

VULNERABILITIES, TERRORIST AND BIOTERRORIST THREATS AND RISKS

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***Abstract:** The contemporary society has been, is and will probably be dominated “urbi et orbi” (everywhere and for everybody) by conflicts expressed through violence, social confrontations, permissiveness, authority collapse, collapse of moral norms.*

Paradoxically, although it is spoken and written much about terrorism and terrorists, there is still no complete and accepted definition of these terms, and the legal classification is approximate.

The analysis of threats is an extremely important decisional asset when setting up plans of direct protection or objective security strategies or institutions suitable to become targets of violent actions, but today's intelligence community has not yet established a clear set of procedures and principles that constitute the expert main frame for a comprehensive analysis of threats and vulnerabilities.

The analysis of risks, vulnerabilities and threats materializing probabilities is done in stages. Estimating integrated threat takes into account: availability, vulnerability, necessity, recovery, effects on target and the attacker risk. Threats, vulnerabilities and risks of ADM CBRM in situations of peace, crisis or war are many and one must be prepared including for medical countermeasures, in order to combat terrorism and counter-terrorism.

***Keywords:** terrorism; vulnerability; risk; threat; countermeasures; CBRN.*

Introduction. The contemporary society has been, is and will probably be dominated “urbi et orbi” (everywhere and for everybody) by conflicts expressed through violence, social confrontations, permissiveness, authority collapse, collapse of moral norms.

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Bursts of violence have become commonplace companions of everyday life and stress and anxiety are ubiquitous in all levels of social existence¹.

Natural tendency. This should not surprise us, because in the hominids' history dating back almost two million years, man as an animal, inherited from his ancestors strengths and weaknesses: intelligence, skill, gregarious spirit, love for "his own" and hatred of "the other", hunter's instinct and desire to fight to get what he wants or revenge etc. The modern man, *Homo sapiens sapiens*, after escaping (willingly or not) from the competition of other hominids, has organized the modern society only after the end of the last ice age, E.g. ten millennia ago, when he started the History of our species. Since then, he still tries to be better, more efficient, more civilized, more human, in essence. But the animal instincts persisted throughout this period, which is not even one percent of human evolution.

History is mostly made of story battles, wars, battles, murders, conquests and of violent leaders' biography, positive heroes, if "ours" or negative, if "of others". The History revolves around the enlargement and decay of empires, from ancient Egypt until today. Religions, arts and sports complete these aggressive tendencies, despite the declared civilizing intentions. Economic competition led to fights over territory, population, food, mineral resources; today we fight for power, tomorrow we will fight for water, in the future we will fight for other celestial objects... So it is not only naive and utopian, but really false the prediction of a future human society without conflict, the so-called "end of history". No "Pax Romana" no "Pax Americana" and no other solutions based on political ideology or religion cannot be definitive solutions. In physics, every action determines an equivalent reaction, but this also happens in biology, sociology, politics etc.

Military regulations. In the military, any action will lead to a counter-offensive; military forces will fight with military powers, great forces will fight with great power or alliance of powers and superpowers can fight with everyone else together, following the "symmetry" that is the balance of forces. But if the disproportion of forces and means of combat is overwhelming, the weak either will obey (when in its advantage, the same as the relationship between Dacia and the Roman Empire) or will fight, as capable of as possible, just above the laws and customs, what today we call "asymmetric warfare" (as sometimes the Romanian states fought the Ottoman Empire).

¹ Arădavoaița G., Crăiniceanu I., Nita D., *Amenințări, vulnerabilități și riscuri la adresa demnitarilor – metode și tehnici de analiză*, Eitura Antet, XX Press, Filipești, Prahova, p. 120.

International treaties and particularly the Geneva and Hague Conventions from the twentieth century, the most warring and bloodiest of all 100 centuries of history of modern man, set the rules of warfare, for it to be a continuation of external politics by violent means and not by mass murder. Thus, explosive bullets, very small caliber bullets, biological and toxic weapons, chemical weapons and incendiary weapons and any of mass destruction that have discriminatory effect (e.g. on non-combatants) and cause unnecessary suffering were prohibited. But many of them are still used in the twenty-first century, sometimes in the open, sometimes covertly or with changed names: the napalm is "gelled oil" and phosphorus bombs are for lighting, even if launched during the day. In some cases, even the respective law allows it, for example, although chemical weapons are prohibited to be used against the enemy, they may be used on its own population, sometimes even in our country. Although biological weapons are formally prohibited, if a country that signed and ratified the BTWC has justified fears that larger forces will overrun it, it can notify three months prior about resuming the manufacture of biological weapons (BTWC ch. XVII, 1972). The national defense can be found during internal war, whereas the defeated army is helped by the entire nation, following few basic rules: civilian fighters will be organized in units and controlled by competent persons, will carry arms on sight and have distinctive signs. The Spanish against Napoleon's army, Polish Jews and Russians against Hitler's army, the Algerians against the French, Vietnamese against French and American, etc. fought this type of war. But if the abuser threatens the very national being of the attacked, it can use any legal means and methods of fight. This provision is ambiguous and may have serious implications: who can determine when the national being is in danger and what is the difference between fighting and mass murder? Nations fighting in open ground, like the Arabs in desert countries, are tempted or forced to disregard these rules, bringing them under the provisions of the criminal law for war crimes and are considered "terrorists". This equates them with antisocial psychopaths, with mass murderers, with political or religious extremists, so they do not benefit from the provisions of the Convention regarding the wounded and prisoners of war, and sometimes not even from the prisoners rights.

No invader will try to kill the entire population, because there is nobody to put to work, and will not destroy any goods, that has nothing to rob or use. Everything is thought of in economic terms, if the investment in

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war will be profitable or not. Napoleon, when preparing the "Grand Army" said he needs three things: money, money and money! Most ADM/CBRN only affect living force without affecting technique and facilities, so this is taken into account, although not publicly declared.

Terrorist war. So later this warring century the notion of "asymmetrical warfare" appeared, in which a regular army, made up of peace making troops and then of peace keeping troops, and possibly special paramilitary forces (former military civilians) experience more or less organized attacks, sometimes individual (suicide bombers) for which no army is well prepared. Moreover, the military not only that are not well equipped and have no necessary instruction, but they have no physical structure suitable for fighting population; is the main reason why after completing military conquest, invasion troops are replaced by occupation troops and police forces. For the first time this behavior has been described by the occupation of Czechoslovakia by the Soviet army. Worse, this asymmetric warfare can take place as terrorist attacks on enemy territory, hurting innocent people, or against its targets located on neutral territory, against which they commit an act of aggression. And this is how the victim gets to be the aggressor, as in psychiatric diagnosis of "persecuted persecutor". And, at the same time, a freedom fighter gets to be a criminal who does a disservice to his cause even as antisocial behavior cannot lure sympathy society. Paradoxically, although they speak and write much about terrorism and terrorists, there is still a complete and accepted these terms and legal classification is approximate.

The typology of terrorism. Although the analysis of threats is an extremely important decisional asset when setting up plans of direct protection or objective security strategies or institutions suitable to become targets of violent actions, but today's intelligence community has not yet established a clear set of procedures and principles that constitute the expert main frame for a comprehensive analysis of threats and vulnerabilities. We may graphically represent the "chain of weaknesses" (Image 1).

Image 1. "chain of weaknesses" in terrorism

Vulnerability – Threat – Risk – Attack – Consequences

The first principle, violence is a process and at the same time an action. Behavioral and attitudinal violence does not appear out of nowhere. The analysis of violent incidents shows that violent acts and actions are completing a series of identified problems, an evolutionary process of crises, conflicts,

disputes and unfulfillments. The second principle resides in the fact that directed violence is the product of interaction with a chain of three factors:

- the actor of violent action (the individual, often psychotic);
- the stimulus (*the triggering point*) and;
- the circumstances that allow the materialization of the violent act.

In the last decade of the twentieth century, the US State Department classified the typology of terrorism as follows:

a. organizational violence, in small groups, radical, without popular support (e.g. the Basques of ETA) or the transnational (e.g. Abu Nidal Palestinians);

b. the insurgents violence, who may be ethnic separatists (e.g. peoples of the former Yugoslavia or the former USSR) or political rebels (e.g. the Civil War in Ukraine); here we can fit some resistance and national liberation movements: Iraq, Afghanistan, Libya, Syria, Palestine etc.

Countermeasures. The majority of successful attacks was due to the target's inability to perceive the potential threat it poses. This deficiency is very visible in the field of bioterrorism, anti-bioterrorist and counter-bioterrorist actions being more in theory. The analysis of the terrorism phenomenon must be multifactorial, interdisciplinary, relying on current information, on retrospective statistics and to issue prospective evaluations, based on the reality of forces and means at our disposal, for the anti-terrorist and counter-terrorist intervention to be effective.

American analysts have estimated that 100 American bombers in a population of 250 million would exceed the capacity of response of the police and secret services.

[1]. From here we can approximate the capacity of antiterrorist defense, which in the European Union would be of 200 terrorists, the most. (fig.2.)

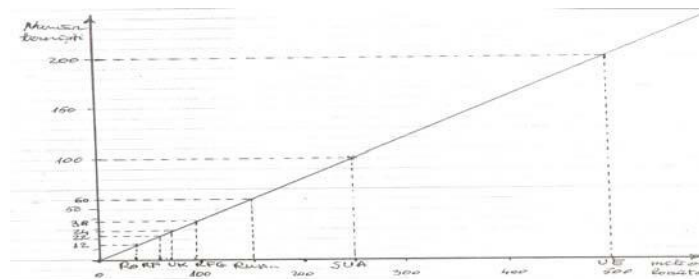


Figure 2. Estimation of the counter-terrorist defense capability nationwide

The functions of a threat **analysis program** shall cover three levels:

1. identifying potential attackers / bombers;
2. the risk analysis of triggering a violent act/attack from the potential attacker, assuming the investigation and then assessing the situation;
3. crisis management: the aggressor, the target, third parties (collateral damage) and countermeasures are implemented on the basis of a flexible plan, adaptable to changing factors and circumstances of the attack.

Reaction levels to terrorist threats:

I. **Political and diplomatic** approaches: the national analysis program for threats of terrorism, extremism and strategic crime; listing protection structures and their coordination; the legal system for action, surveillance, intervention;

II. Strategic approaches: gathering information through special services, international partners, media, specialized literature (e.g. *medical intelligence*);

III. Approaches at a tactical level: structures authorized by law, anti-terrorism and counter-terrorism actions, the intervention itself.

The analysis of terrorist threats. Threats can be general, local or only threat indexes. The first measure consists of alarming, warning of potential targets or in increasing alertness for potential targets. The analysis sources are: open information, unclassified (e.g. media, literature, press, etc.), enclosed information, classified (e.g. from the national defense department, public order, national security, judicial authority etc.), local information (like is known in the military folklore "one must confront the map with the peasant") or espionage.

The indicators and levels of threat, risk actually, are: the existence of terrorists, the ability to put into practice an attack, the intention of a terrorist attack, terrorist history, target identification and the security environment. The Department of Defense (DoD USA) uses a scale with five levels of threat / risk: imminent, high, average, low and negligible, according to the existing information about terrorists. Note that there is no "zero" level. In terms of framing, a certain level is adopted and corresponding tasks of information, prevention or response (Table 1).

Table 1. *The grid for the rapid assessment of threats / risks (adapted after US DoD)*

Risk Level	Existing terrorists	Action Capacity	Terrorist History	Aim	Target Mastery	Color Code
Imminent	+	+	+/-	+/-	+	Red
High	+	+	+	+	-	Orange
Average	+	+	+	+/-	-	Yellow
Low	+	+	+/-	-	-	Green
Negligible	+/-	+/-	-	-	-	Blue

Legend: + = *current factor*; +/- = *the factor may not have been yet identified*; - = *inexistent factor*

This system has been adapted to the Romanian Intelligence Service (SRI), which coordinates by law the anti-terrorist actions, and uses a corresponding color scale for each level, namely: red, orange, yellow, green and blue and updates and publishes it on the internet.

The National Terrorist Alert System since 2004, Romania has a National Terror Alert System (SNAT), operated by SRI, with the scope of supporting the planning process of anti-terrorist activities nationwide as well as informing people about the threat of terrorism. In the SNAT, threatening situations are identified by five levels of terrorist threat alert, emphasized by distinct colors:

LOW	available information and recent events indicate that a terrorist attack is highly unlikely
PRECAUTIOUS	available information and recent events indicate a low risk of producing a terrorist attack
AVERAGE	available information and recent events indicate that there is a general terrorist risk, being a possible terrorist attack
HIGH	available information and recent events indicate an increased terrorist risk, probably a terrorist attack
CRITICAL	available information and recent events indicate an imminent risk of a terrorist attack

To determine the current level of terrorist alert, two types of indicators are being used:

- the information available, containing warnings about developments that might be consisting of: vulnerability / risk factors / threats / states of danger / imminent terrorist attack in Romania;

- recent events - explicit manifestations of any kind of a terrorist entity of carrying out a terrorist attack on a national / international level.

Since the establishment of SNAT (2004) to the present moment, in Romania, the terror alert was **Cautious** (blue), except for a short period - occasioned by the conduct of Bucharest NATO Summit (2008) - when it was decided to raise to **Moderate** level (yellow).

The analysis of risks, vulnerabilities and probabilities for threats to materialize is done in stages. The integrated estimation of threats takes into account: the availability, vulnerability, need, recovery, effects on the target and attacker risk. Factors potentiating the terrorist attack are: the interaction between the aggressor – the victim (including the victim inducing aggression), parade of power, the probability of threats materializing etc. the vulnerability analysis for securing the target is done by "mannerist" vision, i.e. thinking in terms of the aggressor. For the Special Forces this is usually the way of thinking, when planning actions.

The system for determining the vulnerability of military or civilian objectives of national importance (ICN and ICE, 2012) derive from US instructions (6). It has a scale from 0 to 100 points IVDS (Installation Vulnerability Determining System). IVDS includes 11 categories of analysis, ranked in a scoring table, which results in a score. It is based on the following quantifiable elements:

1. features and importance of the military target (plant), max. 18 points;
2. instruction stage, max. 12 points;
3. availability of transmission means, max. 10 points;
4. availability of outside assistance to ensure the security and maintaining order, max.8 points;
5. the time required and the distance to other facilities or installations that can provide support, max. 7 points;
6. distance to urban areas and the time required for covering it, max. 8 points;
7. arrangement of the geographical region and history of attacks;
8. population density in the facility or installation, max. 8 points;
9. proximity to the border, max. 8 points;
10. access to the facility (roads, airfields, water courses) max. 8 points;
11. land (city, mountain, plain) max. 5 points.

The 11 partial scores are being totaled, and the total score gives an indication of the overall vulnerability of the target, by comparison with the scale in Table 1.2.

Table 1.2. Estimation of the overall vulnerability of the target

Total Score	Vulnerability
0-10	Very low
11-30	Low
31-60	Average
61-80	High
81-100	Very high

Worldwide, IT systems have been developed for assessing the vulnerability of the critical infrastructure *World Vulnerability Matrix 2000* (Figures 1.3. And 1.4.).

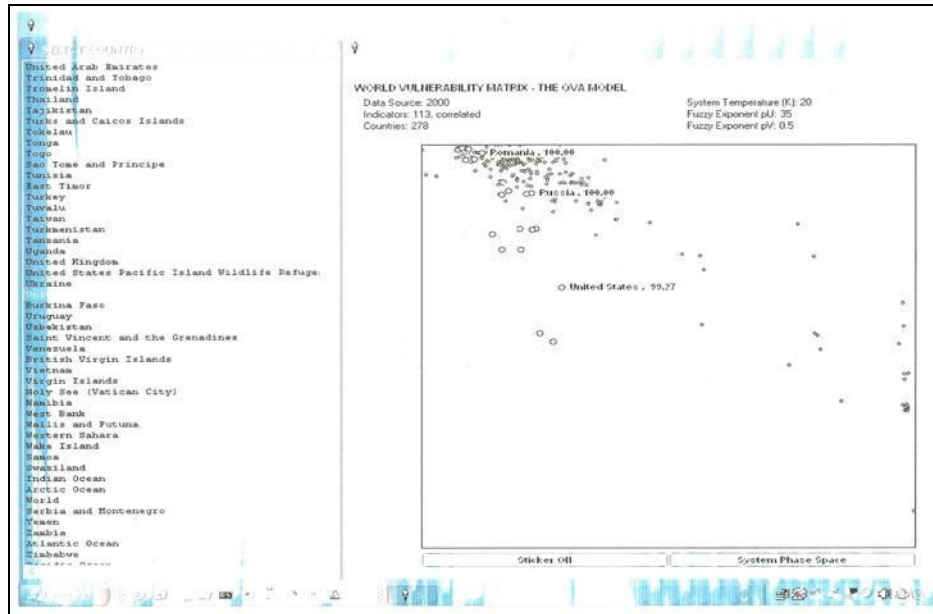


Figure 1.3. Graphical display *World Vulnerability Matrix- the OVA Model 2000*, u 113 indicators correlated on 278 countries (e.g. USA)

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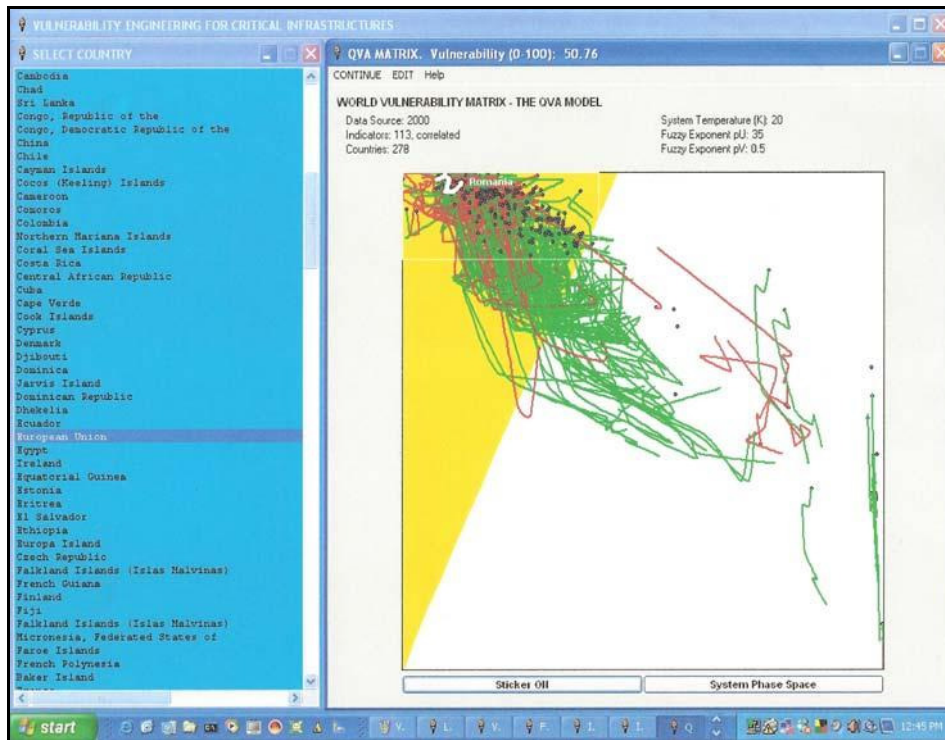


Figure 1.4. Graphical Display World Vulnerability Matrix- the OVA Model 2000, u 113 indicators correlated on 278 countries (e.g. EU)

Vulnerability assessment of the unit. Work Tool UVA (Unit Vulnerability Assessment) having as reference the US Army Regulation FC 100-37 for assessing vulnerability / risk in the deployment of a subunit towards a low intensity conflict zone, as in our case would be the deployment of the CBRN Mobile Intervention Teams on site of the attack. Points are awarded for the overall assessment, regional assessment and assessment specific to the point of deployment.

The integrated analysis of threats and vulnerabilities requires quantification, modeling and specific countermeasures on levels. The set of protective measures is a unity in diversity, which must reduce the risk to an acceptable level as costs: human and material resources, probable losses, consequences etc. The evolution terrorist process, from vulnerability to committing the attack, can be represented schematically as an algorithm (Figure 5).

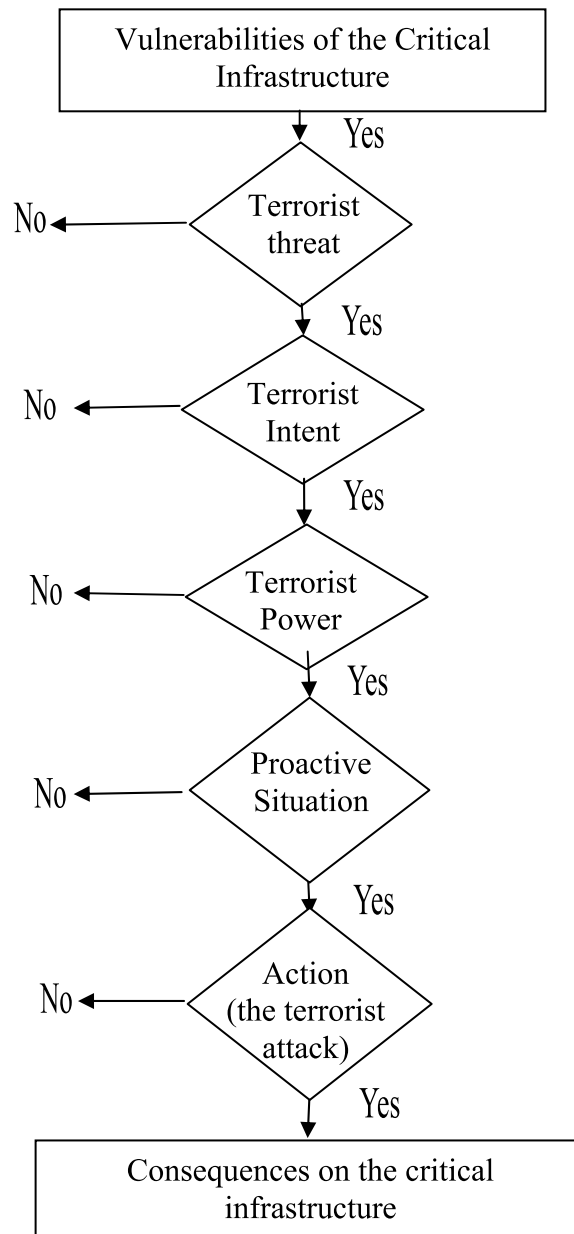


Figure 1.5. *The actions terrorist algorithm*

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Bioterrorism. The subject of terrorism and terrorists is approached worldwide, especially after September 11th 2001, when the Western civilization received the harshest blow in the history of terrorist attacks. And this was followed shortly by anthrax bio-terrorist attacks. Of all weapons of mass destruction in the context of bioterrorism, biological weapons are the most dangerous, they are considered the "poor man's atomic bomb".

Although by law, in Romania, the task of defending against terrorism falls into the hands of SRI, the army has specialized forces and means, especially for surveillance and NBC defense, so it represents a very important factor in the fight against biological weapons and bioterrorism as well as in the management of the consequences of the biological attack.

Throughout the history of human society, infectious diseases were one of the most serious threats to human health and life, being centuries on end, until the nineteenth century, the leading cause of death by disease. The special progresses recorded in medicine, particularly in microbiology, molecular genetics, epidemiology and pharmacology in the twentieth century enabled the effective control of the manifestation of the most of infectious diseases. However, even in developed regions in economic and social terms, some diseases are difficult to control. In addition, the emergence of new human pathogens such as e.g. the human immunodeficiency virus (HIV) or the pathogen agent "Severe Acute Respiratory Syndrome" (SARS) indicate emerging human infectious agents. It should be stressed that there is a negative impact relating to the excessive use of antimicrobials in agriculture and animal husbandry, which led to the selection of several species and microbial strains resistant to antibiotics therapy, which is a significantly hampering effect. It should also be added here the mechanisms that microorganisms are developing for the resistance to antimicrobials.

Military use of infectious diseases is mentioned since antiquity, but the real development of scientific research programs and biological weapons production took place in the twentieth century. Research programs aimed at achieving not only technical means of dissemination of infectious agents, but also for obtaining strains resistant to conventional methods of treatment, with altered antigenicity, pathogenicity and increased virulence, increased resistance in the external environment etc.

After the Cold War (1990), the issue of biological weapons became a current issue due to the military conflict in the Gulf (1991), but also due to increased terrorist activities worldwide, culminating with the terrorist attack in the US on September 11th 2001, attack continued with the dissemination of anthrax spores through correspondence and air-conditioning installations.

At international level there is an intense political activity to halt the production, storage and use of biological weapons, which is based on the Prohibition Convention of the development, production and stockpiling of bacteriological (biological) weapons and their destruction, signed in 1972 and entered into force in 1975; currently, more than 170 states have signed the Convention (BTWC), and others, even members of the UN have not signed or not ratified the BTWC. Romania signed the BTWC on 10.04.1972 and on 07.25.1979 ratified the document.

Medical protection in the attack with biological weapons was considered by experts as a specific activity carried by the military medical service. We do not entirely share the opinion of some authors (5) who believe that the issue of medical intervention in biological crisis must be addressed on "a unitary level, based on similar methodology, but distinguished from the civil structures in relation to military structures".

Events recorded in recent years, from which we can recall the phosphonofluoridates attack in the Tokyo subway or the attack with anthrax spores in the US and the EU, confirm the need to develop effective intervention and response systems to the use of weapons of mass destruction (chemical, biological, radiological and nuclear), situation in which can be affected a large part of the population. Making a medical system in crisis intervention must not only be a goal, but it also must be regarded as a necessity. The concepts of emergency medicine and disaster medicine must result in a viable, functional and efficient medical system. Viewed from this perspective, medical intervention is and should be a responsibility of all fundamental institutions of the state and of the local authorities.

The biological risk. The biological risk to the health of military personnel is estimated by NATO standards, such as STANAG 2242/2005. Recommendations provide to to be given the order for chemoprophylaxis measures based on the level of increasing suspicion. It uses a table with three degrees of suspicion (low, average, and high), which identifies the

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operational triggers in the theaters of operations (TO) and recommends actions including ordering the use of chemoprophylaxis. (Table 3.) [3]

Table 1.3. Biological risk assessment in theaters of operation (TO) and chemoprophylaxis (NATO, STANAG 2242/2005)

Level	Triggering Factor	Actions
Low	<ul style="list-style-type: none"> • does the enemy have bio-offensive capabilities (including infective agents)? • are the terrain and weather conditions favorable to a Bio attack? 	<ul style="list-style-type: none"> • it follows the standard Bio defense procedures. • where appropriate, ensure that ROM (Restriction of Movement) is included in SOFAs (the agreement) with the host nation • the storage of medical and personnel clearances suitable for use • staff immunization (if the appropriate vaccine is available). • identification of particularly vulnerable targets.
Average	<p>At least one of the following:</p> <ul style="list-style-type: none"> • unusual activities of the enemy (e.g. movements, suspect communications), which indicates a Bio attack. • triggering Bio alarms. • the occurrence of unusual patterns (number / time + spatial distribution) of sickness / death among domestic and wild animals. • unusual or suspicious patterns (number / time + spatial distribution) of the disease among staff? 	<ul style="list-style-type: none"> • identification of targets most likely to be attacked and planned for ROM in their surrounding areas. • alerting the command staff to the possibility of appeal and obtaining the authorization needed to implement ROM. • alerting international organizations - ECDC, CDC, WHO. • warning / relationship with civil governmental authorities in the theaters of operations - if necessary, consider convening a committee of military / civilian crisis management. • planning for the possibility of interrupting communications in case of force majeure, with the staff and media. • health surveillance of staff in the likely targets. • the implementation of standards for sampling and identification of biological,

		<p>chemical, radiological (SIBCRA) agents</p> <ul style="list-style-type: none"> • staff training in making medical countermeasures (e.g. antibiotics) • limited use of ROM, e.g. quarantine / health surveillance for those who leave the theaters of operations (TO), restricting movement in and out of the nonessential staff in the TO or probable objectives identified above.
High	<p>At least one or more of the following:</p> <ul style="list-style-type: none"> • Two or more mid-level triggering factors • Field samples confirm the presence of an infectious biological agent • The confirmation of a contagious disease in the personnel most likely caused by a biological agent 	<p>All of the above steps, plus:</p> <ul style="list-style-type: none"> • ordering affected personnel to implement medical countermeasures • implementing the communication plan in case of force majeure, with the staff and media • totally restricting access around the affected area (for the target) • full isolation of confirmed cases and identification of contacts and of other suspects who may have been exposed • medical supervision and monitoring of repatriated personnel

In case there are contagious sick patients or contaminated injured patients in TO, they are evacuated and isolated for treatment purposes, in stages, according to the Flow of patients in TO (NATO, Medical Force 2000 MF2K), with the necessary precautions to avoid the creation of secondary outbreaks, and the military and civilian medical units who receive them must be able to provide adequate isolation and quarantine.

ADM CBRN threats, vulnerabilities and risks, in situations of peace, crisis or war are many and we must be prepared including for medical countermeasures, in order to combat terrorism and counter-terrorism.

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