# **CBRN EVENT - DO WE NEED MEDICAL INTELLIGENCE**

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**Abstract:** Nowadays the risk level for Chemical, biological, radiological and nuclear (CBRN) events raises globally. The industrialization is leading to establishing of thousands plants, where toxic industrial materials are used into the processes or are end products. Radioactive materials are widely used into different industries, while biological and geno-modified products are found all over world. The increased use requires proper and diligent transportation and storage. If any of these processes is jeopardized a CBRN event could occur. Another grim scenario, unfortunately, present into modern world war conflicts is the use of Weapons of Mass Destruction – Iran-Iraq War, Gulf War, War in Yugoslavia, Syria etc. The aim of this study is to analyse the hospital staff awareness regarding the need of focused medical intelligence in case of CBRN event. Material and methods: By the means of descriptive and comparative methods the records from diverse CBRN events' medical support and hospitals involvement into the process are analysed in order to highlight the significance of the promptly, adequate and timely performed medical intelligence for assuring the medical support success. Dichotomous survey among 54 medical professionals was performed in order to discover their awareness regarding medical intelligence performance in case of CBRN event.

Results and discussion: Great majority of the inquired hospital staff completely ignores the medical intelligence as first step in case of CBRN event that endangers both medical staff and casualties. Conclusion: Medical Intelligence has to be taught in greatest details during medical managers' education.

Keywords: Medical Intelligence, Disaster Medical Support, CBRN event

#### INTRODUCTION

Nowadays the risk level for chemical, biological, radiological and nuclear (CBRN) events raises globally. The industrialization is leading to establishing of thousands plants, where toxic industrial materials are used into the processes or are end products. Radioactive materials are widely used into different industries, while biological and gene-modified products are found all over the world. The increased use requires proper and diligent transportation and storage. If any of these processes is jeopardized a CBRN event could occur. Another grim scenario, unfortunately, present into modern world war conflicts is the use of Weapons of Mass Destruction – Iran-Iraq War, Gulf War, War in Yugoslavia, Syria etc.

CBRN impact on population and environment is difficult to manage (9). Regardless of the damaging factor, all activities need to be precise and adapted in accordance with the developed situation and the health hazards present on the scene. Out- and in-hospital procedures like triage, control of decontamination, stabilization in the forward medical station and evacuation, diagnostics and treatment of casualties should have specifics if they are performed in dangerous, hostile and austere environment (4). Standard practice and algorithms for managing casualties are not applicable, because of the risk for contamination. Rapid and organized functioning relies on implementation of hospital contingency plan, mobilization of resources, etc. (10,11). This is done by the instructions of medical support manager; whose directives depend on the information available regarding the event.

CBRN events have the potential to cause mass casualty situations in which hospitals in and around the area of the event are overflown with patients. To deal with this situation, redistribution of casualties from emergency medical services could relieve the burden. Also, hospital personnel have to increase their effectiveness in order to cope with the substantial workload (6). To organize this, information from the area of damage should be available, regarding the number of casualties and severity of injuries.

Another difficulty that could be faced in CBRN incidents is the proper protection for staff and casualties. Applying appropriate personal protective equipment (PPE) could be lifesaving. The choice of it depends on the damaging agent and the tasks that should be performed. Data show, that timely provision of appropriate PPE depends on the observed effect of the contaminating agent (5). To purposefully gather this information and report it should be done by all members of medical teams.

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Collection of information is vital for retrospective study of the event and learning the lessons from it. This data is the source for the final report and could be used for future improvements in medical support operations.

### **OBJECTIVE**

The aim of this study is to analyse the hospital staff awareness regarding the need of focused medical intelligence in case of CBRN event.

#### MATERIALS AND METHODS

By the means of descriptive and comparative methods the records from diverse CBRN events' medical support and hospitals involvement into the process are analysed in order to highlight the significance of the promptly, adequate and timely performed medical intelligence for assuring the medical support success. Dichotomous survey among 52 medical professionals was performed in order to discover their awareness regarding medical intelligence performance in case of CBRN event.

### **RESULTS AND DISCUSSION:**

Survey was performed among 52 respondents – both doctors and nurses. All respondents were divided in three age groups – under 35(22), 35-45(22) and 46-55(8). Also all respondents were divided in accordance to their work experience: - with less than 5 years' work experience (14), 6-15 years of experience (18) and 16-30 years (20). The purpose was to distinguish the role of experience and compare it to newly acquired knowledge.

All respondents were chosen among recognized professionals attending the Master Programme for Healthcare Management of Faculty of Public Health in Medical University Plovdiv. This degree allows them to take managing positions in healthcare facilities, thus determining their key part in disaster medical support.

The question asked was: Do You know what medical information You are supposed to collect, analyse and disseminate in case of use of weapons of mass destruction? Only 15 (29%) of the respondents gave affirmative answer. The other 37 (71%) gave negative answer.

From those with less than 5 years work experience, 3 respondents (23%) gave positive answer and 10 (77%) – negative. Among those with 6 to 15 years of experience 8 (40%) gave positive answer and 12 (60%) negative. In the group of professionals with 16 to 30 years of experience 4 (21%) gave positive and 15 (79%) negative answer. In the middle group results were significantly better than in the rest, which suggests that multiple factors affect emergency preparedness.

The chart, presented below, is depicting the results from the survey.



Medical intelligence is the process of gathering, analysing, evaluating and disseminating medical information. This information is necessary for medical managers and planners to organize and manage medical operations in case of disasters. The information they need should be accurate, relative, understandable and provided on time. Subjects of

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interest are: the type of the event, the damaging factor that caused it, the time of occurrence, the area that is affected, the number and structure of casualties, medical resources available to perform medical support, additional resources that are needed, medical facilities in vicinity, appropriate location for forward medical station, evacuation and triaging areas, routes for ingress and egress, other rescue teams that operate in the area and their chain of command, etc.

In major events specialized medical intelligence teams perform this important activities, but still every member of the medical team is required to collect and report data with significance to the medical support. 71% of the respondents are not confident what medical information is required of them. (Fig.1) Since this process has specifics that do not apply in standard practice, it is questionable whether it could be performed. Experience shows that such activities need to be not only studied but also practiced and trained (2).

Gathering and communicating information among staff members and to medical support managers has proven to be problematic. (1,7) The ways and means to do so could be perfected by using approved and practiced methods. Teaching medical staff how to do so should be a part of their education.

### CONCLUSION

Performed analyses undisputedly reveal the low percentage of certainty among healthcare providers, regarding the planning, organization and execution of medical intelligence in case of CBRN incidents.

Medical Intelligence has to be taught in greatest details during medical managers' education. Both field and tabletop exercises, performed on regular bases, could improve preparedness for response in case of CBRN incident. (3,8)

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