

Epidemiological investigation in theatres of military operations

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ABSTRACT

The organization and implementation of anti-epidemic support in the Polish Armed Forces carrying out mandatory tasks in theatres of military operations poses a difficult and imperceptible problem in the field of medical assistance of military contingents. One of the operative instruments designed for limitation of the spread of infectious diseases and its health consequences among participants of military operations is an epidemiological investigation. Analysis of the real limitations and possibilities in the management of investigative activities constitutes a complex and varied character of issue. The aim of this paper was to present the legal, diagnostic, and logistic limitations, including medical treatment, health prevention, and evacuation capabilities, which determine the practical, medical activities in military operational conditions.

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INTRODUCTION

The basic and legally-binding definition of epidemiological investigation has been presented in the *Law on preventing and counteracting infections and contagious diseases in people*; it defines the term as ‘detecting a disease, its aetiological factor and determining causes, sources, reservoirs, and mechanisms ruling the spread of a contagious disease or an infection’ [1].

A specialized definition of the term may also include broadly understood stages of epidemiological investigation: introductory investigation, identification of all cases, collecting and analysing data, implementing control measures, notifying the people involved, and observation [2]. However, the high variability in cause and effect events, connected with the origin and spread of an outbreak, results in the fact that certain, differently defined phases and blurring clearly outlined borderlines overlap. Specialist literature presents a more concise description of the term as: de-

tecting causes, sources, and mechanisms of the spread of diseases. Essentially, such a definition is a quintessence of this complex and multilayer subject matter [3, 4]. The analysis of the term in terms of semantics directs our attention to the word ‘investigation’, which is defined as ‘finding useful information, especially after patient and thorough examination’ [5]. Yet, the common trend of implementing English words and phrases into current academic terminology or into everyday language, e.g. replacing the Polish term ‘*medycyna zapobiegawcza*’ with the English borrowed ‘*medycyna prewencyjna*’ (Eng. preventive medicine), directs the meaning of the term ‘epidemiological investigation’ into the domain of law – an inquiry/a criminal investigation. Such an association is obviously connected with turning social attention (since the late 1990s) to newly-defined threats to biological security, especially the danger of applying biological agents used in weapons of mass destruction and international bio-terrorism. Such

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a comparison has also been reflected in expert articles relating to public health and protection against the results of bio-terrorism [6]. Upon consideration of a wide range of possible biological threats to the security of troops operating overseas, it seems justifiable to accept the broader meaning of the concept 'epidemiological investigation'.

THE AIMS AND PRINCIPLES OF ANTI-EPIDEMIC SUPPORT AND EPIDEMIOLOGICAL INVESTIGATION IN MILITARY OPERATIONS

Providing troops with anti-epidemic support in operational conditions serves two main purposes:

- maintaining combat readiness in the theatre of operations;
- preventing possible import of infectious diseases (esp. the most dangerous ones) into a home country.

In this case, the broadly-understood concept of combat readiness, with much attention paid to the human factor, is defined as a series of actions aimed at preventing the origin and/or spread of infections, contaminations, or poisoning with a biological agent. Within the context of the subject matter discussed in this article, it does not apply to non-infectious diseases or diseases of civilization. A comprehensive execution of the objectives of epidemiological investigation should focus on different levels of medical support, and should especially become a part of:

- medical investigation and identifying health hazards prevailing in a particular zone of operations;
- a planning and preparatory phase of a military operation (including vaccinations and training concerning sanitary issues);
- active epidemiological supervision within the framework of medical supervision (including the issue of self-defence and protection against agents used as biological weapons);
- medical procedures in case of an outbreak of mass infection (including the execution of epidemiological investigations);
- procedures concerning the rotation of military contingents or concluding a military mission (including transport of military personnel from a mission area into a home country).

A thorough epidemiological preparation of a military mission should result in effective protection of soldiers against the above-mentioned risk factors and also in the increased awareness among military personnel of the uniform and most effective course of action in case an outbreak of an epidemic occurs in

a given territory. When it comes to the organization of training sessions for medical personnel, the critical point would be to equip them with the practical skills needed for conducting an epidemiological investigation.

The level of training would later be reflected in the ability to make important and snap decisions in critical situations. Epidemiological investigation is an indispensable tool for preventive medical services as far as providing anti-epidemic support in extraordinary situations is concerned. Practical character, lack of uniformity, and frequent intuitive actions give rise to some difficulties in creating consistent medical procedures. The main aim of introducing such comprehensive and specialized procedures of the epidemiological investigation is to identify the causes of any diseases of an epidemic character. Another important objective of the process is to work out and specify effective anti-epidemic measures the implementation of which would considerably decrease the spread of disease. The term 'disease of an epidemic character' used in this article will not be found in epidemiological jargon, it refers to a practical classification used by sanitary services for their organizational and functional needs when describing an epidemic. This classification includes:

- an epidemic – the occurrence of diseases, behaviours, or other health-related events in numbers substantially exceeding what is predicted during a given period and in a given territory [7];
- an outbreak of food poisoning/infection – the occurrence, in specific conditions, of two or more cases of the same infection in humans and/or developing an infection caused by the same agent, or the occurrence of such a situation in which the observed number of cases exceeds what is expected and all the cases are connected with one source of food, or there is a likelihood of such a connection [8];
- detecting at least one case of a particularly dangerous and highly infectious disease – an easily communicable disease of high mortality rate, causing major hazards for public health and requiring special medical treatment [1].

The occurrence of one of the above-mentioned situations should immediately trigger the implementation of certain epidemiological investigation procedures. The principle elements of the epidemiological investigation should include:

- confirming the occurrence of a disease of an epidemic character;
- establishing the definition of the case;

- active identification of cases;
- description of an outbreak (time, place, population);
- formulating hypotheses (medical differentiation);
- collecting samples for diagnostic tests;
- analysis of the collected data;
- verifying hypotheses;
- listing appropriate anti-epidemic procedures;
- compiling a final report [9, 10].

Determining the source of infection, the routes of transmission, sensitive population groups, or detecting the etiological factor (a causative biological agent) remains unchanged regardless of the situation. However, operational conditions prevailing in the theatre of war have forced medical personnel to direct their attention to the risk of possible biological warfare or acts of biological sabotage. Owing to the extensive range of existing military and medical risk factors, epidemiological investigation remains a highly complicated assignment requiring proper expertise and experience. Therefore, every restriction placed on the execution of the epidemiological investigation is a serious impediment to the smooth and effective detection of etiological factors and the possibility to get an outbreak of an epidemic under control.

LIMITATIONS TO THE EXECUTION OF THE EPIDEMIOLOGICAL INVESTIGATION

The actual limitations to conducting the epidemiological investigation in operational conditions overseas may be classified into three separate categories:

1. Legal limitations;
2. Diagnostic limitations;
3. Logistic limitations, including:
 - medical treatment and health prevention capabilities,
 - evacuation capabilities.

Such a division is a result of grouping different elements which, from a medical point of view, are significant as far as conducting epidemiological investigations and implementing anti-epidemic procedures are concerned. Thus, the focus of the given classification is on the problem itself rather than on particular factors. The aim of formulating the list of basic limitations is to define the risks facing the process of epidemiological investigation and to direct the readers' attention to the complex character of such actions.

LEGAL LIMITATIONS

The process of conducting an epidemiological investigation requires a physician to have considerable knowledge of the subject matter but also to be

familiar with the so-called sanitary law. The term is informally explained as a set of legal acts relating to the implementation and execution of sanitary-hygienic and anti-epidemic regulations. Owing to clearly specified issues within this domain, it is possible to determine critical points directing a researcher to the source of an infection or an infection route, to specify the conclusions concerning the sanitary-hygienic situation, to commission particular diagnostic tests, and consequently to implement appropriate anti-epidemic procedures aimed at bringing the spread of an infection under control. In the territory of Poland legally binding acts facilitate the implementation of certain procedures intended for the prevention of the origin and spread of infectious diseases, whereas in operational areas outside Poland such actions pose a major problem which remains unnoticed. Article 7 of the act of law of 17th December 1998 on *The rules of engagement or deployment of the Armed Forces of the Republic of Poland abroad* [11] specifies the possibility to refer and apply legal acts which are valid in the territory of Poland to the theatre of war abroad:

1. Military personnel assigned to a temporary duty assignment overseas are subject to the criminal and disciplinary law which is in force in the territory of the Republic of Poland;
2. Soldiers and civilians employed in military units deployed overseas are committed to observe the law which is valid in the territory of the receiving country and the international law which is binding in Poland.

Considering the fact that legal acts relating to broadly understood concept of sanitary law and health prevention procedures cannot be easily classified in relation to disciplinary or criminal law, it would be justifiable to apply legal regulations which are valid in the territory of the receiving country within this domain. It would not pose any problem if combat operations were conducted in the territory of the EU. However, while conducting military operations in countries characterized by totally different culture, social conditions, geography, climate, or legal regulations, such as Iraq, Chad, or Afghanistan, the implementation of the local law within this domain is extremely difficult if not impossible. In extreme cases, local law cannot be applied at all, as it simply does not exist in the territories of certain countries. Similarly, the law of a receiving country cannot be observed if combat operations are aimed at overthrowing the existing government and administrative bodies which could enforce appropriate legal regulations. If all Polish regulations concerning sanitary-hygienic and anti-epi-

demic support were classified as 'order law', or if chosen acts of law and orders of ministers were applied as a whole, it would have serious repercussions, including bringing any military activity to a halt. In particular, it applies to clearly specified requirements relating to supervision and diagnostics, which are impossible to fulfil outside Poland due to technical or organizational problems. On the other hand, the absence of a legally binding definition of 'order law' may effectively prevent the introduction of all regulations required by the Polish law, being one coherent system, since not every act of administrative law can be interpreted as 'order law'. The absence of administrative regulations for certain acts of law, which would specify the scope of Polish law to be observed in operational areas overseas, and most importantly, the necessity to introduce the best and the most rational solutions, requires, in this case, referral to military regulations created to satisfy the demands of a particular mission or to implement legally binding acts (including military law) of lesser importance. The fundamental document defining the aims and procedures to be followed within an operational area is the Operations Plan (OPLAN). Among other things, it includes an annex containing information about the organization and execution of medical support. Owing to its general and concise character it is impossible to find in this document any detailed information regarding medical issues, e.g. the rules of conducting epidemiological investigation. It also refers to the Operations Order (OPORD) formulated on the basis of the OPLAN. Some of the contemporary military missions are supplemented with special medical manuals. In case of all the UN operations it is *'The Medical Support Manual for the United Nations Peacekeeping Operations'* [12]. There are also a number of other medical handbooks created for military purposes; some are devoted to a specific military mission, e.g. *'The medical support manual for the EUFOR Chad/The Central African Republic peacekeeping operation'* [13]. All such manuals provide support on the merits of the subject matter as well as on the organization of medical procedures; however, they do not specify how the specialized procedures should be carried out. For such a purpose, detailed instructions and lists of procedures should be applied. For the period of the execution of allied operations conducted within the NATO framework, the basis for cooperation and decision-making are documents implemented by the Republic of Poland. They include doctrinal documents (AJP, AMED, etc.) and procedural documents (STANAG). The docu-

ments secure the execution of the medical investigation and the maintenance of appropriate sanitary-hygienic standards on condition that they have been translated and specially adapted for the capabilities of national contingents and then effectively implemented. However, NATO regulations do not provide a legal basis for United Nations peacekeeping operations or military operations conducted under the auspices of the European Union. In the case of all EU missions, procedural documents are created independently but with some reference to NATO source materials. The absence of a uniform system within this domain with reference to anti-epidemic support provided within NATO, UN, or EU operations constitutes a serious problem when quoting particular laws or trying to enforce certain regulations in a uniform and invariable way. A complete catalogue of legal regulations valid within the territory of Poland is demonstrated in the Constitution of the Republic of Poland (Chapter 3: 'Sources of legal acts'). In the case of EU countries, all European legal regulations are clearly defined, whereas in the case of other organizations with Polish membership, such as NATO or the UN, precisely defined acts of law do not exist. As a result, normative documents issued by the above-mentioned organizations are in contradiction to legally binding acts of law observed in Poland. Therefore, normative regulations issued by suitable institutions functioning within international organizations cannot replace acts of law. This becomes a serious problem when, on the grounds of normative acts, which according to the Constitution of the Republic of Poland are not legal acts, there is an obligation to limit certain rights or impose duties on citizens. Such events can occur while dealing with an epidemic outbreak (quarantine, isolation). The situation is even more complicated if a foreign citizen has to follow the procedures which were imposed on him/her. In an attempt to standardize epidemiological investigations, including the possibility to refer to specific legal regulations, one could look for solutions in the MASCAL plan, i.e. a list of procedures to be followed in case an event of medical character occurs on a mass scale. Such a document, however, is typically intended for emergency events, such as bombardment, a plane crash, or a terrorist attack, and it does not include detailed medical procedures within the field of epidemiological investigation or guidelines for dealing with an epidemic outbreak. Although the document is a collection of organizational rules, it also involves rules of engagement for equal and superior institutions while coping with medical events

which exceed the capabilities of a given medical evacuation level. Owing to the fact that specific solutions and guidelines for practical execution of epidemiological investigation are missing, Standing Operational Procedures (SOP) could be applied. They should involve precise information on anti-epidemic support and procedures. Regrettably, such documents are generally compiled by medical personnel participating in military operations but with no expertise in epidemiology or related fields. Standing Operational Procedures created for the purpose of a military mission should be based on source documents being an exponent of law. Yet, taking into consideration the aforementioned difficulties in referring to acts of law or legal orders, the only applicable documents in such situations remain detailed military instructions approved by the Minister of National Defence, Chief of General Staff of the Polish Armed Forces, or other specialist ministerial instructions and military normative documents. At this point another difficulty arises, namely, the number of possible references is insufficient. The basic source of knowledge for researchers dealing with epidemiological investigation has not changed for the last 30 years, and it has been 'Instruction – sanitary-hygienic and anti-epidemic support for the armed forces in times of war and peace' [14], the 'Military Epidemiology' [15], and the 'Military Hygiene' [16] textbook. Nonetheless, none of these textbooks was created for the purpose of the theatre of contemporary war. It should be mentioned that certain actions aimed at creating specialized regulations concerning selected issues of sanitary-hygienic and anti-epidemic support of military missions have already been taken [17]. However, comprehensive solutions to the problem or specialized ministerial publications to be used as an interpretation of present-day legal regulations and operational conditions are still missing. Existing instructions created for NATO purposes [18, 19] and national military textbooks [20] could provide a sound basis or a point of reference for creating systematic solutions in the domain of anti-epidemic prevention in the Polish Armed Forces. Such documents, in compilation with certain acts of law, could successfully be used as a foundation for creating uniform procedures in the form of specialized military instructions.

DIAGNOSTIC LIMITATIONS

Limited diagnostic capabilities are the primary constraint on formulating final results of epidemiological investigations conducted in a mission area. The main cause of the situation is undoubtedly the

complexity of medical analytics. This extensive field of science includes microbiology, virology, parasitology, and other specific fields. A leading role in the area of field diagnostics has been assigned to microbiology. This is primarily the result of two reasons that are crucial in operational conditions:

- therapeutic reason – the fastest possible identification of the biological agent causing an infection, in order to implement effective medical treatment;
- military reason – informing the commander about the essence of a mass-scale health hazard and its expected consequences as fast as possible.

Providing the full range of diagnostic facilities (that are available in Poland) in an overseas mission area is completely impossible. This relates to the absence of qualified personnel (the necessity to employ many specialists in such fields of medical diagnostics) and to the lack of appropriate materials (the necessity to supply medical personnel with expensive but fragile specialized equipment). Given the circumstances, obtaining the appropriate level of diagnostic facilities should always reflect the specific requirements identified in a risk analysis and medical investigation report. On the grounds of the data mentioned above, it is necessary to elaborate a wide range of portable laboratory diagnostics, such as portable PCR (polymerase chain reaction) or field diagnostic assay kits for the detection of specific pathogens, which can be a practical epidemiological tool for rapid analysis of the occurrence of potential threats. Yet another important issue within this domain is the diagnostician's knowledge of certain procedures, i.e. isolating, differentiating, or recognizing a pathogen and an interdisciplinary ability to prepare and process samples of different origin (biomedical, environmental – including specimens of air, food, and water). Typically, diagnosticians are skilled in a specific field of research work, e.g. biomedical clinical research, sanitary and epidemiologic research or environmental research. As a result, one diagnostician cannot be expected to have the total ability to conduct microbiological genetic research and parasitological assessment of direct preparations as well as the ability to carry out a comprehensive physicochemical analysis of water. The necessity to perform certain laboratory tests (and the range of such tests) should be determined by a person conducting the epidemiological investigation. Additional tests carried out in the process of the epidemiological investigation form the basis for performing an analysis, verifying hypotheses which have been constructed, and defining

specific anti-epidemic procedures to be implemented in order to increase epidemiological effectiveness in an outbreak. Furthermore, some of the medical risks that were identified in a military mission area could require the implementation of additional diagnostic facilities, which go beyond the routine and legally approved procedures. Field testing into particularly dangerous biological agents or tests for the presence of cysts of intestinal parasites in drinking water represent an example of diagnostic procedures which had not been regulated according to law (in a form of the Polish Norm or the Defence Norm) and are conducted without specialized and uniform military instructions. Considering the fact that such laboratory tests would be of little practical use in Poland, it would be sensible to introduce uniform norms, patterns, and diagnostic procedures of a typically military character. The given norms and regulations could be based on international literature and well-functioning standards implemented by NATO specialists. Also, one needs to keep in mind that in operational conditions test results cannot be verified in a referential laboratory. This creates a serious problem if a sudden biological attack occurs (biological weapons, bioterrorism, or biological sabotage). Then the ability to collect appropriate environmental or biomedical samples, their correct preservation, packing, labelling, and transportation [21] together with the results of laboratory tests conducted in field conditions may turn out to be a decisive factor as far as undertaking or abandoning certain preventive measures or the necessity to take retaliatory actions is concerned. This may potentially give rise to some serious legal and military implications, which could be grounded on both the information gathered by operational intelligence and the data obtained through laboratory tests, in the conclusions of the epidemiological investigation. As a consequence, it is necessary to introduce uniform procedures relating to the issue of collecting specimens and conducting diagnostic tests which should be based on concrete instructions – executive acts of law approved to be implemented in the armed forces. Creating and implementing such legal regulations could also facilitate cooperation between different components of the Polish Armed Forces, e.g. the Biological Reconnaissance Section of the Military Preventive Medicine Centres, Epidemiological Reaction Units from the Epidemiological Reaction Centres of the Polish Armed Forces, and the Mobile Biological Laboratory from the Contamination Analysis Centre. The problem is not merely a theoretical deliberation. A good exam-

ple of such a joint investigation into the possible risk of an attack with biological weapons was the research carried out in the territory of Iraq in 2003 conducted by the Mobile Biological Laboratory (whose staff are directly subordinate to the Chief of Medical Services of the Multinational Division Centre South [22]), sample-takers from the chemical platoon, and a reconnaissance component. The accepted course of action in a given situation is based on an AEP 10 source document 'NATO handbook for sampling and identification of biological and chemical agents'. This document, however, has not been converted into the form of a military instruction, which could be enforced in all mobile sample-taking and laboratory units.

Another significant issue, as far diagnostic procedures are concerned, is the specific character of certain diseases prevalent in a given geographical area. The peacekeeping mission conducted in Cambodia (1992–1993) and the mission conducted in Chad (2008–2009) made the researchers realize the scale of health problems and variety of epidemiological risks resulting from the medical geography of a specific operational area [23]. Therefore, it is necessary to consider geographical differences existing in areas where military operations are to be deployed while preparing medical support of a given mission. Working out effective prevention measures will logically be reflected in the speed at which medical assistance is provided to the sick. The introduction of mobile sample-taking units will make it possible to exercise laboratory supervision over the components of level 1 medical support, and more importantly it will enable medical personnel to provide full diagnostic support without the necessity to employ more medical staff. The accepted procedures will lead to a significant decrease in the rate of non-battle sanitary losses being the effect of the occurrence of diseases characteristic of a given area, as well as optimizing the activities undertaken by medical services. Therefore, the essence of the proposed actions is to create such diagnostic facilities which would provide assistance in dealing with specific epidemiological risks identified in the process of epidemiological investigation.

LOGISTICAL LIMITATIONS

Providing equipment and preparing provisions for a military mission is a massive undertaking. Its efficiency may determine whether certain combat operations are a failure or a success. The essence of providing appropriate operational support and long-term defence planning is the ability to estimate sanitary losses [24]. For that reason, the success of a military

mission will largely depend on the ability to predict the exact amount and quality of necessary equipment and materials as well as supplying military personnel deployed in an operational area with the exact amount of provisions. The variety of renewable gear and equipment in today's battlefield forces logistics units to be aware of and to follow a number of norms, regulations, and tables of amounts due. It also requires logisticians to have some specialized knowledge about the demands of particular services and to be able to deal with any shortages in this respect as quickly as possible.

Health prevention and therapeutic problems

Medical logistics determines the scope of responsibility and capabilities of medical services by setting the standards of multi-level treatment and medical evacuation of the sick and wounded into subsequent levels of medical aid. The standards of equipment necessary to provide first aid, and qualified and specialized medical assistance in all medical centres is clearly defined and recorded in documents of universal [25] or short-term and dedicated character; whereas, such uniform and standardized requirements relating to anti-epidemic support, laboratory diagnostics, or sanitary-hygienic protection in the form of consistent regulations or medical instructions simply do not exist. It is then reflected in the limited ability to carry out epidemiological investigations or the implementation of proper prevention measures, and consequently in the speed of dealing with an epidemic outbreak and protecting people in danger. The most serious problem which medical services functioning in the theatre of operations have to face remains the absence of regulations relating to procurement of disinfection agents, laboratory reagents, medications, and materials used for anti-epidemic support. Under such circumstances, an outbreak of an infectious epidemic requires the implementation of nonstandard procedures. Additionally, if there are severe shortages of indispensable medical supplies or if medical services are forced to wait for a long time for the delivery of urgent materials and equipment, the situation may become dangerous. Delays in implementing anti-epidemic procedures will result in an increased risk of the spread of a disease. Also, one needs to consider certain limitations in delivering supplies into an area of deployment arising from environmental conditions, e.g. impassable roads or closed airfields during the rainy season. In such cases, it is necessary for medical personnel of the contingent to maintain the appropriate level of supplies

termed DOS (Days of Supply). At present, there are no regulations that would enable medical personnel to calculate and then to maintain a standardized reserve of drugs and medical materials in a mission area. Hence, regulations issued by a superior as to the amount of DOS to be maintained poses yet another significant problem concerning the issue of proper evaluation and providing material supplies for military personnel participating in mission throughout the mass infections which medical services operating in a theatre of military activities have to confront. In addition to this, a great number of problems occurring in the field of the vaccination schedule significantly diminish the capabilities of anti-epidemic support. The absence of an effective mechanism which would deprive some of the military personnel who had not been vaccinated or had only been partially vaccinated, according to legally binding regulations, from being relocated overseas results in a number of difficulties, especially as far as arranging a vaccination schedule is concerned. The medical services of a military mission are rarely aware of the exact number of people arriving in the zone of operations who will require basic vaccinations; therefore, preparing the right amount of vaccines to be used in a mission area in extraordinary situations or to be used as a booster dose is unfeasible. Apart from the fact that maintaining the proper standards of transportation (vaccines kept in refrigerators) may not be possible in operational conditions (no credible reports on actual conditions of transportation in military mission areas, e.g. in Afghanistan) or the fact that due to a vaccine injury some soldiers might be incapable of performing their tasks for several days after having been vaccinated, the fact remains that the most serious threat in this respect is the risk of an outbreak of an epidemic among those who have not been vaccinated. A possible solution to this problem would be to create a system of medical supervision which would be composed of a central register of the vaccination schedule and an electronic database of medical records of military personnel serving in the Polish Armed Forces. Implementing such a solution has been proposed and discussed, but unfortunately the plan has not been executed until now.

Problems with medical evacuation

Each patient who has been diagnosed with a disease or sustained an injury but cannot be effectively treated at a given level of medical support (owing to limited diagnostic or therapeutic capabilities available at this level) should be evacuated to a higher level.

The principles which govern the process of medical evacuation seem to be clear; however, a problem occurs if one takes into consideration the fact that a patient who is about to be evacuated may be infected with a contagious pathogen. Owing to the long incubation period of certain pathogens (from the moment of becoming infected until the occurrence of the first symptoms of the disease) it is possible that the first cases of mass infections will go unnoticed. This results in the necessity to increase the number of tasks of the personnel in charge of carrying out medical investigations. It is also a great impediment to the implementation of comprehensive anti-epidemic procedures. Upon considering situations of this kind it seems logical that in certain cases there is a need to establish 'transitory camps' where soldiers could be stationed before being homebound. While in a transitory camp they would not be directly engaged in combat operations and thus would not be put at risk of developing certain diseases. The waiting time before returning to a home country would be a specific form of quarantine and its duration would be determined by the head of the medical service on the grounds of information included in the medical history of a patient (typically it should not exceed 5–14 days). The best solution would be to be set up transitory camps in the vicinity of at least level 2 medical centres, thus avoiding the necessity to evacuate serious cases to a higher level of medical treatment. In case of an outbreak of infectious disease in an operational area the fundamental issue is to decide whether serious cases should be isolated on the spot or if medevac procedures, requiring the evacuation of the sick to a home country, ought to be implemented [26]. The answer to this question seems obvious, as the specific character of a military mission make it easier to concentrate infected patients in one place. As a result, the process of epidemiological investigation could necessarily be focused in a specific place in the theatre of operations. Moreover, the absence of national diagnostic and treatment facilities of biosafety level 4 unit (BSL-4), which would be capable of detecting and identifying all specifically dangerous pathogens of group A, would not only make it impossible to eliminate the risks within this domain in the territory of Poland, but more importantly could facilitate the spread of infectious diseases. A potential resolution to this problem could be the introduction of so-called 'bio-boxes' used as a means of isolating the sick. Yet, without any doubt, the primary task of health services should be to prevent the import of infectious di-

seases to Poland. This could be achieved by concentrating mass-scale infections in the territory of a military operation, carrying out epidemiological investigations, implementing anti-epidemic procedures, and eventually bringing an outbreak of an epidemic under control. The execution of the entire program connected with the occurrence of mass infections needs to be clearly defined in the MASCAL plans and should allow for the principles of medical (specialized) support with its limitations as to the implementation of medical evacuation of patients from the territory of an outbreak.

CONCLUSIONS

1. Epidemiological investigation is a practical tool as far as the execution of anti-epidemic support of military missions conducted abroad is concerned. The rules applied to the implementation of investigation procedures should allow for the possible risk of using biological agents and the specific character of all natural health hazards prevailing in a given theatre of operations.
2. The major problem in implementing standardized prevention measures are all kinds of limitations as well as the absence of legal regulations applicable to operational conditions as far as anti-epidemic support is concerned.
3. Diagnostic and logistic limitations relating to anti-epidemic support ought to be minimized by directing the attention of medical services to the specific character of medical requirements in a given military operation. And medical investigation should be applied as a chief instrument for supporting this goal.
4. Existing procedures and handbooks issued by NATO member countries, along with acts of the Polish law, should provide the basis for formulating the national system of anti-epidemic support in the form of military instructions.

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