

### Dutch Guidelines to Assess Risks of Mass Gatherings and Public-Health and Safety Measures

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**Study/Objective:** Dutch guidelines to assess risks of mass gatherings and public-health and safety measures.

**Background:** As mass gatherings in the Netherlands are growing in number, scale and complexity, guidelines on risk assessment and public-health measures should be evaluated and adapted accordingly. Lessons learned from incidents, such as the Monster Truck crash (2015) and the Marches of Nijmegen (2016), illustrate the necessity for improvements. The inspectorates (IGZ, IvenJ 2016) still concludes a lack of attention for public health and safety measures. This strengthens the demand from the emergency medical services and municipal health organizations involved, for renewed guidelines for public health experts, event organizers and decision makers. The current threat of possible terroristic attacks enhances the urgency. The National Office of Public Health and Safety (GGD GHOR Netherland) and the Academic Network of Public Health and Emergency Management (ANAPHEM) started a project to improve the quality of the advice of the Director of Public Health (DPG) that concerns public health care and safety issues including major incident medical planning and coordination.

**Methods:** Lessons learned and documents such as the WHO guideline, have been used to improve the current approach.

- The current guideline (GHOR NL 2011) has been evaluated by field-experts.
- Insights of the World Congress on Disaster and Emergency Medicine (WCDEM) 2015 formed the basis for:
  - o A new administrative framework.
  - o A new guideline for recognition and assessment of risks and public health measures needed.
  - o Improvement skills, related to the advisory roles.
  - o Uniform definitions, registration process, resilience, operations and building, an (international) knowledge platform.
- In collaboration with ANAPHEM, several workshops have been organized to develop a shared understanding and support for the improved approach.

**Results:** A new guideline for risk assessment of mass gatherings and required public health and safety measures.

**Conclusion:** The new guideline includes the current knowledge that support an improved and solid basis for the advisory role of the DPG.

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### Factors Influencing Patron Egress from Nightclubs During Emergency Events

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**Study/Objective:** In an emergency situation, movement within a mass gathering is governed by a variety of influences. We will review the mechanics concerning the motion of bodies under the action of forces, that come about when an event of an unexpected nature occurs. This presentation will provide the basis for the actions of the individuals, small groups and the mass as a whole within the group. Also considered are the group dynamics that can hinder or facilitate the evacuation of a venue. The impact may be caused by either biomedical, psychosocial or environmental factors.

**Background:** Evacuation studies reveal that patrons are often unaware of the environment, and therefore exit strategies are made quickly but may be confounded by incomplete knowledge of evacuation routes, or by chemical intoxication. Additionally, staff may not have been trained in emergency procedures and safety overall. Among the characteristics that impact egress in an emergency are the ages of those attending the event, substance use/abuse, the density of the crowd and the infrastructure of the venue itself.

**Methods:** The methods include a comprehensive review of current and past literature.

**Results:** The nightclub scene has consistently shown to more likely be fatal in a fire than similar situations in other venues. The causes of this difference will be revealed to provide a basis for future changes in prevention, regulations and enforcement.

**Conclusion:** At the conclusion of this presentation the audience will understand the psychosocial elements that may impede or promote movement within crowds. This is a continuation of previous research, and will specifically be investigated in populations who attend night clubs.

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### Altered Mental Status at Music Festivals: A Case Study Examining Clinical Concepts and Controversies

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**Study/Objective:** To describe patients with altered mental status at an electronic dance music event.

**Background:** Music festivals are a subset of mass gatherings that have predictable medical needs for attendees. Altered

mental status is one of the most common presentations to medical services at these events. It is challenging to care for these potentially critically ill patients, in and out of a hospital environment. To date, best management practices remain unclear for this common and high-risk subset of the festival population.

**Methods:** We present a case series of patients presenting to medical services with an altered mental status, attending a 15,000 attendee, multi-day, electronic dance music event. A retrospective chart review was performed on patient encounter forms from 2014-2016 to identify alterations in patient content or consciousness.

**Results:** Three event years were reviewed with 328 of 4,032 unique medical presentations deemed to have had altered content or consciousness. Of the altered content subset, 22 required physical or chemical restraint. Of the 255 altered consciousness presentations, 144 were transient syncope-like cases, 37 were seizure-like cases, and 41 had GCS  $\leq$  8 documented at some point during the visit. There were no endotracheal intubations or deaths. Seventy percent of altered patients stayed less than 30 minutes, and LOS was found to be inversely proportional to the lowest recorded GCS.

**Conclusion:** Managing the altered patient at a music festival is challenging. True aspiration risk in the GCS  $\leq$  8 subset remains unclear. High risk features for poor outcomes in altered patients include significant desaturations, active vomiting in an unresponsive patient, metabolic abnormalities, associated trauma, severe agitation, and failure to meet discharge criteria. Analysis of medical presentations for altered mental status at a music festival suggest a handful of discrete clinical presentations and best practices. A good understanding of these presentations aids in preparing, training, and equipping for similar events.

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### Camping, Cowboys, and Country Music: Patient and Resource Management at Canada's Largest Multi-Day Country Music Festival

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**Study/Objective:** This case study examines types of patients, methods of patient management, types of medical staff/responders used to manage and build medical capacity at a Canadian multi day, residential music festival. Objectives also include how a similar model could be used to manage lower acuity patients in an out-of-hospital context during disaster situations.

**Background:** Medical response and deployment of a field hospital at Canada's largest multi-day country music and camping festival. With over 60,000 attendees camping on site, in a rural area for a 5-day period. Medical needs at this large mass gathering event are varied and diverse. Over the 5-day period, a private event medical company had over 3,000 patient contacts, which significantly deferred from local EMS and hospital resources. Diversion and planning ensured local capacity did not become overwhelmed.

**Methods:** Data collection is from the event company's patient documentation forms, which are correlated electronically through a database.

**Results:** Data includes: number of patient contacts, types of injuries/illnesses, duration of patient contact, duration of patient contact per injury/illness type, acuity levels of patient transports, breakdown of injuries/illnesses diverted from local hospital and EMS, festival incident location (campground, music stages, other), number and type of personnel used at event and types/amounts of medical equipment/consumables used at the festival.

**Conclusion:** As a case study on an entire multi-day music festival in Canada of 60,000 attendees and 3,000 patient contacts, on-site patient management contributed greatly to reduce EMS transports and hospital visits.

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### Global Mass Gatherings: Implications and Opportunities for Global Health Security

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**Study/Objective:** To look at how planning and delivering mass gatherings can be used to enhance global health security through enhancing compliance with International Health Regulations (IHR) and cross government working.

**Background:** Mass gatherings pose a health care challenge because of the increased risk of transmission of communicable diseases, due to the influx of international visitors, and the fact that participants disperse soon after the gathering - potentially spreading disease within their communities and potentially internationally. Early identification and response helps reduce the risk of widespread exposure and minimize the impact on both visitors and the local community. The dispersion of participants also poses a challenge for traditional surveillance methods. Planning and preparing public health systems and services for managing a mass gathering is a complex procedure. Advanced risk assessment and system enhancement are critical to identifying potential public health risks, both natural and manmade, to preventing, minimizing, and responding to public health incidents. However, these events are opportunities to enhance public health systems, International Health Regulations (IHR) compliance, and provide a significant legacy to the host country.

**Methods:** Reviewing the experience gained from planning and delivering a range of mass gatherings to determine the legacy for public health capacity and capability building - the legacy. This included looking at different approaches across a range of countries, types of events, and reviewing the recent management and preparations for mass gatherings during Public Health Emergencies of International Concern.

**Results:** Overview of some of the key areas of public health legacy from mass gatherings and the long-term impact.

**Conclusion:** Mass gatherings provide an excellent opportunity for the host country to enhance systems and preparedness