

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 Ciottono^{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

organizing religious mass gatherings can predict and utilize to mitigate future events.

Prehosp. Disaster Med. 2019;34(Suppl. 1):s38–s39

doi:10.1017/S1049023X19000931

Global Event Data Research Registry: Taking Mass Gathering Research to the Next Level

Stefan Gogaert¹, Annelies Scholliers¹, Dr. Holly Sherman², Dr. Matthew Brendan Munn³, Dr. Sheila Turris², Dr. Adam Lund², Dr. Jamie Ranse⁴

1. Mass Gathering Solutions, Wambeek, Belgium
2. UBC Emergency Medicine, Vancouver, Canada
3. UBC Mass Gathering Medicine Interest Group, Canada
4. Menzies Health Institute Queensland, Griffith University, Australia

Introduction: Research on events and mass gatherings is hampered by a lack of standardized and central reporting of event data and metrics. While there is work currently being done on report standardization, this will require a plan for recording, storing, and safeguarding a repository of event data. A global event data registry would further the work of standardized reporting by allowing for the collection and comparison of events on a larger scale.

Aim: To characterize the considerations, challenges, and potential solutions to the implementation of a global event data registry.

Methods: A review of the academic and grey literature on the current understanding and practical considerations in the creation of data registries, with a specific focus on an application to mass gathering events.

Results: Findings were grouped under the following domains: (1) stakeholder identification and consultation, (2) research goals and clinical objectives, (3) technological requirements (ie hosting, format, maintenance), (4) funding (budget, affiliations, sponsorships), (5) ethics (privacy, protection, jurisdictions), (6) contribution facilitation (advertising, support), and (7) data stewardship and registry access for researchers.

Conclusion: This work outlines key considerations for undertaking and implementing an event data registry in the mass gathering space, and compliments ongoing work on the standardization of data collected at mass gathering events. If practical and ethical considerations are appropriately identified and managed, the creation of an event data registry has the potential to make a major impact on our understanding of events and mass gatherings.

Prehosp. Disaster Med. 2019;34(Suppl. 1):s39

doi:10.1017/S1049023X19000943

The Impact on Local Emergency Departments During a “Schoolies Week” Youth Mass Gathering

Prof. Julia Crilly^{1,2}, Dr. Jamie Ranse^{1,2}, Nerolie Bost¹, Tonya Donnelly¹, Jo Timms¹, Kate Gilmour¹, Dr. Michael Aitken^{1,2}, Dr. Amy Johnston^{3,4}

1. Department of Emergency Medicine, Gold Coast Health, Southport, Australia
2. School of Nursing and Midwifery, Griffith University, Southport, Australia

3. School of Nursing, Midwifery and Social Work, The University of Queensland, Brisbane, Australia
4. Department of Emergency Medicine, Princess Alexandra Hospital, Brisbane, Australia

Introduction: Community-based strategies designed to minimize the impact on local emergency services during mass gathering events (MGEs) require evaluation to provide evidence to inform best practice.

Aim: This study aimed to describe characteristics and outcomes for people aged 16–18 years requiring emergency care before, during, and after a planned youth MGE “Schoolies week” on the Gold Coast, Australia.

Methods: A retrospective observational study was undertaken. Presentations from all young adults to the emergency department (ED) or In-Event Health Service (IEHS) over a 21-day period in 2014 were included. Descriptive and inferential analyses were performed to compare across time and to describe characteristics of and outcomes for young adults requiring healthcare.

Results: A total of 1029 presentations were made by youth aged 16–18 to the ED and IEHS over the study period (ED: 139 pre, 275 during, and 195 post; IEHS: 420 during). Patient characteristics and outcomes to the ED that varied significantly between pre, during, and post Schoolies periods included patient’s age (higher proportion of 17-year-olds), residing outside the Gold Coast region, and not waiting for treatment. All were higher during Schoolies week. Of the 24,375 MGE attendees, 420 (1.72% [95% CI, 1.57–1.89], 17.2/1,000) presented to the IEHS. The majority were toxicology related (n=169, 44.9%). Transportation to hospital rate was low (0.03% [95% CI, 0.01–0.06], 0.3/1,000) for the 24,375 MGE attendees.

Discussion: Findings from this study support previous research indicating that MGEs can impact local emergency healthcare services. The provision of the IEHS may have limited this impact. The recipients of care delivery, predominantly males with trauma- or toxicology-related problems, warrants further investigation. Research describing the structures and processes of the IEHC could further inform health care delivery in and out of hospital settings.

Prehosp. Disaster Med. 2019;34(Suppl. 1):s39

doi:10.1017/S1049023X19000955

On the Way Out: An Analysis of Patient Transfers from Four, Large-Scale, North American Music Festivals Over Two Years

Mr. Christopher Callaghan, Dr. Sheila Turris, Mr. Haddon Rabb, Dr. Brendan Munn, Dr. Adam Lund

Mass Gathering Medicine Interest Group, University of British Columbia, Canada

Introduction: Music festivals are globally attended events that bring together performers and fans for a defined period of time. These festivals often have onsite medical care to help reduce the impact on local healthcare systems. Historically, the literature suggests that patient transfers offsite are frequently related to complications of substance use. However, there is a gap in