

Methods: A handheld GE V-Scan™ with Dual Probe ultrasound was available for use by physicians in the main medical tent. All treating physicians consented to participate and self-reported their training and proficiency using POCUS. After each use of POCUS, physicians completed a survey recording the indication, scans performed, and impact on diagnosis, management, and disposition of patients.

Results: In total, POCUS was used on 28 patients out of the 686 patients seen in the main medical tent. The three most common indications for ultrasound were abdominal pain, gynecological complaints, and dyspnea. POCUS narrowed the differential diagnosis in 64% (18/28) and altered the working diagnosis in 21% (6/28) of patients. It confirmed the management plan in 57% (16/28) and altered it in 39% (11/28) of patients. Use of POCUS reduced the burden on the local healthcare infrastructure in 46% (13/28) of patients and prevented ambulance transport to a higher level of care in 32% (9/28) of patients.

Conclusion: Physicians reported that POCUS aided in the diagnosis, management, and disposition of select patients at a remote multi-day mass gathering. POCUS helped to reduce the local healthcare burden caused by hosting a large-scale mass gathering by preventing or altering the urgency of transport to hospital for higher level care or diagnostic imaging.

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Organization of Health Services and Risk Preparedness during the 2016 Rio de Janeiro Olympic Games

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Study/Objective: To present information on an organization of health services and risk preparedness during the 2016 Rio de Janeiro Olympic Games.

Background: Mass gatherings of international importance occur frequently in Brazil, especially in Rio de Janeiro. In 2014 and 2016 the country received two global sports events – the 2014 Fifa World Cup, and the 2016 Olympic Games in several Brazilian state capitals and in Rio. These events joined a great contingent of people and demanded the health sector to prepare for reception of incoming participants and visitors.

Methods: The ‘Prepara Brasil’ Project investigated health services preparedness in Rio de Janeiro. A literature-based data collection instrument to assess available health infrastructure, health services and safety risks concerning the 2016 Olympic Games was made available online for spectators in all Olympic events. Filling out the survey form in real time and directly from the sports venues, was voluntary and participation was maximized through snowballing. After the Games data was accrued and analyzed.

Results: A total of 61 spectators, 70% of which were university graduates completed the form. Participants attended 26 events in 42 different sports, during 17 of the 19 days of competition. Roughly 45% of respondents clearly identified locations of health services in Olympic venues. Inside the arenas, 17% of respondents could point out health services and health services personnel at a maximum distancing 50 meters or less (.3 mi) from their seats. Half of participants identified emergency exits and escape routes, and 80% considered safety measures in sports venues as strict. According to participants, crowding was observed in 3% of sports events.

Conclusion: Shortcomings regarding overall information and identification of health services were perceived by spectators to the 2016 Rio de Janeiro Olympic Games. However, spectators also regarded that risks related to infrastructure and safety were adequately approached by the venue organization.

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Health Service Impact from Mass Gatherings: A Systematic Literature Review

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Study/Objective: This literature review aims to develop an understanding of the impact of mass gatherings on local health services.

Background: Mass gatherings are events where a large number of people congregate for a common purpose, such as sporting events, agricultural shows, and music festivals. When definitive care is required for participants of mass gatherings, municipal ambulance services provide assessment, treatment, and transport of participants to acute care settings, such as hospitals. The impact on both ambulance services and emergency department services from mass gathering events was the focus of this literature review.

Methods: This research used a systematic literature review methodology. Databases were searched to find articles related to aim of the review. Articles focused on mass gathering health, provision of in-event health services, ambulance service transportation and hospital utilization.

Results: Twenty-four studies were identified for inclusion in this review. These studies were all case-study based and retrospective in design. The majority of studies (n = 23) provided details of in-event first responder services. There was variation in reporting of the number and type of in-event health professional services at mass gatherings. All articles reported that patients were transported to hospital by the ambulance

service. Only nine articles reported on patients presenting to hospital.

Conclusion: There is minimal research focusing on the impact of mass gatherings on in-event and external health services, such as ambulance services and hospitals. A recommendation for future mass gathering research and evaluation is to link patient-level data from in-event mass gatherings to external health services. This type of study design would provide information regarding the impact on health services from a mass gathering, to more accurately inform future health planning for mass-gatherings across the health care continuum.

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Interagency Collaboration in Mass Gatherings: The Case of Public Health and Safety Organizations in the 2012 London Olympic Games

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Study/Objective: Mass gatherings pose unique challenges for inter-organizational collaboration. The diverse public health and safety organizations involved in a mass gathering, such as the Olympic Games, are a good empirical example of the challenges involved in this process. This study used the 2012 London Olympic Games as the empirical setting, to examine the inter-agency collaboration among the multiple public health and safety organizations involved in a mass gathering.

Background: Mass gatherings often bring together organizations that collaborate irregularly, or have never engaged in a joint working activity. They often involve interaction and collaboration among multiple and diverse agencies, aiming at delivering a service to a large clientele.

Methods: A single, holistic, and exploratory case study design was used, and data were collected before, during, and after the Games; utilizing 39 semi-structured interviews with key informants, direct observations of field exercises, and documentary analysis. Data collection commenced in May 2011, which was 14 months before the actual Games, and was completed in October 2012, two months after the completion of the Games. Template analysis was used to thematically analyze the interviews' transcripts, the fieldnotes from observations, and the documents.

Results: Findings discuss inter-agency collaboration in mass gatherings along three main activity domains: leadership, communication, and learning. In each domain, a number of challenges and facilitators emerged as influential to collaboration. The analysis suggested that the lack of engagement of the leading organization, the ambiguous decision-making processes across organizations, and the complex structure of the involved agencies negatively influenced organizations' collaboration. The study found that shared micro-level leadership, the use of linkages, and experiential learning enabled the development of collaboration.

Conclusion: The findings in this study provided a deeper understanding of how inter-agency collaboration was formed, before and during a mass gathering, through the interplay of the three domains of leadership, communication, and learning.

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Heat Stroke Patients of a Mass Gathering Festival in Japan- Kishiwada Danjiri Festival

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Study/Objective: A mass gathering.

Background: Kishiwada Danjiri Festival is famous in Japan for its brave characteristics of rushing around in the city area. It has been held in every mid-September for about 300 years. Over 500,000 visitors and players gather in a small area downtown (about four square kilometer). We have introduced an admission criteria for "heat stroke:" CK $\geq 10,000$ U/L or s-Creatinine ≥ 2.0 mg/dl. We evaluated the heat stroke patients who were transferred to our emergency center during these festival days.

Methods: A total of 88 patients were transferred by ambulance to our emergency center during September 17-18, 2016. Among them, 53 cases were players of the festival. Excluding 28 cases of injuries, there were 25 cases of heatstroke and dehydration brought in by ambulance.

Results: Eleven cases (seven by ambulance and four by walk-in) of heat stroke were admitted during the two festival days. On the other hand, 18 patients were able to be back at home after receiving liters of fluid infusion. There were no dead cases. All cases were male and comparatively young (age 24.5 [SD = 7.2] years). Continuous renal replacement therapy was introduced to one case because of acute kidney injury, but the other 10 cases were successfully treated by crystalloids infusion and discharged within two or three days.

Conclusion: Among the traditional festival players in Japan, mild heat stroke or collapsed patients due to dehydration and running are frequently seen. Though most patients easily recover, severe cases with AKI have to be treated intensively. To prepare for a mass-gathering disaster, "festival in hot circumstances," it is useful to introduce simple criteria for heat stroke and dehydration.

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Medical Support for the Special Olympics Canada 2014

Summer Games: Unique Requirements for a Mass Participation Event with a Specific Population

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Study/Objective: To describe the patient presentation rates and range of injury and illness observed, as well as the medical support required for a large scale multi day event serving a distinct population.

Background: The Special Olympics Canada Summer Games held in Vancouver BC in July 8-12, 2014 with over 2,000