

THE PROCEDURE FOR PROVIDING EMERGENCY MEDICAL SERVICE AT MASS TRAUMA EVENTS (USING THE EXAMPLE OF SITUATIONAL TASK SOLVING)

V.I. Barklaya^{1,2*}, V.Y. Pikovsky²

¹ Training Unit, Moscow Scientific and Practical Center of Emergency Medical Care, Moscow, Russian Federation

² Department of Emergency Medical Care, Moscow State University of Medicine and Dentistry named after A.I. Yevdokimov, Moscow, Russian Federation

* **Contacts:** Vadim I. Barklaya, Cand. Med. Sci, Head of the Training Unit of Moscow Scientific and Practical Center of Emergency Medical Care, Associate Prof. of the Department of Emergency Medical Care, Moscow State University of Medicine and Dentistry named after A.I. Yevdokimov. Email: barklaya@rambler.ru

ABSTRACT The article gives a situational task with detailed solving on providing emergency medical service at traffic accident with several victims. This type of educational technology is applicable for training classes and monitoring of medical personnel training level.

Keywords: road traffic accident, mass trauma, prehospital stage, postgraduate education, situational task

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Car accidents with a large number of victims require the personnel of emergency medical services to strictly follow the principles of disaster medicine, including medical sorting and algorithms of medical and diagnostic measures in conditions of temporary shortage of medical resources.

The solution of situational clinical problems simulating events close to reality is an important component of continuous medical education and can be conducted both in the form of seminars and team practical trainings using simulation mannikins and involving actors (standardized patients).

Problem situation

The general ambulance team, consisting of a doctor and a paramedic on the way to a patient, witness the crash of two cars with several victims. There is no burning and fuel spill on the scene of the accident.

The primary examination revealed:

Victim 1. A 40-year-old male driver, with visible deformation of the left hip is blocked in the car, he is awake, the pulse on the left radial artery of poor volume, regular, tachycardia 112 bpm, breathing is not difficult, respiratory rate is 20 per minute.

Victim 2. A 5-year-old child, is locked in the passenger compartment of the same car in a child's seat, without visible damage, loudly cries, does not complain about the pain if asking the directed question, the pulse on the radial arteries is 112 beats per minute and regular.

Victim 3. A 30-year-old woman, is on the road, awake, with visible deformation in the region of the right shoulder joint, pulsation on the radial arteries of both upper limbs is maintained, the pulse rate is 88 bpm, the rhythm is correct, the breathing rate is 20 per minute.

Victim 4. A woman, about 50 years old, unconscious, the pulse is detected only on the carotid artery, the pulse rate is 56 bpm, and the breathing rate is 10 per minute.

Victim 5. A 25-year-old man, with signs of recent nose bleeding without other visible traumatic injuries, excited, runs between vehicles, interferes with examination of victims, requires immediate medical attention to the child.

Two crews of the General Administration for Traffic Safety (GIBDD) arrived two minutes after the ambulance had stopped.

Problems

1. Indicate the sequence of actions of the ambulance team.
2. Indicate the amount of information that must be transferred to the operational department of the EMS station as the situation develops.
3. Determine the location of the ambulance at the scene in relation to the vehicles involved in the accident.
4. Conduct medical triage with justification of each triage group.
5. Determine the number of additional ambulance crews needed to organize the rational delivery of treatment and evacuation activities.
6. Indicate the procedure and scope of medical care for all victims.
7. Indicate the amount of information about the victims, which must be transferred to the disaster medicine team when it arrives at the scene.

Standart answers

Answer No. 1. The sequence of actions of the EMS team is as follows:

- a) to provide primary information to the operational department of the EMS station;
- b) to conduct primary medical triage of victims;
- c) to re-inform the operational department of EMS station about the results of primary medical triage;
- d) to establish interaction with emergency operational non-medical services upon their arrival;
- e) to conduct a secondary medical triage and start emergency medical treatment;
- e) to take over the management of the newly arrived general ambulance crews until a specialized EMS team or a disaster medicine team arrives.

Answer No. 2. The ambulance team has to inform the operational department of EMS station with the following:

- a) the need to cancel the ongoing call;
- b) the place and type of the incident;
- c) the absence or presence emergency personnel at the accident scene, including medical ones.

After conducting the primary medical triage, the ambulance crew should contact the operational department of the EMS station again to tell the following information:

- a) about the specified number of victims with indication of contingents (children, pregnant women) and the severity of their condition;
- b) the absence or presence emergency personnel at the scene, including medical ones;
- c) about the additional required number of ambulances, including specialized ones, as well as the need to call the rescue crew to release the injured.

Answer No. 3. Before the arrival of the police, the ambulance should stop, not reaching 10-15 meters the location of vehicles, with the flashing lights on and the engine running (Fig. 1). This location of the ambulance can prevent accidents between ambulance specialists or victims and the preceding traffic.

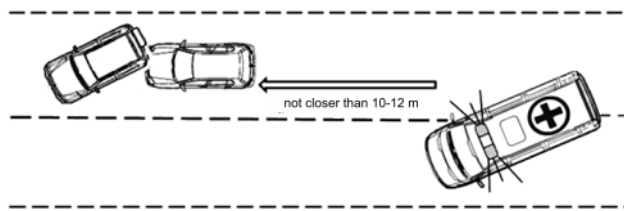


Fig. 1. The location of the ambulance at the site of road-traffic accident before GIBDD car (General Administration for Traffic Safety) arrived

When the traffic police arrives, the ambulance can be moved upon agreement.

Answer No. 4. As a result of medical triage:

Victim 1 (the man locked in the car) should be assigned to the 2nd triage group (severe trauma with failed vital functions, requiring priority medical care) due to the suggested diagnosis "Closed femoral fracture. Traumatic shock."

Victim 2 (the child locked in the car) should formally be referred to an out-of-category group (like pregnant women), which requires the priority medical care. However, in a specific situation, in the absence of visible injuries and unconsciousness in a child, without a significant tachycardia (pulse rate 112 bpm is the age norm) and signs of respiratory failure (loud crying), assistance may be delayed due to the presence of several seriously affected. The fixed position of the child (in the immediate vicinity of the victim No. 1) allows constant monitoring of his condition to be performed.

Victim 3 (a woman on the roadway, awake) can be referred to the 4th triage group, taking into account stable hemodynamics, adequate breathing and dislocation of the shoulder without signs of impaired peripheral blood flow in the injured limb.

Victim 4 (a woman on the roadway, unconscious) due to the presence of increasing signs of a life-threatening condition (coma, bradypnoe, bradycardia, detectable pulse only on the carotid arteries) should be in the 2nd sorting group.

Victim 5 (a man with inadequate aggressive behavior), considering active movements and absence of visible severe traumatic injuries, can be referred to the 4th or 5th triage group with delayed medical diagnostic and evacuation measures. The arrived police should isolate the victim in connection with the potential danger to others.

Answer No. 5. When determining the necessary number of additional ambulances in the event of mass lesions, the following scheme is recommended: 3 EMS teams for 5 victims, including one specialized team of resuscitation (it is also advisable to call the pediatric team, if available) .

Answer No. 6. First of all, medical assistance should be provided to the victims of the 2nd triage group. Given the presence of two members of EMS, assistance should be initiated simultaneously to both seriously affected.

In the victim No. 4, after the application of the neck collar, the patency of the airways is ensured by the installation of a laryngeal tube, and mechanical respiratory support begins. After providing the venous or intraosseous access, infusion therapy is performed, as well as further topical diagnosis of lesions with correction of directed therapy, mandatory measures to prevent hypothermia (metallized coverlet). If technically possible, cardiomonitoring is provided.

The victim No. 1, blocked in the car, if a venous access is successfully provided, undergoes infusion therapy and analgesia with narcotic drugs. The oxygen therapy (advised for this condition) is potentially dangerous before taking the victim from a damaged vehicle because of the possibility of spilling technical fluids and subsequent combustion. Given the mechanism of injury, further topical diagnosis of lesions is necessary, also to rule out pneumothorax. A neck collar from the equipment of the next EMS team or rescue crew should be applied before evacuation of the victim from a damaged vehicle.

The victim No.3 with dislocated shoulder should have delayed analgesia with narcotic drugs and transport immobilization.

In the absence of aggravation of the state in the victim No. 2 (the child locked in the car), he/she is followed up dynamically observed before the arrival of the rescue crew.

The Victim No. 5 with aggressive behavior requires detailed examination in dynamics after rendering assistance to the severely injured to exclude hidden life-threatening injuries, since such behavioral disturbances may be a manifestation of a compensated phase of traumatic shock (for example, with continuing internal bleeding) or a "light gap" of brain injury .

Answer No. 7. When transferring the organizational authority to the incoming team of the disaster medicine, it is necessary to give:

- a) information about the ambulance crew;
- b) information on the total number of victims, the type of their lesions and the amount of therapy performed;
- c) passport data of the victims (name, surname, patronymic name, age, citizenship of foreigners);
- d) information about the place of hospitalization (in case of medical evacuation of some victims before the arrival of the disaster medicine team).

Thus, this type of educational technology (situational tasks) is applicable both for seminars and trainings on postgraduate education cycles, and for monitoring the skill level of emergency medical personnel, for accreditation as well.

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