

Abstracts of Oral Presentations-WADEM Congress on Disaster and Emergency Medicine 2019

MASS GATHERINGS

Anatomy of a “Mass” Mass Gathering

Dr. Michael Molloy^{1,2,3}, Ciaran Browne³, Tom Horwell⁴,
Dr. Jason VanDeVelde⁴, Prof. Patrick Plunkett⁵

1. BIDMC Fellowship in Disaster Medicine, Boston, United States
2. University College Dublin, Belfield, Dublin, Ireland
3. Health Service Executive, Dublin, Ireland
4. National Ambulance Service, Dublin, Ireland
5. Trinity College Dublin, Dublin, Ireland

Introduction: Mass gatherings are growing in frequency. Religious, or in this case, “mass” mass gatherings are also growing in complexity, requiring considerable effort from nations hosting a Papal Mass. Ireland hosted a papal mass in 1979 when the prospect of terrorism at such events was significantly lower. Large high-profile events such as a Papal Mass offer a platform via the media and social media to gain widespread coverage of adverse events. In 2018, a predicted 500,000 guests were scheduled to attend a Papal Mass gathering in Phoenix Park, Dublin, a bounded 1,700-hectare park in the center of Dublin.

Aim: To develop a medical plan estimating numbers of people requiring medical attention at a Papal Mass held in Ireland late August 2018, and compare same with actual numbers treated post-event. This study aims to reduce the medical impact of such an event on local receiving hospitals through plans that effectively manage medical- and trauma-related presentations on site.

Methods: A literature review of medical reports regarding medical care at Papal Mass gatherings worldwide found a range of predicted medical attendance from 21-61 per 10,000 attendees. On that basis we had prepared on-site facilities, facilities on travel routes and access point system for medical care for a crowd of 500,000 were selected.

Results: One of 6 receiving hospitals in Dublin had an increase in average presentations on the day. Attendance was reduced significantly due to weather. 261 patients were treated on site, falling in line with lower rate predicted of 31 patients treated in hospital on site and 17 transports off-site.

Discussion: A predictable number of patients presented for medical care. On-site medical services reduced transports to hospital. Reduced attendance ensured facilities were sufficient, but could have been under the pressure of the predicted attendance of 500,000.

Prehosp. Disaster Med. 2019;34(Suppl. 1):s38
doi:10.1017/S1049023X1900092X

Axis Dimensional Analysis of Religious Mass Gathering Human Stampede Reports

Dr. Abdullah A Albadhira^{1,3}, Dr. Michael S Molloy^{1,2},
Dr. Alexander Hart^{1,3}, Dr. Fadi Issa^{1,3}, Dr. Bader Alossaimi^{1,3},
Dr. James Fletcher^{1,3}, Amalia Voskanyan^{1,3}, Dr. Ritu Sarin^{1,3},
A Prof. Gregory R Ciottoni^{1,3}

1. BIDMC Fellowship in Disaster Medicine, Boston, United States
2. University College Dublin, Belfield, Dublin, Ireland
3. Department of Emergency Medicine, Beth Israel Deaconess Medical Centre, Boston, United States

Introduction: Human Stampedes (HS) occur at religious mass gatherings. Religious events have a higher rate of morbidity and mortality than other events that experience HS. This study is a subset analysis of religious event HS data regarding the physics principles involved in HS, and the associated event morbidity and mortality.

Aim: To analyze reports of religious HS to determine the initiating physics principles and associated morbidity and mortality.

Methods: Thirty-four reports of religious HS were analyzed to find shared variables. Thirty-three (97.1%) were written media reports with photographic, drawn, or video documentation. 29 (85.3%) cited footage/photographs and 1 (2.9%) was not associated with visual evidence. Descriptive phrases associated with physics principles contributing to the onset of HS and morbidity data were extracted and analyzed to evaluate frequency before, during, and after events.

Results: 34 (39.1%) reports of HS found in the literature review were associated with religious HS. Of these, 83% were found to take place in an open space, and 82.3% were associated with population density changes. 82.3% of events were associated with architectural nozzles (small streets, alleys, etc). 100% were found to have loss of XY-axis motion and 89% reached an average velocity of zero. 100% had loss of proxemics and 91% had associated Z-axis displacement (falls). Minimum reported attendance for a religious HS was 3000. 100% of religious HS had reported mortality at the event and 56% with further associated morbidity.

Discussion: HS are deadly events at religious mass gatherings. Religious events are often recurring, planned gatherings in specific geographic locations. They are frequently associated with an increase in population density, loss of proxemics and velocity, followed by Z-axis displacements, leading to injury and death. This is frequently due to architectural nozzles, which those