

# THE IMPACT OF HEALTH THREATS ON THE SECURITY OF PEACEKEEPING AND STABILIZATION MISSIONS

BOŻENA KONECKA-SZYDEŁKO\*

## ABSTRACT

---

Soldiers are currently one of the largest professional groups treated as long-term travelers. They are stationed in difficult environmental conditions for many months. The purpose of this article is to present the scale of health threats faced by participants in peacekeeping and stabilization missions/operations. Today's security challenges encompass a huge mass of complexes and evolving threats such as pandemics, international terrorism, organized crime, cyber threats, environmental degradation and natural disasters. The thesis of the article is that in the era of modern threats, health problems of soldiers include transmission diseases, zoonoses, combat and non-combat injuries. The Central and South Asian region has the highest rate of infectious and invasive diseases in the world. Afghanistan and Pakistan are the reporting countries for poliomyelitis. Taking into account the following issues, it is extremely important to monitor the scale of health threats to participants in military operations, to conduct appropriate risk assessments

---

\* Bożena Konecka-Szydełko, M. A., Provincial Sanitary and Epidemiological Station in Rzeszów, Poland; correspondence address: ul. Wierzbowa 16, 35-959 Rzeszów; e-mail: bozena.konecka@wsse.rzeszow.pl;

so that control measures reflect the latest scientific knowledge in the field of protection against the risk of infection, disease or injury management. A comprehensive emergency preparedness plan enables military operations to be better prepared for a swift, coordinated and effective response, while tailoring resources to the specific situation.

## ARTICLE INFO

---

### *Article history*

Received: 16.11.2020 Accepted: 14.05.2021

### *Keywords*

military operations, transmission diseases, mission security

## 1. INTRODUCTION<sup>1</sup>

Since 1953, over 115,000 Polish soldiers have participated in 92 different missions. At that time, the tasks carried out during the mission also changed. The participation of Polish Military Contingents in peacekeeping and stabilization missions at the beginning of 2009 was focused on the Asian, European, and African continents. The main efforts of our soldiers focused on the NATO stabilization mission in Afghanistan (International Security Assistance Force – ISAF), NATO mission in the Balkans (European Union Force – EUFOR, Kosovo Force – KFOR), UN peacekeeping missions in Lebanon (United Nations Interim Force In Lebanon – UNIFIL) and Syria (United Nations Disengagement Observer Force – UNDOF), and European Union operations in Chad.<sup>2</sup> The participation of the Armed Forces of the Republic of Poland in missions abroad is an important instrument of foreign policy and confirmation of Poland's participation in shaping international security. At the same time, it is a source of operational experience and an indicator of the directions of transformation of the Polish army (Table 1).<sup>3</sup>

---

<sup>1</sup> The paper has been submitted to the conference LIV CICA – XV Security Forum Krakow 2020 that took place on 7–8 October 2020 at University of Public and Individual Security “Apeiron” in Krakow.

<sup>2</sup> K. Korzeniewski, *Udział żołnierzy Wojska Polskiego w misjach pokojowych i stabilizacyjnych organizacji międzynarodowych*, [in:] *Zarys medycyny tropikalnej*, R. Olszański, B. Morawiec, Z. Dąbrowiecki, K. Korzeniewski (eds), Gdynia 2006, pp. 87–102.

<sup>3</sup> *Missions*, “Polish Army”, <https://www.wojsko-polskie.pl/misje> (accessed: 8.11.2020).

TABLE 1. PARTICIPATION OF THE ARMED FORCES OF THE REPUBLIC OF POLAND IN MISSIONS ABROAD

Continent	States where peace-keeping operations / missions have been conducted	Selected examples of the missions of the United Nations
Asia and the Pacific	North Korea, South Korea, Cambodia, Laos, South Vietnam, Pakistan, Afghanistan, Nagorno-Karabakh, Georgia, Tajikistan, Bahrain	<ul style="list-style-type: none"> <li>– UNGOMAP – United Nations Good Services Mission in Afghanistan and Pakistan</li> <li>– UNMOT – United Nations Observer Mission in Tajikistan</li> <li>– UNTAC – United Nations Interim Administration in Cambodia</li> <li>– UNOMIG – United Nations Monitoring Mission in Georgia</li> </ul>
Near East	Syria, Iraq, Iran, Israel, Azerbaijan, Kuwait, Turkey, Lebanon, Jordan, Saudi Arabia	<ul style="list-style-type: none"> <li>– UNEF II – Second United Nations Emergency Peace Force</li> <li>– UNIIMOG – United Nations Military Observers Group in Iran and Iraq</li> <li>– UNIKOM – United Nations Monitoring Mission in Iraq and Kuwait</li> <li>– UNDOF – United Nations Separation Supervision Force in the Golan Heights</li> <li>– UNIFIL – United Nations Transitional Armed Forces in Lebanon</li> </ul>
Africa	Nigeria, Eritrea, Egypt, Ethiopia, Namibia, Western Sachara, Rwanda, Ivory Coast, Somalia, Sudan, Chad, Mali, Liberia, Angola, Democratic Republic of the Congo, Central African Republic	<ul style="list-style-type: none"> <li>– UNAVEM III – United Nations Third Verification Mission in Angola</li> <li>– UNAMIR – The United Nations Relief Mission to Rwanda</li> <li>– UNMEE – Mission of the United Nations in Ethiopia and Eritrea</li> <li>– MINURCAT – The Mission of the United Nations in the Central African Republic and Chad</li> <li>– MONUA – United Nations Monitoring Mission in Angola</li> </ul>

		<ul style="list-style-type: none"> <li>– UNOMIL – United Nations Observation Mission in Liberia</li> <li>– MINUCI – The Mission of the United Nations in the Ivory Coast</li> <li>– UNMIS – Mission of the United Nations in Sudan</li> <li>– MONUC – Mission of the United Nations in the Democratic Republic of the Congo</li> <li>– UNTAG – United Nations Relief Group in the Interim Period</li> <li>– MINURSO – United Nations Mission for the Referendum in Western Sahara</li> </ul>
Europe	Croatia, Macedonia, Bosnia and Herzegovina, Albania, Moldova, Romania, Greece, Italy – Mediterranean, Latvia, Lithuania, Estonia, Ukraine	<ul style="list-style-type: none"> <li>– UNSPG – United Nations Police Support Group</li> <li>– UNCRO – United Nations Operation to restore Confidence in Croatia</li> <li>– UNMIBH – Mission of the United Nations in Bosnia and Herzegovina</li> <li>– UNMOP – United Nations Monitoring Mission on the Prevlaka Peninsula</li> <li>– UNPREDEP – United Nations Preventive Force</li> <li>– UNPROFOR – United Nations Protection Force</li> <li>– UNTAES – United Nations Interim Administration for East Slavonia, Barania and West Sirmium</li> <li>– UNMIK – United Nations Interim Administration Mission in Kosovo</li> </ul>

Own study. Source: *Międzynarodowe operacje pokojowe i stabilizacyjne w polskiej polityce bezpieczeństwa w XX i XXI wieku*, D. Kozerański (ed.), Warszawa 2016.

Today's security challenges involve an immeasurable mass of complex and evolving threats such as international terrorism, the proliferation of weapons of mass destruction (WMD), organized crime, cyber threats, environmental degradation, and related security threats, natural disasters and man-made,

pandemics and more. Military operations in the modern world are carried out in various, often difficult, climatic, and sanitary conditions.

The success of any military mission is determined by the recognition of the area of operation and the combat capability of own troops. Both elements are dependent not only on technologically advanced equipment but also, and perhaps above all on the correct assessment of environmental conditions and existing health hazards in the area of stationing, as well as up-to-date and reliable population health analysis.<sup>4</sup> The changes taking place in recent years in the doctrines concerning the operation of the armed forces should be reflected in the formulation of goals for the field referred to as military epidemiology. These changes mainly concern military mobility. Contemporary armed forces, especially those of NATO countries, are very mobile. The second, very important issue covering the scope of interest in military epidemiology is predicting threats resulting from the development of military technology and the experience of the twentieth and twenty-first centuries related to the possible use of various types of weapons of mass destruction.

One should also remember the other nature of military operations. Instead of typical wars waged between states, local armed conflicts intensify, often in the form of civil wars, which are fought for a long time in a specific area, posing a huge threat to the civilian population. Hence, the division into military and civil epidemiology is blurring. The civilian health service must also be prepared to operate in extreme conditions. The same problem relates to the possibility of terrorist attacks and major industrial disasters. Knowledge of epidemic issues in the above-mentioned situations is very important for the armed forces as they can relate to both hostilities and peacetime situations. The role of military epidemiologists should be to prepare the medical personnel of the armed forces to assess the potential health effects of the scale of the population at risk (both the armed forces and the civilian population) in these situations.<sup>5</sup>

## 2. THE RISK OF HEALTH THREATS IN THE AREA OF STABILIZATION MISSIONS

Modern epidemiology focuses its attention on three essential elements that are fundamental to the determination of a health or disease state. These are:

---

<sup>4</sup> K. Korzeniowski, *Choroby infekcyjne w rejonie działania misji stabilizacyjnych w Iraku i Afganistanie*, "Lekarz Wojskowy", 2008, no. 86 (1), pp. 35–45.

<sup>5</sup> *Epidemiologia działań wojennych i katastrof*, K. Chomiczewski, W. Gall, J. Grzybowski (eds), Bielsko-Biała 2001, pp. 7–9.

the specificity of the causative agents of the disease, individual sensitivity, or the recipient's susceptibility to the causative agent and the impact of the environment. The causative (etiological) factors are all biological factors (bacteria, viruses, fungi), reservoir elements (people, animals, air, water, soil), as well as carriers (insects, birds, mammals). The causative factors also include physical and chemical factors (temperature, radiation, humidity, sunlight, physicochemical properties of air, water, and soil). The individual sensitivity or susceptibility of the recipient to the causative agent is determined by its individual features of innate and acquired immunity, general health, many genetic factors, and the degree of exposure to disease agents.

Participation of soldiers in missions and operations abroad is often served in completely different conditions from those in which they function daily in Poland. Extreme climatic and terrain conditions are a serious threat to the health of soldiers, exposing them to various diseases specific to a given region of the world.<sup>6</sup> The history of past wars shows that epidemics of infectious diseases were inextricably linked with combat activities and military movements, and with the conditions in which civilians remained as a result of the war. In the past, epidemics have had a significant impact on the outcome of armed conflict. In all the wars of the past centuries, except for the last two world wars, the losses caused by infectious diseases were greater than those caused by direct military losses.

During Napoleon's expedition to Russia, the number of sufferers of typhus and dysentery exceeded 30% of the manpower of the French army. During the Crimean Wars, losses from the use of weapons in the Russian forces amounted to approximately 40,000, while the number of soldiers who died from infectious diseases was more than twice as high and was about 88,000. This state of affairs was directly influenced by two basic facts: the poor sanitary and technical condition of the then military and civilian population, and secondly, poor knowledge of the basic principles of hygiene, epidemiology, and various preventive measures.

Since the beginning of the 20<sup>th</sup> century, the situation has changed – the ratio of losses from the use of weapons to losses resulting from infectious diseases has changed in favor of military losses. A significant deviation from the rule during World War I was the effects of the flu epidemic known

---

<sup>6</sup> K. Korzeniewski, *Problemy zdrowotne long-term travelers na przykładzie żołnierzy Polskich Kontyngentów Wojskowych w aspekcie praktyki lekarza rodzinnego*, "Family Medicine & Primary Care Review", 2013, no. 3, p. 455.

to all as “Spanish”, and during World War II – viral hepatitis. The period of World War II closes a certain evolutionary stage of military medicine, from the phase of relative helplessness to full control in this area with the use of modern methods and means: effective and numerous antibiotics, preventive vaccinations, improvement of the sanitary condition, and other civilization achievements.<sup>7</sup> There was a widespread belief in the public that the era of infectious disease is over. Nothing could be more wrong. Acute infectious diseases were disappearing, but new infections caused by previously unknown microbes appeared in their place. The massive emergence of biologically prepared microorganisms, with features of drug resistance, has made many infections so easily combated a difficult therapeutic problem.

### 3. EPIDEMIOLOGICAL THREATS OF INFECTIOUS DISEASES OF MILITARY PERSONNEL PARTICIPATING IN MILITARY OPERATIONS

Soldiers are currently one of the largest professional groups, treated as long-term travelers, who are stationed for many months in harsh environmental conditions, in areas where due to ongoing military operations there is an increased risk of infectious diseases and non-infectious. The main factors contributing to the increase in the incidence are: an escalation of the armed conflict, inconvenient climatic conditions, and low sanitary standards. In the era of modern terrorist threats, it is impossible to exclude mixed injuries as a result of an explosion with contamination with substances of radiation, chemical, or biological origin. A huge variety of biological factors, the possibility of bringing them into the country by various routes, or using them for terrorist purposes make the conduct of stabilization activities, in the case of biological threats, extremely difficult and dangerous. Therefore, this type of action cannot be based solely on rigid procedures.

All activities and their management must be flexible, so as to allow for a quick reaction in the face of changing situations. The climatic and environmental conditions of modern military operations, especially in the region of the Middle East and Central Asia, are difficult for participants from Europe and North America to live in and function. High-temperature differences in the diurnal and annual cycle, poor sanitary conditions, and ongoing military operations are the causes of numerous diseases and injuries

---

<sup>7</sup> W. Gall, *Dynamika i struktura przewidywanych zakaźnych procesów epidemicznych na współczesnym polu walki oraz w działaniach bioterrorystycznych*, Bielsko-Biała 2001, pp. 13–14.

among soldiers participating in military operations. Soldiers' health problems include transmission, food and respiratory tract infections, zoonoses and combat injuries, and non-combatants (Table 2).<sup>8</sup>

Infectious diseases among soldiers participating in modern armed conflicts constitute only 2.8% of all medical diagnoses. That fact is related to the lack of comprehensive laboratory diagnostics and causes that some diseases of the digestive, respiratory, genitourinary systems, and skin recognized as non-infectious diseases may have an infectious or parasitic etiology. In the areas where troops are stationed illnesses, which are asymptomatic during a stay abroad and become symptomatic only after returning to the country in the following weeks or months, may occur. Soldiers importing infectious or parasitic diseases, including tropical non-occurring diseases in the temperate climate zone, end up with health problems to family doctors' offices. That is where the patient's essential health check is carried, based on a thoroughly collected interview and proper guidance of the diagnostic and therapeutic process.<sup>9</sup>

TABLE 2. INFECTIOUS DISEASES POSING A THREAT TO PARTICIPANTS OF MILITARY OPERATIONS

<b>Routes of transmission</b>	<b>Infectious diseases</b>
Transmission diseases	<ul style="list-style-type: none"> <li>– transmitted by mosquitoes (malaria, dengue fever, yellow fever, chikungunya, zika, filariasis, Riftu valley fever)</li> <li>– transmitted by flies (cutaneous and visceral leishmaniasis, sand fly fever)</li> <li>– transmitted by ticks (Crimean Congo haemorrhagic fever, tick-borne encephalitis, Q fever)</li> <li>– transmitted by lice (epidemic typhus)</li> <li>– carried by fleas (plague, endemic typhus)</li> </ul>
Respiratory diseases	<ul style="list-style-type: none"> <li>– bacterial / viral airway inflammation</li> <li>– tuberculosis</li> <li>– meningococcal disease</li> </ul>

<sup>8</sup> A. Krzemińska, *Spoleczne aspekty udziału Sił Zbrojnych Rzeczypospolitej Polskiej w misjach i operacjach poza granicami kraju (cz. I)*, "Obronność – Zeszyty Naukowe Wydziału Zarządzania i Dowodzenia Akademii Obrony Narodowej", no. 1 (17), pp. 115–116.

<sup>9</sup> K. Korzeniewski, *Problemy zdrowotne long-term travelers...*, *op. cit.*, p. 456.



	<ul style="list-style-type: none"> <li>- diphtheria</li> <li>- SARS-CoV, SARS-CoV-2 / COVID-19 coronavirus infection</li> <li>- Middle Eastern Respiratory Distress Syndrome MERS</li> </ul>
Foodborne diseases	<ul style="list-style-type: none"> <li>- hepatitis A</li> <li>- typhoid</li> <li>- poliomyelitis</li> <li>- damn</li> <li>- salmonellose/shigellose</li> <li>- helminths (ascariasis, worms, tapeworms)</li> <li>- protozoal diseases (giardiasis, cryptosporidiosis, amoebiasis)</li> </ul>
Zoonoses	<ul style="list-style-type: none"> <li>- animal bites (rabies)</li> <li>- contact by respiratory tract (Q fever, anthrax, Hanta virus infection)</li> <li>- contact with infected skin (anthrax)</li> <li>- consumption of a product contaminated with animal faeces (echinococcosis)</li> <li>- consumption of unpasteurized dairy products (brucellosis)</li> </ul>
Sexually transmitted diseases	<ul style="list-style-type: none"> <li>- hepatitis B</li> <li>- hepatitis C</li> <li>- HIV infection</li> <li>- syphilis/gonorrhea/chlamydiosis</li> </ul>
Contact with infected blood (injections, transfusions)	<ul style="list-style-type: none"> <li>- hepatitis B</li> <li>- hepatitis C</li> <li>- HIV infection</li> </ul>
Contact with contagious/contaminated soil	<ul style="list-style-type: none"> <li>- gastrointestinal worms (ancylostomosis / necatorosis, strongyloidosis)</li> <li>- tetanus</li> </ul>
Contact with contagious/contaminated water	<ul style="list-style-type: none"> <li>- giardiasis, cryptosporidiosis</li> <li>- schistosomiasis</li> <li>- leptospirosis</li> </ul>

Source: Own study

#### 4. EPIDEMIOLOGY OF SELECTED THREATS OF INFECTIOUS DISEASES IN THE WORLD

**Chikungunya** – an infectious disease caused by the chikungunya virus (Alphavirus). It occurs in Southeast Asia, the Indian Subcontinent, Sub-Saharan Africa, and the Caribbean. Clinical symptoms are similar to dengue fever. They manifest themselves in acute fever (2–5 days) accompanied by headaches, muscle aches, rash, and itching of the skin, followed by long-lasting pain in the large joints (knee, ankle, wrist) lasting for weeks or months. In most patients, symptoms disappear within a few days, but in some patients, it may last for a long-lasting period of up to 2 years, especially joint pain.<sup>10</sup>

**Dengue** – an infectious disease caused by the dengue virus of the genus *Flavivirus*. There are four serological types of the virus that are important for the course of the disease. The vector of infection is the *Aedes aegypti* mosquito, more rarely other *Aedes* mosquitoes. There is no direct human-to-human transmission. The participation of the Dengue vector is necessary, it occurs in the hot climate zone of Southeast Asia, Sub-Saharan Africa, Central and South America, and the islands of Oceania. The risk of infection is lower in areas above 1000 meters above sea level. The period of the disease incubation lasts 3–14 days (4–7 days on average). In typical cases, dengue is asymptomatic (80%) or mild (10–15%). Adults suffer a bit more severe disease than children, with more pronounced general symptoms, enlarged lymph nodes, and liver. Dengue hemorrhagic fever with shock syndrome – occurs mainly in Southeast Asia (Thailand, Philippines). Prevention: use of repellants, mosquito nets, protective nets in the windows of rooms, properly worn clothing (long shirt sleeves and trouser legs), especially from dusk till dawn.<sup>11</sup>

**West Nile fever** – an infectious disease caused by the West Nile virus of the genus *Flavivirus*, which is part of the so-called West Nile fever and Japanese encephalitis antigen complex. The reservoir of infection is birds, and the vector is mosquitoes, mainly of the genus *Culex* and *Aedes*. West Nile fever occurs in the countries of North Africa (Egypt) and Central Africa (Uganda) in the Nile basin, in the Middle East (Israel, epidemic in 2000), in Eastern Europe (epidemics in Romania 1996, Russia 1999), and

---

<sup>10</sup> *Chikungunya*, “World Health Organization”, 15.09.2020, <https://www.who.int/en/news-room/fact-sheets/detail/chikungunya> (accessed: 8.11.2020).

<sup>11</sup> W. Gut, *Denga*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 87–89.

West Asia. At the end of the 1990s and the beginning of the 21<sup>st</sup> century there were numerous severe cases in the USA (it is suspected that infections were imported from Israel). Since then, West Nile fever has become a health problem in North America as well. The incubation period of the disease is 3–14 days (3–5 days on average). With a typical course, complications are rare and mainly affect the elderly and immunocompromised people (encephalitis and hemorrhagic diathesis). In cases of encephalitis, 10–20% of severe cases are fatal. Prevention: use of repellants, mosquito nets, protective nets in the windows of rooms, properly worn clothing (long shirt sleeves and trouser legs), especially from dusk to dawn.<sup>12</sup>

**Japanese encephalitis** – an infectious disease caused by a virus belonging to the Flaviviridae family, the reservoir of which is wading birds in wetlands and pigs in rural areas. The vector of infection is the mosquitoes of the genus *Culex* and *Aedes*. The incubation period is 6–16 days. Most cases of the disease (99%) are asymptomatic or in the form of mild flu-like symptoms (fever, headache, gastrointestinal disturbances). Approximately 1% of those infected have severe disease with symptoms related to the central nervous system (encephalitis, meningeal symptoms, impaired consciousness, paresis), with a mortality rate of up to 30%. Complications after the disease may be ataxia, parkinsonism, muscle weakness, mental disorders. Prevention: since there is no possibility to treat the causal disease, the basis is preventive measures to prevent vector-borne infections (mosquitoes), which include the use of repellants, appropriate clothing (long shirt sleeves and trousers), avoiding being in the field from dusk to dawn especially over water reservoirs, as well as the use of preventive vaccinations.<sup>13</sup>

**Malaria** – is a parasitic disease caused in humans by five species of spores: *Plasmodium falciparum* (sickle plague), *Plasmodium vivax* (motile plague), *Plasmodium malariae* (streaked plague), *Plasmodium ovale* (oval plague), and *Plasmodium knowlesi* (*Plasmodium knowlesi*). Human malaria develops as a result of being bitten by mosquitoes infected with the parasite (introducing invasive forms of *Plasmodium* into the human bloodstream), by blood transfusion, or by vertical route from mother to fetus. 3.3 billion people in 104 countries live in malaria-endemic regions. According to WHO,

---

<sup>12</sup> M. Sadkowska-Todys, *Gorączka Zachodniego Nilu*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 146–150.

<sup>13</sup> *Japanese encephalitis*, “World Health Organization”, 9.05.2019, <https://www.who.int/news-room/fact-sheets/detail/japanese-encephalitis> (accessed: 8.11.2020).

219 million people suffered from malaria in 2017 (92% in Africa, 80% in 15 countries: 25% in Nigeria, 11% in the Democratic Republic of Congo, 5% in Mozambique, 4% in Uganda; 5% in South and Southeast Asia, including 4% in India). At the same time, 435,000 deaths were reported (93% in Africa, 61% among children under 5); 80% of cases in 17 countries and 53% in 7 countries: 19% in Nigeria, 11% in the Democratic Republic of Congo, 6% in Burkina Faso, 5% in Tanzania, 4% in Sierra Leone, 4% in Niger, 4% in India. The most common etiological factors of the disease are *P. falciparum* and *P. vivax* (80–95%). In highly industrialized countries (North America, Western Europe) there are about 10,000 infections annually imported from the areas where the disease occurs, mainly from sub-Saharan Africa and Southeast Asia. There are also sporadic cases of the so-called airport or port malaria, i.e. falling ill in the vicinity of airports and ports in countries where the disease does not occur, and the infestation vectors (mosquitoes) reach the temperate climate zone by means of transport (planes, ships). Malaria caused by *P. falciparum*, also known as malignant malaria, is characterized by severe complications with a high mortality rate of 15–20%. Prevention: use of antimalarial prophylaxis depending on the degree of risk, repellents, mosquito nets.<sup>14</sup>

**Viral Haemorrhagic Fevers (VHFs)** are severe systemic infectious diseases with fever and damage to the vascular system, leading to disturbance of the organism's homeostasis, usually accompanied by symptoms of hemorrhagic diathesis. VHFs are diseases transmitted by infection vectors (bites of mosquitoes, ticks), by droplets, or direct contact with infectious material (blood, sweat, feces, urine, vomit). Man is a natural reservoir for VHFs in dengue hemorrhagic fever and yellow fever (urban form). Other VHFs are zoonotic diseases, where the reservoir of infection is in the natural environment of wild fauna (monkeys, rodents, birds, ticks) or domestic animals (sheep, cattle). In the course of Marburg, Ebola, Lassa hemorrhagic fever, as well as some fever South American New World (Bolivian hemorrhagic fever) viruses can be transmitted from person to person by airborne droplets or by contact with infectious material. With other VHFs, the patient is not contagious to those around him. The breeding period of hemorrhagic fever is usually 3–21 days (average seven days). The onset of the disease is sudden, with high fever, chills, headaches, muscle aches, sometimes res-

---

<sup>14</sup> T. Dzbeński, M. Stępień, *Malaria (zimnica)*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 271–279.

piratory symptoms (cough), and/or gastrointestinal symptoms (abdominal pain, nausea, vomiting, diarrhea).

In severe conditions, neurological disorders and symptoms of renal failure may also occur. High fever lasts for about 4–5 days. In the next phase of the disease, the fever decreases slightly, symptoms of hemorrhagic diathesis with bleeding from various organs and systems are added, related to the damage and increased permeability of the walls of small blood vessels. Hemorrhagic diathesis may also be accompanied by symptoms of kidney failure, disturbances in the water, and electrolyte balance, drop in blood pressure, including shock. Some of the viral hemorrhagic fever can cause intravascular coagulation syndrome (DIC). The risk of bleeding also increases due to the observed structural damage and impairment of plain organs' functions. In the clinical picture, extravasation of blood to the skin, mucous membranes, conjunctiva, and in more severe cases, into body cavities is observed. The prognosis of VHF depends on the location and severity of hemorrhagic diathesis, the occurrence of systemic (shock, DIC) and organ (renal failure) complications, and primary coexisting diseases. Prognosis is usually favorable if the patient survives the first 12 days of illness. African fever (Marburg, Ebola, Lassa) and Hantavirus infections have a worse prognosis. Mortality in VHF is high and amounts to about 10–15%, Ebola and Marburg infections reach 50–90%. Prevention: people going to the endemic regions of yellow fever (Africa, South America) are subject to mandatory vaccination against this disease. Another preventive measure is to avoid contact with the local fauna, which is a reservoir of pathogens (monkeys, rodents, birds), and the use of repellants, mosquito nets, and nets in the windows of the rooms. In the case of VHF transmitted by the droplet and contact with infectious material, the primary action is to avoid contact with patients, their excreta and body fluids; isolation of the sick, quarantine of contact persons; compliance with the rules of personal protection when caring for the sick, and disposal of infectious material including used disposable equipment, proper disinfection of reusable equipment.<sup>15</sup>

**Zika virus infection** – an acute infectious disease caused by the Zika virus (ZIKV) belonging to the genus *Flavivirus*. It is also the etiological agent of dengue, yellow fever, West Nile fever, Japanese encephalitis. ZIKV

---

<sup>15</sup> A. Zieliński, *Gorączki krwotoczne o etiologii wirusowej*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 127–138.

is transmitted by daytime active *Aedes mosquitoes* (mainly *A. aegypti*, *A. albopictus*), as well as vectors of: dengue, *chikungunya*, yellow fever, West Nile fever, and by Japanese encephalitis. ZIKV infection is also likely to occur through sexual contact, blood transfusion, and vertical route from mother to fetus (causing microcephaly in the baby). Prevention consists of the use of repellants, mosquito nets, and protective nets on the windows of the premises. It is not recommended for pregnant women to travel to epidemic zones in South and Central America. Women trying to get pregnant and their sexual partners should follow the recommendations for protection against insect bites. Due to the likelihood of transmission of ZIKV by blood transfusions, testing of donors for ZIKV infections is recommended.<sup>16</sup>

**Travelers' diarrhea** is usually defined as three or more loose stools a day accompanied by at least one symptom such as abdominal pain, nausea, vomiting, stool pressure, or fever. Enterotoxigenic *Escherichia coli* is the most common pathogen of travelers' diarrhea. Other infectious/invasive agents include bacteria (*Salmonella*, *Shigella*, *Campylobacter*), viruses (Norwalk, adeno- and rotaviruses), and protozoa (*Entamoeba histolytica*, *Giardia intestinalis*, *Cryptosporidium parvum*). Travelers' diarrhea is cosmopolitan. The highest incidence occurs in children under 2-year-age and among adults aged 20–30. Most cases of the disease are associated with the consumption of contaminated food and/or water. Prevention: avoiding buying food from street vendors, washing your hands frequently, especially when using toilets and before every meal, washing vegetables and fruits before consumption, drinking bottled water, avoiding drinking ice drinks of unknown origin, avoiding consumption of unpasteurized dairy products and local ice cream production.<sup>17</sup>

**Typhoid fever** – an infectious disease of the digestive tract caused by the gram-negative bacterium *Salmonella typhi*. The source of infection is water and food contaminated with excreta from sick people and carriers. Typhoid fever is a cosmopolitan disease and is found all over the world. The risk of contamination occurs mainly in areas with poor hygiene in the preparation and serving of meals. It is estimated that 22 million people suffer from the illness each year, of which over 200,000 people suffer from death. The highest risk of the disease is in South Asia (India, Nepal, and

---

<sup>16</sup> *Zika virus*, “World Health Organization”, 20.07.2018, <https://www.who.int/news-room/fact-sheets/detail/zika-virus> (accessed: 8.11.2020).

<sup>17</sup> A. Zieliński, *Biegunki podróŜnych*, [in:] *Choroby zakaŹne i pasoŹytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 28–32.



neighboring countries), Southeast Asia (Indonesia), South America (Peru), and North and West Africa. Prevention: preventive vaccination combined with compliance with the rules of food hygiene and nutrition, especially for travelers to South and Southeast Asia and developing countries where street food is planned.<sup>18</sup>

**Cholera** – an acute infectious disease of the gastrointestinal tract, caused by the gram-negative bacterium *Vibrio cholerae* (cholera). It is a particularly dangerous disease, and if left untreated, especially in people who do not live in endemic areas, it can lead to death in just a dozen or so hours. The severity of the disease and the related mortality depends on the degree of dehydration. Without replenishing fluids and electrolytes, acidosis develops and the patient's condition deteriorates rapidly. Immunity after falling ill is short-lived. Infection occurs through the consumption of contaminated water or food, rarely through direct contact with the sick person or host. Over the past decade, the number of cases in the world is increasing. The World Health Organization estimates the occurrence of cholera worldwide at 1.3–4 million infections and 21–143 thousand deaths annually. Prevention: preventive actions against cholera mainly consist in improving sanitary conditions and preventing contamination of water reservoirs with feces.<sup>19</sup>

**Polio** – an infectious disease caused by the Poliovirus (type 1, 2, and 3). Currently, infections with types 1 and 2 of the virus are reported (type 3 was last detected in 2012 in Nigeria). The source of the infection is the sick person or the carrier, as well as its excreta and secretions. The infection spreads through the ingestion and droplets, through contact with an infected person or objects contaminated with feces or pharyngeal secretions. As late as 1988, 350,000 cases of poliomyelitis were reported worldwide. Currently, the incidence has been reduced by 99%. Nevertheless, new examples are still being observed. Because of that, there is a delay in the achievements of the state to fully eradicate the disease in the world. Until the global spread of wild-type Polio strains is not stopped, all disease-free countries and areas are considered at risk of introducing WPV and rebounding the epidemic. Prevention: Vaccination is the most effective method of prevention. Adults

---

<sup>18</sup> E. Gonera, *Dur brzuszny*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 90–96.

<sup>19</sup> D. Naruszewicz-Lesiuk, *Cholera*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 58–63.

vaccinated during childhood should receive a single booster dose of the inactivated vaccine before traveling to countries at risk of the disease.<sup>20</sup>

**Tuberculosis** – an infectious disease caused by the mycobacterium *Mycobacterium tuberculosis*. Most often it affects the lungs, but it can also affect the central nervous system, lymphatic and circulatory systems, osteoarticular, genitourinary, and skin. Tuberculosis is a cosmopolitan disease, and the most common infection in the world. World Health Organization estimates that more than 2 billion people are infected with *Mycobacterium tuberculosis*, especially in Third World countries like Asia and Africa, where incidence rates are as high as 100–300 cases per 100,000 inhabitants. Tuberculosis is, next to AIDS, the leading cause of death due to infectious diseases in the whole world (over 2 million people annually).<sup>21</sup>

**Diphtheria** is an acute bacterial disease caused by the toxin-producing bacteria *Corynebacterium diphtheriae*. It is transmitted by airborne droplets or direct contact with the patient or carrier. Diphtheria affects the mucous membranes of the respiratory tract, the skin, and less often other parts of the body (eyes, nose, genitals). *Cutaneous diphtheria* caused by *Corynebacterium ulcerans* is common in tropical countries and can be a source of pharyngeal diphtheria. That can lead to airway obstruction and death. Diphtheria is found worldwide but very rarely in industrialized countries due to the widespread use of routine vaccinations against the disease. It is currently endemic in many countries: in Asia, the South Pacific, the Middle East, Eastern Europe, Haiti, and the Dominican Republic. Since 2011, epidemics of diphtheria have occurred in Indonesia, Thailand, and Laos.<sup>22</sup>

**Meningococcal infections** – are caused by the bacteria *Neisseria meningitidis*. Most cases of the disease are caused by serogroups A, B, and C; less often by serotypes Y (in the United States), and X (Africa, Europe, United States). Also, serogroup W-135 is gaining importance as it causes outbreaks, especially in Saudi Arabia and several countries in sub-Saharan Africa. Meningococcal infections can take the form of invasive meningococcal disease. That is a severe infection most commonly associated

---

<sup>20</sup> P. Stefanoff, J. Rogalska, *Porażenie dziecięce nagminne*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 337–342.

<sup>21</sup> I. Szczuka, M. Korzeniewska-Koseła, *Gruźlica*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 151–165.

<sup>22</sup> K. Kuszewski, *Błonica*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 33–37.



with meningitis or blood poisoning (sepsis). The disease is transmitted by droplets and directly, for example, by drinking from one bottle with the patient or with the meningococcal carrier. In temperate zones, they usually occur during the winter months. Local epidemics take place most often in clusters of people (for example, dormitories, military barracks). In sub-Saharan Africa, the so-called “Meningococcal belt” is a continent-wide zone of countries, from Senegal to Ethiopia, where the risk of *Neisseria meningitidis* infection is highest. There are large outbreaks of disease in this area in the dry season (November to June). The most common infection is caused by group A meningococcus, and there are also infections with group C bacteria and others.<sup>23</sup>

**Measles** – is an acute, viral, infectious disease spreading through droplets or direct contact with the infected and their secretions (discharge from the *nasopharynx*). Man is the only reservoir for the measles virus. The disease occurs all over the world, especially in non-immunized people (of all ages) in countries where vaccination rates are low. The greatest risk for travelers is to have contact with infected people.<sup>24</sup>

**HIV infection and Acquired Immunodeficiency Syndrome (AIDS)** – Acquired Immunodeficiency Syndrome (AIDS) is caused by HIV (Human Immunodeficiency Virus), which has an affinity for cells in the immune system. AIDS is not an independent disease. It is a set of symptoms of many diseases appearing as a result of impaired immunity. It is the final stage of HIV infection, usually occurring after many years of being infected. AIDS is a cosmopolitan disease that happens all over the world. Over the last 30 years, 64 million people have been infected by HIV. Approximately 30 million of them have died from AIDS to date. According to UNAIDS statistics, the largest number of people infected with HIV are currently recorded in South Africa (5.5 million people). The second largest region of HIV infection after Africa is Southeast and South Asia, where 5.2 million people in India alone carry the virus. The former Soviet Union is also an area characterized by a sharp increase in HIV infection and AIDS. Currently, the risk of HIV infection in the world is not determined by geographic location but by risk factors. In the first place they include transfusion of

---

<sup>23</sup> K. Piekarska, *Zakażenia gronkowcowe*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 526–533.

<sup>24</sup> I. Paradowska-Stankiewicz, D. Naruszewicz-Lesiuk, *Odra*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 291–297.

blood not tested for the presence of viruses, intravenous administration of drugs (narcotics), and casual sexual contact.<sup>25</sup>

**Rabies** – an infectious disease caused by the RNA virus from the *Rhabdoviridae* family, from the genus *Lyssavirus*. It occurs in 7 biotypes (mostly in bats), all of which are pathogenic for humans (a fatal disease in humans, death occurs in the course of respiratory failure). The reservoirs are wild (foxes, bats, rodents) and domestic (dogs, cats) mammals. Human infection occurs through direct contact (biting or drooling the skin by a sick animal). A sick person is contagious to those around him. Rabies virus is mainly localized in the central nervous system, saliva, and skin. Rabies is a cosmopolitan disease that occurs all over the world. The list of countries reporting human rabies is regularly updated by WHO; currently, it is 90 countries in Asia, Africa, Central, and South America. It is estimated that approximately 55,000 people die each year from rabies. The highest number of rabies cases is recorded in India (about 20,000 annually), and also in other countries of South and Southeast Asia (Afghanistan, Pakistan, Bangladesh, Nepal, Burma, Cambodia) and Africa (Democratic Republic of Congo, Burkina Faso, Niger, Nigeria, Ethiopia, Somalia, Kenya, Tanzania, Mozambique). Prevention: pre-exposure vaccination is used in people exposed to rabies. Vaccination against rabies is recommended for people traveling to endemic areas of the disease.<sup>26</sup>

**SARS Coronavirus Infections** – An epidemic in 2002–2003, SARS incidents occurred in 29 countries/territories in Asia, Europe, and North America. Most cases were recorded in China – 87.7% (including 21.7% in Hong Kong). In other countries, cases have been reported in much smaller numbers. Based on the analysis of the infection's spread conducted among travelers from all around the world, the risk of dragging and spreading SARS infection is high. An example is Canada, where the largest SARS epidemic occurred outside Asia – the incidence there was confirmed in a total of 251 people, of which only 5 were imported cases. In this country, 43 people died as a result of SARS-CoV infection. One of the reasons for the SARS outbreak was that the patient ignored quarantine recommendations

---

<sup>25</sup> M. Rosińska, *Zakażenie wirusem HIV/Choroba wywoływana przez wirus HIV*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 574–587.

<sup>26</sup> M. Sadkowska-Todys, *Wścieklizna*, [in:] *Choroby zakaźne i pasożytnicze...*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), *op. cit.*, pp. 489–496.

and needed medical attention.<sup>27</sup> Currently, the risk of soldiers being exposed to SARS-CoV-2 during a pandemic may in part depend on the type of direct contact with a potentially infected person virus. Other factors, such as conditions in the community in which surgeries are performed (including travel to COVID-19 outbreaks) and individual health conditions, may also influence the risk of contracting COVID-19 or developing complications after the disease. Prevention: apply strict hygiene rules to cut pathways for these infections and undergo testing and recommendations for what to do in case of suspected disease.

## 5. CONCLUSIONS

The missions carried out by the Armed Forces of the Republic of Poland, apart from guaranteeing the defense of the state, supporting the protective subsystems of internal security, and helping the society, are based on participation in the process of stabilizing the international situation, including international activities in the field of crisis management. Polish soldiers fulfill this mission through activities outside the country. Related tasks they implement by participating in building and strengthening world peace and security in missions and operations outside the country since 1953. During over sixty years, the nature of crises and armed conflicts, as well as missions and operations carried out, as a result, have evolved. That has significantly contributed to the intensification of the challenges and threats to the soldiers. It has also influenced the perceiving of a several problems related to this issue.

Soldiers are the largest professional group often stationed in regions with different climatic conditions. Due to ongoing hostilities, there is an increased risk of infectious and non-infectious diseases. In the era of modern terrorist threats, the risk of contamination with substances of radiation, chemical, and biological origin cannot be ruled out. Pathogenic viruses and microorganisms have accompanied us from the very beginning of our species. Advances in medicine have allowed humanity to gain certain advantages over them, but the recent COVID-19 epidemic has shown that we are far from complete safety. Bacteria and viruses are constantly evolving, and many of our actions make them easier to spread. Changes caused in

---

<sup>27</sup> W. K. Pancer, *Pandemiczne koronawirusy człowieka – charakterystyka oraz porównanie wybranych właściwości HCoV-SARS i HCoV-MERS*, "Postępy Mikrobiologii", 2018, vol. 57, no. 1, pp. 25–32.

the natural environment alongside climate change are also factors that can mainly affect what diseases we will face in the future. The knowledge about the impact of climate change on the spread of pathogens, their virulence, and antibiotic resistance is still incomplete.

Scientists do not take this problem lightly. Even though there are not many cases of illness among the participants of the mission, many difficulties in the implementation of preventive measures (lack of vaccines and frequent abandonment of the use of pharmacological agents against malaria) cause that they pose a significant threat due to the possibility of importing infections/infections to home country. While water and food control, vaccination of personnel can be a benefit in preventing foodborne diseases, in the case of vector-borne transmission diseases, inconsiderable room for maneuver in terms of the applied preventive measures, places this group of illnesses in the first place of interest for medical services. Food-borne diseases include typhoid, hepatitis A, and cholera. They are among the most common health problems among soldiers participating in stabilization missions.<sup>28</sup> They are related primarily to the poor sanitary-hygienic condition of the army stationing areas, water and soil pollution, improper drinking water treatment, and the disastrous state of sewage systems, water treatment plants, and sewage treatment plants. Breathing diseases are one of the highest health risks in regions affected by hostilities, which is mainly influenced by mass migrations of people, overpopulation, the collapse of the preventive vaccination program, and changing weather conditions. Soldiers taking part in military operations are also exposed to high morbidity, apart from the local population.<sup>29</sup>

The incidence of sexually transmitted diseases among military personnel during hostilities is many times higher than during peacekeeping. The soldiers in the contingents of military operations are usually young, sexually active men, prone to stress relief through sexual contact, often with bystanders. Muslims do not seem to see the problem, believing that extra-marital sex, prostitution, homosexuality, and drug use do not exist among adherents of their religion. Currently, zoonoses of epidemiological

---

<sup>28</sup> R. S. Kotwal, R. B. Wenzel, R. A. Sterling, W. D. Porter, *An outbreak of malaria in US Army Rangers returning from Afghanistan*, "The Journal of the American Medical Association", 2005, no. 293 (2), DOI 10.1001/jama.293.2.212, pp. 212–216.

<sup>29</sup> K.C. Earhart, C. Beadle, L. K. Miller, *Outbreak of influenza in highly vaccinated crew of U.S. Navy ship*, "Emerging Infectious Diseases", 2001, no. 7(3), DOI 10.3201/eid0703.010320, pp. 463–465.

significance include rabies, brucellosis, and Q fever.<sup>30</sup> Although the number of cases in the coalition army population is not as large compared to other infectious diseases, the consequences of the infection are so significant that they should be carefully analyzed – any suspicious case, especially disease states of unknown origin. Brucellosis is a disease endemic in the Middle East and spread to humans through contact with sick animals or the consumption of their products (unpasteurized dairy products). Q fever is a disease entity of particular epidemiological importance on a global scale, not only due to the possibility of infection in the area where troops are stationed but also due to the possibility of using an etiologic agent (*Coxiella burnetii*) as a biological weapon in bioterrorist attacks. Another zoonotic disease occurring in the peacekeeping missions area, which etiologic factor can be used as a biological weapon, is anthrax.

Considering the above, it is extremely important to monitor the scale of health threats to participants in military operations. It is also significant to conduct appropriate risk assessments so that control measures reflect the most recent scientific knowledge of protection against infection risk, disease, or combat injury. With a comprehensive on-site emergency preparedness plan (high-risk disease, epidemic, pandemic), military operations can be better prepared to develop a quick, coordinated, and effective response while adopting measures to a specific situation.

#### REFERENCES

1. Dzbeński T., Stępień M., *Malaria (zimnica)*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 271–279.
2. Earhart K. C., Beadle C., Miller L. K., *Outbreak of influenza in highly vaccinated crew of U.S. Navy ship*, “Emerging Infectious Diseases”, 2001, no. 7(3), pp. 463–465, DOI 10.3201/eid0703.010320.
3. *Epidemiologia działań wojennych i katastrof*, K. Chomiczewski, W. Gall, J. Grzybowski (eds), Bielsko-Biała 2001.
4. Gall W., *Dynamika i struktura przewidywanych zakaźnych procesów epidemicznych na współczesnym polu walki oraz w działaniach bioterrorystycznych*, Bielsko-Biała 2001.

---

<sup>30</sup> K. Korzeniewski, *Choroby infekcyjne w Afganistanie*, “Lekarz Wojskowy”, 2006, no. 82 (1), pp. 48–53.

5. Gonera E., *Dur brzuszny*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 90–96.
6. Gut W., *Denga*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 87–89.
7. Korzeniewski K., *Choroby infekcyjne w Afganistanie*, “Lekarz Wojskowy”, 2006, no. 82 (1), pp. 48–53.
8. Korzeniowski K., *Choroby infekcyjne w rejonie działania misji stabilizacyjnych w Iraku i Afganistanie*, “Lekarz Wojskowy”, 2008, no. 86 (1), pp. 35–45.
9. Korzeniewski K., *Problemy zdrowotne long-term travelers na przykładzie żołnierzy Polskich Kontyngentów Wojskowych w aspekcie praktyki lekarza rodzinnego*, “Family Medicine & Primary Care Review”, 2013, no. 3, pp. 454–457.
10. Korzeniewski K., *Udział żołnierzy Wojska Polskiego w misjach pokojowych i stabilizacyjnych organizacji międzynarodowych*, [in:] *Zarys medycyny tropikalnej*, R. Olszański, B. Morawiec, Z. Dąbrowiecki, K. Korzeniewski (eds), Gdynia 2006, pp. 87–102.
11. Kotwal R. S., Wenzel R. B., Sterling R. A., Porter W. D., *An outbreak of malaria in US Army Rangers returning from Afghanistan*, “The Journal of the American Medical Association”, 2005, no. 293 (2), pp. 212–216, DOI 10.1001/jama.293.2.212.
12. Krzemińska A., *Spoleczne aspekty udziału Sił Zbrojnych Rzeczypospolitej Polskiej w misjach i operacjach poza granicami kraju (cz. I)*, “Obronność – Zeszyty Naukowe Wydziału Zarządzania i Dowodzenia Akademii Obrony Narodowej”, no. 1 (17), pp. 107–124.
13. Kuszewski K., *Błonica*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 33–37.
14. *Międzynarodowe operacje pokojowe i stabilizacyjne w polskiej polityce bezpieczeństwa w XX i XXI wieku*, D. Kozerański (ed.), Warszawa 2016.
15. Naruszewicz-Lesiuk D., *Cholera*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 58–63.
16. Pancer W. K., *Pandemiczne koronawirusy człowieka – charakterystyka oraz porównanie wybranych właściwości HCOV-SARS i HCOV-MERS*, “Postępy Mikrobiologii”, 2018, vol. 57, no. 1, pp. 22–32.



17. Paradowska-Stankiewicz I., Naruszewicz-Lesiuk D., *Odra*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 291–297.
18. Piekarska K., *Zakażenia gronkowcowe*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 526–533.
19. Rosińska M., *Zakażenie wirusem HIV/ Choroba wywoływana przez wirus HIV*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 574–587.
20. Sadkowska-Todys M., *Gorączka Zachodniego Nilu*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 146–150.
21. Sadkowska-Todys M., *Wścieklizna*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 489–496.
22. Stefanoff P., Rogalska J., *Porażenie dziecięce nagminne*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 337–342.
23. Szczuka I., Korzeniewska-Koseła M., *Gruźlica*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 151–165.
24. Zieliński A., *Biegunki podróżnych*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 28–32.
25. Zieliński A., *Gorączki krwotoczne o etiologii wirusowej*, [in:] *Choroby zakaźne i pasożytnicze – epidemiologia i profilaktyka*, A. Baumann-Popczyk, M. Sadkowska-Todys, A. Zieliński (eds), 7<sup>th</sup> ed., Bielsko-Biała 2014, pp. 127–138.

## Websites

1. *Chikungunya*, “World Health Organization”, 15.09.2020, <https://www.who.int/en/news-room/fact-sheets/detail/chikungunya> (accessed: 8.11.2020).

2. *Japanese encephalitis*, “World Health Organization”, 9.05.2019, <https://www.who.int/news-room/fact-sheets/detail/japanese-encephalitis> (accessed: 8.11.2020).
3. *Missions*, “Polish Army”, <https://www.wojsko-polskie.pl/misje> (accessed: 8.11.2020).
4. *Zika virus*, “World Health Organization”, 20.07.2018, <https://www.who.int/news-room/fact-sheets/detail/zika-virus> (accessed: 8.11.2020).

**CITE THIS ARTICLE AS:**

B. Konecka-Szydelko, *The impact of health threats on the security of peace-keeping missions and stabilization*, “Security Dimensions”, 2021, no. 36, pp. 40–63, DOI 10.5604/01.3001.0015.0486.

Licence: This article is available in Open Access, under the terms of the Creative Commons License Attribution 4.0 International (CC BY 4.0; for details please see <https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided that the author and source are properly credited. Copyright © 2021 University of Public and Individual Security “Apeiron” in Cracow