Background

- Large scale electronic dance music events (EDME) are increasingly common.
- The lay media has been reporting frequently on EDME-associated deaths, which has generated a growing interest in both preventative and medical response approaches to improve health outcomes while minimizing the impacts on host community health services.

- Several reviews have examined the utilization of harm reduction strategies at music festivals, inferring their relationship with medical services; however, no comments on their efficacy in minimizing negative health outcomes has been explicitly described.

- Shambhala Music Festival (SMF) represents a remotely set EDME in the West Kootenays of British Columbia (BC) with a cumulative daily attendance of more than 67,000 visits. SMF has been recognized publicly in the media for its explicit described harm reduction services to improve health outcomes while minimizing the impacts on host community health services.

Objective

- Describe the medical response at a multi-day electronic music festival where on-site harm reduction interventions and dedicated medical care are delivered as parallel public health measures.

Methods

- This study is a descriptive case report.
- Event-related data regarding attendee numbers and event site hazards and conditions were provided by event organizers and on-site medical team leaders. In addition, meteorological data were gathered from Environment Canada.
- Patient-related data was collected via the Mass Gathering Medicine (MGM) Online Registry Project. Harm reduction encounter data was obtained via reports generated by harm reduction service providers.

Results

<table>
<thead>
<tr>
<th>Event Day</th>
<th>Attendance (%/100)</th>
<th>Patients</th>
<th>PPR (1000)</th>
<th>Ambulance Transfers</th>
<th>PPTA (%)</th>
<th>ATR (%)</th>
<th>Unaltura</th>
<th>White</th>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-event</td>
<td>7.907 (7.4)</td>
<td>52.6</td>
<td>11.825</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>13.14</td>
<td>46.89</td>
<td>28.25</td>
<td>5.63</td>
<td>0.00</td>
</tr>
<tr>
<td>Day 1</td>
<td>12.18 (7.92)</td>
<td>152 (13.0)</td>
<td>12.314</td>
<td>3.33</td>
<td>0.41</td>
<td>0.10 (7)</td>
<td>41.29</td>
<td>28.25</td>
<td>15.00</td>
<td>10.7</td>
<td>0.00</td>
</tr>
<tr>
<td>Day 2</td>
<td>14.54 (9.48)</td>
<td>214 (15.4)</td>
<td>14.718</td>
<td>0.93</td>
<td>0.13</td>
<td>0.41 (8)</td>
<td>68.73</td>
<td>37.3</td>
<td>78.44</td>
<td>11.12</td>
<td>0.57</td>
</tr>
<tr>
<td>Day 3</td>
<td>13.35 (10.5)</td>
<td>375 (26.9)</td>
<td>24.362</td>
<td>2.53</td>
<td>0.13</td>
<td>0.00</td>
<td>72.19</td>
<td>28.27</td>
<td>210.54</td>
<td>222.61</td>
<td>4.12</td>
</tr>
<tr>
<td>Day 4</td>
<td>13.05 (9.04)</td>
<td>410 (28.9)</td>
<td>28.862</td>
<td>0.00</td>
<td>0.00</td>
<td>72.19</td>
<td>28.27</td>
<td>210.54</td>
<td>222.61</td>
<td>4.12</td>
<td></td>
</tr>
<tr>
<td>Day 5</td>
<td>2.059 (18.6)</td>
<td>140 (10.7)</td>
<td>52.116</td>
<td>2.68</td>
<td>1.39</td>
<td>26.17</td>
<td>49.37</td>
<td>65.28</td>
<td>57.3</td>
<td>32.4</td>
<td>2.68</td>
</tr>
<tr>
<td>Post-event</td>
<td>348 (23)</td>
<td>10 (1.7)</td>
<td>28.735</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>22.00</td>
<td>40.00</td>
<td>32.75</td>
<td>12.50</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Cumulative | 67.133 (100) | 20.754 | 12 | 0.33 | 0.194 | 260.182 | 347.283 | 787.17 | 151.12 |

For the Acuity Scale of Mass Gathering is a 5-colour, categorical system for triage and acuity assessment based on the widely used START image system with the addition of a white 'Discrepant acuity and modifiers, as in the CTAS system.'

Discussion

- Medical encounter volume, acuity, and transfer rates were consistent with previously published results for dance music festivals. Metrics of PPR and ATR are of common interest to Mass Gatherings and the PPTA has been proposed as a measure of the ability of MS to care for patients on-site. The high PPR (20.8 per thousand cumulative attendances days), low ATR (0.194 per thousand cumulative attendances days) and low PPTA (0.93%) suggest that dedicated, on-site HR and higher level of care (HLC) MS help to minimize the effects of a more than 13-fold increase in population on local health services.

- The efficacy of HR services on medical acuity and patient volume remains unproven at SMF; however, observed benefits of HR services included:
  - Redistribution of care and decongestion of medical services
  - Assistance for attendees once medically cleared
  - Spaces with peer support away from the dance setting to rest, cool down, and rehydrate
  - Drug testing allowing for discarding of potentially dangerous drugs
  - Dissemination of drug testing results to attendees and medical services regarding high-risk substances on-site

- Non-judgmental interactions and educational materials promoting more informed and safer drug use
- Open communication with medical services and security, allowing for a more dynamic and adaptable response to on-site incidents.

Conclusions

- When preparing on-site medical protocols at EDMEs, the inclusion of HR services and approaches can inform patient care, reduce presentation rates and acuity, and decrease impact on the host community's local health services.

- The specific extent to which HR strategies reduce the medical care needs is not well understood and further collaborative research is needed in order to characterize and quantify the impact.

- Limitations of this study include a potential lack of generalizability of HR interventions to other events due to heterogeneity in event characteristics.

References

1. Lund A, Turk TA. Mass gathering medicine: risks and patient presentations at a 2-day electronic dance music event. [In Review].
6. Vasile E, et al. Mass gathering medicine: risks and patient presentations at a 2-day electronic dance music event. [In Review].
8. Lund A, Turk TA. Mass gathering medicine: risks and patient presentations at a 2-day electronic dance music event. [In Review].
11. Vasile E, et al. Mass gathering medicine: risks and patient presentations at a 2-day electronic dance music event. [In Review].

Acknowledgements

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