Mass Gatherings/MCI/Disaster Response

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Objectives

• Definitions

• When Mass Gathering $\rightarrow$ MCI

• Historical Examples

• Preparation is KEY

• 5 Areas of Risk Management and Planning Mitigation

• Planning Under Normal Circumstances

• Transitioning to MCI

• Know Your Roles/ICS

• Conclusion
Definitions

• Mass Gatherings: some define as “> 1,000 persons”  
  • Most published data > 25,000 persons

• FEMA uses "special events”
  • “A non-routine activity within a community that brings together a large number of people...emphasis is on the communities’ ability to respond to a large-scale emergency or disaster or the exceptional demands that the activity places on response services.”

• WHO defines it as “any occasion, either organized or spontaneous, that attract sufficient number of people to strain the planning and response resources”
When Mass Gathering Becomes an MCI

- Present unique challenges to an already taxed EMS system, hospitals, transportation, and law-enforcement
- Can produce QUICKLY escalating events
  - Crowd disturbance
  - Fire
  - Structural collapse
  - Natural disaster
  - Disease outbreak
  - Terrorist attack
History of Disasters/MCIs at Mass Gatherings

- Hillsborough Stadium
- Hyatt Skywalk collapse
- Virginia Tech
- Joplin tornado (graduations)
- Ferguson, MO (potential)
Hyatt Skywalk Collapse

- Steve Orr, M.D. TMC ER Resident on EMS Rotation
- Walkways in lobby collapse at weekly dance
- 113 killed
- 188 injured, many critically
- 2 blocks or so from TMC
BEFORE THE COLLAPSE

The lobby of the Hyatt Regency hotel, with its open atrium, suspended walkways and interior landscaping, was a sight to behold, and the weekly tea dances were very popular parties. Thousands of people flocked to the hotel every Friday evening for the 1940s style dance contests and big-band music. The party on July 17, 1981, began in typical fashion.

WHAT WAS BUILT

The original design called for six single-rod assemblies, attached to steel beams in the roof, to run continuously through the skywalk box beams on the fourth floor to the box beams on the second-floor skywalk. But the plan was changed during the construction phase, and 12 shorter rods were employed.

NOTE: For clarity, the third floor skywalk is not shown.

South end of skywalks anchored to steel plates.

Ceiling of lobby

South wall

North wall

South end of skywalks anchored to steel plates.

Fourth-floor skywalks

Ceiling of lobby

South end of skywalks anchored to steel plates.

Fourth-floor skywalks

West windows

North end of skywalks attached to expansion joint.

Lobby bar

Band

Escalators

Stairs

Terrace restaurant

Lounge area

Alcove areas

To main hotel entrance

Skywalk floor

1 3/4 inch diameter suspension rod

Box beam

L-beam

1-beam

Illustration is schematic. Not to scale.
The Issues

• Despite history, traditional planning concentrates on normal operations using patient presentation rates from comparable events
  • When an escalating event occurs, generally not prepared
  • Why?
    • Complacency, training, lack of time, lack of money

• Important to integrate MCI planning INTO the mass gathering preparation and planning
Preparing for Mass Gatherings AND MCI

- **Pre-assignment** of MCI leadership roles
  - Know ICS and what your specific role will be
  - Who will you report to?
  - Paperwork, liability, accountability

- **Pre-designation** of disaster communications channels
- **Coordination** with regional hospitals
- **Integration** of EMS tools and capabilities
- **Staging** of disaster supplies
- **Recognition** and mitigation of historic vulnerabilities
- **Preservation** of regional resources with physician-based treatment centers
5 Areas of Risk Management and Planning Mitigation

• Soomaroo and Murray:
  • 1) Overcrowding and crowd control
  • 2) Event access points
  • 3) Fire safety measures
  • 4) Medical preparedness
  • 5) Emergency response
#1: Overcrowding and Crowd Control

1) Predictable Patterns of Behavior
   • In dense crowds, can’t see
   • Can exacerbate a crowd crush with pushing behaviors
   • Stimuli can create a sudden surge → individuals fall and become crushed

2) Bottlenecks
   • Stairways, tunnels, turns, equipment, and stages create obstacles that impede traffic flow
Hillsborough Disaster

- Occurred in two central pens
  - To ease overcrowding outside, police ordered an exit gate be opened at 2:52 pm, kickoff at 3pm
  - Lead to a sudden influx of ~2,000 supporters
  - Trapped spectators w/ fences to their front and sides
  - Game stopped at 3:06pm
- 96 dead, 766 injured:
  - Remains one of the world's worst football disasters
- Led to safety improvements
  - Elimination of standing terraces
  - Removal of spectator fencing
#2: Event Access Points

- Ticketed and Controlled Event Access Points
- Control # of attendees
- Provide additional security screening
- Access points used for **both** entrance and exit reduce traffic flows
- Adequate # of **clearly marked** emergency exits, not blocked
#3: Robust Fire Safety, Prevention, Response Measures

- Strict enforcement of fire safety codes
- Set numbers of extinguishers
  - Be able to find them!
  - Know how to use them!
#4: Medical Preparedness &
#5: Emergency Response Planning

- Help manage an event during normal operations
  - Know # and type of medical personnel needed based on historic patient presentation rates (PPR) at similar events under normal circumstances
- Prepare for escalating event
  - Preplan and Practice
    - Repeat training exercises for all levels of response
  - Ingress/Egress
    - Emergency access corridors must be protected for responders
  - Proper communications
Overall KEY to Mitigation of MCIs at MGs = Proper Planning
Timeline

• Divide into 1) Pre-planning, 2) Planning, 3) Operations, and 4) Post-event review

• 1) Pre-planning - Know type of event, expected attendance, dates and duration, agencies involved, transport modes, alcohol and drug policy, event history, geography

• 2) Planning - Preparation of site, personnel, and resources

• 3) Operations - Duration of the event

• 4) All should conclude with post event reviews
Resources

• Depends on number of spectators and scale of events

• Factors that indicate higher level of resources
  • Crowd size
  • Age, event type, and environment

• Look at validated measures:
  • Patient Presentation Rate (PPR)
  • Medical usage rate (MUR) - percentage of patients per 10,000 persons in attendance
  • Recurring events benefit from prior experiences

• Some facilities have medical equipment, others do not

• No widely excepted standard list

• Also consider basic food, water, sanitation facilities, and sheltering
Stakeholders

- Politicians
- Celebrities
- Hospital administrators
- EMS agencies
- Dispatch
- Law enforcement
- Transportation operators
- Event sponsors
- Event planners
Regulations

• Knowledge of local regulations for legal aspects of mass gathering managements

• Special permits?

• Local minimum staffing regs?

• Liability?
  • Event managers should cover medicolegal liability

• Local license?

• Malpractice?
  • Covered through own employer or event sponsor
Medical Plans

- Should not place additional stress on existing EMS system
  - Keep event medical care separate

- Include staffing requirements, tx areas, BLS/ALS transport options, potential MCI plan

- Most events average 0.5-2 medical calls/1,000 spectators
  - 1 physician for 5,000-50,000 spectators
  - 1 nurse for 2,600 – 15,000 spectators
  - 1 EMT for 2,600-65,000 spectators
  - BLS/FR within 4 mins, ALS within 8 mins, transport to facility within 30 mins

- Review with event management and operations staff

- Approved 30 days prior to event
Environmental Factors

• Pre-event monitoring of weather predictions
  • Extreme cold/hot, wind, rain
  • Water, shade, fans, cooling centers

• Public health regulations for food prep, storage, waste removal

• Traffic routes and parking laid out prior to event
  • Special access for emergency medical vehicles

• Crowd disposition and atmosphere
  • Sports teams, mosh pits
Venue Review

• Complete site review during planning stage
• Identify # and accessibility of exits
• Hazard recognition
• Site mapping
• Evacuation routes
• Security personnel
• Venue specific plan for MCI – convert normal operations to disaster operations
Public Health Surveillance

- Disease surveillance to detect outbreaks or possible deliberate chemical/biological/radioactive agents
Documentation

• Standardized patient care record – paper or electronic
  • PCR is medical and legal record of care rendered
  • Will this form change in an MCI?
• Important for liability, equipment restocking, future event staffing, reimbursement
Communications

• Constant and accurate
• Prepare for complication or escalating situation during the event
• Direct communication from medical oversight to field providers
• Medical oversight have external contact with local EMS agency, fire dept, dispatch, emergency department
• Pre-established channels
• Social media
Disaster Preparedness

• Knowledge of ICS and predestination of roles
• Mutual aid for exceeding resources
  • Finalize contracts before event
Postevent Review

• Debrief to address success and failures during event

• For recurring events: QI program

• AAR (“lessons learned”) session

• Identify areas of improvement for future events
Converting Into MCI Operations

• First phase: 1) Activate Event Emergency Plan
  • Onsite communications notify command center of incident

• FR communicate
  • 1) Nature of incident (fire, structural collapse)
  • 2) Identify hazards (debris, smoke, violence)
  • 3) Est potential # of injured/injury patterns (crush, burns, GSW, chemical attack)
  • 4) Resources needed (heavy rescues, CRBNE response, suppression, law enforcement)
  • 5) Best ingress/egress routes
Converting to an MCI

- 2) Command center communicates with 911 center to activate local/regional MCI plan
- 3) Enact regional mutual aid agreements
- 4) Activate predesignated communication channels
- 5) Notify area hospitals that MG → MCI
  - Implement surge capacity and recall procedures
- 6) Medical providers transition to predesignated mass casualty operator role (ICS), don vest, deploy equipment/management aids (protective gear, ICS documentation, triage tags)
  - Roles change as incoming resources arrive
Medical Care

- Mobile teams likely initial triage and transport to tx center
- Tx center transition to prepare for pts
  - Organized into red, yellow, green, black
  - Clinic intake area becomes secondary triage area and documentation point
- Deploy staged MCI supplies (cots, blankets, bandages)
- **Site security** to maintain safety of responders
- Leave deceased in place for evidence
MCI Medical Service Goals

• Establish rapid access to the injured or ill
• Provide rapid triage, stabilization, and transport
• Provide on-site care for minor injuries and illnesses
• Preserve EMS function in the surrounding community
• Use ICS
Incident Command Structure (ICS)

- ICS used when need to accomplish a complex mission in the face of threat/hazard
- Standardized system and language
  - Gov’t and non gov’t agencies, OSHA, NFPA, FEMA, EMS and hospitals
- Predetermined goals
  - Life safety
  - Incident stabilization
  - Property conservation
- Predetermined roles and relationships
  - “Unity of Command” – ensures each member reports to only one person
  - Span of control – leader is directly responsible for 3-7 personnel or functions
  - These override normal relationships
  - Appointed to role you’re trained for and wear clear identifiers
ICS: Communication

• Joint Information Center (JIC)
• Address broad range of risk communication and public education
• Composed of PIOs from all responding partners
• Use predefined operating procedures
• Given to media in timely and effective manner
ICS Sections

• Operations: Responsible for tactical decisions and situational awareness
  • Ems, fire, hazmat, law

• Planning: Continually assess incident and provide predictions; monitor resources and estimates immediate and long-term requirements
  • Incident Action Plan: outlines control, objectives, and resource requirements for each operational period
  • Record and maintain documents related to incident operations
  • Demobilization
  • Draft AAR (After Action Report)
ICS Sections

• Logistics:
  • Provides radios, food, hydration, medical support for emergency responders
  • Equipment (fuel, supplies, repair), sanitary requirements, maintenance of command post
  • Resources from mutual aid agreements

• Finance:
  • Money to accomplish goals
  • Keep records on personnel involved and periods worked
  • Responder injuries/deaths
  • Salary
After an MCI

- Responders likely suffer effects of stress
- Provide psychological support to all involved
- Medical directors – put incident stress management process in motion
- Post-event operational debriefing
  - Identify areas for improvement
  - Assist in planning for future events
  - Disaster planning
- AAR (“lessons learned”)


Conclusion

• Mass gatherings present challenges
• Address these with proper planning and preparation
• Use mass gathering as MCI training tool
• Know what to do when a MG → MCI by
  • Coordination, preparation, planning
  • Preassignment of roles and tasks
  • Predesignation of disaster communication channels
• Address the 5 Areas of Risk Management and Planning Mitigation
• Know ICS
Questions?
Types of Response Capabilities

• Medical care delivery sites can be grouped by capability, capacity, and mobility

• Well-established venues enable ED like capability
  • Stadiums, arenas, exhibit halls
  • Capability varies according to professional level of staff
  • Many tx and return to event

• Mobile stations: tents, mobile intensive care vans, field hospitals
  • Basic to advanced care
  • Need provisions for security, triage, staff work space, pt tx, staging for transport
  • Water, electricity, restrooms, waiting area, signage, climate control
• Mobile teams to access pts
  • Determined by event, vertical/horizontal distance
  • Foot teams, bike teams, gators, golf carts, boats
  • At least 2 personnel: 1 EMT
  • 1 team per 20,000 spectators
  • Provide CPR and AED within 3 mins
• Sobering services

• Transportation resources for complex medical problems
  • Alcohol use, age of participants, hx of previous event

• ALS/BLS depends on staffing on site and local EMS agency protocols

• Integration of air medical assets if long transport times or limited access to pts due to #

• Staffing first aid facilities and mobile units important to success of event

• Physicians on-site decrease ambulance transport rates and conserve resources
  • Expand on-site definitive tx: advanced wound care, chemical restraint, antidotes, AMA

• MCI preparations
  • Boston marathon bombing
  • Alternative communication modalities, training
Potential Complications and Considerations

- Each event presents unique challenges
- Prepare for the next disaster, not the last one
- Prepare for the worst
- Resistance from budget restrictions and organizational inertia
- Our responsibility to mitigate the risk inherent in mass gatherings