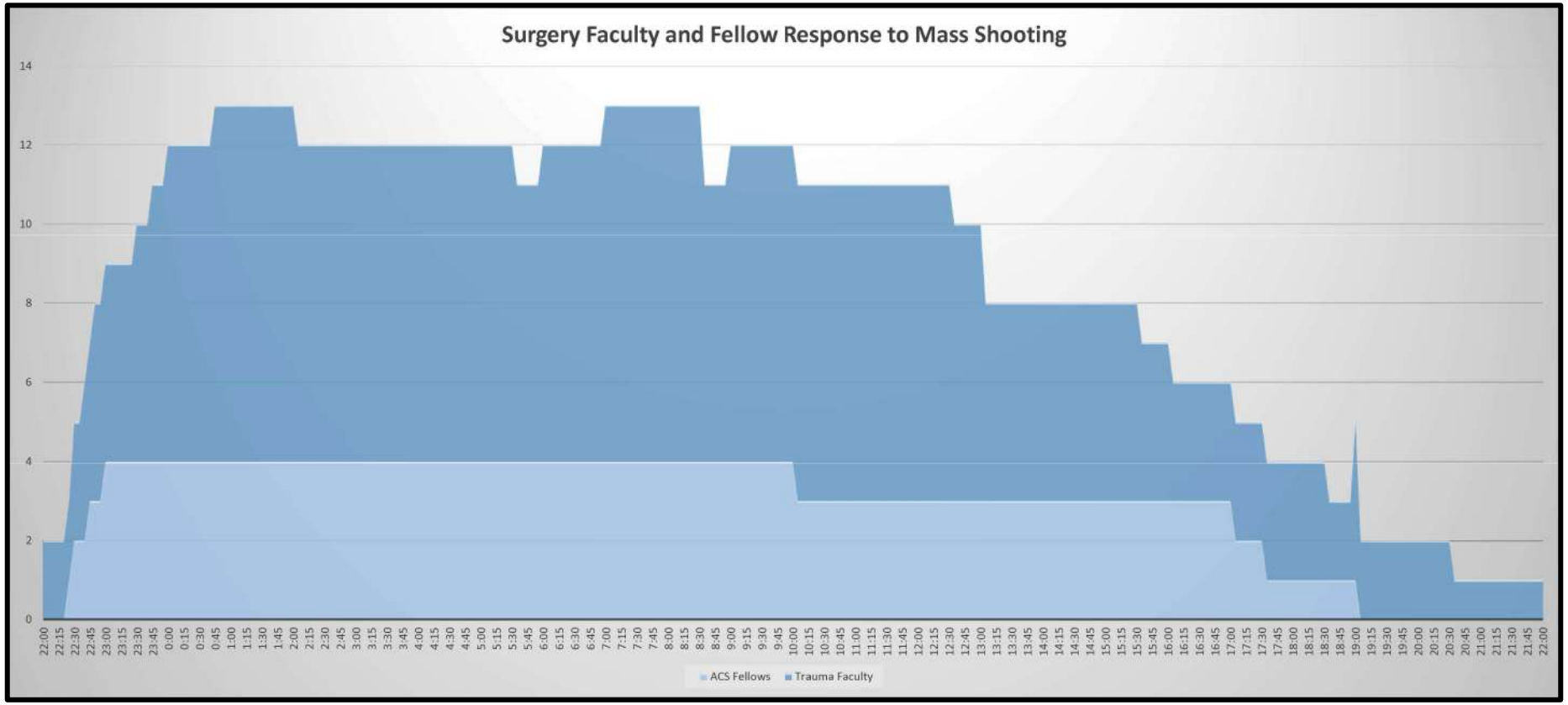


Incident Command Center

- 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

Surgeon Arrival Time

0 mins - 2 faculty in house plus Surgery, Ortho & EM Residents
30 mins - 4 faculty 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 Nursing & Staff – Disaster Plan

- TR Charge nurse called clinical supervisor (chain of command, 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

Mobilization of Resources/Active Shooter

- 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 Resources

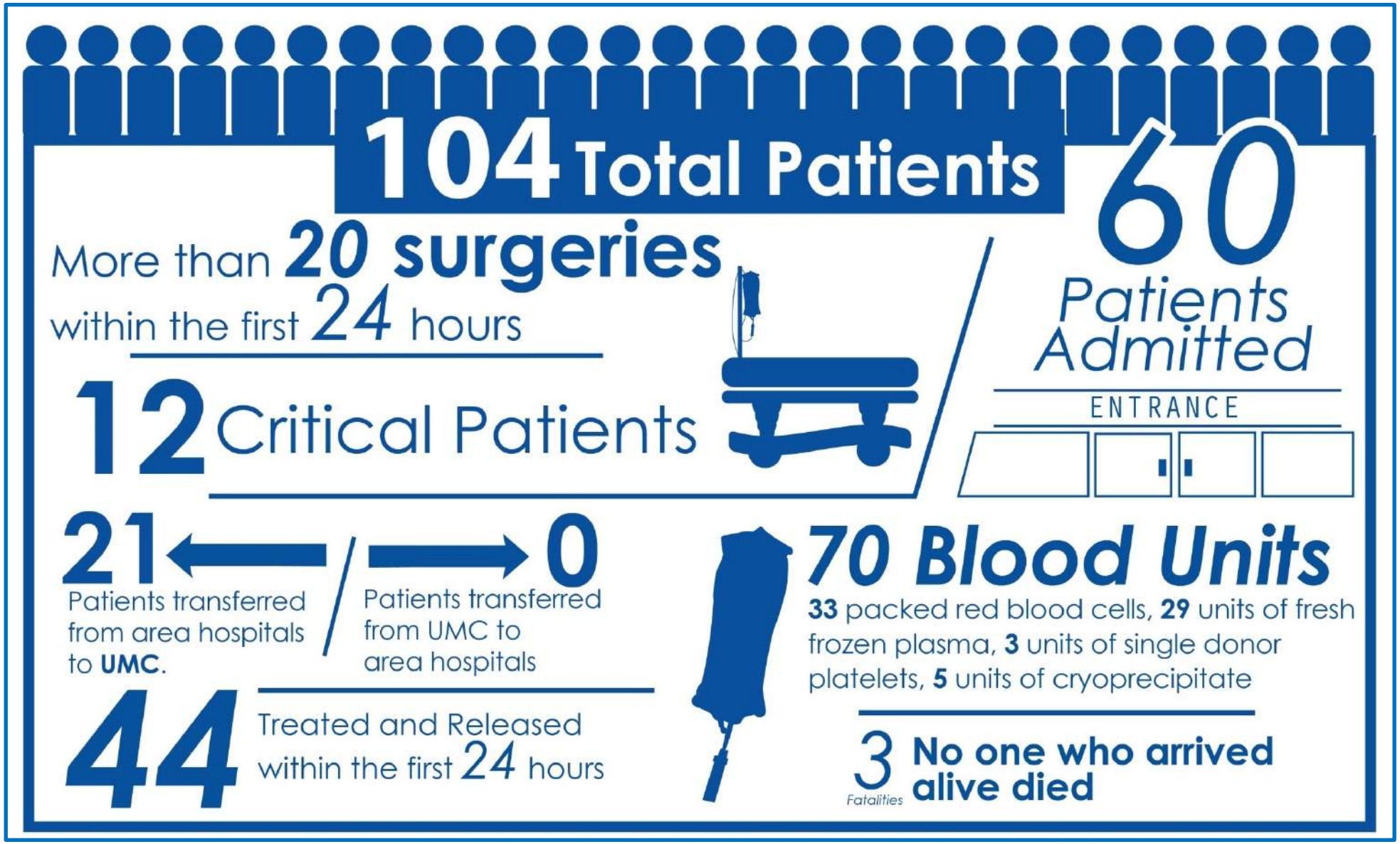
- The Hall, Main PACU and ASU were set up for less critical patients
  - Staffed by EM physician, Trauma Surgeon(s), Anesthesiologist, Nurses
  - Many came in from home
  - “Mini teams” with leader
- Families went to cafeteria
- Social Services, chaplain, TIP

Surgical Procedures

- 20+ OR's first 24 hours
  - 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 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



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

- Sustained Medical and Readiness Trained Program
- 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

Dr. Snook SMART Program Director

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Patients Treated at Other Hospitals
More than 600 patients were treated

- Centennial Hills Hospital (23 mi away)
  - 5 patients
- Desert Springs (4 miles away)
  - 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 Dominican (Level III)**
  - **>100 patients; 37 serious injuries**
- 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
- VA – 0 patients
- Nellis AFB – 0 patients
- North Vista – 0 patients

Debrief – What Went Well at UMC

- Nursing leadership knew exactly what to do
  - Moved patients from Trauma resuscitation to Trauma PACU
  - Set up triage area within minutes
- All staff responded – voluntarily came to hospital and were called
- Administration ensured many resources:
  - Nurses, OR techs
  - Supplies, medications and blood
  - Housekeeping
  - Family support
  - Media and VIPs
- Physician recruitment
- Patient flow and repurposing main PACU and Same Day Surgery area

Challenges Encountered at UMC

- Patients could not be registered as quickly as they arrived
  - Registered in order of severity
- Unable to place orders or generate electronic notes
- Phone system overwhelmed
- Tracking of patients – Senior Surgeon, one page paper
- Misinformation – shooters; terminology for main ER caused confusion among pre-hospital providers
- Documentation – tertiary surveys

Trauma System Summary of Lessons Learned

- Practice your disaster plan – in each hospital and system wide!
- Road Closures!
- Consistent terminology across the system
- Security protocols in place at your hospital
- Triage arriving patients outside of hospital
- Create smaller teams to work through manageable numbers of patients
- Be prepared to work around bottlenecks (i.e. registration)
- Robust system of naming unnamed patients
- Plan for “level-loading” system for uneven distributions of patients
- Advanced Trauma Life Support (ATLS) is the common language.

ASPR Visit and Presentation

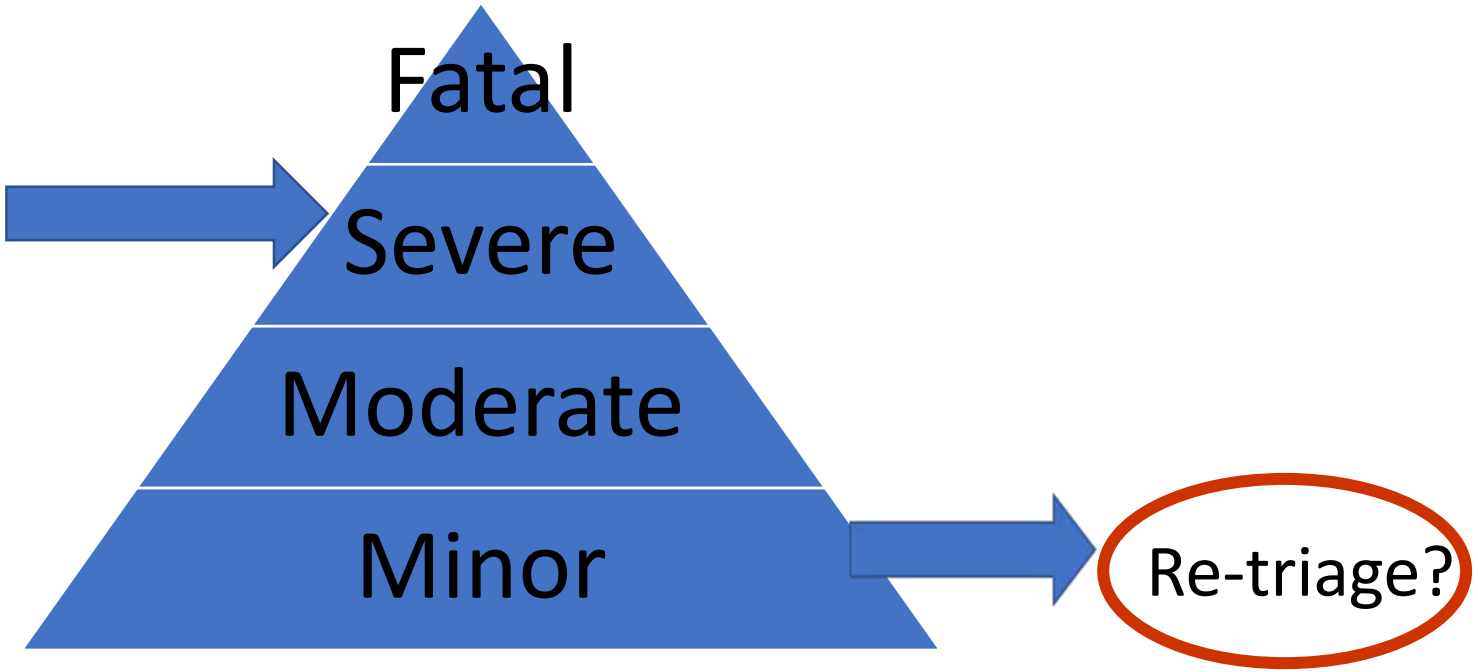
- March 28, 2018 webinar
- Robust EMS Response
- <20% transported by EMS
- Potential to redistribute patients
- Scene Safety Issues
- Surgical services should be prepared for 12 hour shifts indefinitely
- Specialty teams
- Damage control/delay non-life-threatening surgeries to next day

ASPR Visit and Presentation

- Non-trauma center surgeons know to stop bleeding
- Not all specialty surgeons treat trauma patients
- Stabilize and transfer
- Opportunity for Governor to enact legislation to allow any physician licensed in state to have privileges at any hospital in state
- Trauma Centers were over-accessed → opportunity to transfer patients with minor injuries ("walking wounded") to other non-trauma center hospitals→ include in disaster plans
- Include anesthesia in disaster plan and practice
- Support for patients, families, staff debriefing

The Trauma Center's Role

The Injury Pyramid in an MCI



Disaster Preparedness

DMEP™
DISASTER MANAGEMENT & EMERGENCY PREPAREDNESS

One day course with these objectives:

- Understand the surgical problems, injury patterns, and issues that may result from disasters
- Discuss the role that surgeons can play in planning for and responding to mass casualty incidents and disasters, especially at a hospital level
- Become familiar with the terms and concepts of incident command
- Understand the principles and challenges of disaster triage
- Become familiar with treatment principles related to blast injury, chemical attacks, and radiological dispersal devices
- Know the civilian and military assets available for support

Disaster Preparedness

DMEP™
DISASTER MANAGEMENT & EMERGENCY PREPAREDNESS

Core Competencies:

- Epidemiology and history of disasters
- Disaster planning
- Disaster response organization and execution
- Medical management of mass casualties
- Pathophysiology and patterns of injury
- Post-disaster assessment and recovery
- Pitfalls and barriers in disaster planning and response
- Understanding the needs of special populations (i.e., pediatric, geriatric, disabled)

Tell Your Story - 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

Community, Outreach, Donations

- More food donations than we could possibly eat (or should!)
- Continued for 2+ weeks
- Developed a schedule for vendors to bring items
- Everyone gained weight

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Emotional Impact – Crisis Support - Recovery

- Start crisis support right away
  - Available 24/7
- Recovery starts immediately
- Prepare to be affected
- Realize that this changes everyone permanently
- Crisis support continues
  - Highlighted in media at least weekly in LV

Stop The Bleed Training

- NV Statewide Meeting Oct 7
- Significant increased interest in Stop the Bleed training after One October.
- Over 3000 trained in NV
- 4-10 classes/week
- Incorporated into ATLS refresher course

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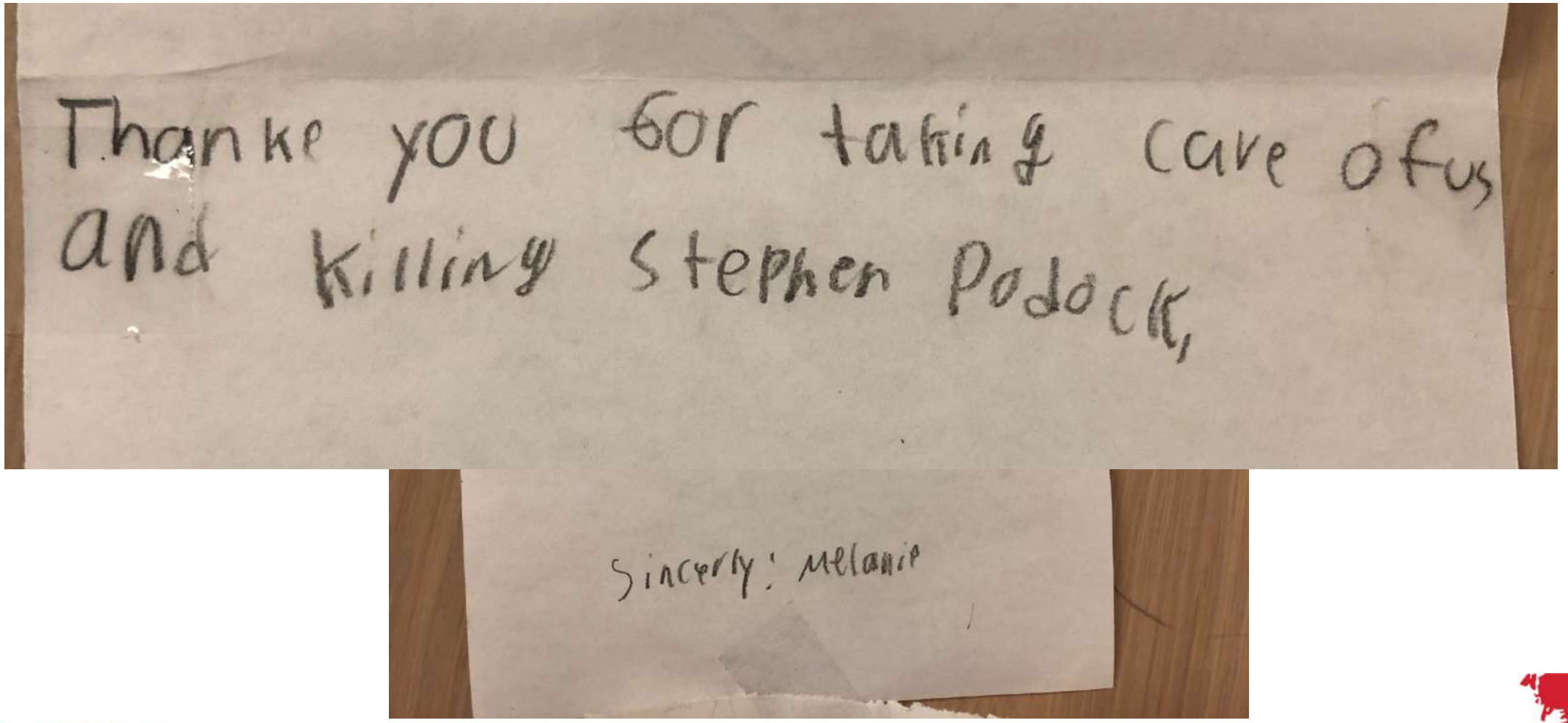
Hundreds of Notes



Dozens of Banners

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A Team Effort – Save Lives, Maintain Resilience

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Sunrise

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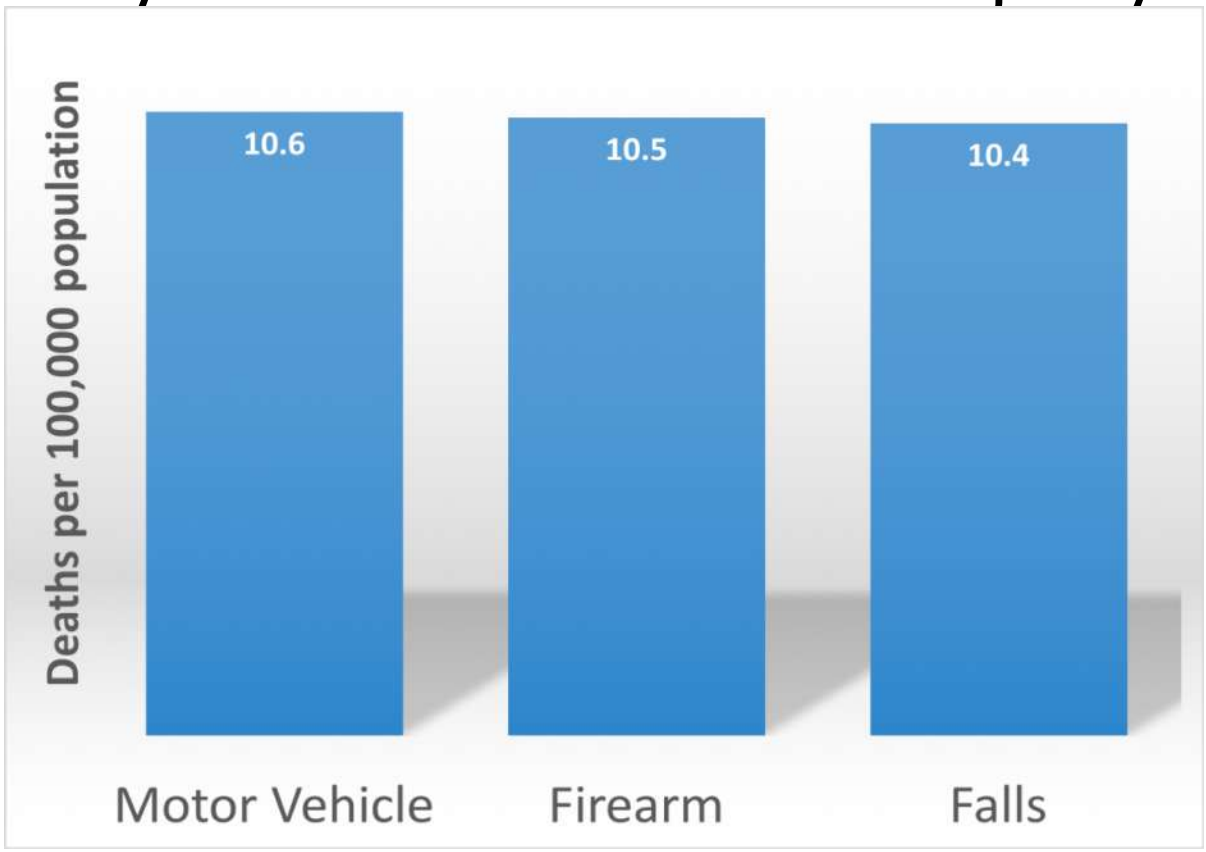
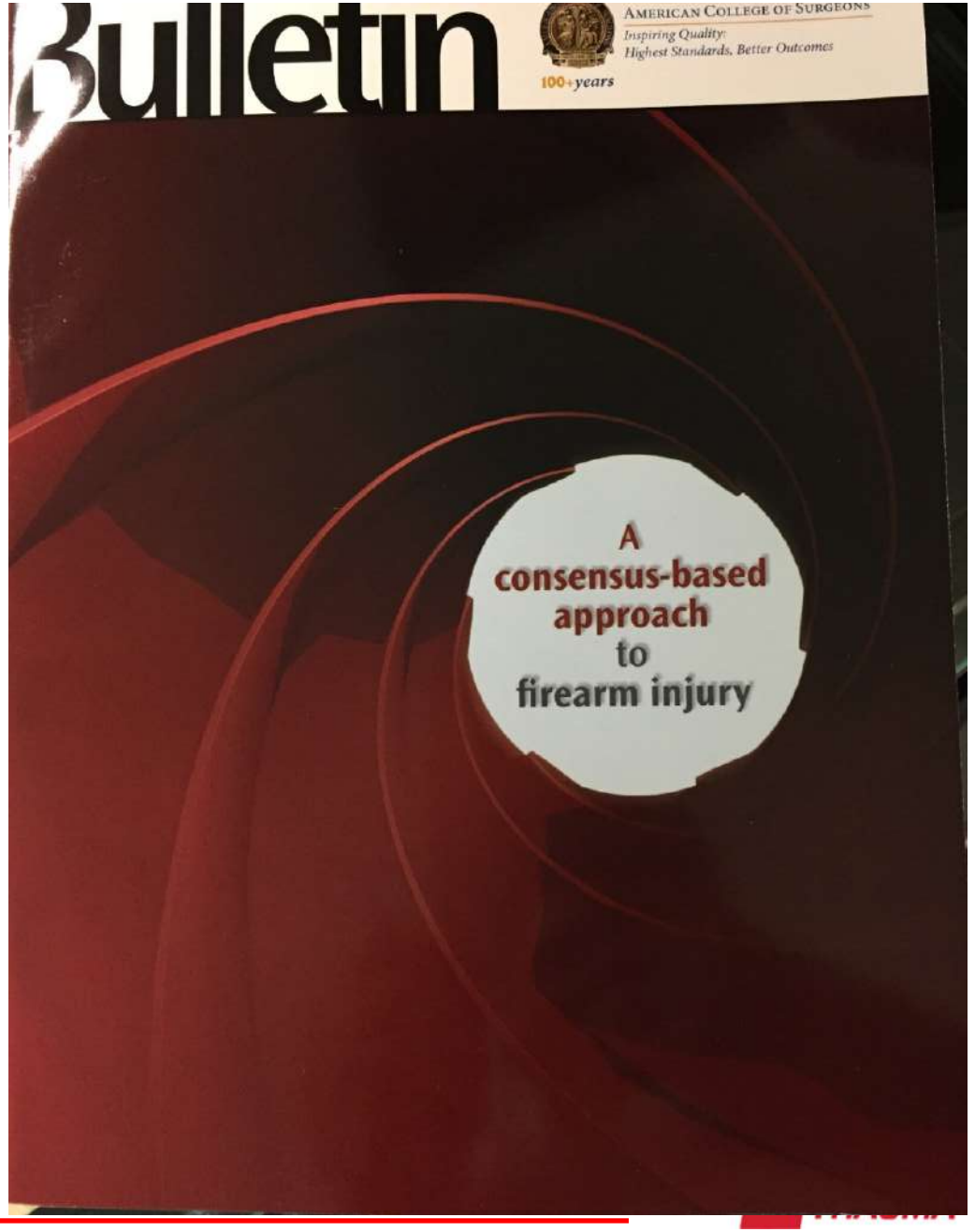
Burden of Death in the U.S. by Mechanism of Injury



CDC National Center for Health Statistics, 1999-2014

What Can We Do?

- Statements and action plans
- Opinions vary widely and can be very divisive
- Surveyed COT and BOG members
- Areas of consensus that included:
  - Talking with patients about safe storage and ownership
  - Research to better understand interventions
  - Leverage trauma system and injury prevention
  - Violence – hospital based violence intervention programs
  - Advocacy based upon consensus
- October 2017 Bulletin
- Injury Prevention website – publications, more
  https://www.facs.org/quality-programs/trauma/ipc



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THE COMMITTEE ON TRAUMA

- Injury Prevention and Control
- Firearm Injury Prevention Activities
- Advocacy and Position Statements
- National Safety Council Award
- Injury Prevention Resources

Firearm Injury Prevention

Bulletin

The ACS COT's approach to firearm injury prevention was highlighted in the October 2017 *Bulletin*.

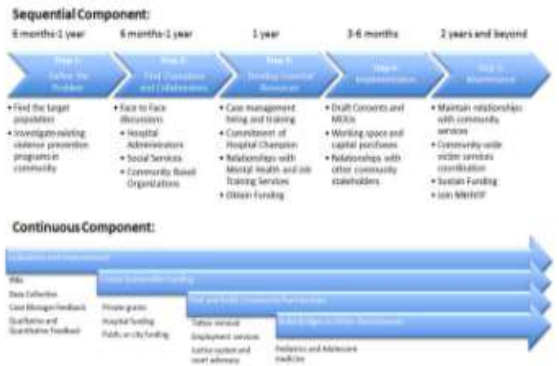
- The COT's consensus-based approach to firearm injury
- Violence intervention programs
- Survey of the ACS Board of Governors on firearm injury prevention
- Trauma surgeon uses traveling fellowship to learn about HVIPs

COT Finds Consensus on Firearm Injury

Survey of American College of Surgeons Committee on Trauma members on firearm injury: Consensus and opportunities

Published in the *Journal of Trauma Acute Care Surgery*

Violence Intervention Primer



A group from the ACS COT Injury Prevention and Control Committee was tasked with outlining a comprehensive approach to institute a sustainable hospital-based violence intervention program (HVIP). The committee has developed a step-wise guide to establishing a working HVIP.

Read the primer

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ACS Firearm Action Plan

AMERICAN COLLEGE OF SURGEONS

Inspiring Quality:
Highest Standards, Better Outcomes

1. Support trauma systems and the Stop the Bleed program .
2. Focus and strategy group of firearm-owning Fellows to discuss firearm injury prevention strategies that they could support and for which a durable advocacy platform could potentially be developed around.
3. Broad survey of membership to understand their views on firearm ownership and firearm advocacy and injury prevention strategies.

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ACS Firearm Action Plan

AMERICAN COLLEGE OF SURGEONS
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4. Multiple collaborative partnerships.

5. Implement injury prevention including safe storage initiatives, hospital based violence intervention programs and guidance for physicians to counsel patients on safe firearm ownership.

6. Develop a research agenda and advocate for federal funds for firearm injury prevention research.
   - www.affirmresearch.org – non-profit, private funds for research

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ACS Firearm Action Plan

AMERICAN COLLEGE OF SURGEONS
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7. Promote responsible gun ownership and non-violent conflict resolution.

8. Collaborate with the mental health community in support of increased funding for mental health programs.

9. Work to enhance background checks and support and strengthen enforcement of current laws and regulations designed to keep firearms out of the hands of criminals or those who do not pass a background check.

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Summary

- Trauma System – the entire system
- Disaster planning, training, drills, practice, practice, practice
- Consider massive trauma in plan
- Practice, practice, practice
- Train the public – transform bystanders into live savers!
- Train students, residents, fellows
- Prevent these injuries and deaths
- COT Injury Prevention and Control Committee https://www.facs.org/quality-programs/trauma/ipc
- Advocacy – Stay Involved!

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Questions?

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STOP THE BLEED

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