Medical services for outdoor rock music festivals

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This paper describes the medical services provided at an outdoor rock music festival near Toronto and reviews similar services at other outdoor concerts as reported in the literature. Between 0.5% and 1.5% of concertgoers were reported to have used medical services, proportions that may be useful in planning for future festivals. Most of the medical problems encountered were minor, although life-threatening problems occasionally occurréd. Alcohol and drug abuse were common but led to major medical problems in only small proportions of patients. Guidelines for planning are suggested that include recommendations about facilities, supplies and equipment, transportation and communications, staffing and procedures. The need for liaison with the concert promoters, the police, ambulance officials and local hospital personnel is noted, and the use of nonmedical ancillary staff is encouraged.

Cet article décrit les services médicaux qui ont été offerts lors d'un festival de musique "rock" tenu en plein air près de Toronto et passe en revue les services similaires prodigués lors d'autres concerts en plein air, tels qu'ils ont été décrits dans la littérature. Il a été signalé qu'entre 0.5% et 1.5% des habitués de ces concerts ont utilisés les services médicaux offerts, un taux qui pourrait être utile dans la planification des festivals futurs. La plupart des problèmes médicaux rencontrés étaient bénins, quoiqu'à l'occasion des problèmes menaçant la vie des individus soient survenus. L'abus de l'alcool et des drogues était fréquent, mais il n'a été la cause de complications médicales majeures que chez une minorité de patients. On propose des directives pour la planification de ces concerts, comprenant des recommandations quant aux installations, aux fournitures et équipements, au transport et aux communications, au personnel et aux façons de procéder. On constate la nécessité d'établir des liaisons avec les organisateurs, la police, les services ambulanciers et l'hôpital local, et on encourage l'emploi d'un personnel non médical pour les services auxiliaires.

Each summer for more than a decade big rock music festivals have been held in or near large North American cities. Although articles have been published describing selected aspects of outdoor concerts in Great Britain,[1-4] New Zealand,[5] Hawaii,[6,7] New York State[8] and the District of Columbia,[9] physicians recruited to provide emergency medical services at such events will find few comprehensive guidelines in the medical literature to aid their preparations.

After our group had provided emergency medical services at one of these concerts we decided to prepare a set of guidelines for physicians faced with the task of delivering medical care in this unusual and, for most, unfamiliar setting. In this paper we review our experience and that of others as presented in the literature and make recommendations about equipment, supplies, personnel and procedures.

Our experience

Festival site and medical facilities

In August 1980 a "new wave" rock music festival (Heat Wave) was held at a racetrack site about 80 km northeast of Toronto. The 36-hour open-air concert began at 10 am Saturday and was attended by an estimated 30 000 fans. The sky remained clear throughout the weekend, with the temperature rising to 26° to 28°C during the day and dropping to 12° to 14°C at night.

The concert area was a fenced-off portion of the racetrack infield that enclosed a stage, food and souvenir concessions, and water and toilet facilities. Immediately adjacent but separated by temporary fencing from the concert area were several large, circus-type tents that sheltered administrative areas, the staff cafeteria and the medical facility.

The medical tent (10 × 15 m) had a red-and-white striped roof for easy identification. Except for an area partially shielded by cloth screens that was equipped to treat patients suffering cardiorespiratory arrest, severe trauma or burns, the tent had an "open-concept" arrangement. Thirty cots equipped with blankets and disposable paper sheets were set up on the jute mat flooring. Lighting was provided by overhead floodlights, supplemented when necessary by portable upright lamps. Four industrial fans were hung overhead for ventilation. Four large rectangular tables in the centre of the tent held supplies and equipment (Tables I and II). Although we had electricity, the only source of running water was a tap about 50 m from the tent; this was inconvenient but not detrimental. A similar tent used by ancillary staff, the "bummer" tent, adjoined the medical facility. A motor home near these tents was used as a resting and eating area by the medical staff and ambulance attendants. The concert promoters provided two meals on the day of the concert. For other

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meals and snacks the staff relied on the food concessions. Portable toilets were provided, and shower facilities were available in permanent buildings on the racetrack site.

Medical transportation and communications

Two Ontario Ministry of Health ambulances were stationed at the rear of the medical tent, ready to transfer patients to the nearest local hospital, about 30 km away. Liaison had been established with the hospital before the concert, and telephone communication was maintained throughout the weekend. As well as the ambulances on site, Ontario Ministry of Health air ambulance services were on call, and two private helicopters, in use by the concert promoters, could have served as ambulances to evacuate patients in serious condition. There was a helicopter pad at the concert site.

Medical staff

Of the nine physicians in attendance seven were members of the Ontario Race Physicians, a group that provides trackside emergency care at auto and motorcycle racing events in Ontario. These physicians had varied backgrounds and experience in internal medicine, surgery, anesthesia or psychiatry, as well as emergency medicine. They covered the concerts in shifts over a 36-hour period that began Friday evening, when the first fans arrived. One physician served as director and was responsible for coordinating staff schedules and communicating with the concert promoters, hospital and ambulance officials, and the media.

Ten registered nurses, all of whom had worked in an emergency room or a critical care unit, worked in 12-hour shifts throughout the weekend. One of them was responsible for scheduling and maintaining supplies.

Three attendants, trained as paramedics and familiar with the site and equipment, worked in the medical tent.

In addition to the main medical tent there was a first aid post, staffed by members of the St. John Ambulance Brigade, on the opposite side of the concert area. It was equipped to deal with such problems as minor lacerations, burns and sprains. Patients with more serious problems were transported to the main medical tent.

Ancillary staff

A staff of about 30 volunteer youths (known popularly as the "bummer squad") patrolled the crowd looking for fans in need of assistance and brought mildly intoxicated fans to the "bummer" tent, where they could recover away from the crowd. Several times these volunteers found comatose patients who required attention in the medical tent.

Security guards provided by the concert promoters controlled access to the medical tent area. Although there were uniformed police officers at the concert gates and elsewhere on the site, none patrolled the medical area.

Patients

Of the estimated 30 000 fans who attended the concert we staffed, 502 (1.7%) made a total of 512 visits to the medical facility. The patients ranged in age from 13 to 47 years (mean 21.9 years). Of these patients, 354 were treated and released by the nurses, while 148 were referred to the physicians. The physicians treated 134 at the site and referred 14 to hospital. Patients transported by ambulance were accompanied

Table I—Supplies available at a 36-hour outdoor music festival and recommended for similar events

- Cardiopulmonary agents
  - Aminophylline
  - Atropine
  - Epinephrine
  - Furosemide
  - Isoproterenol
  - Lidocaine
  - Salbutamol
  - Sodium bicarbonate
- Analgesics
  - Acetaminophen
  - Acetylsalicylic acid
  - Codeine
  - Meperidine
  - Morphine
  - 222 tablets
- Gastrointestinal agents
  - Antacids
  - Dimenhydrinate
  - Diphenoxylate
  - Prochlorperazine
- Ophthalmic and otolaryngologic preparations
  - Brompheniramine maleate
  - Chlorpheniramine
  - Clemastine
  - Hydrocortisone–polymyxin B ophthalmic drops
  - Polymyxin B—neomycin ophthalmic drops
- Throat lozenges
- Dermatologic preparations
  - Antibiotic cream
  - Dibucaine
  - Steroid cream
  - Sunscreen
- Sedatives, hypnotics and anticonvulsants
  - Chlorpromazine
  - Diazepam
  - Diphenylhydantoin
  - Haloperidol
  - Phenobarbital
- Antibiotics
  - Ampicillin
  - Erythromycin
  - Penicillin
  - Tetracycline
- Miscellaneous preparations
  - Electrolyte replacement solutions
  - 50% glucose solution
  - Insulin
  - Ipecac
  - Lidocaine (as a local anesthetic)
  - Naloxone
  - Parenteral nutrition solutions
  - Steroids
  - Tetanus toxoid

Table II—Equipment available at our concert and recommended for similar events

- Resuscitation supplies
  - Ambubags
  - ECG machine with defibrillator
  - Endotracheal tubes
  - Intravenous poles
  - Intravenous cannulas and tubing
  - Laryngoscopes
  - Oropharyngeal airways
  - Oxygen tanks, masks and tubing
  - Suction equipment
- Diagnostic instruments
  - Flashlight
  - Glycemia diagnostic aids and lancets
  - Ophthalmoscopes and otoscopes
  - Rectal gloves and lubricant
  - Reflex hammer
  - Sphygmomanometers
  - Stethoscopes
  - Thermometers
  - Tongue depressors
  - Urine dipsticks
- Dressings
  - Adhesive bandages
  - Adhesive tape
  - Chlorhexidine burn dressings
  - Eye patches
  - Sterile gauze in squares and rolls
  - Tension bandages
  - Triangular bandages
- Surgical equipment
  - Autoclave
  - Chest tubes
  - Cutdown tray
  - Forceps
  - Needle drivers
  - Scalpel handles and blades
  - Scissors
  - Sterile gloves
  - Sterile suture strips
  - Surgical masks
  - Sutures
- Miscellaneous
  - Alcohol swabs
  - Cervical collars
  - Cotton applicators
  - Disposable towels
  - Hand soap
  - Kidney basins
  - Leather restraints
  - Paper cups
  - Pen and paper
  - Plastic spoons
  - Safety pins
  - Spare batteries and light bulbs
  - Spinal board
  - Splints
  - Stretchers
  - Surgical scrub
  - Syringes and needles
  - Tampons
  - Tourniquets

by a physician on two occasions and by a nurse on one occasion.

Members of the St. John Ambulance Brigade administered first aid to 108 spectators, of whom 20, including 3 suffering from drug overdoses, were referred to the medical facility for further assessment and management.

Table III lists the conditions diagnosed and the treatment provided at this concert. Most of the problems were minor; those that were more serious were often associated with drug or alcohol abuse.

Medical services at other festivals

In a review of the literature we found a few reports on some aspects of medical services provided at rock music festivals. The earliest papers described medical problems and public health aspects of open-air festivals held in Great Britain.[1-4] A 3-day rock music festival held in New Zealand was the subject of a report by Streat and associates.[5] One group twice described an annual music event held in Diamond Head Crater, Hawaii.[6,7] James and colleagues[8] studied primarily the toxicologic aspects of a large rock festival held in Watkins Glen, New York. Hayman and coworkers[9] described emergency services for a 4-hour concert called a rock festival but held in a stadium in Washington, DC. The only description of an emergency health care facility at an outdoor rock festival in North America appeared in the pediatric literature.[10]

Table III—Conditions diagnosed, personnel seen and treatment provided during one 36-hour festival

Diagnosis	No. of patients: Treated at site and released: By nurses	Treated at site and released: By physicians	Transferred to hospital
Minor medical problems			
Headache	224	4	–
Vomiting/diarrhea	17	22	–
Hay fever	17	5	–
Alcohol/drug abuse	–	14	–
Sunstroke/dehydration	–	11	–
Menstrual complaints	10	–	–
Otolaryngologic conditions (e.g., otitis, sinusitis)	–	5	–
Miscellaneous	2	6	–
Minor surgical problems			
Lacerations/abrasions			
With dressing only	43	15	1
With sutures	–	16	–
Sunburn	22	–	–
Burns	9	5	–
Sprains	1	13	–
Miscellaneous	9	9	–
Major problems			
Alcohol/drug intoxication	–	3	5
Asthma	–	4	–
Assault, facial fracture, concussion, drug/alcohol abuse	–	–	3
Sunstroke/dehydration	–	2	–
Seizure	–	–	2
Soft tissue hematoma (patient taking anticoagulants)	–	–	1
Abdominal pain, undiagnosed	–	–	2
Total	354	134	14

Facilities

Facilities established at various concerts have ranged from a primitive open-air area without electricity or running water[2] to permanent buildings with modern conveniences.[9] Evidently care can be offered under a variety of conditions, and many of the limitations of some sites can be overcome through the ingenuity and energy of the staff.

Transportation

At most concerts patients requiring care in hospital were transported by ambulances, although helicopters were used when necessary.[2,8]

Medical and security personnel

Medical students were part of the medical staff at some concerts.[3,5] In addition to the nursing and ambulance staff, festival medical services have productively used nonprofessional staff, as we did. In Britain the St. John Ambulance Brigade and the Red Cross have provided additional first aid care. At some concerts lay counsellors have been employed to search the crowd for fans in distress and to "talk down" the drug abusers.[5] At our concert, members of the St. John Ambulance Brigade and the "bummer squad" played a useful role on the medical care team.

At one concert the use of inexperienced security staff seemed to provoke crowd violence,[2] but this has not been a widespread problem. At another, stationing uniformed police in the medical area itself seemed to inhibit frank discussion of problems by patients.[9]

Patients

Despite the widely varied character, locale, physical layout and size of the concerts reported in the literature, an almost identical proportion (0.5% to 1.5%) of concertgoers sought medical attention for every 24 hours of each concert. Most of the medical problems were regarded as minor; from 0% to 5.4% of the patients were reported to have been transferred to hospital for further care. The proportion of transferred patients admitted to hospital according to three reports[2,3,7] was less than half.

Alcohol or drug abuse, though common at these events, was the sole or major diagnosis in less than 10% of our patients. Sexton[7] and Burns[6] and their associates stated that, although 10% and 14% respectively of their patients were noted to have used drugs, in only 7% and 8% were the medical problems directly attributed to drug use. They noted that, with the exception of a few patients who had taken large overdoses, drug users suffered the same types of minor illnesses and injuries as those that did not use drugs. Our experience was similar.

One interesting approach to drug use at festivals was described by James and colleagues,[8] who established an efficient on-site toxicologic laboratory at the Watkins Glen concert. Although this approach would be impractical for most medical groups, the report of this study offers some worthwhile insight into the problem. Most drugs sold to or carried by concertgoers have been misrepresented or adulterated, and the physician must

take care not to be misled by erroneous histories. The on-site physician can perform a valuable service by forwarding drug samples with patients transferred to hospital.

For the concert we staffed, promoters attempted to curtail the amount of alcohol and drug abuse by advertising that no alcohol would be allowed on the concert site and by confiscating all alcoholic beverages at the concert gates. Despite this measure it was our impression that a large amount of alcohol, presumably smuggled in, was available at the site, as were more easily concealed drugs. This policy of confiscation also led many young fans to quickly consume their entire weekend supply of alcohol outside the concert gates before the concert. As a result, early on Saturday morning we saw a large number of patients with acute alcohol intoxication. Whether the confiscation policy produced an overall reduction of the abuse problem is not clear.

Violence marred some rock concerts, and injuries ranged from contusions and fractures to gunshot wounds.[2,3,10]

Recommendations

Facilities

An efficient triage area should be included in the layout of the medical facility. Specialized areas for such services as cardiopulmonary resuscitation or treatment of burns were useful in our experience and in that of others.[3] Also important are areas in which food and accommodation are available for the medical staff, who often work long hours under demanding conditions.

A medical facility should be operating on site several hours before a concert starts and for several hours afterward to care for fans camping in the area and for concert staff setting up and dismantling concert equipment.

We recommend that the medical facility contain the equipment and supplies we provided. Our list does not give specific quantities of these supplies, and we recommend that others, after estimating their needs, arrange to procure back-up supplies should stores run low during a concert. Such an arrangement might prevent drug addicts from having to administer drugs intravenously with their own "set of works", as happened at the Watkins Glen concert when the supply of syringes was exhausted.[8]

Transportation

We found it useful to have ambulances stationed at the site and to have close liaison with ambulance officials. Plans for evacuating patients should be coordinated with police officials, as the major roads in the vicinity of a large festival may be clogged with traffic. Traffic congestion can also make arrival and departure of medical staff difficult. At the Watkins Glen concert medical services were almost overwhelmed at the beginning of the concert because some members of the staff were delayed by traffic jams on their way to the site.[8] In our experience separate access and evacuation roads for staff and patients were helpful.

Medical and security personnel

Training in emergency care is valuable for medical personnel at a rock festival. The number required will be determined by the anticipated size of the concert, the length of shifts planned and the presence of ancillary staff.

Staffing an outdoor concert may be educational for both undergraduate and postgraduate medical students. For the latter an assignment at such a venue might be a useful field exercise for training future emergency physicians in various aspects of planning for disasters. Members of both formal and informal volunteer groups can provide valuable services complementary to those performed by health care professionals.

Although security guards are generally supplied by concert promoters these arrangements should be assessed ahead of time. Liaison with the police force should be close but unobtrusive.

Patients

The finding that 0.5% to 1.5% of concertgoers have needed medical care at other concerts plus projected attendance figures could be used to determine staffing, equipment and drug supply needs when planning for a concert. Attendance expectations may be misleading far in advance of a concert, but last-minute adjustments can be made in the week or so preceding a concert if figures on advance ticket sales are available.

As drug and alcohol abuse are common at such concerts we recommend that medical staff be well trained in the management of such problems.

Although usually only a small number of fans are likely to be involved, riots can occur, and staff should be prepared to handle large numbers of injured patients.

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