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The Calgary Stampede: Effects on emergency and urgent care department utilization during a Canadian mass gathering

Introduction: The World Health Organization defines mass gatherings as “any occasion that attracts sufficient numbers of people to strain the planning and response resources of the community hosting the event”. The Calgary Stampede is a two-week mass gathering (MG) occurring annually in July. Clinicians have anecdotally attributed the event with a surge in overall emergency department (ED) and urgent care (UC) visits, especially for complaints related to drug and alcohol intoxication, trauma, and sexual activity. Our objectives were: 1) to determine if there is an increase in overall visits to ED and UCs during the Stampede, and 2) to determine if there are specific increases in presentations related to trauma, violence, alcohol and drug intoxication.

Methods: We conducted a retrospective chart review utilizing a citywide electronic database that captures all ED and UC visits in Calgary. We extracted daily census data at each of the five EDs and two UCs in Calgary. Data was further stratified by time of registration, patient gender, CTAS level, CEDIS complaint category, and ICD diagnosis at discharge.

For the years 2013 to 2015, daily average data for the official Stampede event dates were compared to the 21 days immediately preceding and following the event as a comparator. Dates were selected to incorporate a similar proportion of weekends and weekdays in the Stampede and non-Stampede periods. We performed a post-hoc analysis on the same variables, excluding the departments least likely impacted by the mass gathering for demographic and geographic reasons.

Results: The study period yielded data for 263 380 individual ED and UC visits (34 492 Stampede and 228 888 non-Stampede visits). Overall ED and UC visits increased by 2.1% ($p < 0.0001$) during the Stampede period. Increases in utilization were more marked in predicted subgroups: EMS arrival, male, and nighttime arrival between 2000-0400 (all $p < 0.05$). A marked increase (16.2%, $p < 0.01$) in CTAS 1 visits was seen in the Stampede period. Notable increases were also seen in the CEDIS complaints of lacerations (12.4%, $p < 0.0001$) and blunt trauma (19.4%, $p < 0.0001$), and the ICD diagnosis of substance misuse (23.9%, $p = 0.01$). Visits triaged to the minor treatment (or “Fast Track”) areas increased by 9.5% ($p < 0.0001$), again most markedly at night (15.3%, $p < 0.0001$). When the Children’s Hospital and the geographically remote sites were excluded, the same trends became more marked: overall ED visits increased 3.7%, male visits increased 5.5%, and nighttime visits increased 9.4% (all $p < 0.0001$).

No differences were detected for CEDIS complaints of altered level of consciousness, sexual assault, head or neck injury, limb injury, or social problems.

Conclusions: The Calgary Stampede provokes appreciable changes in overall ED and UC utilization, with marked increases in nighttime visits, visits by men, trauma or substance abuse-related complaints, and minor treatment visits. The effects are most pronounced at sites geographically closest to the event grounds.