

**Background:** A Mass Gathering (MG) World Health Organization (WHO) definition is an occasion, either organized or spontaneous, where the “number of people attending is sufficient to strain the planning and response resources of the community, city, or nation hosting the event” (WHO, 2008). It can be planned or spontaneous, which can bring their own unique challenges to public health and other risks. Addis Ababa in Ethiopia has held the 13th INDEPTH ISC/AGM International Conference, which has brought together 350 participants from HDSS in the world from 22 countries, 38 HDSS leaders, INDEPTH board members, INDEPTH scientific committee, editors of the Lancet, editors of Global Public Health, chair-person of the African Public Health Association, and 14 university presidents or vice-presidents which do not have HDSS. Six university presidents and/or vice presidents where the six HDSS in Ethiopia located, Representatives of Embassies, Save the Children, WHO, and key researchers from Stanford University have also been among the participants; hundreds of local scientific communities were all in attendance. **Methods:** A total of three Emergency Medicine and Critical Care residents based in Addis Ababa University and one consultant where involved. A duty room fully equipped of emergency drugs and other equipments were ready. Prehospital transportation plans were undertaken and hospital ambulances directory created. **Results:** The conference was finalized with no major incidents. The mass gathering preparedness team was available throughout the conference dates. **Conclusion:** Mass-gathering preparedness is a new concept for Ethiopian emergency care and should continue from this blueprint. Such preparedness should be continued for future mass-gathering events.

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Team response	Average likert score
This was a new start of mass gathering preparedness.	4.8
Preparations were adequate.	4.5
Future recommendations.	4.8

**Table 1.** Mass Gathering Preparedness Team Response: Likert Scale.

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### Event Medical Life Support (EMLS): Event Medicine for Multidisciplinary Teams

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**Study/Objective:** To create a consolidated, standardized, comprehensive, core-concepts curriculum to support multi-disciplinary health care professionals at Major Planned Events (MPEs).

**Background:** MPEs occur in all communities. Increasingly, attention is directed toward making MPEs safer and minimizing impact on host community health infrastructure. Event Medicine context:

Multi-disciplinary health-care providers new to MPEs have a wide variety and depth of clinical and operational expertise but may have very little knowledge of the event context of practice (eg, event risk profiles, prehospital resources, unique procedures and policies, stakeholder issues, customer service, etc). Events are heterogeneous and have unique characteristics (eg, size of event, duration, location, terrain, climate, high-risk activities, etc).

Planning for event health services involves a complex skill-set for those in leadership roles. No formal training program is available for those offering health-care services in the setting of MPEs.

**Methods:** Referencing the substantial growth in the literature that underpins mass gathering health, and seeking expert stakeholder input, Core, Elective and Planning level courses are proposed.

**Results:** The “Event Medical Life Support” (EMLS) courses will provide concise, accessible, applicable learning opportunities for clinicians and planners. Requisite knowledge domains will include risk assessment, human resource planning, inventory management, infrastructure, logistics, transportation, communication, insurance and liability, records management, medical direction and financial considerations. The EMLS curriculum will be offered online and via flexible face-to-face adaptations for pre-conference or pre-event workshops. Participants will have access to a series of core and specialty (elective) e-modules. A full-day, face to face workshop will focus on applying knowledge and experience to interactive case and tabletop scenarios. Accreditation through appropriate continuing professional development programs will be pursued. **Conclusion:** The creation of an EMLS curriculum will build capacity and standardize our approaches based on the best available evidence in the mass gathering community.

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### Human Stampedes: What do we know today?

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**Study/Objective:** This study summarizes available literature on stampedes, their prevention, preparedness, and response.

**Background:** Human stampedes are among the major causes of mortality in mass gatherings, but have received scarce scientific attention. The literature has increased over the last years but, to our knowledge, there is no updated review of results from new publications.

**Methods:** A scoping review was conducted with an initial search using PubMed, Google Scholar, Web of Science, the WHO Library Database, and Relief Web. Peer-reviewed and grey literature referring to human stampedes was selected

according to predefined eligibility criteria. Included items were read and results were compiled and summarized.

**Results:** In a total of 64 included items, 34 were published between 2013–2016. The most studied events were Germany's Love Parade stampede in 2010 ( $n=6$ ) and the UK Hillsborough stadium stampede in 1989 ( $n=4$ ). The literature retrieved was from a wide range of different disciplines. Conflicting definitions of human stampedes were found. The common belief that they result from an irrational and panicking crowd has progressively been replaced by studies suggesting that successive systemic failures are the main underlying causes. Stampedes are not reported in global disaster databases, making unusual sources like news reports often the only information available. Prevention measures are to date mainly related to crowd management and venue design, but their effectiveness has not been studied. Best practices for preparedness and response are not consensual.

**Conclusion:** Stampedes are a complex phenomenon that remains incompletely understood, hampering formulation of evidence-based strategies for their management. Many of the findings come from high-profile events and are difficult to extrapolate to other settings. More research from different disciplines is warranted to address these gaps in the knowledge in order to prevent and mitigate future events. A start would be to agree on a commonly accepted definition of stampedes.

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### Common Injuries of Marathon Runners in Nigeria, Epidemiology and Preparedness

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**Study/Objective:** To identify the epidemiological spread of athletes, the injuries and medical conditions they present with, to assess the level of preparedness and organization of the medical care at the event, and how the medical preparedness coped with the surge at the medical tent.

**Background:** Marathons and ultra-marathons have become increasingly popular in Nigeria and other developing countries. Participants are more dedicated, investing time and effort to prepare and compete. As the field increases, so do the types of injuries and medical conditions that present to the medical tent on event day. As a result, a lot more goes into preparation and medical capacity for these events.

**Methods:** A mass gathering matrix will be applied to the event demographics to assess the projected need for the event. Actual preparedness on the ground will be assessed and studied. All athletes entering the medical tent, picked up along the route, or taken directly to hospital will be triaged and a questionnaire applied to them.

**Results:** Musculoskeletal injuries, dermatological, respiratory problems, collapse and hypotension have been shown to be common problems in marathon runners. The result should clarify, if this is so in marathons in Nigeria. Organization of medical coverage of these events needs to be well coordinated

and staffed to be effective. The matrix will help organizers have a baseline or template for proper preparation.

**Conclusion:** The epidemiology of marathon injuries may follow conventional events, but a proper understanding of this will aid proper preparation for the event and organization of medical coverage. Though nothing is definite, a mass gathering matrix can give an effective guide or template for Medical organizations for marathon events.

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### Can the Patient Influx at Mass Gatherings be Predicted? A First Attempt to Crunch the Numbers

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**Study/Objective:** To determine whether there are certain patterns that emerge at mass gatherings, in order to create a model for future predictions concerning the pace of patient influx at mass gatherings. Patient influx is an important parameter to determine the capacity of the first aid post.

**Background:** The Belgian Red Cross staffs first aid posts at more than 50 events with an attendance of more than 10,000 people every year. Since 2006, every patient encounter gets logged in a database called MedTRIS. The MedTRIS database contains more than 150,000 unique patient encounters.

**Methods:** The time of entry gets logged in the MedTRIS database for every patient. A chart is made showing the evolution of the number of patients that enter the first aid post every 30 minutes. To compare data over different editions (years), these data are 'normalized' by dividing these numbers by the total amount of patients that entered the first aid post that day. By doing this, abstraction is made of the total amount of attendees or other parameters.

**Results:** For all events where the number of patients is more than 300 per day in a particular first aid post, it is clear that the patient influx always follows a similar, event specific trend. Calculating the correlation between the different normalized graphs over the different years for a same first aid post on the same event, renders high rates in the range between 0.6 and 0.8.

**Conclusion:** For a given mass gathering, there seems to be a constant patient influx trend over the years. Further exploration is needed, and may lead to the start of creating a predictive model to determine the capacity of the first aid post.

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### What Skills does a Physician Need at Mass Gatherings? An Analysis of more than 16,000 Patient Encounters that Required Medical Attention

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**Study/Objective:** To determine the most common type of injuries that need medical attention, to better prepare physicians at mass gatherings.