# EMS Subspecialty Certification Review Course

## Mass Gatherings: 4.3

Disaster Planning and Operations: 4.3.1
Human Resource Needs in Disaster Response 4.3.2
Care Teams 4.3.2.1
Physician Placement 4.3.2.2
Training and Drills 4.3.2.3
Design of Temporary Facilities 4.3.4
Level of Care 4.3.4.1
Ingress/Egress 4.3.4.2
Equipment Needs 4.3.5
Communications 4.3.5.1
Integration of telecom systems with existing EMS systems 4.3.5.2

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1

## Learning Objectives

Upon the completion of this program participants will be able to:
- Understand Mass Gathering Planning and Operations
- Recognize the risks of a developing MCI
- Describe the role of the EMS Medical Director in Mass Gathering Planning and Operations
- Understand Human Resource Needs
- Understand Care Teams
- Understand intricacies of physician placement
- Be able to list different kinds of training and drills
-

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## Learning Objectives

- Be able to recognize need for temporary treatment facilities during a mass gathering
- Decide on level of care necessary given a scenario
- Understand the impact of ingress and egress
- Describe possible equipment needs
- Be able to verbalize the various communication challenges and needs
- Understand how to integrate mass event communication systems with existing EMS communication systems

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## What is a Mass Gathering?

- Numbers of persons attending vary in definitions (1,000-25,000)
- FEMA uses term “special events”:
  - “…a non-routine activity within a community that brings together a large number of people” and emphasizes that the number of attendees is less important than the community’s ability to respond to the activity or a large-scale disaster
- WHO describes “mass gathering as:
  - “….any occasion …that attracts sufficient numbers of people to strain the planning and response resources of the community….”

4

## Mass Gatherings

- Mass gathering patients produce demands for EMS care that have little to do with crowd size
  - Exposure to adverse weather
  - Alcohol and illicit drug use
  - Inadequate intake of water
  - Consumption of contaminated food
  - Violent spectator behavior
  - Stress of physical competition

Photo courtesy of Taylor Ratcliff, MD

5

## Mass Gatherings

- “Bounded/focused” events (stadium sporting events) tend to have higher Patient Presentation Rates (PPR)
- “Unbounded/extended” events (marathons and parades) tend to have lower PPR (patients may seek care outside event medical plan)
- Duration of the event over 6 hours, freely mobile crowds and events where alcohol and drugs are being used all affect PPR

6

## Rock, Revival, Sports


7

## Mass Gatherings

- Higher PPR in athletic events
- Participants usually outnumber spectators
- Higher demand for medical care than events with spectators > participants
  - Weather
  - Pre-existing disease
  - Poor conditioning

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## Characteristics of Mass Gatherings

- Mass gathering event medical personnel can be easily overwhelmed by multi-casualty illness or injury
- Densely clustered population
- Physical barriers to ingress and egress with patients
- Reliance on communications for coordination of care
- Need for jurisdictional coordination is key

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## The Role of the EMS Medical Director in Mass Gathering Planning and Management

### Goals

- Establish rapid access to ill or injured
- Provide triage, treatment, stabilization, and transport for ill and injured patients
- Provide on-site care for minor illness and injuries
- Preserve EMS function in surrounding community

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### Medical Oversight

- Proper Medical Oversight – appoint a medical director who is licensed in the state the event will be held in, and will be ***at the event*** and has experience with mass event medicine
- Medical Director – must assume that he/she is ultimately responsible for care provided
- Event Negotiations – lay foundation of understanding with event managers regarding providing the **level of care at least commensurate with the surrounding community**
- Perform Venue Reconnaissance

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### The Medical Director must…

- Be integrated into administrative structure and function of the event
- Delineate clear lines of responsibility with event management
- Have authority over medical care providers

**Medical organizational chart should be created and shared

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12

## Med Dir Planning – Event Negotiations

- Medical Director must meet with event managers and venue owners to:
  - Establish clear understanding of mass gathering medical care
  - Obtain full support in planning and execution of care
- Details about event relevant to medical coverage
- Event managers should take medico-legal liability for medical providers – Reliance on "Good Samaritan" laws is risky.
- Medical providers should be paid to assure coverage
- Assure appropriate communications and medical equipment

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13

## Med Dir Planning – Resource Needs

- Consider size of crowd, age, event type and environment
- Also consider drugs or alcohol, crowd density, venue layout, and length of event
- Human resources
- Medical equipment
- Food and water
- Ice and cooling vessels
- Sanitation facilities
- Alternate care sites
- Hospitals

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14

## Human Resource Needs

- Ideal number vs. realistic number - Balance between number determined as optimal
- Based on reconnaissance, statistical estimates, records of previous similar events and the numbers that can be supported by sponsorship and community resources
- Each event is unique
- Must take into account extremes of temperature, condition of participants, length of event
- Presence of alcohol or illicit drugs, and likely types of drug

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## Human Resource Needs - Other Resources/Care Teams

- Staff:
  - Physicians – Must hold a medical license in state of event, be CPR and ACLS certified (unless EM trained) and be experienced with care of life or limb threatening injuries and illnesses
  - Physician extenders-NPs and PAs
  - Nurses – triage, on-site observation, critical care if credentialed
  - EMT-B, AEMT and Paramedics
  - Ushers or security – often act as spotters and are invaluable
- Requires pre-event training
- Field personnel should be readily identifiable-vests, uniforms; picture ID badges allowing access to restricted areas
- Mobilization and demobilization times should be determined by medical director and event management

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16

## Med Dir Planning – Stakeholders & Regulations

- **Discussions should include**
  - Politicians
  - Hospital administrators
  - EMS agencies
  - Law Enforcement
  - Dispatch center(s)
  - Event sponsors and planners
- **Knowledge of local regulations**
  - Permits required?
  - Minimum staffing requirements?
  - Medicolegal liability?

Photo courtesy of Sharon Malone, MD

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17

## Med Dir Planning – Medical Plans

- Staffing requirements
- Treatment areas
- BLS and ALS transport options
- MCI planning

** Efforts should be made to keep the event EMS response and the community EMS response separate

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18

## Medical Plans - Level of Care

- Ideal level vs possible level
- Possible determined by financial and personnel resources
- Basic EMT should be minimum acceptable level of care
- Negotiations will surround cost of providing safe level of care
- Require all non-physicians to follow protocols
- Avoid any “free” or informal EMS medical care

19

## Medical Plans - Medical Equipment

- Scope of care and level dependent on **available resources – human, equipment, pharmaceuticals**
- May be purchased or provided by system providing the medical coverage
- Be aware of jurisdictional requirements when providing medical direction at events
  - Resources should not exceed providers’ scope
- Review BLS and ALS equipment, protocols and medication lists for your state as may vary

20

## Medical Plans - Transportation Resources

- Intra-venue
  - Depends on event
  - Stretchers, golf carts, stretcher road vehicles, boats
  - Must be appropriately staffed – vehicle operations

- Extra-venue
  - Must be approved by Medical Director
  - Consider non-ambulances for non-emergent transport
  - Should be determined by protocol and after a complete patient evaluation
  - Re-stocking of ambulances should be considered in planning
  - Air medical care should be considered in planning

21

## Medical Plans – On site Treatment Facilities

- May be indicated for large or long-duration events with high risk or long transport times
- Location must be easily accessible and announced to participants
- Must provide protection from weather and patient privacy
- At least one medical provider at highest level should be at facility at all times
- Supplies, pharmaceuticals, and equipment will be different from mobile responders
- Supplies and Pharmaceuticals on hand are to be used only if physician is charged with direct patient care or dispensed by others under standing orders and/or direct medical oversight
  - Must consider:
    - Expected patient volume and severity
    - Patient transport options and times to definitive care
    - Level of transport care at site
    - Integration and communication with overall EMS/healthcare system in jurisdiction
    - Level of care to be provided

22

## Medical Plans – Off site treatment facilities

- These are facilities that receive patients from pre-hospital system
- Med director must know capabilities and have communicated with them prior to event
- Specialized facilities for trauma, burns, pediatrics

Photos courtesy of STRAC

23

## Medical Plans – Other treatment facility considerations

- Mobile teams
- Sobering centers
- Transportation to and from facilities
- Physician staffing can increase capabilities, thus further decreasing burden on hospitals
- Sites should have MCI plans in place

24

## Physician Placement

- Depends on type of treatment facility
- Large mobile events may require multiple physicians
- Mobile physicians are often able to get to scene quickly and make rapid treatment and transportation decisions
- May be required to be in fixed facility like first aid station in a stadium
- May be positioned on the sideline of a sporting event or race end of a marathon

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## Med Dir Planning – Environmental Factors

- Warm weather
  - Water
  - Shade
  - Fans
  - Ice
  - Cooling vessels
  - Cooling centers
- Cold weather
  - Rewarming facilities

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26

## Med Dir Planning – Venue Reconnaissance

- Prior to event, the medical director should inspect the venue – hazards, weather, exits, signage, ingress/egress routes for emergency vehicles
- Venue reconnaissance includes understanding the jurisdictional capabilities where event is being held and interfacing with their medical and operational leadership
  - Level of jurisdiction's EMS capabilities
  - Hospital locations, capabilities
  - Backup / mutual aid providers

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27

## Med Dir Planning – Venue Reconnaissance

- Decide at what level MCI plan will be instituted
- Attend similar events to observe factors to consider:
  - Climate
  - Terrain
  - Population density
  - Mobility of crowd
  - Alcohol consumption / drug use
  - Adequacy of toilet facilities and potable water
  - Emergency ingress and egress
  - Review of medical records

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## Med Dir Planning – Venue Reconnaissance

- Must assure a 5-minute response time to a cardiac arrest
- Map position of providers based on this
- Remember "spotters" or spectators are often the first to witness an ill or injured person
- Map AED locations
- Map First Aid stations/tents

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## Med Dir Planning – Public Health Surveillance

Understand and ensure disease surveillance – coordinate knowledge among patient treatment areas.

- Detection of infectious outbreaks
- Use of chemical or biological agents
- Recognition of food-borne or water-borne illness

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## Med Dir Planning – Documentation

- Ensure standardized PCR – paper or record
- Important medical and legal record
- Who is responsible for maintenance?
- Where will records be stored?

31

## Med Dir Planning – Communications

- MOST important part of provision of sound medical care at a mass gathering
- MOST vulnerable part of plan
- MUST have redundancy
- MUST have interagency interoperability
- MUST have clear language (no 10 codes)
- MUST test and retest systems

32

## Communications - Dispatch

- PSAPs (public service answering points): where 911 call is received
- Use CAD system (computer aided dispatch)
- Call takers receive 911 call and route to appropriate public service agency (police, fire, ems)
- Dispatchers responsible for providing pre-arrival instructions and sending resources to scene as well as collection of all relevant times

33

## Communications - Operations

- Channels for the event and MCI should be pre-established and widely distributed to responders
- Hand-held P25 compliant interoperable radios preferred
  - Allows for multiple agencies to share common frequencies
  - Connectivity is a channel away
  - Plan for spares
  - Extra batteries
  - Security on radio frequencies
- May communicate through MDTs (mobile data terminals)
- Truncated systems prevent walk over
- Recent use of social media?

34

## Medical Communications

- Medical Direction communication with field personnel is critical
- Transportation destination decisions
- Triage decisions
- Alerting facilities of incoming patients
- Providing ingress and egress information in crowded areas
- Each patient encounter requiring transportation should be taped from PSAP to end of call

35

## Communications

- Medical oversight center must be linked by cell phone, landline, satellite phone and/or radio to:
  - PSAP
  - EOC (emergency operations center)
    - If event large enough the EOC will stand up
    - If MCI the EOC will stand up vs mobile command post
- Public Health
- EMS
- Fire
- Area Emergency Departments
- Event dedicated public transportation

36

## Medical Control/Oversight Center

- Can be a fixed location (base station physician)
- May be a mobile physician (radio in jurisdictional system)
- If event management working with jurisdiction may be useful to share radios so they have access to larger system
- Event should be worked on separate channel from day to day operations
- Dedicated network for event with dedicated dispatchers and units assigned to event only

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## Training and Drills

- Each participant must know his/her geographical postings and coverage area
- Location of Medical Control Center and how to access
- Know fixed facilities with ingress and egress
- Ambulance locations
- Security assets

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## Training and Drills

- **Prospective QM**: must create Medical Action Plan and MCI plans and do scenario based practice of the plans with all agencies participating
- Drills and Training only as good as level of participation
- Table tops
- Video conferencing

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39

## Mass Gatherings → MCI

- When a MCI occurs during a mass gathering, emergency services are already saturated and response is compromised
- Conventional planning and historical data for similar events may not be enough. Proper planning and tools for an escalating event must be incorporated.
- Inclusion of MCI planning leads to better preparation, and the mass gathering can also be used as MCI training opportunities.

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40

## Considerations for Mass Gathering MCI planning

Five general areas of risk management to consider

- Overcrowding and inadequate crowd management
- Ticketed and controlled access points
- Robust fire safety , prevention, and response measures
- Medical preparedness and emergency response planning
- Emergency response

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41

## MCI

- Must have ***internal*** plan interfacing with external resources and planning as need arises
- Involves event security, event management, jurisdictional fire, law enforcement, emergency medical services, emergency operation centers and PSAP managers
- Medical Director MUST contribute to all medical aspects of response, triage, treatment and transport plans

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42

## MCI

- Must have strong link between internal resources and resources from public domain
- Goal is seamless transfer of incident management from event personnel to city, county, state and/or federal personnel
- The Incident Commander for the event should be the "link" between the event and requests for outside resources
- Medical Director should be involved in this communication for medical resources
- The medical director should be involved in post-event debriefing
- Medical directors can be instrumental in assuring CISM occurs

43

## MCI

Planning for response should include the assignment of MCI response roles to all medical staff PRIOR to event:

-**Incident Commander** (generally the highest level of training at scene (medical director of event until arrival of outside resources; may change as more resources arrive)

-**Triage officer**
-**Treatment (immediate life threa**
-**Transportation Officer**
-**Safety Officer**
-**Information Officer**
-**Liaison Officer**

Information transmitted should include number and injury type of casualties, scene accessibility, known inherent dangers and specific resource requests.

44

## Disaster Medical Protocols

- Should be decided/drafted pre-event
- May deviate from routine standard of care
- Some states have statutes that protect the providers in crisis care scenarios (Declared disaster, MCI)
- Behooves the EMS Medical Director to familiarize him/herself with their state laws

45

## Prospective QM

- All planning for medical care at mass events and during disasters is part of this form of QM
- Medical staff hiring, orientation, and training processes are all part of this
- Unscheduled “routine” duties of personnel make it hard to have everyone train at same time
- Alternatives include table-tops, video conferencing and virtual reality applications offered to personnel
- Periodic full exercises with other agencies when they host

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46

## Concurrent QM

- Develop PCR for event (or designate item numbers specifically for event)
- Legal and medical document
- All patient encounters must be recorded including patient refusals and against medical advice refusals (using medical control)
- Review who can and can not refuse care

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47

## Retrospective QM

- Debrief, “hot wash”, “the good, the bad and the ugly”
- Must review all aspects of event and care rendered/decisions made
- Must be done in honest way to improve performance
- Review pre-set patient encounters
- Review numbers of patient encounters relative to transports

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48

## Take-Home Points

- This topic is part of the EMS core content
  - Special Operations: 4.3.1 which is 20% of core curriculum
- EMS Medical Director must be at the center of this prehospital medical practice and planning
- Crowd size less important than crowd characteristics
- Planning includes other disciplines
- Mass gathering medicine takes on many forms
- Must integrate with disaster planning
- Operations, Planning, Communication, Logistics (both personnel and supplies), and Quality Management through live drills and tabletops is encouraged

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49

## Disaster Plan and Operations

Medical Director must meet with event coordinators

Consider "crowd size" less important than crowd characteristics:

-alcohol/illicit drug use

-adverse weather conditions

-inadequate potable water intake when temperature extremes

-contaminated food

-violent behavior

-physically demanding competition leading to participant illness/injury

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50

## Disaster

- A situation in which the severity of damage or the number of patients exceeds the ability of scene responders and local management authority to provide immediate management
- Worst case scenario of all mass gatherings is a Disaster or MCI

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## Disaster Plan

- Prospective arrangements that are initiated in response to a potentially overwhelming set of conditions such as the number of ill or injured victims, weather conditions, natural events, or terrorist acts.

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52

## Mass Casualty Incident (MCI) Planning

- A systematic way to orchestrate the medical response to any event potentially involving large numbers of patients
- Events such as concerts, sporting events, parades are considered “mass gatherings”
- Others events include natural disasters, and man-made disasters
  - pandemic, hurricanes, tornadoes (natural)
  - Levee breaches, terrorism, school shootings (man-made)

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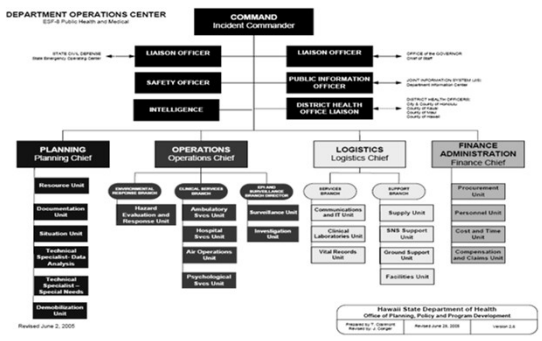
53




54

## Mass Gatherings


55

## Treatment Facilities

- Ingress must account for traffic patterns, EMS vehicle height and width, offload area, shelter from the elements
- Egress must account for above plus timely offload and capacity to hold more than one unit
- Must work with law enforcement during mass gatherings to assure traffic flow and access to and from scene and treatment facilities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56


57

## Appropriate Medical Care at Mass Events

- Integrate public health, public safety and clinical emergency medicine
- Functional knowledge of public relations, telecommunications, logistics, business negotiations and disaster preparedness
- Requires need for special talents and plans
- Must understand the overarching medical system for treating acutely ill and injured in the given event jurisdiction

58

## Resources


59

## High Yield Topics

- Environmental & event characteristics (bounded/unbounded, type) impacts PPR
  - Crowd size is less important
- Goals of Mass Gathering medical care:
  - Provide commensurate standard of care
  - Spare local EMS resources
- Understanding physician deployment locations
- Mass Gathering definition less about size than ability to adequately respond

60