

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

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

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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), (5) contribution facilitation (advertising, support), and (6) 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.

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

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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.

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

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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

understanding as to why patients are transferred to a hospital when an onsite medical team, providing a higher level of care (HLC), is present.

Aim: To better understand the causes that necessitate patient transportation to the hospital during festivals that have onsite physician-led coverage.

Methods: De-identified patient data from a convenience sample of four, large-scale Canadian festivals (over two years) were extracted. Patient encounters that resulted in transfers to hospital, by ambulance, non-emergency transport vehicle (NETV), or self-transportation were analyzed for this study.

Results: Each festival had an onsite medical team that included physicians, nurses, and paramedics. During 34 event days, there were 10,406 patient encounters, resulting in 156 patients requiring transfer to a hospital. A patient presentation rate of 16.5/1,000 was observed. The ambulance transfer rate was 0.12/1,000 of attendees. The most common reason for transport was musculoskeletal injuries (54%) that required imaging.

Discussion: The presence of onsite teams capable of treating and releasing patients impacted the case mix of patients transferred to a hospital, and may reduce the number of transfers for intoxication. Confounding preconceptions, patients in the present study were transferred largely for injuries that required imaging. Results suggest that a better understanding of the specific effects onsite medical teams have on avoiding off-site transfers will aid in improving planning for music festivals. Findings also identify areas for further improvement in care, such as onsite radiology, which could potentially further reduce the impact of music festivals on local health services.

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Prediction Modeling Studies for Medical Usage Rates in Mass Gatherings: A Systematic Review

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Introduction: Mass gatherings attended by large crowds are an increasingly common feature of society. In parallel, an increased number of studies have been conducted to identify those variables that are associated with increased medical usage rates.

Aim: To identify studies that developed and/or validated a statistical regression model predicting patient presentation rate (PPR) or transfer to hospital rate (TTHR) at mass gatherings.

Methods: Prediction modeling studies from 6 databases were retained following systematic searching. Predictors for PPR and/or TTHR that were included in a multivariate regression model were selected for analysis. The GRADE methodology (Grades of Recommendation, Assessment, Development, and Evaluation) was used to assess the quality of evidence.

Results: We identified 11 prediction modeling studies with a combined audience of >32 million people in >1500 mass gatherings. Eight cross-sectional studies developed a prediction model in a mixed audience of (spectator) sports events, music

concerts, and public exhibitions. Statistically significant variables ($p < 0.05$) to predict PPR and/or TTHR were as follows: accommodation (seated, boundaries, indoor/outdoor, maximum capacity, venue access), type of event, weather conditions (humidity, dew point, heat index), crowd size, day vs night, demographic variables (age/gender), sports event distance, level of competition, free water availability, and specific TTHR-predictive factors (injury status: number of patient presentations, type of injury). The quality of the evidence was considered as low. Three studies externally validated their model against existing models. Two validation studies showed a large underestimation of the predicted patients presentations or transports to hospital (67–81%) whereas one study overestimated these outcomes by 10–28%.

Discussion: This systematic review identified a comprehensive list of relevant predictors which should be measured to develop and validate future models to predict medical usage at mass gatherings. This will further scientifically underpin more effective pre-event planning and resource provision.

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Proposing a Minimum Data Set for Mass Gathering Health

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Introduction: There is currently no standardized approach to collecting mass gathering health data, which makes comparisons across or between events challenging. From 2013 onward, an international team of researchers from Australia and Canada collaborated to develop a Minimum Data Set (MDS) for Mass Gathering Health (MGH).

Aim: The process of developing the MDS has been reported on previously at the 2015 and 2017 World Congresses on Disaster and Emergency Medicine, and this presentation will present a final MDS on MGH.

Methods: This study drew from literature, including the 2015 Public Health for Mass Gatherings key considerations, previous event/patient registry development, expert input, and the results of the team's work. The authors developed an MDS framework with the aim to create an online MGH data repository. The framework was populated with an initial list of data elements using a modified Delphi technique.

Results: The MDS includes the 41 data elements in the following domains: community characteristics, event characteristics, venue characteristics, crowd characteristics, event safety considerations, public health considerations, and health services. Also included are definitions and preliminary metadata.

Discussion: The development of an MGH-MDS can grow the science underpinning this emerging field. Future input from the international community is essential to ensure that the proposed