

ORIGINAL ARTICLE

MEDICAL STANDBY: AN EXPERIENCE AT THE 4TH NATIONAL YOUTH CAMPING AND MOTIVATION PROGRAM ORGANIZED BY MAKSAM MALAYSIA

Mohd Idzwan Zakaria, Ridzuan Mohd Isa, Mohd Shaharudin Shah Che Hamzah, Noor Azleen Ayob

Department of Emergency Medicine,
School of Medical Sciences, Universiti Sains Malaysia, Health Campus
16150 Kubang Kerian, Kelantan, Malaysia

*Department of Emergency Medicine, Hospital Universiti Kebangsaan Malaysia

Medical standby is the provision of emergency medical care and first aid for participants and/or spectators in a pre-planned event. This article describes the framework and the demographics of a medical standby at the 4th National Youth Camping and Motivation Program in Pasir Puteh, Kelantan from 30th July until the 3rd August 2004. The framework of the medical team is described based on the work process of any medical stand by. A medical encounter form was created for the medical standby defining the type of case seen (medical or trauma), name, age, race and diagnosis of the patient. We concluded that interagency collaboration during the initial planning and during the event itself is needed to ensure the smooth running of the medical standby. Most of the medical encounters were minor illnesses which are similar to previous studies and there was no case transferred to the hospital during that period.

Key words : Medical standby, pre-hospital care

Submitted-20-2-2004, Accepted-20-12-05

Introduction

Medical standby is a branch of pre-hospital care medicine. As emergency physician we are expected to be an “emergency planner” for any mass gathering event (2). Medical standby is the provision of emergency medical care and first aid for participants and/or spectators in a pre-planned event (5). By definition, a mass gathering event is a pre-planned event, involved a gathering of many people (usually 1,000 or more) and confined to a single site (8). Being a teaching hospital, Hospital Universiti Sains Malaysia (HUSM) is seldom called to provide medical coverage to mass gathering event. We were very lucky in August 2004 when the Department of Emergency Medicine Hospital Universiti Sains Malaysia was invited by the Civil Servants Sports and Welfare Organisation or Majlis Kebajikan dan Sukan Anggota-anggota Kerajaan (MAKSAM) from the very beginning to provide medical coverage for

the 4th National Youth Camping and Motivation Program held in Taman Rehlah, Pantai Bisikan Bayu, Semarak, Pasir Puteh, Kelantan. Although this event didn't fulfill the criteria for a mass gathering event, it is still was a pre-planned event involving a large number of participants (165 participants and 52 teachers and trainers) and confined to a single site. This was a good opportunity for the emergency medicine residents to understand and practice the principals of medical standby.

The 4th National Youth Camping and Motivation Program was held from 30th July until the 3rd August 2004 in Taman Rehlah, Pasir Puteh, Kelantan. It was an annual event held by the Civil Servants Sports and Welfare Organisation or Majlis Kebajikan dan Sukan Anggota-anggota Kerajaan (MAKSAM). It was a national event where by 165 students between the age of 15 to 16 year olds from all over Malaysia gathered in Taman Rehlah, a training and recreational center at the shores of Tok

Table 1: Levels of medical coverage (5)

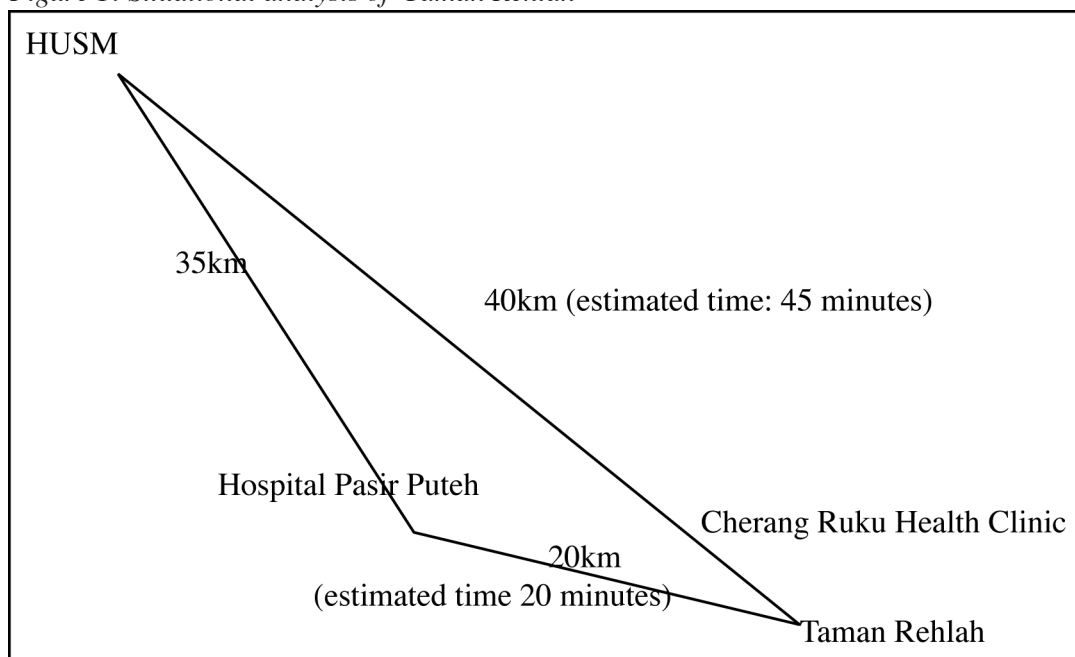
Level	Medical coverage	Types of sports activities	Medical team
I	Activities or sports events without any risk	Security officers are present around the spectators during the activities or sport events	Medical team from the non governmental agencies example the St. John's ambulance or the Malaysian Red Cross Society equipped with first aid kit Grade B ambulance
II	Activities or sports events without any risk of serious injury to participants or spectators	Youth gatherings, small golf gatherings, track and field events, and workshops	i. medical assistants/ staff nurse ii. health attendant iii. ambulance driver Grade B ambulance
III	Activities or sports events with body contacts. Moderate risk	Boxing, karate-do, silat tournament, judo, soccer and motor rally	i. medical officer ii. medical assistants/ staff nurse iii. health attendant iv. ambulance driver Grade A ambulance
IV	Presence of VIP for examples the Royal Highness, Sultans etc., any high risk activities or sport events with a large number of participants	International sport events	i. emergency physician ii. medical officer medical assistants/ staff nurse iii. health attendant iv. ambulance driver Grade A ambulance

Bali beach about 20 kilometers from the town of Pasir Puteh. These students were all children of the members of the MAKSAP. It involved indoors and outdoor programs. Indoor programs were restricted in the classrooms and the outdoor programs involved orienteering, abseiling, flying fox and kayaking. Such programs promote unity and team spirit amongst the participants. This article describes the framework and the demographics of a medical standby at the 4th National Youth Camping and Motivation Program in Taman Rehlah, Pasir Puteh, Kelantan.

Methods

The 165 participants of the program were involved in outdoor activities like abseiling, flying fox and kayaking and classroom activities in Taman Rehlah and orienteering at Praksi Hill which was 5km from Taman Rehlah. The medical team from HUSM consists of an emergency medicine registrar, 1 staff nurse, 1 medical assistant, 1 attendant and 1 driver. Medical care was provided for 165 participants of the program and 52 teachers and trainers.

Figure 1: Situational analysis of Taman Rehlah



The framework of the medical team was described based on the work process of any medical stand by. They were divided into job description, risk analysis, resource matrix, contingency planning and table-top exercise.

Job description

Job description was done in order to justify the team and equipments sent to cover the event. This was formulated based on the Ministry of Health Malaysia Guidelines for Medical Stand by (5). Based on table 1 below, we have classified it into a Level IV as it involves high risk sport events like orienteering, abseiling, flying fox and kayaking.

Risk/situational analysis

In this program, the participants were all fit 16 year old students. There were no VIP present during the event. There was also no alcohol or illicit drugs involved in the event. The event was held in Taman Rehlah, training and recreational center at the shores of Tok Bali beach about 20 kilometers from the town of Pasir Puteh. Figure 1 below shows the distance between Taman Rehlah and the responding hospitals. The nearest hospital was Hospital Pasir Puteh which was 20km but the nearest health clinic was Cherang Ruku Clinic which was about 2.5km away. As Pasir Puteh hospital was the nearest hospital, suggested that triage green cases requiring hospital admission could be transferred to Pasir Puteh Hospital but triage yellow and red should be transferred to Hospital Universiti Sains Malaysia (HUSM) after stabilization in the medical post. This

is due to the lack of facilities available in Pasir Puteh Hospital. Patient transfer would be done using ambulance as the roads were easily accessible and during our on site survey we noted that it took 20 minutes by ambulance to reach Pasir Puteh Hospital and 45 minutes to HUSM from Taman Rehlah. Although it takes > 20 minutes by ground ambulance to HUSM but the availability of ground ambulance and easy patient access, we decided to utilize the ground ambulance. All patients arrived to the hospital from the program would be “fast-tracked” in the emergency department.

Figure 2 shows the proposed medical post which had been moved to the front of the main hall. This was because of easy accessibility of ambulance to the medical post and nearer to the sites where the abseiling, flying fox activities and kayaking were done. We had also stationed another ambulance with a mobile team from the Civil Defense beside the lake to standby during kayaking activity. During the kayaking activity, the Civil Defense team had also provided a boat manned by life-savers to monitor the event. Figure 2 also showed the ambulance evacuation route. During the orienteering program at the Praksi Hill, we had provided a four by four vehicle with 1 HUSM’s medical assistant and 2 Civil Defense personals during the activity. Site surveys had to be done prior to the events in order to come up with the proposed coverage. Site surveys had to be done with approval of the event organizer (MAKSAM) and site organizer. The new site of our medical post was organized after careful discussion with MAKSAM and site organizer.

Figure 2: Diagram showing the proposed medical post and the new medical post and ambulance parking points in Taman Rehlah.

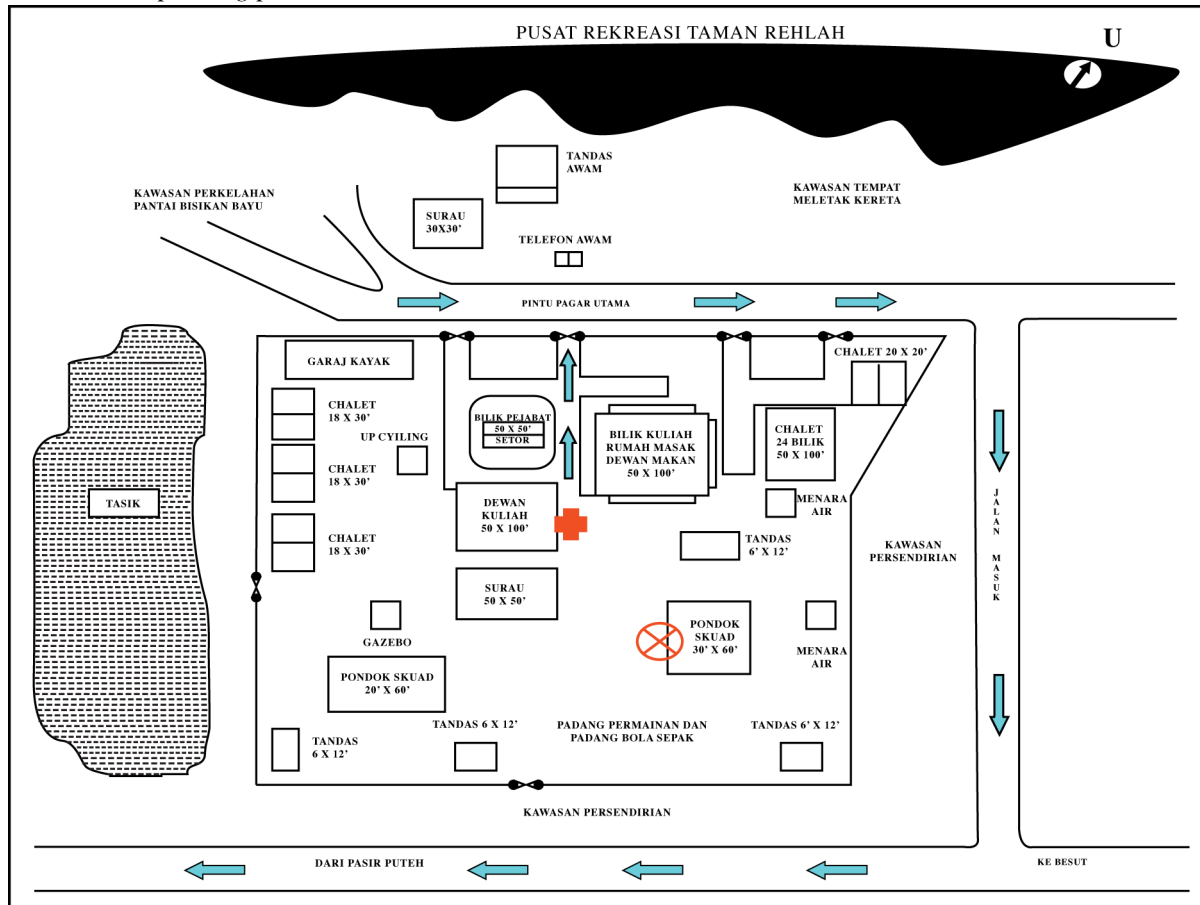


Figure 3 shows the schematic diagram of the medical post. It is in a safe area with easy access to ambulance traffic (4). Negotiations with the organizer need to be done in order to supply the electricity and water for the medical post. A gazebo was put up as a medical post. Gazebo was not appropriate for this event as it can be blown away by the wind if not anchored properly to the ground. Our contingency plan if such incident occurs was to move our medical post to the verandah in front of the main hall.

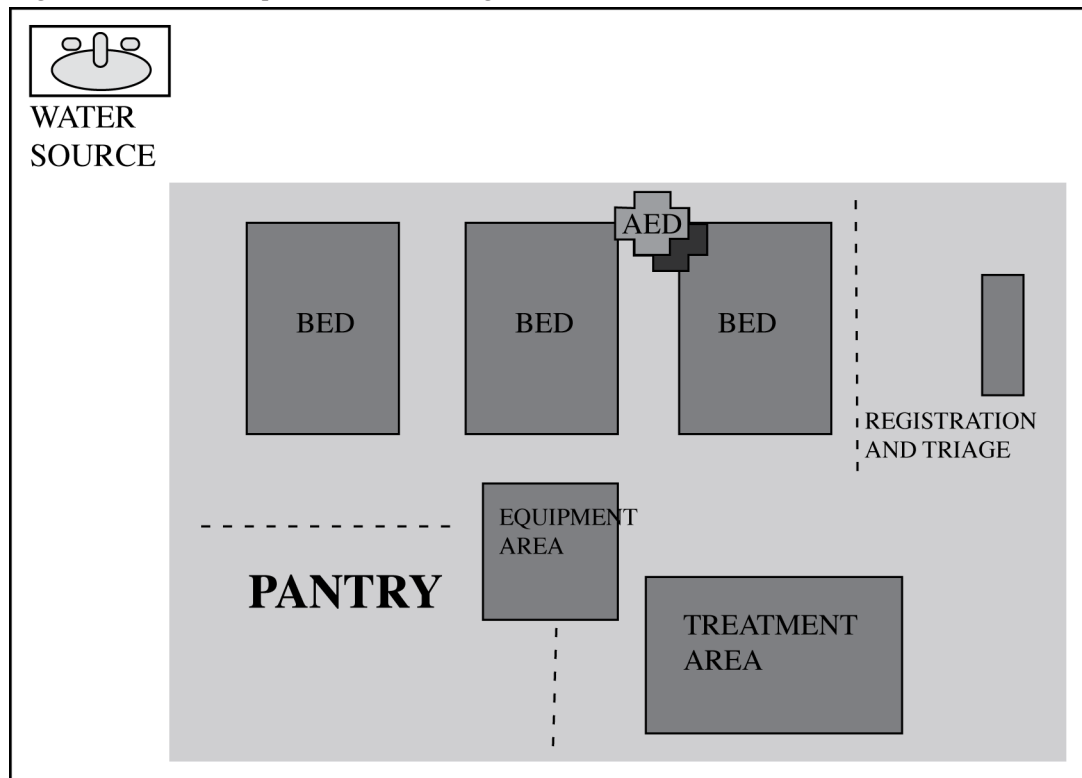
Walk-in care was provided at the medical post staffed by an emergency medicine registrar, a staff nurse and an attendant equipped with Advanced Life Support (ALS) care equipments from 8 am until 4.45pm by the HUSM team. A mobile medical team was provided during kayaking by the Civil Defence. 2 ambulances were utilized during the event, a grade A ambulance from HUSM staffed by a driver with emergency medical dispatcher certificate and a grade B ambulance from the Civil Defence. They also provided a four by four vehicle for this event. The grade A ambulance was stationed at the medical post and the Malaysian Civil Defence's grade B

ambulance was stationed beside the lake. The four by four vehicle was stationed at the medical check point at the base of Praksi Hill staffed by a medical assistant from HUSM and two Malaysian Civil Defence personals.

The medical post received walk-in patients as well as cases from the mobile teams. A triage area was set up staffed by the staff nurse. Medical post capabilities included ALS, intravenous rehydration, simple cooling measures, simple suturing and wound care, splinting, dispensing of medications (including analgesics, antacids, antibiotics, antidiarrheal agents, antiemetics, antihistamines, antiinflammatories and bronchodilators). Any transfer from the medical post to Pasir Puteh Hospital or HUSM must receive consent from the "Supervisor Medical Team" at the operation center. Triage green cases requiring laboratory work, radiographs and rehydration could be managed in Hospital Pasir Puteh but triage yellow and red had to be transferred to HUSM after stabilization at the medical post.

A medical encounter form was created for the medical standby defining the type of case seen (medical or trauma), name, age, race and diagnosis

Figure 3: Medical post schematic diagram



of the patient. The treatment given was also stated in the form. Patient care data then transferred to computer. The demographic data were evaluated from the medical encounter form using Microsoft Excel.

Resource matrix

Resource matrix consisted of manpower and specialty, equipment, communication, transport and other agencies

The manpower, specialties and equipments needed are described above. The medical team was headed by a “supervisor medical team” which is contactable at all times. He/she would supervise the team and act as the team leader. An emergency physician on call on that day would stand by in the hospital and would provide clinical advice to the team if needed. Standard Operating Procedures (SOP) were written for the medical post, operation room and hospital management. Communication between the event areas including the site of orienteering which was Praksi Hill and Taman Rehlah were tested using walkie-talkie and hand phones. Interagency support during the event was extraordinary amongst the HUSM, Civil Defense, Pasir Puteh’s Hospital, Fire and Rescue team, police, MAKSAT organizer team and Taman Rehlah’s team.

Contingency planning

Contingency plans were drawn up before the medical standby in relation to evacuation routes, manpower, equipments, transport and inter-agencies cooperation.

Table-top exercise

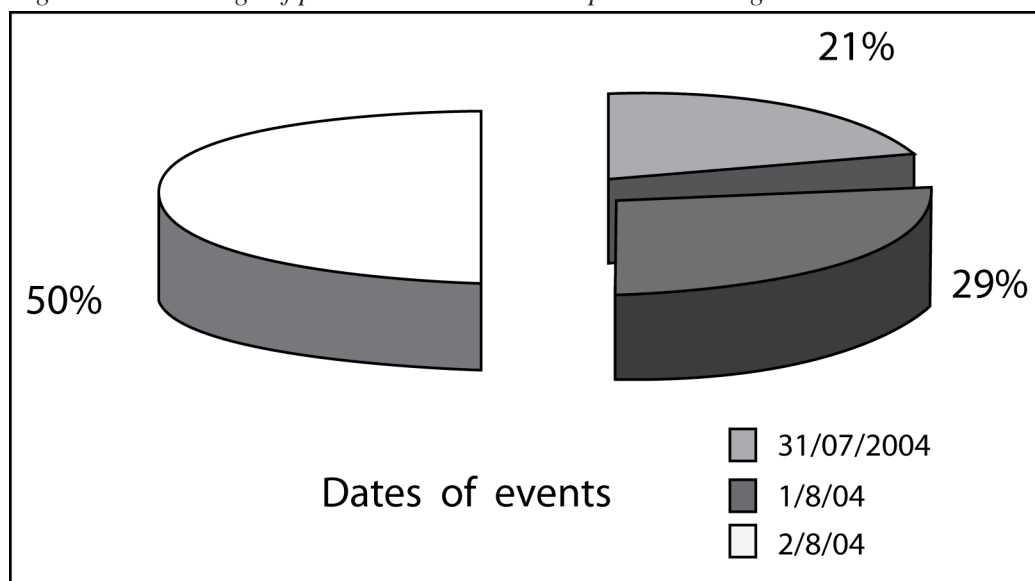
These exercises were done prior to the medical standby. It involved “scenario mapping”, inter-agencies cooperation and work process according to the standard operating procedures.

Results

Over the 4 days of the event, 14 patients were seen at the medical post, an average of 3.5 patients per day and a daily frequency of 1.6 encounters per 100 participants, teachers and trainers. 13 patients (93% of the encounters) were medical cases and only 1 patient was a trauma case who had soft tissue injury. All patients were triage green by the staff nurse and all patients were being seen by an emergency medicine registrar. Figure 4 below shows the percentage of patients seen at the medical post during the program. The pie chart shows an increase of patients seen as the program progresses.

Table 2 above shows the distribution of medical encounters during the program. None of the patients require transfer to hospital and none of them

Figure 4: Percentage of patients seen at medical post according to date



require intravenous fluid therapy. However, 2 patients were given intravenous injection, one for an allergic reaction and the other for vomiting from acute gastroenteritis. The patient with acute exacerbation of bronchial asthma was given nebulised salbutamol at the medical post and discharged with oral prednisolone. The rest of the patients seen at the medical post were seen and discharged with oral medications.

Discussion

Medical standby being a branch of pre-hospital care requires careful organization by emergency physician. Such experience is vital for emergency medicine residents who is currently undergoing the master's program in Universiti Sains Malaysia (1). Understanding the principal of event medicine and applying it's importance for the success of the event and to prevent any lawsuits based on bad outcomes in crowd situations that were claimed to have been "insufficiently planned" (4).

Emergency physicians and emergency medical residents had to understand the goals of a medical standby. This was to ensure the fast, safe, smooth and stealthy treatment and evacuation of a patient.

Rapid access to patient was vital to ensure fast treatment for the patient. However, this access has to be subtle in order not to create panic and attract attention of the media which will be detrimental to the patient and the organizer of the event. This was an up most important if the patient is a (Very Important Person) VIP or if the event is a national

or international one.

Evacuation to appropriate hospital is vital in medical standby (5). Hospital selection should be based on patient needs and hospital capability (6). As HUSM is the regional referral center for the east coast of Malaysia, providing neurosurgical, cardiothoracic, cardiology etc services, it is only appropriate that the responding hospital for this event is HUSM.

An operation center has to be created during the medical standby. This center acts as a "coordination center" between the medical team and the receiving hospital. The operation center has to be able to communicate with the medical team at all parts of the event venue.

The planning of the standby is the key to a successful medical coverage. The emergency planner should formally meet with the organizer to ascertain what is expected of the emergency medical group and to learn of his or her understanding of the level of medical care expected (4). This job description allows the emergency planner the appropriate level of equipment and staff for the event. Special considerations which may affect the recommended medical resources are night vs. daytime event, number of active participants, alcohol availability and anticipated use, demographics of crowd, number of attendees, location of event/ multiple locations, weather/time of year, length of event and problems encountered with event in the past.

Obtaining the equipment was another issue in medical standby. The emergency planner might be able to get donations (or loans) of equipment and supplies from hospitals and medical/drug companies

Table 2: *Medical encounters during the event*

Diagnosis	Total	%
Acute gastroenteritis	3	21.4
Allergic reaction	2	14.3
Dizziness	2	14.3
Insect bite	1	7.1
Soft tissue injury	1	7.1
Upper respiratory tract infection	1	7.1
Gastritis	1	7.1
Dysmenorrhea	1	7.1
Vasovagal attack	1	7.1
Acute exacerbation bronchial asthma	1	7.1

(4). The number and types of attendees could be made known from the organizer or if it was an event that requires ticket sales, then the number sold would give us the information.

Risk analysis and situational analysis required calculated analysis of various factors in the event. The duration of the event was important to determine the number of staff needed at the medical post. Risk analysis of the event site was important in order to access the flow of people to your medical post, the ease of access of ambulances to the medical post and evacuation and potential hazards of the outdoor events. In previous study on mass gatherings, it was concluded that the medical support needed was based on event size (7, 8). But the choice of medical support for this event were based on nature of the event, environmental conditions and accessibility of permanent medical facilities which were included in our risk and situational analysis (9). For example, the risk analysis of the outdoor events were related to the potential trauma and heat related illness during orienteering, abseiling and flying fox activities and submersion during kayaking. In view of these potential injuries, our emergency medicine registrars on duty were all ACLS/ATLS trained, the medical post was equipped with resuscitation drugs and our ambulance was upgraded to grade A ambulance.

The medical aid stations at an event should

be accessible within 5 minute walk and should be clearly marked so that all event personnel know about the location of the aid stations. It should be in a safe area and have easy access to the ambulance. We feel that gazebo was not the right choice for a medical post beside the beach. But due to financial constraint we had to make do with the gazebo. Gazebo was not appropriate for this event as it can be blown away by the wind if not anchored properly to the ground. In view of these basic principals, we have stationed the medical post in front of the main hall where the main event was held. We had also put 1 mobile team near the kayaking and orienteering programs respectively. Communication was vital at the medical post. The physician in charged on-site should be able to communicate with the site-organizer personnel, fire and rescue team, police, supervisor of the medical team, medical personnel on-site and operation center.

The overall medical commander was the supervisor medical team (SMT) which could be stationed on-site or at the hospital and contactable at all times. The emergency medicine registrar on duty on that day would report to him/her of any medical incidents. The chain of command was written clearly in our “standard operating procedures” and agreed upon by the Emergency Department HUSM. The SMT was responsible for

the medical coverage of the event. He/she was also responsible to resolve any unforeseen problems during the event. Transfer of patients to the hospital had to be noted to the SMT. He/she was responsible for communicating with the emergency physician on call and receiving specialty team about the case.

Interagency support during the event was extraordinary amongst the HUSM, the Civil Defense, Pasir Puteh's Hospital, Fire and Rescue team, police, MAKSAM organizer team and Taman Rehlah's team. This was achieved by building rapport during meetings and respecting the other teams' expertise. We were very grateful to MAKSAM for having confidence in us, calling us to every important meetings and providing with any alterations with the event schedule. This splendid interagency support was vital in order to maintain smoothness in running the medical standby.

The patient would be "fast-track" once arrived at the emergency department meaning patient would be seen immediately on arrival, treated by the emergency department team and the respective specialty team/s before admission to the ward. The "fast-track" system was good for the patients because they are cared for quickly and efficiently without spending hours in the waiting area. The "fast-track" system was implemented in medical standby in order to provide fast treatment for the delegates and participants of the event. Moreover, the patient had already been seen at the medical post hence should not be burden by waiting too long at the waiting area.

Patient encounter form was made for medical legal purposes and data collection for future planning. Ideally forms could be made with NCR (no carbon required) form so that medical personnel could send a copy with the patient if he or she goes to the hospital as well as to keep a copy at the aid station but due to financial constraint we were unable to do one. In our medical standby, the daily rate of patients seen was 1.6 patients per 100 participants or 16 patients per 1000 participants. Reported patient presentation rates (patient presenting per 1,000 spectator) have varied significantly with values ranging from 0.14 to 90.0, though most reported events have ranged between 0.5 and 2.0. The range of patient presentation rate reported reflects significant variations in factors such as weather, event type, and data collection and reporting formats (10). All of our medical encounters were minor illnesses like acute gastroenteritis (21.4%), dizziness

(14.3%), allergic reaction (14.3%), insect bite (7.1%), soft tissue injury (7.1%), upper respiratory infection (7.1%), gastritis (7.1%), dysmenorrhoea (7.1%), vasovagal attack (7.1%) and mild exacerbation of bronchial asthma (7.1%) which did not require transfer to the hospital. This demographic feature is similar to previous study done by De Lorenzo which states that respiratory illnesses, minor injuries, heat-related injuries, and minor problems (headache, blisters, sunburn) comprise 75% of patient presentations. However in this event, only 7.1% of the patient presentations were soft tissue injuries although most of the activities were outdoors. This was probably due to the extensive safety precautions and monitoring taken during the events.

There was an increase of patients as the events progress from 21% on day 1 to 50% of the total medical encounters on day 2. This was probably due to the physical and mental fatigue of the participants as the events progress. We were unable to correlate with the humidity and environmental temperature due to inability of data in the medical encounter form. This data should be available in the medical encounter form in future for a more comprehensive data collection and correlation. None of the medical encounter required transfer to the hospital in this event. This could be due to many probabilities such as small sample size, strict supervision and control of the outdoor and indoor activities and the environment was conducive for outdoor activities. A more extensive study had to be done to justify the team and equipments ventured during a medical standby.

Conclusion

Medical standby requires careful planning and organization prior to the event. Emergency physicians who were trained in disaster and mass gathering medicine were expected to act as the emergency planner. Interagency collaboration during the initial planning and during the event itself is needed to ensure the smooth running of the contingency plans during the medical standby. Most of the medical encounters were minor illnesses which is similar to previous studies. Moreover there was no case transferred to the hospital. A more extensive study has to be done on various mass gathering to justify the team and equipments ventured during a medical standby.

Correspondence :

Dr. Mohd Idzwan Bin Zakaria (MB Bch BAO Ireland) MMed Emergency Medicine (USM)
Department of Emergency Medicine,
School of Medical Sciences,
Universiti Sains Malaysia, Health Campus,
16150 Kubang Kerian, Kelantan, Malaysia
Tel: 09-7663244 Fax: 09-7653370
e-mail: idzwan@kck.usm.my

References

1. De Lorenzo RA, Boyle MF, Garrison R. A proposed model for a residency experience in mass gathering medicine: The United States Air Show. *Ann Emerg Med* 1993; **22** : 1711-1714.
2. Guidelines for preparation of a medical standby team: Director General of Health Meeting, Ministry of Health Malaysia 28th May 1997
3. Rose WD, Laird SC, Prescott JE, et al. Emergency medical services for collegiate football games: A six and one half year review. *Prehosp Disast Med* 1992; **7**: 157-159.
4. Leonard RB. Medical support for mass gatherings. *Emerg Med Clin N Am* 1996; **14(2)** : 383-397.
5. Arbon P, Bridgenater FHG, Smith C. Mass gathering medicine: A predictive model for patient presentation and transport rates. *Prehosp Disast Med* 2001; **16(3)** : 109-116.
6. Sanders MJ, Lewis LM, Quick G, Mc Kenna K. Paramedic Textbook. Mosby's 2001
7. Pons PT. Providing care at mass gatherings. American College of Emergency Physicians 1996 Scientific Assembly.
8. Spaite DW, Chris EA, Valenzuela TD, et al. A new model for providing prehospital medical care in large stadiums. *Ann Emerg Med* 1988; **17** : 825-828.
9. Friedman LJ, Rodi SW, Krueger MA, Voley SR. Medical care at the California AIDS Ride 3: Experiences in event medicine. *Ann Emerg Med* 1998; **31** : 219-223.
10. De Lorenzo RA. Mass gathering medicine: A review. *Prehosp Disast Med* 1997; **12(1)** : 68-72.