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The co-operation of the Fire and Rescue Service and Emergency Medical Service

Súčinnosť Hasičského a záchranného zboru a Záchrannej zdravotnej služby

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Abstract:

The establishment of an Integrated Rescue System is a first pre-requisite to enhance and make the system of providing the assistance in an emergency more co-ordinated and effective as from the threaten persons as from the responders point of view. However, the Integrated Rescue System of the Slovak Republic has been established already in 2002, there are still problems in the system of co-operation of particular responders at the incident scene. The reason of such a situation is absence of joint education and training in particular. It results from more surveys realised in the last years. In the paper, we introduce a proposal of type activities and procedures, specified for the Fire and Rescue Services and Emergency Medical Service forces, using the mass casualty incident example. This proposal was elaborated based on the results of a questionnaire survey realised among the Fire and Rescue Service and Emergency Medical Service employees and the experience and knowledge adopted from abroad.

Keywords: *co-operation, integrated rescue system, intervention, mass casualty incident, rescue services.*

Abstrakt:

Zriadenie integrovaného záchranného systému je vôbec samotnou prerekvizitou pre zlepšenie a koordináciu a zefektívnenie systému poskytovania pomoci v tiesni, a to ako z pohľadu osôb nachádzajúcich sa v tiesni, tak i samotných záchranných zložiek. Hoci Integrovaný záchranný systém Slovenskej republiky bol zriadený už v roku 2002, ešte stále v systéme pretrvávajú problémy týkajúce sa súčinnosti jeho jednotlivých záchranných zložiek na mieste udalosti. Príčinou tejto situácie je najmä absencia spoločného vzdelávania a výcviku. To vyplýva z viacerých prieskumov, ktoré boli realizované v predchádzajúcich rokoch. V príspevku

predstavujeme návrh typových činností a postupov určených pre zložky Hasičského a záchranného zboru a záchrannú zdravotnú službu s využitím príkladu udalosti s hromadným postihnutím osôb. Tento návrh bol vypracovaný na základe výsledkov realizovaného dotazníkového prieskumu, skúseností a poznatkov prevzatých zo zahraničia.

Kľúčové slová: *súčinnosť, integrovaný záchranný systém, zásah, udalosť s hromadným postihnutím osôb, záchranné služby.*

Introduction

The Integrated Rescue System of the Slovak Republic (IRS SR) was established by the Law no. 129/2009 Coll. [1], in 2002. It is characterized as the co-ordinated procedure of its responders to ensure their readiness and to implement activities and measures related to the provision of emergency assistance.

The emergency is characterized as a state in which life, health, property, or the environment is imminently threatened, and the person affected is reliant on providing urgent assistance.

The basic organizational bodies of the IRS SR, pursuant to the [1], are the Ministry of the Interior of the SR, the Ministry of Health of the SR, the Regional Offices and the responders of the IRS SR.

In the framework of the IRS SR operate: the first responders, other responders, Police force responders.

The scope of immediate medical, technical and other emergency assistance, based on the instructions of the Coordination Centre or the Emergency Centre, is placed on the first responders that comprise the Fire and Rescue Service, the Emergency Medical Service, the Mountain Rescue Service, the Miming Rescue Service and the Control Chemical Laboratories of Civil Protection. The Police forces are involved in the provision of immediate emergency assistance in the scope of tasks under specific legislation.

The principal organizational element of the IRS SR, integrating the activities of the responders, is the IRS Co-ordination Centre, established on July 1st, 2003. The Co-ordination Centres include the Regional Emergency Centres of the Emergency Health Service and Emergency Centre of the Regional Directorate of the Fire and Rescue Services at the same time. Organizationally and technically, they are built, according to the 2010 IRS development conception, as part of the regionalt offices. The statutory tasks of the Coordination Centre are formulated to be capable to respond adequately to any situation associated with the provision of emergency assistance. And it is not decisive, whether or not the threat is due to a person's accident or the consequences of an emergency or other crisis situation. Linking the Co-ordination Centres to the crisis staff of the regional offices creates an element in the crisis management system, allowing a timely response to the “standard range” crisis situation. [2].

The Coordination Centre is integrating the call takers and dispatchers of the Civil Protection, Emergency Medical Service and Fire and Rescue Service.

In the previous years, there were tackled many problems related to the communication between the Coordination Centre and the responders at the incident scene, but there still remains the problem of communication between the responders at

the incident scene. Another problem, which was solved, is the geographical support to localise the emergency call. In the presence, the location of a caller is provided in 1 min in case of 94.5 % requests [3].

Another problem, which is focused in this paper is the co-operation of the responders. There was identified a lack of joint education, even joint training. When the training is realised, the same persons are often involved in.

The aim of this paper is to present the critical points in the co-operation of the Fire and Rescue Service and the Emergency Medical Service. Those points were identified based on the results of the questionnaire survey, realised among the Fire and Rescue Service and Emergency Medical Service workers, in 2015. To enhance the present situation in the co-operation of above mentioned responders, there was proposed a list of type activities for both of them, according to the knowledge and experience of responders acting abroad.

1. Results of questionnaire survey realised

To get the information on the critical points in the intervention activities of the IRS SR responders, the questionnaire survey was realised. It is the method used mostly to get the objective information and notion on problem solved, taking into account the real experience of professionals.

The questionnaire survey was realised via Google Forms in period February - April 2015.

The basic data set range of the questionnaire survey was set to 100 respondents, the employees of both responders considered.

In the beginning, there was specified the number and the form of the questions asked in the survey. There were used as the closed as the open questions. The respondents responded totally 16 questions related to: gender; age; IRS SR service membership; years of experience in the emergency service; participation at a co-operative tactical training of the IRS SR responders oriented to management and coordination of a mass casualty incident; previous participation at a real mass casualty incident; opinion on actual situation in relation to the co-operation of Fire and Rescue Service and Emergency Medical Service in joint incidents; respect of respondent authority by the other responders employees, when intervening; specification of a need with the highest importance in the mutual co-operation of the Fire and Rescue Service and Emergency Medical Service at an incident scene; specification of the most critical points in the co-operation of the Fire and Rescue Service and Emergency Medical Service in the case of a mass casualty incident; opinion on a situation related to the abundance of the information about the IRS SR and its roles, responders hierarchy in the case of mass casualty incidents; source of information about the IRS SR; importance of the continuous education and training in the area of an emergency coping; opinion on the interest of a respondent`s employer to let educate and train his employees in the area of intervention activity, e.g. mass casualty incident; importance to realise the joint education and training activities for the first responders (focusing the mass casualty incidents); and formulation of personal experience, knowledge studied, to enhance the actual situation in the co-operation of the IRS SR responders.

In the questionnaire survey, there were involved totally 327 respondents. The members of the Fire and rescue Service represented the number of 132 respondents and remaining 195 respondents were the employees of the Emergency Medical Service.

The results of the questionnaire survey were processed by the MS Access SQL tools. First, the results for the particular responders were obtained. Further they were summarized and compared. Finally, the differences in the responses of the respondents were identified and classified in terms of the gender, age and the years of the professional experience.

Distribution of respondents by particular regions is introduced in Tab. 1.

Tab. 1 Distribution of respondents by regions

Region	FRS		EMS		Total
	Men	Women	Men	Women	
Banská Bystrica	6	1	14	12	33
Bratislava	26	3	16	8	53
Košice	3	0	11	8	22
Nitra	26	1	13	13	53
Prešov	14	2	18	18	52
Trenčín	16	0	17	17	50
Trnava	10	1	15	2	28
Žilina	22	1	5	8	36
Total	123	9	109	86	327

The age structure of respondents is shown as in Tab. 2.

Tab. 2 Age structure of respondents

Age category	Men	Women	Total
< 30 years old	39	21	60
31 - 35 years old	46	4	50
36 - 40 years old	59	14	73
41 - 45 years old	40	24	64
46 - 50 years old	22	12	34
> 50 years old	26	20	46

In accordance to the worked out years (experience) number in the emergency service, the age structure of respondents is as follows, see Tab. 3.

Tab. 3 Structure of respondents in view of the years of professional experience

Experience	Men	Women	Total
< 5years	31	18	49
6 - 10 years	64	35	99
11 – 20 years	93	21	114
21 – 30 years	40	19	59
> 30 years	4	2	6

The aim of this paper is not to present all the responds to the particular questions. Those were already published in [4]. The responses were summarized and the critical points in the co-operation of the Fire and Rescue Service and Emergency Medical Service were identified.

Among the critical points in the co-operation of the assessed IRS SR responders belong: problem with the radio communication of the responders at the incident scene, in particular due to the lack of a uniform way of communication between the individual responders. Furthermore, the lack of knowledge about the procedures and roles of individual responders and the absence of joint rules and practices for coping with incidents (mass casualty incidents) by rescue personnel involved in the intervention.

A problem appears to be the fragmented platform of communication components of the IRS and absence of a "nationwide" communication channel, the lack of joint education and training for all co-operating responders of the IRS SR and a problem with the incompatible software environments of the Emergency Centres, which does not allow the mutual sharing of data.

In addition, it is also problematic to have incompatible and inadequate equipment of individual responders, failure to comply with the Occupational Health and Safety (OHS) rules, lack of material and technical equipment for further assistance to the persons in emergency (tents, blankets, meals, beverages, or fuel), often a small number of intervening persons for large interventions, no co-operation of the emergency centres of the individual IRS responders upon receiving the emergency report and subsequent sending of intervention forces, lack of fire-fighters practice in the work with the wounded (which could be ensured by their practice in the Emergency Medical Service), ineffectiveness between the Emergency Medical Service forces and the other providers and inappropriate, an identifiable way of marking "interim-care centres".

2. Proposal of the list of the type activities in the mass casualty incidents

Based on the results of the questionnaire survey results, there were identified problems in the co-operation and co-ordination of the first responders at an incident scene. To enhance this situation, in particular in the mass casualty incidents, there were elaborated the lists of type activities for the Fire and Rescue Service and Emergency Medical Service to ensure and increase the efficiency and safety level of the intervention activity in such an emergency. To elaborate the lists of type activities

the knowledge and experience of the first responders acting abroad was applied [5, 6, 7].

The systems of the joint interventions for the specific types of the emergencies were elaborated and are available in the foreign countries, even in the Czech Republic. But, the situation in the Slovak Republic is totally different. There exist only the methodologies and lists of type activities to for the individual responders, which do not take into consideration the joint interventions. Those are even not shared among the responders of the IRS SR.

A mass casualty incident is an incident, in which Emergency Medical Service resources, such as personnel and equipment, are overwhelmed by the number and severity of casualties [8].

In accordance to [9], the mass casualty incident is an emergency, where the number of people with serious health threats or imminent threats to life is three or more.

The mass casualty incident is possible, in accordance to the emergency severity and intervening personnel number, to divide to the following three categories:

- *Emergencies, where the conditions found at the incident scene allow the triage of the wounded to be performed by the Emergency Medical Service personnel on-site or as close as possible to the place where the wounded are present, without any apparent threat to health of paramedics.*
- *Emergencies, requiring the removal of the wounded persons at a safe distance beyond the reach of possible emergency consequences (e.g. explosion, threatening construction breakdown), that endanger both the wounded and the rescuers. The recovery and transport of the wounded persons are generally carried out by fire-fighters (with the use of protective equipment), who hand over the wounded to paramedics.*
- *Emergencies with the presence of dangerous substances (e.g. CBRNE – Chemical, Biological, Radiological, Nuclear, and Explosive materials), where the rescuers must consider the appropriate level of danger and to use the protective equipment. Only after the contamination and subsequent decontamination of the affected persons, decontaminated persons are handed over to the paramedics.*

The emergency is characterized by the fact that, in particular, at the beginning of the intervention of the responders of the Integrated Rescue System, there is a lack of forces and resources, which will increase during the incident coping. Therefore, it is necessary from the beginning to pay attention to the organization of the intervention control of the IRS responders and the division of the incident scene to sectors (especially the staging area, etc.). For the successful incident coping, the first half-hour – up to an hour, is the most important time interval. It attracts the attention of the media and the public, especially relatives and close relatives.

The priority of responders during the intervention is to concentrate and adequately organize adequate number of forces and resources of the IRS responders. It should consist of the ensuring the safety of the rescuers, the procedures including the

preventing the spread of emergency consequences, wounded triage, recovery, stabilising and transportation.

The activities are overlapping and can be carried out simultaneously, while the ensuring the safety of the rescuers is essential during all phases of the specific tactics implementation:

- *Minimizing the loss of life and lasting health consequences for the wounded can be achieved by providing adequate first aid, maximum possible urgent pre-hospital emergency care and, in particular, shortening the time of handing over the wounded person from the incident scene to the hospital care. In the absence of medical personnel at the incident scene, the triage of wounded is done, according to the severity of the injuries - for the needs of the IRS responders is optimal to use the START triage method (Simple Classification and Rapid Therapy). The use of the START triage does not replace the medical triage of the wounded, i.e. the initial triage before medical triage.*
- *The identification of deceased persons will allow the "declaration of the person for the dead", which is of fundamental importance for the legal situation of the deceased (must be implemented in co-operation with the Police force).*
- *To establish the conditions for the identification of deceased persons - for the purpose of investigating by the law enforcement authorities (if involved in the investigations), or of the forensic medicine. It is necessary to keep the parts of the bodies of deceased persons on the spot, until the investigation is completed. The spot must be labelled.*
- *Keeping tracks and evidence to investigate the causes of the emergency. It serves to multiple investigating authorities. Various types of the mass casualty incidents are practically always followed by various inspections carried out by specialized authorities, investigating the causes of air, railway, traffic accidents, labour safety inspections, fire investigators, etc. It is therefore appropriate, as far as possible, to consult these authorities on how to carry out the rescue and removal works and to pay maximum attention to documentation of the intervention. In the case of mass casualty incidents, it is always necessary to call the forensic medicine experts.*
- *Communication with the media and notifying the related relatives is an important part of the intervention and the subsequent duty of the IRS responders. The pressure of the public and the media on the intervening responders of the IRS to provide information during a rescue operation increases and usually does not end when the intervention is terminated. It is therefore appropriate, to let the information to be provided by the Emergency Centres the IRS responders as soon as possible and then by the press agents or the Information Centres created.*
- *The provision of the post-traumatic care to victims is not realised only at the incident scene. For some types of mass casualty incidents, the number of people in need of follow-up psychological help - the victims of stress among rescuers, related of wounded persons and survivors - is growing. It is the responsibility of the emergency management to address those emergency implications by providing the posttraumatic care specialists.*

Incident commander and the organisation of the incident scene

The incident commander, in accordance to the actual legislation [1], is a fire-fighter from the Fire and Rescue Service. The incident commander commonly establishes Command Staff in a structure related to the type of emergency and the IRS responders participating in the intervention. He should divide the incident scene into the sectors and then into the sections. A special position in the staff has the intervention chief doctor − the commander of the medical intervention, a doctor who first appears at the incident site, unless he is subsequently replaced by another, predetermined doctor. The commander of the medical intervention co-operates with the incident commander until the time of the last wounded is removed from the incident scene, always managing the operations of the Emergency Medical Service (triage, re-triage, treatment and transport to the medical or health care facilities). He requires assistance from the incident commander for activities that are not sufficiently covered by the Emergency Medical Service forces, i.e. relocating the wounded from the incident scene to the assembling point, patient transfer and logistic support. He is responsible for communicating with the Emergency Centre of the Emergency Medical Service and the target medical or health care facilities (hospitals) through the Emergency Centre.

The forces and resources of the IRS SR are normally divided into the sectors at the incident site:

- ***Search and Rescue Sector*** − *the sector commander is a member of the Fire and Rescue Service. In the sector, the search for persons in ruins and wreckage, their recovery and activities aimed at preventing the risks to rescued persons and intervening rescuers (e.g. fire extinguishing, wreckage cooling, detection of hazardous substances and objects and their retention) is implemented. The sector can be further divided into sections to ensure the systematic search and rescue of wounded persons. Intervening rescuers are generally organized into groups.*

Those groups are:

- *Search – it is used for searching or triage of wounded or otherwise threatened persons, labelling the place of their finding, and directing the individuals able of moving independently to the point of assembling and wounded triage. If possible, i.e. there is no danger zone and no threat to the health of paramedics, the triage of the wounded persons is managed by the paramedics directly. If there is a threat to life, the fire-fighters apply the START triage method for initial triage of wounded. Therefore, there is the requirement for enhancement of the current situation in the education and training of fire-fighters in the emergency medicine issues.*
- *Rescue – it is used for rescuing of persons not able to move, including their recovery and transport to the point of assembling and wounded triage.*
- *Support – it is used for supporting the search and rescue groups from possible threats occurring during the intervention, e.g. from the wreckage of the vehicles. Its task is to extinguish a fire or to be prepared for an unexpected threat of fire, wreckage slides, etc.*

- ***Medical Aid Sector*** *– the commander of the medical intervention is intervention chief doctor. His primary role is to provide the medical treatment of wounded, in accordance to the priority treatment at the point of assembling and wounded triage as well as the transportation of wounded. The point of assembling and wounded triage has a place for the provision of professional pre-hospital emergency care, a place for the loading of wounded to be transported to the medical or health care facilities, etc. The sector should be organised so that the distance travelled in a small evacuation circuit is as short as possible and the point for assembling and triage of wounded was placed outside the zone of danger.*

Further, there are introduced the lists of type activities for the Fire and Rescue Service and Emergency Medical Service.

2.1. Fire and Rescue Service

The tasks of the Fire and Rescue Service, the resources and forces used in a mass casualty incident:

- *To take over the intervention management and divide the incident scene to the sector of the search and sector of the rescue, to identify the hazardous areas with a distinctive danger to the rescuers and other persons occurring in the incident scene, as well as to the health care sector;*
- *To establish the Command Staff (incident commander staff), to co-operate with the commander of the medical intervention;*
- *From the beginning, in the framework of the survey, and where feasible, to search and to indicate the places, where there are persons wounded or victims of an emergency. If there is obviously no danger of spreading the emergency consequences, the survey also includes searching and triage of wounded persons;*
- *To find out whether the consequences of a mass casualty incident (traffic accident) do not pose a potential additional threat to persons or environment by dangerous substances, to detect the possibility of leakage of operating fluids from damaged vehicles and its potential extent;*
- *To detect the road traffic (pass ability) due to a traffic accident (barrier, passing only one lane, string of cars formation, etc.);*
- *To find the possible safe arrival routes for rescue vehicles to get to the place of traffic accident (due to the reduced visibility, glazed ice, fog, snowdrift, etc.);*
- *To carry out the relocation of the wounded to the point specified for the assembly and triage of the wounded;*
- *To establish and continuously specify the mode of protection in the zones of the intervention scene;*
- *To prevent further spread of the emergency effects, in particular to extinguish the fires, to prevent the leakage / release of hazardous substances, to start the concurrent activities to rescue wounded persons without delay, including the*

prevention of the persons wounded against the exposure to dangerous substances;

- *To establish a space for providing the health care - a location for assembly and triage of wounded, in agreement with the commander of the medical intervention;*
- *In the case of the detection of hazardous substances, in particular CBRNE substances, to request the Coordination Centre for additional devices to detect the hazardous substances and detailed information on the hazards of those substances;*
- *To provide, where appropriate, a space for decontamination of persons and space for decontamination of the equipment used;*
- *To organise available forces for searching, triage and transportation of wounded;*
- *When the wounded person is in a dangerous zone, in which the rescuers movement is only possible with the use of protective equipment, according to the decision of the commander of the intervention, to perform wounded triage applying the START triage and to carry out their transport to the wounded assembling point by the forces and resources of the Fire and Rescue Service (backboard, scoop spine board, emergency stretcher, etc.);*
- *To carry out the decontamination of persons (wounded and rescuers) and equipment in the case of contamination with CBRNE substances;*
- *To build (technically) the workplace of the intervention commander and his staff (Incident Command Post), in the case of long-lasting incident coping;*
- *To provide radio communication with the participating responders of the IRS and with the Coordination Centre of the IRS SR, or request the Coordination Centre to establish an Information Centre for the public and to organize the information flow from the intervention site;*
- *To carry out the necessary removal works − the procedures for performing the removal works in order to preserve the traces to consult them with the representatives of the law enforcement authorities;*
- *To provide required technical and informational co-operation with the forensic practitioner (doctor) and other law enforcement agencies, if necessary.*

In the framework of the co-operation with the Emergency Medical Service, the resources and forces of the Fire and Rescue Service shall be provided for:

- *Recovering and relocation of wounded;*
- *Relocation of the wounded triaged, labelled with tags / strips used in the mass casualty incidents, in accordance to the identified priorities for entry to the "interim-care centre", using own and paramedics transportation equipment (backboard, scoop spine board, emergency stretcher, etc.);*

- *According to the decision of the commander of the medical intervention and the intervention commander to perform the wounded triage using the START method:*
  - *in situations, where the number of wounded significantly exceeds the possibilities of medical triage,*
  - *in situations, where the area (extent), on which the wounded are found exceeds the possibilities of medical triage (small number of triage teams),*
  - *in situations, where the wounded persons are inaccessible (due to the toxicity, danger zone, position).*
- *Lighting of intervention scene and the "interim-care centre", identification of sectors;*
- *Construction of the tents at the incident site, as agreed with the commander of the medical intervention;*
- *Relocation and loading of patients in the "interim-care centre";*
- *According to instructions of the commander of the "interim-care centre" and according to the progress of the individual patients health condition to provide forces and resources for relocation of wounded among sectors in the "interim-care centre";*
- *Providing the humanitarian aid;*
- *Handling with hazardous materials and protecting the environment;*
- *Protection of the property and prevention of further damage;*
- *Safety in the dangerous zone and safety of the rescuers in the intervention actions.*

In order to organize the activities of the individual responders of the Integrated Rescue System (fire brigades, Police forces, Emergency Medical Service forces, Civil Protection forces and other responders) and for the efficient use of the fire-fighting equipment, the incident commander from the Fire and Rescue Service is fully responsible.

Tasks of the intervention commander, according to the situation and the development of an emergency situation, when providing the rescue operations:

- *To provide a survey and evaluation of the situation;*
- *If necessary and required, in accordance to the severity of threats to the lives, health and property of the population, to suggest to the crisis management authority a statement of an emergency;*
- *To decide to call on other territorial responders of the IRS, needed to deal with an emergency (e.g. flood, industrial accident, traffic accident, fire);*
- *To evaluate the information on hazards existing at the incident scene;*

- *To divide the incident scene into the intervention sectors with a distinctive hazard and to determine the relevant mode of work as well as the mode of protection;*
- *To specify the particular tasks for the intervening forces, considering their equipment;*
- *In the co-operation with the Civil Protection External Staff, dispatched by the Regional Office (authority), as well as the municipality, district and regional crisis staff, to decide to provide the necessary rescue works, especially in the case of natural disasters, accidents and other emergencies;*
- *In co-ordination with the municipality and district and regional crisis management authorities, to deploy the Fire and Rescue Service forces, to specify the main direction and the way of intervention activity;*
- *To entrust the commanders of the intervention sections, the head of the command staff and to order them to perform the tasks related to the intervention at the incident scene;*
- *To require the use of a helicopter for aerial search, rescue or emergency response through the territorial competent Fire and Rescue Service Emergency Centre;*
- *To co-operate with the other IRS responders;*
- *To establish the Incident Command Post and to assign its labelling (to specify the primary and secondary Incident Command Post location);*
- *To control compliance with the occupational health and safety (OHS), including the use of personal protective equipment by the rescue personnel;*
- *To ensure providing the drinks and food;*
- *To provide continuous information to the competent authorities of the Emergency Centre's management, the regional, district and municipality crisis staff on the situation at the incident scene, the need for forces and resources, and the change in the incident commander's person;*
- *To co-operate with the Police Force or with other law enforcement authorities in keeping with the order at the incident site and in its immediate vicinity;*
- *To provide emergency communication and information to the affected municipality and district authorities on the situation at the incident scene;*
- *Together with the Crisis Staff members to perform an inspection of the incident scene and to determine the necessary measures for its control;*
- *To handle the report (information) about the intervention and to ensure, without undue delay, and to send it to the Emergency Centre of the Fire and Rescue Service.*

2.2. Emergency Medical Service

The role of the Emergency Medical Service, as one of the first responders of the Integrated Rescue System, is to provide immediate and professional medical assistance to a person in emergency, based on the Coordination Centre instructions. The law [6] also imposes an additional obligation, to be professionally prepared, using the available technical and material resources for an intervention in the framework of the Integrated Rescue System. The activity at the incident scene is fundamentally different from the normal intervention of the Emergency Medical Service crew. It is necessary to organise and co-ordinate the activity of the Emergency Medical Service in such a way, that the adequate urgent health care of the persons wounded is ensured within the shortest time interval from the occurrence of the wound.

In the first phase, immediately after the catastrophe up to 24-72 hours, there should be predominantly the specialized urgent health care and hospital health care provided. The main activity is to save as many human lives as possible from the consequences of an emergency. At the same time, there is a need to implement the anti-epizootic measures to prevent the spread of diseases among the relatively healthy population, living in the affected area.

In the second phase, which lasts weeks, months to years, there is necessary to provide subsequent professional health care and rehabilitation, including the treatment, caressing and recovery of persons after injuries caused by the action of negative forces released during an emergency. This phase also includes hygienic and epidemiological surveillance of the affected area.

The Decree of the Ministry of Health SR no. 10548/2009-OL [10] defines the organisational personnel division of the Emergency Medical Service crew, as well as the commanding positions and their labelling at the incident scene. In this decree is specified that the bag for a mass casualty incident is a part of mandatory vehicle equipment.

Defined commanding positions [10]:

- *Commander of the medical intervention – white vest*
- *Commander of the "interim-care centre" – red vest*
- *Commander of the transport – blue vest*
- *Triage provider – yellow vest*

Commander of the medical intervention

He is responsible for setting up a functional system of emergency health care providing an operation of all health services and medical equipment applied at the incident scene.

The main roles of the medical intervention commander:

- *Upon arrival at the incident scene to report to the intervention commander;*
- *After the situation evaluation, to provide the M.E.T.H.A.N.E. (the act of demobilization) situation report from the incident scene to the Emergency Centre of the Emergency Medical Service;*

- *In co-operation with the intervention commander, to build a place for the first-time treatment of the persons wounded, a place for triage of the wounded, a place for creation of the "interim-care centre", the car park of ambulances and the intervention vehicles, the route of arrival and departure, the helicopter landing place, a place for on-site morgue, a place for loading of persons wounded into the transport vehicles or transit buses, a staging area (location at or near an incident scene where tactical response resources are stored while they await assignment);*
- *To entrust the personnel with the execution of the particular tasks;*
- *To entrust the commander of the "interim-care centre" and commander of the transport;*
- *To entrust the triage teams;*
- *To communicate with Regional Emergency Centre of the Emergency Medical Service about the need to deploy other resources and forces;*
- *To keep the documentation on the intervention;*
- *To be responsible for alternating the emergency medical forces and resources, and for their gradual release upon termination of the intervention;*
- *When the intervention Command Staff (meeting at the Incident Command Post) is established, the commander of medical intervention shall be involved in its activities, particularly in determining the requirements for the external zone, the forces and resources deployment tactics, the specific effects of the dangerous substances, the safety measures and the traffic regulation.*

Triage provider

The triage provider can be only well experienced medical rescuer (paramedic) or a doctor of the Emergency Medical Assistance, which first arrived at the incident scene, and is able to apply the diagnostics, in accordance to the START triage. Using the START triage, the medical responder assigns each patient to one of four color-coded triage levels, based on their breathing, circulation, and mental status. The triage levels are:

RED – Immediate: Patients, who have major life-threatening injuries, but are salvageable given the resources available.

YELLOW – Delayed: Patients, who have non-life-threatening injuries, but are unable to walk or exhibit an altered mental status.

GREEN – "Walking Wounded": Patients, who are able to ambulate out of the incident area to a treatment area.

BLACK – Deceased or Expectant: Used for victims who are dead, or whose injuries make survival unlikely.

The tasks of the triage provider at the incident scene:

- *Not to conduct treatment, but to examine each of the persons wounded and to label everyone with a priority on relocation, to realise only life-saving actions*

(airway release, to stop massive bleeding and to get person wounded into the stabilized position);

- *Firstly, to invite all the walking wounded persons to move to a predetermined location under the supervision of the person in charge to collect them in a safe area outside the incident scene, where they will be, after the triage of remaining persons, labelled as lightly wound with green colour;*
- *At the same time, gradually and systematically to examine the wounded who remain at the incident scene and cannot come to the place for the lightly wounded;*
- *Quickly and dynamically to search for the most severely wounded, taking into consideration the type and spatial localisation of the incident scene;*
- *To keep the documentation on the wounded number, the urgency of their treatment or relocation;*
- *Upon the completion of the triage, to report this fact to the commander of the medical intervention and to be available for the provision of the medical care to the wounded.*

Commander of the "interim-care centre"

The commander of the "interim-care centre" is entrusted by the commander of the medical intervention. It is a well-experienced doctor of the next Emergency Medical Assistance crew, which arrived at the incident scene after the first crew. After the arrival at the incident site, the crew should report to the commander of the medical intervention.

The tasks of the commander of the "interim-care centre" at the mass casualty incident scene:

- *To specify the triage team, when entering the „interim-care centre";*
- *To divide the "interim-care centre" space into nursing sectors, according to the priorities of the treated persons wounded, to entrust the commanders of individual sections in the "interim care centre" (Fig.1);*
- *To take over the wounded persons displaced from the incident scene;*
- *In co-operation with the triage team, to perform the classification of the persons wounded at the entry into the "interim-care centre", to determine the priority of the treatment in the "interim-care centre", using the triage cards;*
- *To hand over the persons wounded to the commanders of the individual sections in the "interim-care centre";*
- *To determine the treatment procedures for the persons wounded;*
- *To organise and manage the activities performed in the "interim-care centre";*
- *To keep the records about the patients in the records list of the commander of the "interim-care centre";*

- *To communicate with the commander of the transport and the commander of the medical intervention about the needs to transport the patients in accordance to the priority specified.*

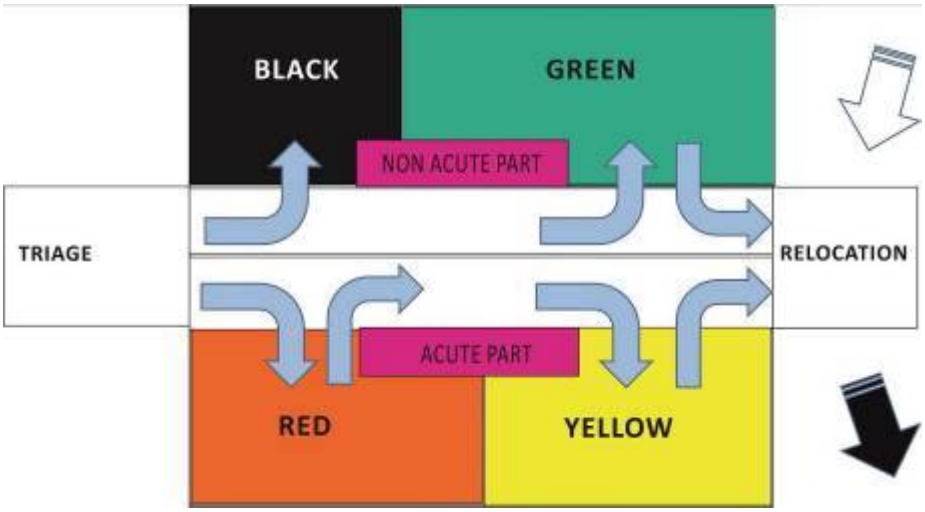

Fig. 1 Division of the sectors in the "interim-care centre" in means of priority (Source: Author).

Commander of the transportation

His role is the coordination of the patients flow from the incident site into the "interim care centre" and their transport do the health care facility after the treatment, their stabilisation in the "interim-care centre" respectively.

The tasks of the commander of the transportation at the mass casualty incident scene:

- *To determine, in co-operation with the commander of the intervention and the commander of the medical intervention, the arrival and departure routes;*
- *To record ground-based equipment of the Emergency Medical Service and the aerial equipment of the Helicopter Emergency Medical Service, intervening directly at the incident scene;*
- *To involve the crews for specific activities in conjunction with other commanders of the individual sectors;*
- *The priority is given to transport of wounded from the incident scene to the "interim-care centre". Only for vital or capacitive reason, he may issue instructions for transportation to medical facilities;*
- *To keep the records of the transporting crews of the Emergency Medical Service with the exact direction of the wounded to the target medical facilities;*

- *In co-operation with the commander of the medical intervention and commander from the Police force to provide the passing and safety of the arrival and departure routes used for transportation of wounded;*
- *To communicate with the Emergency Centre of the Emergency Medical Care (EC EMS) about the capacities of the medical and health care facilities, continuously to update this information in cooperation with the Emergency Centre;*
- *According to the requirements of the commander of medical intervention, to provide the transportation of primarily treated to the medical and health care facilities through the Emergency Centre.*

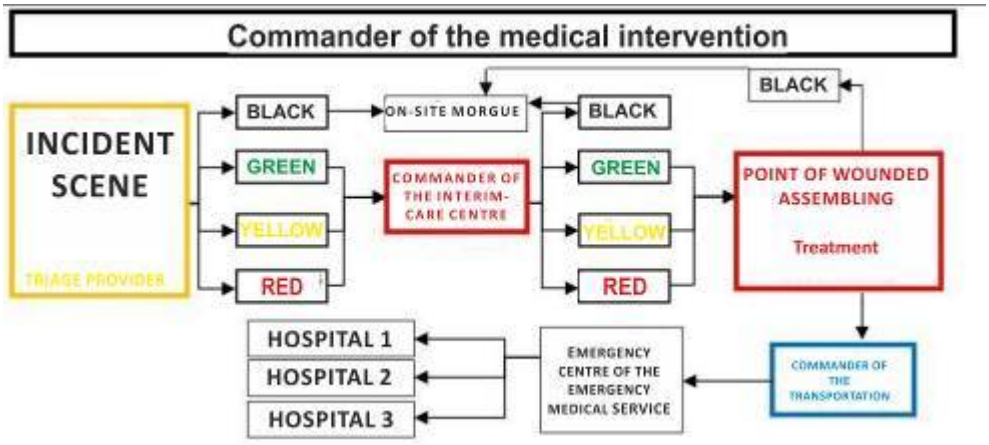

Fig. 2 Organisation of the activities related to the medical intervention (Source: Author).

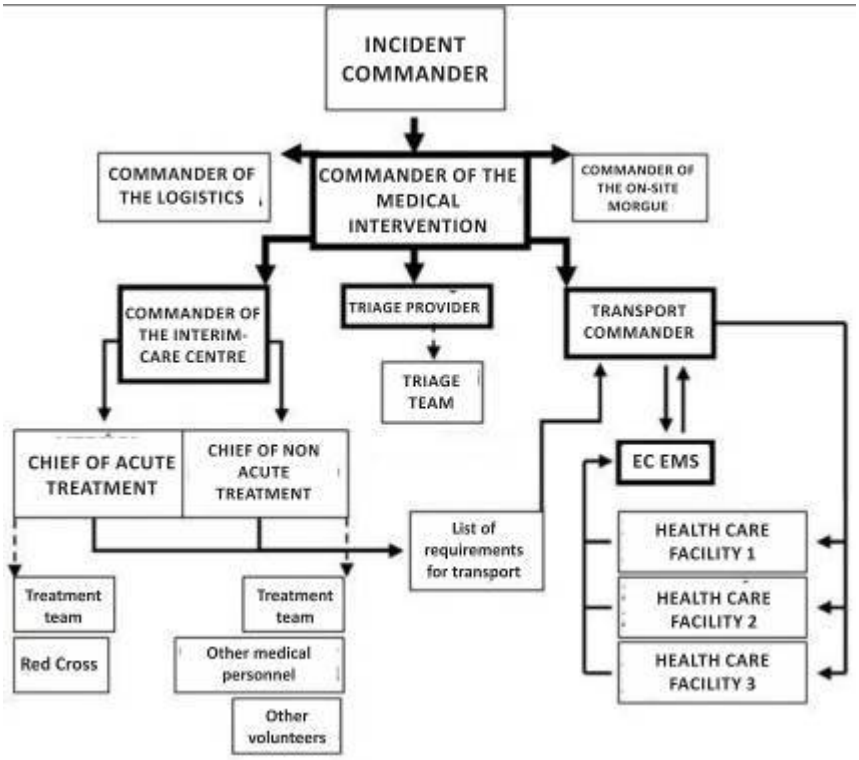

Fig. 3 Organisation of the commanding positions at the incident scene (Source: Author).

Conclusions

The aim of this paper was to present the proposal of the list of type activities to be implemented in the mass casualty incidents. The need to propose such lists arose from the results of the questionnaire survey realised among the employees of the Fire and Rescue Service and Emergency Medical Service. In the paper, there are introduced the proposals of the two lists with specified type activities to be provided in the mass casualty incidents. One of them is focusing the role of the incident commander and the Fire and Rescue Service forces and the second one the role of the commander of medical intervention and the activities provided by the Emergency Medical Service forces. Both lists were elaborated based on the experience and knowledge of the first responders acting abroad, in particular in the U.S. and in the Czech Republic. Those lists are available to be implemented into the internal regulations and then practice of Fire and Rescue Service and Emergency Medical Service, as well as the IRS SR itself.

References

[1] Zákon NR SR č. 129/2002 Z. z. o integrovanom záchrannom systéme, v znení neskorších predpisov / Law no. 129/2002 Coll. on the integrated rescue system, as amended. [In Slovak]

[2] BOGUSKÁ, D., MAJLINGOVÁ, A., MONOŠI, M. *Kritické miesta v súčinnosti záchranných zložiek Integrovaného záchranného systému Slovenskej republiky / Critical points in the co-operation of the emergency services of the Integrated Rescue System of the Slovak Republic*. Prešov: Prešovská univerzita v Prešove, 2016. 187 p. [In Slovak]

[3] Ministry of Interior of the Slovak Republic (MI SR). *Integrated Rescue System of the Slovak Republic*. 2012. [on line] [cit 05-10-2017] available from: http://www.eena.org/ressource/static/files/2012_08_13_slovakia.pdf

[4] BOGUSKÁ, D., MAJLINGOVÁ, A., MONOŠI, M. Results of questionnaire survey focusing the critical points in the co-operation of emergency services of the Integrated Rescue System in Slovakia. In: *Advances in fire, safety and security research: Scientific book*. Eds. Štefan Galla, Andrea Majlingová, Boris Toman. Bratislava: Fire Research Institute of the Ministry of Interior SR, 2015. P. 6-14.

[5] Výbor pro civilní nouzové plánování (VCNP). *Typová činnost složek IZS při společném zásahu – Katalogový soubor: Dopravní nehoda*. Praha. 2009. [online] [cit. 23-06-2015] available from: http://www.hzscr.cz/clanek/dokumentace-izs-587832.aspx. [In Czech]

[6] SAQIB, D., RENDELL, A., FARMER, CH., CARLTON, P. Worldwide disaster medical response: An historical perspective. In: *Critical Care Medicine,* 2015, Vol. 33, no. 1, p.S2–S6.

[7] DECKER, R. Acceptance and utilisation of the Incident Command System in first response and allied disciplines: An Ohio study. In: *Journal of Business Continuity & Emergency Planning*, Henry Stewart Publications, Vol. 5 no. 3, p. 224–230.

[8] Mistovich, J.J., Karren, K.J., Hafen, B. *Prehospital Emergency Care*. Upper Saddle River, N.J.: Pearson / Prentice Hall, 2013. 53 p.

[9] Zákon NR SR č. 579/2004 Z. z. o záchrannej zdravotnej službe a o zmene a doplnení niektorých zákonov / Law no. 579/2004 Coll. on the emergency medical service and on the amendment of some laws [In Slovak]

[10] Opatrenie ministerstva zdravotníctva Slovenskej republiky č. 10548/2009-OL, ktorým sa ustanovujú podrobnosti o záchrannej zdravotnej službe / The Decree of the Ministry of Health SR no. 10548/2009-OL, laying down the details of the emergency medical service. [In Slovak]

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