

Half-a-Million Strong: The Emergency Medical Services Response to a Single-Day, Mass-Gathering Event

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Abbreviations:

ACR = ambulance call report
 EMS = emergency medical services
 EMT = emergency medical technician
 PCR = patient contact report

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Abstract

Introduction: Emergency medical services (EMS) responses to mass gatherings have been described frequently, but there are few reports describing the response to a single-day gathering of large magnitude.

Objective: This report describes the EMS response to the largest single-day, ticketed concert held in North America: the 2003 "Toronto Rocks!" Rolling Stones Concert.

Methods: Medical care was provided by paramedics, physicians, and nurses. Care sites included ambulances, medically equipped, all-terrain vehicles, bicycle paramedic units, first-aid tents, and a 124-bed medical facility that included a field hospital and a rehydration unit. Records from the first-aid tents, ambulances, paramedic teams, and rehydration unit were obtained. Data abstracted included patient demographics, chief complaint, time of incident, treatment, and disposition.

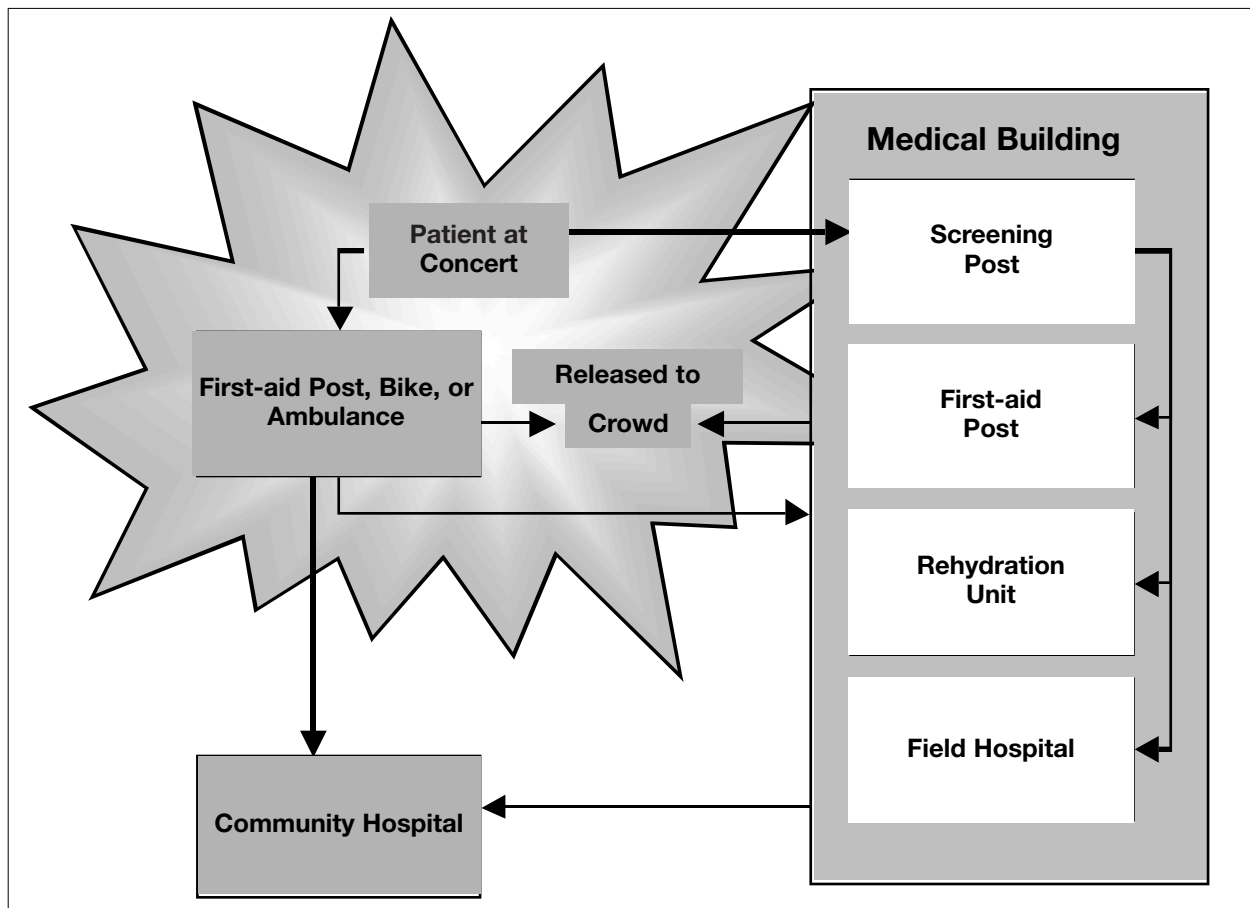
Results: More than 450,000 people attended the concert and 1,870 sought medical care (42/10,000 attendees). No record was kept for the 665 attendees simply requesting water, sunscreen, or bandages. Of the remaining 1,205 patients, the average of the ages was 28 ±11 years, and 61% were female. Seven-hundred, ninety-five patients (66%) were cared for at one of the first-aid tents. Physicians at the tents assisted in patient management and disposition when crowds restricted ambulance movement. Common complaints included headache (321 patients; 27%), heat-related complaints (148; 12%), nausea or vomiting (91; 7.6%), musculoskeletal complaints (83; 6.9%), and breathing problems (79; 6.6%). Peak activity occurred between 14:00 and 19:00 hours, when 102 patients per hour sought medical attention. Twenty-four patients (0.5/10,000) were transferred to off-site hospitals.

Conclusions: This report on the EMS response, outcomes, and role of the physicians at a large single-day mass gathering may assist EMS planners at future events.

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Introduction

The 2003 "Toronto Rocks!" Rolling Stones Concert was held on 30 July 2003. This 12-hour outdoor concert consisted of 15 musical acts performing at an operational airfield with a capacity of >500,000 people. Local politicians conceived the idea for a concert as a boost for tourism in the aftermath of the 2003 severe acute respiratory syndrome (SARS) outbreak in Toronto. The concert was planned for and arranged in less than three months in the late spring of 2003, allowing only six weeks for emergency medical services (EMS) to prepare for the event. The same site was used for a gathering of



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Figure 1—Tiers of care, patient movements, and patient disposition at the concert. Care was rendered initially by EMTs and paramedics in the field and at first-aid posts and patients could be transferred to the medical building or to a hospital in the community after consultation with the on-site EMS physician. Ambulatory patients presenting directly to the medical building were screened by paramedics and directed to one of three tiers of care: (1) a first-aid post; (2) a rehydration unit; or (3) a field hospital. Patients subsequently were released from care or transferred to a community hospital if they required ongoing care.

600,000 people during a papal visit the year before, which aided in the planning for the concert.

A number of variables, including physical layout of the event, anticipated large crowds, expected warm weather conditions, and lack of facilities, all posed challenges to providing medical care at the site. The authors of an extensive review of 25 years of mass-gathering medicine literature concluded that weather conditions, alcohol and drug use, event type and venue, crowd mobility and density, and crowd mood all affect numbers and types of patient presentations.¹ Certain anticipated characteristics of the Toronto concert, including warm weather conditions, crowd mobility, availability of alcohol, and the type of event (i.e., an outdoor rock concert) are reported to be associated with higher rates of patient presentations.²⁻⁴

A MEDLINE search of the mass-gathering medicine literature conducted prior to the event yielded numerous reports on mass gatherings of this magnitude or larger spanning several days or weeks, but there were few descriptions of provision of EMS at large, one-day events. This report details the planning and implementation of the

EMS response, the use of on-site physicians, the observed outcomes, and areas for future improvement at what was termed the largest single-day, ticketed, rock concert ever held in North America.

Event Planning and Implementation

Stakeholders included the concert promoter (a major beer company), Toronto EMS, Toronto Police Service, Toronto Fire Services, Toronto Public Health, public transit, private security, food and water vendors, and the current users of the airfield (an aircraft manufacturer). Meetings served to define site plans, medical response plans, roles and areas of responsibility for the participants, contingency plans for major adverse events, and plans for water distribution. The Sunnybrook and Women's College Health Sciences Center Base Hospital Program was responsible for the medical oversight of Toronto EMS paramedics. The Base Hospital was involved in meetings with Toronto EMS and a large community hospital to design the plans for medical care at the concert site.

Paramedic Screening Tool Guidelines

For use by paramedics stationed at the entrance to the Main Field Hospital. Must be completed and kept with each patient. Check ONE box only.

☐ Directed to First-Aid Post

- Looks well
- Minor abrasions or trivial injury
- Simple thirst
- Minimal Headache
- Seasonal allergy symptoms (itchy eyes, sneezing)
- Simple sunburn
- Other trivial medical problem

☐ Directed to Medical Rehydration Unit Triage Desk

- Heat exposure and inadequate fluid intake
- Skin may be dry, sweaty or pale with dry mouth
- Moderate/severe thirst
- Heat cramps in limbs or abdomen
- Feeling faint, dizzy, exhausted
- Two or fewer episodes of vomiting, diarrhea
- No urge to void in previous 4-6 hours
- Shivering and feeling cold (mild hypothermia)

☐ Directed to Main Field Hospital Triage Desk

- Not alert
- Looks ill with uncertain problem
- Systemic allergic reaction/anaphylaxis
- Dehydration with history of diabetes
- Illicit Drug ingestion
- Non-trivial injury, burns or any head injury
- Severe headache
- Seizure
- Chest pain
- Shortness of breath
- Severe abdominal pain
- Greater than three episodes of vomiting or diarrhea
- More than one medical problem requiring treatment

Patient Name: _____

Chief Complaint: _____

Medic Name: _____

Time: _____

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Figure 2—Screening tool used by paramedics working in the hangar. Paramedics used the pre-printed criteria on this tool to direct patients to the medical rehydration unit, the field hospital, or the first-aid post. A copy of the screening tool was placed in a drop box immediately after completion and facilitated subsequent tracking of patient movement and disposition.

Site Facilities

The concert was held on a 260-hectare (644 acre), active airfield that was in close proximity to local highway and transit links. Public facilities installed on the site for the day of the concert included 3,500 portable toilets, water, food and beer sales concessions, and accessible seating for disabled spectators.

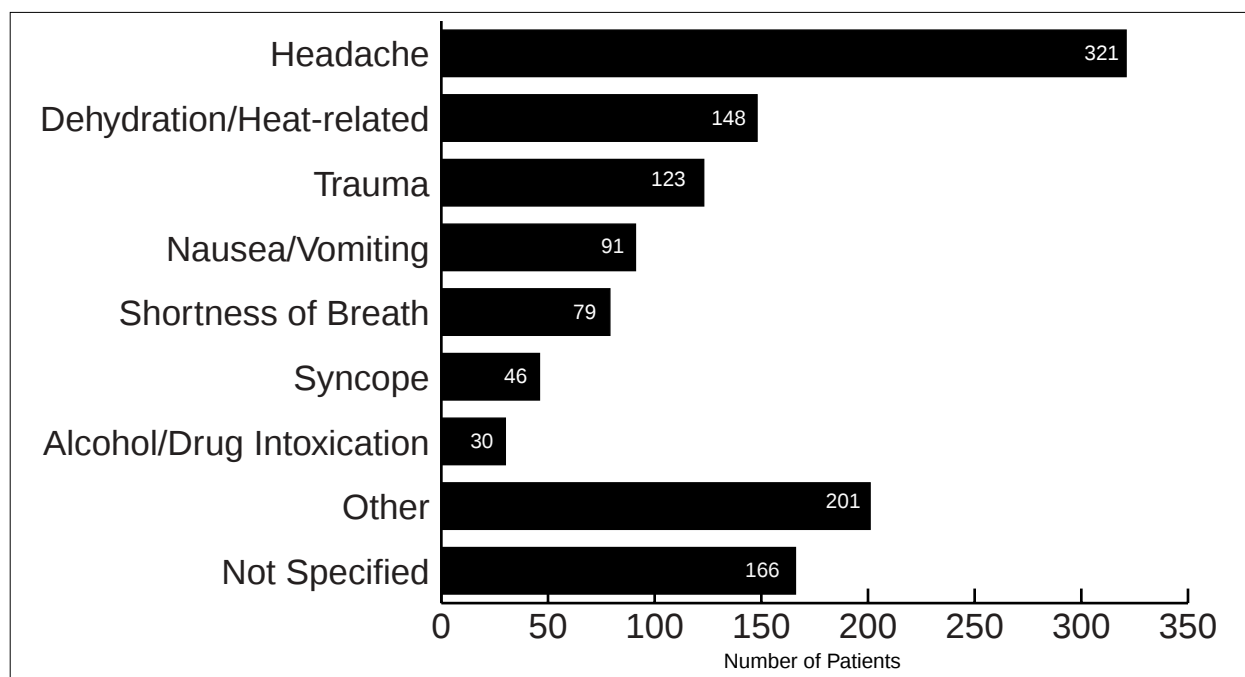
Three tiers of care were available. These included emergency medical technician- and paramedic-staffed ambulances and first-aid posts, a rehydration unit, and a field hospital. An organizational diagram showing the tiers of care is in Figure 1. The emergency department of North York General Hospital staffed a 76-bed field hospital complete with triage, resuscitation, minor procedure, plain film imaging, and substance detoxification facilities. The field hospital was set up in an unused hangar behind the music stage. This volunteer unit was staffed with emergency physicians and residents training in emergency medicine, registered nurses and respiratory therapists, x-ray technologists, pharmacists, and support staff.

A 48-bed medical rehydration unit staffed by paramedics with direct medical oversight also was established in the hangar adjacent to the main field hospital. A detailed description of the rehydration unit is reported by Lukins *et al.*⁵ A screening desk at the hangar entrance was staffed by paramedics who directed ambulatory patients according to pre-determined criteria to one of three areas: (1) the field hospital; (2) the rehydration unit; or (3) a small first-aid post for minor problems. This simplified triage process was facilitated by the use of a preprinted screening tool listing these criteria (Figure 2). Vital signs and other assessments were not done until admission to one of the three treatment facilities. Patients could be transferred from the rehydration unit or first-aid post to the field hospital if the need for a higher level of care was identified.

The concert venue itself consisted of a large stage at the northeast corner of the airfield and an elaborate system of fences and video screens. The fences limited access to the stage by spectators, but could be dismantled rapidly if an evacuation was required. A central access corridor with six laterally projecting arms was fenced in to allow access and egress for emergency crews. Five first-aid tents were placed strategically at the periphery of the site. A temporary helipad was constructed adjacent to the field hospital.

Communications and Direct Medical Oversight

Emergency medical services communications for the concert were provided by a dedicated event dispatcher at the Toronto EMS headquarters, base-station radios at all of the first-aid tents, and portable radios carried by paramedic crews. All radios used two dedicated EMS talkgroups on the Toronto Public Safety, trunked radio system: one for operations and one for on-line medical control. Several landlines also were available at the hangar. Organizers anticipated that the cellular telephone network capacity would be overwhelmed by the excessive demand from the large number of users at the site, and therefore, EMS communications did not rely on cellular phones.



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Figure 3—Presenting complaint and number of patients with the seven most common complaints during the concert

On-line medical control via radio was provided by an EMS physician dedicated to the event stationed at a medical control office in the hangar. The EMS medical control physician was contacted by paramedics prior to all patient transports to determine whether transport to a community hospital rather than the field hospital was preferred. The delegating EMS physician maintained a written record of all physician orders to paramedics. Support staff at the medical control office tracked bed availability at the concert medical sites on an hourly basis, as well as hospital emergency department status in the Toronto area.

Event Medical Staffing

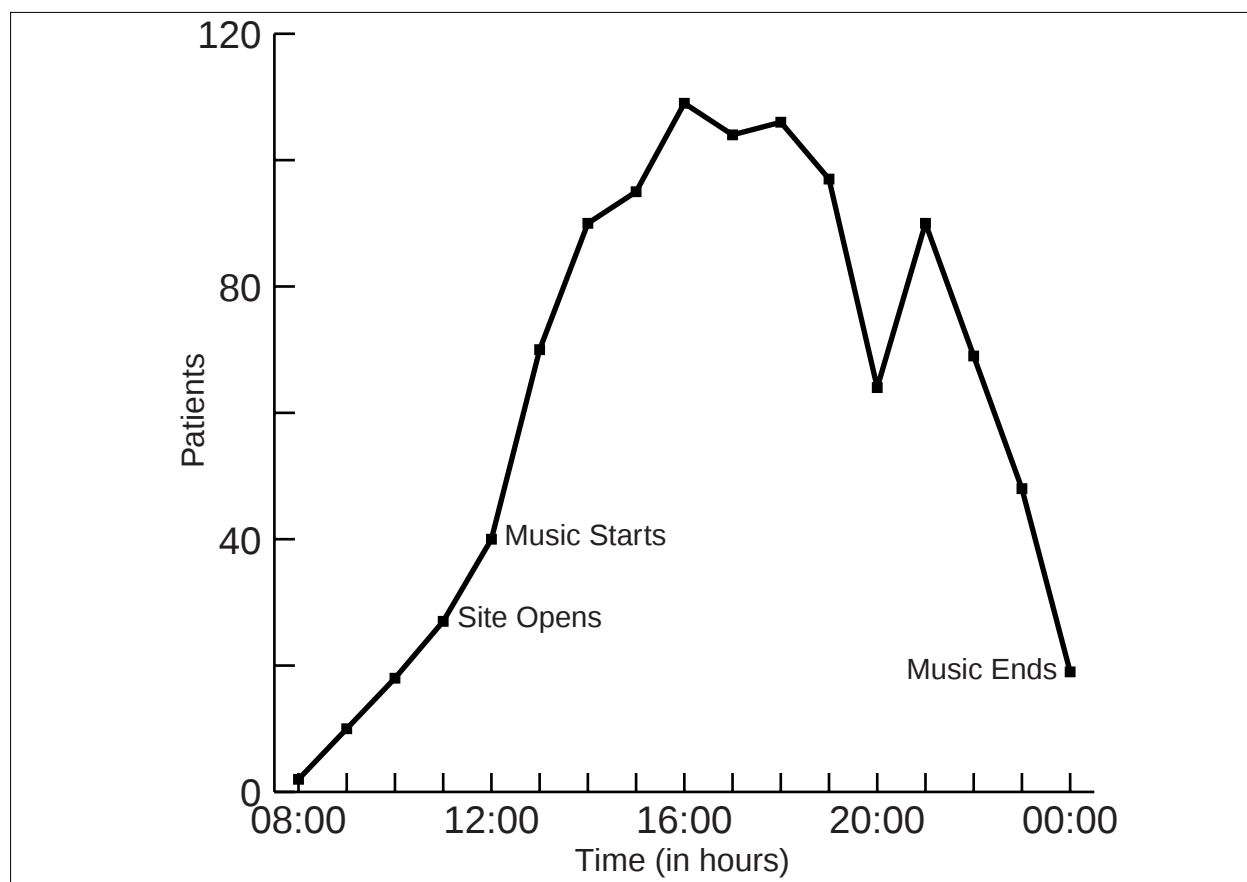
Toronto EMS ambulance crews were deployed to the site as walking teams, all-terrain vehicle teams, bicycle teams, and in 25 ambulances. The first-aid tents, the screening desk in the hangar, and the medical rehydration unit also were staffed by ambulance crews. In the Toronto EMS system, ambulance crews are trained to a variety of levels. A total of 270 emergency medical technicians (EMTs) were employed including basic emergency medical technicians, EMT-defibrillation, intermediate-level EMTs capable of starting intravenous lines, and EMT-paramedics, and were deployed at all of the sites. Specially trained paramedic teams with expertise in tactical EMS operations and chemical, biological, radiological, and nuclear procedures also were on-hand at the concert. In addition to the Toronto EMS ambulance crews, first-aid volunteers and firefighters assisted at the first-aid tents and on the walking teams.

All of the crews reporting for duty were briefed at a staging area. The briefing consisted of a one-hour overview

of the site, access and egress routes, site communications, and treatment and release off-line medical directives for dealing with simple complaints (directives for headache, environmental allergies, nausea and vomiting, small wounds not requiring sutures, and rehydration therapy are in Appendix A). Paramedics reporting for duty at the rehydration unit received an additional 15-minute review of the medical directive for oral and intravenous fluid therapy from the medical director. Paramedics staffing the screening desk were oriented at the start of their shifts to the use of the screening tool.

Data Collection

The study was approved by the Sunnybrook and Women's College Health Sciences Center Research Ethics Board. Data collection needs were defined during the planning phase prior to the event. Four types of pre-printed forms were used for paramedic records. A pocket-sized notebook filled with Patient Contact Reports (PCRs) was issued to each paramedic. The PCRs were an abridged version of the Ontario Ambulance Call Report (ACR) form, which the paramedics used daily, in order to facilitate record keeping. The second form, a two-part carbonless paper, screening tool was used for all ambulatory patients presenting to the hangar; it allowed logging of demographic information and chief complaints (Figure 2). It served a dual function by providing guidelines, which assisted paramedics in directing patients to one of the three tiers of care available at the hangar. A third form was used to record all rehydration unit visits. Finally, all off-site ambulance transports required use of the standard Toronto ACRs.



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Figure 4—Patients presenting per hour at the concert. Gates and medical facilities opened at 08:00 hours, with musical acts beginning at 12:00 hours. Peak temperatures and heat index values were reached at 15:00 hours. Declines in patient presentation were noted at 20:00 hours and after 21:00 hours. The site and medical facilities were closed at 02:00 hours on 31 July 2003.

All PCRs, ACRs, paramedic screening forms, rehydration unit charts, and physician patch logs were collected immediately after the event. Patient charts from the field hospital were maintained separately at the North York General Hospital and were not analyzed for this study, since these patients represented care provided by physicians in a traditional, hospital-type setting rather than care provided by an EMS provider. However, a paramedic screening-desk record, ACR, or PCR existed separately for each of these patients and contained identifying information and the chief complaint.

Abstracted data from the ACRs and PCRs included patient demographics, chief complaint, time of occurrence, treatment rendered, and disposition. Data were entered and analyzed using a Microsoft Excel (Microsoft Corporation, Redmond, WA, Version 2002 SP3) spreadsheet. A random sample of records was double-checked by one of the authors to ensure accuracy.

Total concert attendance was based on ticket sales as reported by the concert organizers. An EMS supervisor working at each first-aid tent tallied all of the patients, including those who requested water, sunscreen, or ban-

dages, who did not require further medical assessment or interventions. All of the EMS dispatch records for 30 and 31 July 2003 were searched electronically for all ambulance transports from the concert to community hospitals. In addition, a manual search of all ACRs from ambulance transports in the city of Toronto on those dates was conducted to find any patients transported by ambulance to community hospitals who were missed by the above methods. Weather conditions on the day of the concert were obtained from the Environment Canada Climate Data Online website (www.climate.weatheroffice.ec.gc.ca/climateData/canada_e.html).

Results

Reported ticket sales indicated that >450,000 people attended the concert. Weather conditions consisted of partly sunny skies with a peak high ambient temperature of 83.3°F (28.5°C) with a relative humidity of 41% (heat index 82.8°F (28.2°C) reached at 15:00 hours). The gates to the concert grounds and medical facilities opened at 08:00 hours, and remained open for 18 hours. One thousand, eight hundred, seventy spectators presented to one of

the medical facilities or ambulance crews (42 per 10,000 attendees; patient presentation rate of 0.0042). Of these, 665 (35.2%) simply requested water, sunscreen, or self-adhesive bandages. No medical records were taken of these encounters. Records were available and obtained for the remaining 1,205 patients (64.8%).

Of the 1,205 patients treated at the concert, 795 patients (66%) received initial care at first-aid tents. Of these, 385 patients (48%) required ambulance transfer to the field hospital or rehydration unit, while five patients (0.0001%) of the total attendees were transferred directly to community hospitals without initial assessment and management at one of the site medical facilities. Disposition was not recorded in 37 cases (4.6%). A total of 143 patients (11.9%) were treated at the rehydration unit and 453 patients (37.6%) were treated at the field hospital, which included ambulatory patients who presented to the screening desk and were directed to those sites.

The average of the ages of the patients was 28 ± 11 years (range: 4 to 62 years); 61% of the patients were female. The most common chief complaints are shown in Figure 3. Thirty patients (2.5%) presented with a primary complaint of alcohol or drug intoxication (either self-reported intoxication or apparent intoxication during initial assessment). No crowd surfing or moshing was reported by paramedics or patients. No deaths, cardiac arrests, or penetrating injuries were observed during the concert.

Peak patient encounters occurred during the afternoon and early evening, with an average of 102 patients presenting per hour between 14:00 and 19:00 hours (Figure 4). During peak periods, crowd conditions sometimes restricted patient movement down the central access corridor and severely limited the movement of ambulances. Between 14:00 and 23:00 hours, police and security officials were unable to continuously maintain a direct route for ambulance transport to the hangar, and ambulances reported transport times within the concert site to be in excess of one hour.

Although the trunked radio system technically functioned well during the concert, paramedics at first-aid tents and in the crowd often could not hear the radios due to ambient noise levels. The inability to reliably provide on-line medical control, as well as the barriers to moving patients to the medical facilities at the hangar during the event threatened to overwhelm the resources at the first-aid tents. Therefore, emergency physicians or emergency medicine residents were sent to the tents to provide direct medical control, assist in patient management, and arrange disposition. Three-hundred, fifty-six patients (29.5%) were released from the first-aid posts back to the concert by paramedics or physicians and 12 patients signed themselves out against medical advice.

The search of the Toronto EMS dispatch database identified 22 ambulance transports from the concert to community hospitals, and the manual search identified two additional transports (an overall transport rate of 0.5 per 10,000 attendees). None of the patients required aeromedical evacuation. The most common reasons for transport included severe intoxication or decreased level of awareness (four patients, 17% of total transports), shortness of breath

(four patients; 17%), and cardiac symptoms such as chest pain or palpitations (three patients; 13%). The indication for transport was not specified in five cases.

Discussion

Large mass gatherings pose significant planning, logistical, operational, and public health challenges. Rates of patient presentation, types of injuries or illness, and composition of event medical facilities can vary considerably. A recent review of the types and frequencies of medical problems at major concerts noted a significant variation in rates of patient presentation ranging from 8 to 1,000 patients per 10,000 attendees. Rock music was associated with a 2.5-fold increase in the number of patients compared to other types of events.³ Other factors reported to be associated with higher rates of patient presentation include high humidity conditions, unseated crowds, unfenced events, and availability of alcohol.^{1,2}

The present report details the EMS response to a large, single-day, ticketed rock concert. It was imperative that the medical facilities be capable of operating at peak capacity within hours of opening, and this was facilitated by separate, independently functioning tiers of care. The three distinct tiers of treatment available at the concert included: (1) treatment by paramedics in the field or at first-aid posts; (2) a field hospital; and (3) a medical rehydration unit. The distribution of patients to the different treatment sites, with oversight of patient movement provided by an EMS physician, functioned relatively smoothly during the concert, except when such transports were limited by crowd conditions. The observed patient presentation rate of 42 per 10,000 attendees is similar to that previously reported for this type of event.¹

Paramedics were used in expanded roles at this event. As triage is within the paramedic scope of practice, the pre-printed screening tool provided an initial method of triage to help manage the dispositions of patients within the three parts of the site medical facility. The screening tool only was applied to walking patients, and vital signs were not assessed until the patient reached their site of care. It is noted that this cursory initial evaluation worked reasonably well, with only 17 of 143 patients initially directed to the rehydration unit, subsequently required transfer to the field hospital.⁵

Patterns of injury and illness at major outdoor rock concerts often involve rates of traumatic injuries as high as 57.4%,^{3,6} and rates of alcohol or drug intoxication of 32%.⁷ Injury and intoxication rates at this event were lower than those previously reported. The rate of intoxication at the Toronto concert was inferred from patient charts, or was self-reported by the patients. This may have led to under-reporting of the rate of intoxication or its contribution to other patient complaints or injuries. Specific steps, including security searches at all entry gates and the prohibition of outside sources of alcohol, also may have been partly responsible for these findings. Although the concert promoter was a major beer company, it did attempt to curtail excessive alcohol consumption by limiting sales to two beers per time per individual, and by periodic shutdowns of

the beer concessions during the concert. Rates of presentation of patients with critical illness and cardiac arrest have been reported to be low at concerts,⁸ and the present findings are consistent with these studies.

Significant problems included compromise of the central access corridor through the crowd (also observed at the 2002 papal visit at the same site) and adverse effects of ambient noise on radio communications. Future planning for similar large-scale events could include a transport route at the periphery that is less likely to become compromised by crowded conditions. Similarly, noise-attenuating headsets were not provided for paramedics, and provision of these items (particularly for those working in the tents trying to contact medical control physicians) would have preserved the ability to maintain communications despite the high ambient noise level.

The observed patient transport rate of 0.5 per 10,000 attendees is similar to those previously described.^{2,9} It has been shown previously that on-site physicians can decrease the number of patient transports.⁹ At the Toronto concert, it was intended that on-site physicians staff the field hospital, rehydration unit, and provide on-line medical control. Use of the on-site physicians at the first-aid tents was not anticipated during planning; however their presence somewhat alleviated the partial loss of communications and transport capability during the peak periods. During the event, 66% of the patients presented initially to one of the first-aid tents, with almost half of them requiring transfer to the field hospital or medical rehydration unit. A chart notation indicating whether an on-site physician was necessary to arrange the disposition for each patient would have allowed quantitation of their role. Nevertheless, physicians stationed at high patient-volume sites, such as the first-aid tents should be incorporated in planning for future events of this size.

Limitations

During the peak activity periods, record-keeping by paramedics occasionally was incomplete and the data collected may have under-estimated the total patient load. However, generally there were agreements between records obtained from different sources (EMS supervisors, dispatch records, and ambulance charts). Because of the need to maintain patient confidentiality, no identifying information was transmitted during patches to the on-line EMS physicians. Therefore, it was not possible to match patch logs to patient charts using a review of the records, nor was it possible to quantify the contribution of the delegating physicians to overall medical care or patient flow. Finally, the Toronto EMS system has a single, municipally run, EMS provider. The present findings may not be generally applicable to other mass gatherings with different venues, multiple EMS systems, or different weather conditions.

Conclusions

The EMS response to a single-day, massive, outdoor rock concert represents a significant public safety, medical, and logistical undertaking. The types and frequencies of presenting complaints at a large, single-day event are similar to those occurring at more prolonged mass gatherings. The presence of on-site physicians was instrumental in providing on-line control and direct medical oversight, as well as in arranging disposition for patients who could not be transported to the field hospital. The present experience with the planning and provision of medical services for a large volume of patients at a very large, single-day mass gathering may assist EMS planners at future large-scale mass gatherings.

Acknowledgements

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APPENDIX A—Treat and release medical directives (EMT = emergency medical technician; EMT-P = emergency medical technician-paramedic)

PREHOSPITAL ADMINISTRATION OF DIMENHYDRINATE (GRAVOL®)

When the following conditions exist, a paramedic may administer dimenhydrinate (Gravol®) for nausea and/or vomiting.

CONDITIONS

- Systolic blood pressure >100 AND <180 mmHg
- Glasgow coma score = 15
- Normal mental status

CONTRAINDICATIONS

- Allergy or sensitivity to dimenhydrinate
- Continued or repeated vomiting (more than two episodes)
- Patient has previously received or taken dimenhydrinate within the previous four hours prior to paramedic contact
- Head injury
- Signs suggestive of a heat-related illness

PRECAUTIONS

- Concomitant use of tranquilizers or sedatives including ethanol

PROCEDURE

1. Administer dimenhydrinate according to the following:
 - 6–12 years = 25 mg per os
 - >12 years = 50 mg per os
2. Advise patient not to drive or operate heavy machinery.
3. Advise patient to seek medical care if repeated vomiting occurs or the patient becomes thirsty or feels faint.
4. Patients may be released from care after treatment if they continue to have normal mental status and vital signs.

PREHOSPITAL USE OF POLYMYXIN B (POLYSPORIN®)

When the following conditions exist, an EMT or paramedic may use Polymyxin B (Polysporin®) for minor wounds and abrasions.

CONDITIONS

- Uncomplicated cuts or abrasions.

CONTRAINDICATIONS

- Allergy or sensitivity to Polymyxin B (Polysporin®)

PROCEDURE

1. Clean the cut or abrasion.
2. Place a small quantity of Polymyxin B (Polysporin®) onto an appropriate dressing and apply it to the affected area.
 - Instruct the patient to seek medical care if the affected area shows signs of infection, requires sutures or require debridement beyond simple irrigation.
 - Advise patients to follow up with their primary healthcare provider to ensure their tetanus status is up to date.

PREHOSPITAL ADMINISTRATION OF ACETAMINOPHEN (TYLENOL®)

When the following conditions exist, a paramedic may administer acetaminophen (Tylenol®) for uncomplicated headaches and minor musculoskeletal pain.

CONDITIONS

- Headache must conform to the patient's usual pattern. Note: If there is any deviation from a patient's normal headache pattern (i.e., sudden onset, change in mental status, transient neurological deficits), acetaminophen must be withheld and transport offered.
- The patient must be >12 years of age
- No neurological deficits
- Glasgow coma score = 15

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CONTRAINDICATIONS

- Allergy or sensitivity to acetaminophen (Tylenol®).
- Vomiting

PROCEDURE

1. Administer acetaminophen (Tylenol®) 650mg per os
2. All attempts must be made to ensure that the patient is transported to hospital if headache persists or does not conform to the patient's usual pattern, or if serious musculoskeletal injury is suspected (e.g. fracture). If the patient ultimately refuses transport, appropriate procedures must be followed.
3. Patients may be released from care after treatment if they continue to have normal mental status and vital signs.

PREHOSPITAL ADMINISTRATION OF DIPHENHYDRAMINE (BENADRYL®)

When the following conditions exist, a paramedic may administer diphenhydramine (Benadryl®) for allergic rhinitis ("hay fever"-type) symptoms or isolated hives (urticaria).

CONDITIONS

- Age ≥ 12 years
- Symptoms consistent with allergic rhinitis ; e.g., sneezing, runny nose, watery eyes
- Isolated hives without other signs of anaphylaxis
- Systolic blood pressure >100 AND <180 mmHg
- Glasgow coma score = 15

CONTRAINDICATIONS

- Allergy or sensitivity to diphenhydramine (Benadryl®).
- Evidence of wheezing, or other signs of anaphylaxis
- Patient has previously received or taken antihistamines within the previous four hours prior to contact.
- Concomitant use of tranquilizers or sedatives, including ethanol.

PRECAUTIONS

- If the patient presents with signs and symptoms consistent with anaphylaxis, they should be treated according to the appropriate medical directive and transported to hospital.

PROCEDURE

1. Administer diphenhydramine 50 mg per os
2. Advise patient not to drive or operate heavy machinery.
3. Advise patient to seek medical care if short of breath, wheezy, unable to swallow, feels faint or experiences hives or facial or tongue swelling.
4. Patients may be released from care after treatment if they continue to have normal mental status, vital signs, and show no signs and symptoms of anaphylaxis.

FLUID REPLACEMENT FOR REHYDRATION

When the listed indications and conditions exist, a paramedic is authorized to administer oral (EMT or EMT-P) or intravenous (EMT-P only) fluids for rehydration. This medical directive does not preclude providing bottled oral replacement fluid to "walk-up" patients who simply request oral fluids. This medical directive may be used for oral rehydration purposes only at a first-aid post unit.

INDICATIONS

Patient who has a history of heat exposure and inadequate fluid intake.

CONDITIONS

Mild Dehydration:

- Thirst
- Pale, clammy (sweaty, moist) skin
- Cramping pains in limbs or abdomen (heat cramps)
- Presyncope (feeling of faintness, dizziness)
- Nausea
- Vomiting two or fewer episodes
- Mild headache as per acetaminophen directive
- Heart rate <120 AND systolic blood pressure ≥ 90 mmHg AND Glasgow coma score = 15

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Moderate/Severe Dehydration:

- Severe Thirst
- Dry, hot, flushed skin
- Feeling exhausted
- Continued heat cramps after oral rehydration
- Postural syncope
- Vomiting three or greater episodes
- No urge to void within the past 4-6 hours
- Heart rate ≥ 120 OR systolic blood pressure < 90 OR Glasgow coma score < 15

Note: Symptoms may appear alone or in combination

CONTRAINDICATION

- need for medical directive treatment other than dimenhydrinate, acetaminophen, or Polysporin®.

PROCEDURE

1. If patient exhibits symptoms and signs of mild dehydration, offer oral fluid replacement as tolerated up to a maximal volume of 1.5 L/hr.
2. If patient exhibits signs of moderate/severe dehydration, the paramedic will administer intravenous saline 1,000 mL over one hour. If no EMT-P is available, the EMT will administer oral fluid replacement fluid as tolerated to patients only if vital signs are as per mild dehydration. If vital signs are as per moderate/severe dehydration, the EMT will offer transport to a community or event specific field hospital.
3. Reassess vital signs, Glasgow coma score, symptoms, signs after 30-60 minutes.
4. Patients can be advised for release provided all the following criteria are met:
 - a. Skin no longer feels dry and hot
 - b. Patient feels subjectively improved with resolution of heat cramps
 - c. No postural presyncope
 - d. Able to tolerate oral intake
 - e. Heart rate < 100 AND systolic blood pressure ≥ 100 mmHg AND Glasgow coma score = 15
5. If the patient continues to meet conditions for treatment, the paramedic may continue oral fluid replacement. The EMT-P may repeat (or initiate) the administration of intravenous saline 1,000 mL.
6. The maximum duration of treatment allowed is two hours. If a patient worsens or does not meet all the criteria for release, the patient should be offered transport to a community or event specific field hospital.
7. All patients kept under observation must have documentation completed. Refusal of transport must be documented according to usual standards.

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