Optimizing Collegiate EMS Resources During Major Events

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Introduction and Background

Brown EMS (BEMS) prepares annual, comprehensive coverage plans for Spring Weekend (SWE), a two-day outdoor concert. SWE is held over a weekend in April with a six-hour concert each day. With concerts drawing as many as six thousand attendees, many of whom are intoxicated and/or otherwise prone to injury, extensive emergency medical coverage is required.

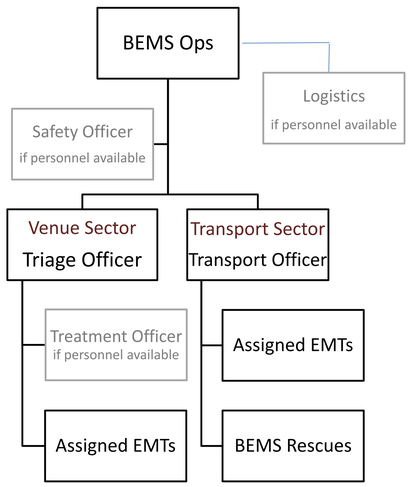
Day-to-day BEMS operations include an ALS/BLS ambulance (Rescue 1) and a BLS non-transport vehicle (Utility 1). This model is sufficient to capture typical campus call volume with minimal need for mutual aid. Recent SWE concerts, however, have seen more than forty patient contacts in six hours, requiring a modified response plan for this 'planned' multiple casualty incident (MCI).

Further planning emphasizes MCI preparedness, which can result from manmade and/or natural origins. Over the last five years, BEMS has developed the BEMS Emergency Response Team (BERT), which trains its responders and creates plans for BEMS operations during MCIs. BERT plans and executes BEMS response during SWE.

Emergency Response Team

BERT is a subset of BEMS personnel who train and prepare for major events/ incidents. BERT providers serve as primary responders during major incidents. In the first few years of its existence, BERT has focused on building a foundation of training, developing response plans, and optimizing resources.

BERT's organizational structure (see right) is based on Incident Command System (ICS) models. During a campus MCI, this model would serve as the basis of EMS Operations.



Certifying Organization	Required Training
FEMA	ICS 100, 200, 700, 800 AWR 160
RI State Fire Marshal	Crowd Manager Training

Spring Weekend Response Model

The BEMS SWE response is designed to maximize:

1. call capture by Brown EMS transport vehicles;
2. triage efficiency on the ground; and
3. readiness for unplanned MCIs.

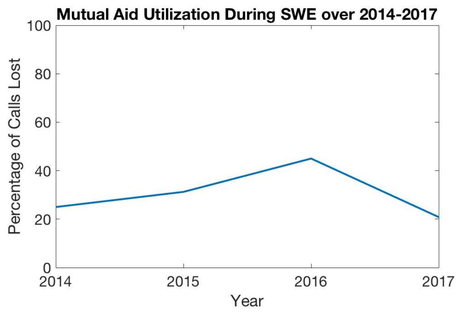
The 2017 response model established EMS Operations, dividing personnel into venue and transport sectors. This model was modified from previous years due to an increase in the number and proportion of patient transports by external agencies over 2014-2016 (25.0% (3/12), 31.3% (5/16), and 45.0% (9/20) over the six-hour Friday concert, respectively). As a result, two ALS transporting ambulances were rented in 2017 as opposed to one ambulance in previous years.

The 2017 model also prepared for the potential MCI by providing ground details with triage tape; storing personal protective equipment in Utility 1; and sharing BEMS plans with event staff and the Department of Public Safety (DPS).

Venue Sector	Transport Sector
BLS: Pairs of EMTs assigned to ground detail units, providing first aid	**ALS/BLS**: BEMS Rescue 1
	ALS: 2 rented private ambulances
	BLS: BEMS Utility 1

2017 Response Evaluation

The 2017 model was evaluated compared to the aggregate of 2014-2016. Mutual aid utilization in 2017 was lower than our three prior control years; however, this observed difference in the proportion of transports requiring mutual aid during Friday concerts was not statistically significant: 20.8% (5/24) in 2017 vs. 35.4% (17/48) in 2014-2016 (p = 0.21).



Ground details were initially able to manage all calls within assigned zones. During peak periods, details were overwhelmed, a pair managing as many as three patients at once while awaiting transport.

No unplanned MCI occurred in 2017; therefore, preparedness is more difficult to evaluate.

Conclusions & Additions for 2018

The 2017 response showed the lowest rate of mutual aid use in the past four years. While this change is not statistically significant, the cause is likely a small 2017 sample. While MCI preparedness is difficult to evaluate, incident plans were more thorough than in any previous years. Ground detail efficiency could be improved; details were delayed and were forced to remain with patients awaiting further evaluation by transport/utility vehicles.

The BEMS SWE response model undergoes annual, iterative revision. In 2018, we plan to introduce new components, including the following:

- A dedicated Logistics Officer replenishing supplies for ground details, as recommended in the BERT Organizational Chart when personnel are available. This new position will reduce need of details to leave posts.
- A treatment tent established for patients requiring transport, following ICS recommendations for secondary triage. Staffed with a supervisor and three EMTs, this addition will allow details to return to their posts rather than await vehicles.

Allowing details to return to service more quickly, from the new Logistics Officer and treatment tent additions, will improve the triage efficiency during times of peak temporal patient density. Furthermore, in the event of an unplanned MCI, a secondary triage post will already be established, increasing our MCI preparedness.

The 2018 response model will also involve enhanced communication with both the Brown DPS and with the Providence Fire Department. Much of MCI preparedness depends on strong communication, as its breakdown is a major obstacle during incidents. By increasing dialogue with organizations that would be involved in an SWE MCI, we hope to optimize potential MCI response.

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