

Prevalence of skin diseases among soldiers of military operations in Iraq and Afghanistan.*

By K. KORZENIEWSKI, Poland



Krzysztof KORZENIEWSKI

Col. Assoc. Prof. KORZENIEWSKI Krzysztof MD, PhD.
Head of Epidemiology and Tropical Medicine Department, Military Institute of Health Service.

Address: Grudzińskiego St. 4, 81-103 Gdynia 3, POLAND.

The main area of research interests: health hazards in different climatic and sanitary conditions, in the contemporary battlefield.

Military service in peace and stabilization operations: as a medical and humanitarian officer in the United Nations Interim Force in Lebanon – UNIFIL (1999/2000, 2001/2002), Iraqi Freedom Operation (Iraq 2004), Enduring Freedom Operation (Afghanistan 2005), United Nations Mission in the Central African Republic and Chad – MINURCAT II (Chad 2009).

Specialist in tropical medicine, epidemiology, and dermatology-venereology.

RÉSUMÉ

Prévalence des maladies de la peau chez les soldats en opérations en Irak et en Afghanistan.

Les maladies de la peau constituent l'un des problèmes de santé les plus significatifs pour les troupes stationnées au Moyen Orient et en Asie Centrale. Le but de cette étude était d'examiner l'incidence des dermatoses chez les soldats Polonais servant en Irak et en Afghanistan.

Matériel et méthodes : le recueil épidémiologique a été fait chez les patients de nationalité polonaise venant consulter au service des soins externes de l'Hôpital de Campagne en Irak (Division multinationale centre-sud) d'août 2003 à juin 2004 (n=1 692) et aux consultations externes du contingent polonais en Afghanistan de novembre 2003 à octobre 2005 (n=400).

Résultats : Les dermatoses représentaient 22.8% des motifs de consultation en Irak et 21.9% en Afghanistan.

Conclusion : L'incidence élevée des maladies de la peau chez les soldats servant sous un climat chaud dans les zones de combat montre la nécessité d'une sélection des candidats sur leur aptitude à servir dans différentes conditions de climat et d'environnement sanitaire, ainsi qu'une organisation appropriée de la prise en charge dermatologique sur le terrain.

KEYWORDS : Skin diseases, Soldiers, Iraq, Afghanistan.

MOTS-CLÉS : Maladies de peau, Soldats, Irak, Afghanistan.

INTRODUCTION

Skin diseases are common clinical problem encountered in most fields of clinical medicine and pose one of the most frequent reasons for military personnel to seek medical care^{1,2,3}. The disease spectrum observed in the military clinics is very similar to that in a general medical practice. Allergic, bacterial, fungal, and viral infections are the most frequent presentations of skin problems⁴. Risk factors influencing the incidence of skin diseases are mostly chemical agents, impact of chemical substances, e.g. detergents, solvents⁵, physical factors (micro injuries, high temperature and humidity of air, solar radiation)⁶, biological factors (contact with infected material – bacteria, viruses, fungi, parasites)⁷, congenital and acquired disorders of

immunological resistance, metabolic diseases, disorders in peripheral circulation, therapy by antibiotics, steroids and immunosuppressive medication⁸, inappropriate clothes and shoes in the hot climate (made of artificial materials)⁹, poor social and economical conditions, low hygienic level,

Correspondence

Col. Assoc. Prof. Krzysztof Korzeniewski MD, PhD
Military Institute of Health Service
Department of Epidemiology and Tropical Medicine
Grudzińskiego St. 4,
81-103 Gdynia 3, POLAND.
Phone: +48 608 322 676
E-mail: kktropmed@wp.pl

* Presented at the 38th World Congress on Military Medicine, Kuala Lumpur, Malaysia, 4-9 October 2009.

and nutrition¹⁰. High temperature and humidity of air, solar radiation, impact of chemical substances on the posts, inappropriate clothing and low level of personal hygiene influence the incidence of skin diseases among soldiers in active duty in military operations^{11, 12, 13}. The aim of this article was to assess the prevalence of skin diseases among the population of Polish soldiers, deployed in military missions in hot, dry climate, in Iraq and Afghanistan, with number and structure of dermatoses.

MATERIALS AND METHODS

The epidemiological analysis of skin diseases among the personnel of the Polish Military Contingents in the Middle East and Central Asia was based on the medical documentation, hospital records, cards of ambulant treatment from the Polish Field Hospital of the Multinational Division Central South (level +2) in Iraq and the outpatient clinic of the Polish Military Contingent (level 1) in Afghanistan. Documentation used to do the research came from 1692 soldiers of Polish nationality, treated in Iraq from the period August 2003 – June 2004, and 400 Polish soldiers treated in Afghanistan from November 2003 to October 2005. The examined population was chosen among 4860 soldiers of Polish Military Contingent serving in Iraq, and 400 soldiers serving in Afghanistan.

RESULTS

Skin diseases were one of the main reasons of morbidity among soldiers of Polish Military Contingents serving in the Middle East and Central Asia in the analyzed period. Dermatoses made up 22.8% of all health problems, treated in the population of Polish nationality (Fig. 1).

From the group of skin diseases diagnosed in the population of Polish nationality in Iraq, allergic diseases were a prime occurrence making up 25.6% of all dermatoses (Tab. 1). Among allergic diseases the most dominant was irritant and allergic contact dermatitis. Other allergic diseases treated during analyzed period were phototoxic and photoallergic reactions (photo-dermatitis), dyshidrotic and seborrheic eczema, acute urticaria (Tab. 2). Mycoses, which made up 16.9% of all skin diseases, were the second, frequently diagnosed group of dermatoses in the Polish population. *Tinea pedum*, *tinea inguinalis*, and *pityriasis versicolor* were the most dominating fungal infections (Tab. 3). Pyodermas made up 16.4% of all dermatoses and the most frequent pyodermic condition was folliculitis and furunculosis (Tab. 4). Another group were viral diseases (14.6% of all dermatoses). Among them the most dominating were herpes simplex labialis and viral warts (Tab. 5). Other skin problems also occurred, e.g. epidermis excoriation, miliaria and acne. Sun burns developed rarely due to the common use of creams with filter with high coefficient of protection against UVA/UVB radiation.

The examined population was analyzed in the reference to the age. Incidence of skin diseases in individual age groups was evenly dispersed and proportional to a number of examined patients in the given age categories.

The incidence of skin diseases similarly to Iraq was the prevalent health problem in the population of Polish military personnel serving in Afghanistan. Dermatoses were the second reason for admissions of soldiers treated in the analyzed period (Fig. 2).

Figure 1: Illnesses profile among Polish soldiers (n=1692) treated in MND CS Field Hospital in Iraq from August 2003 to June 2004.

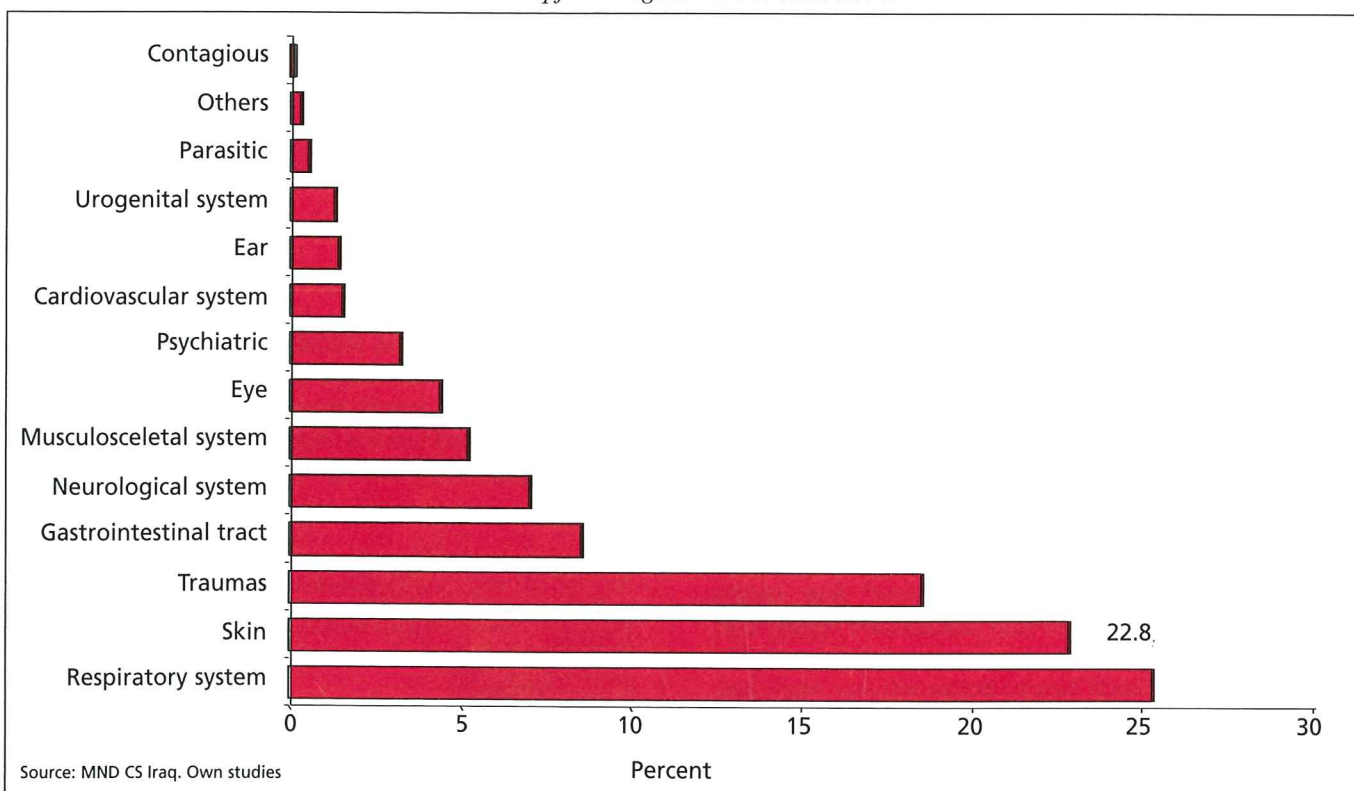


Table 1: Structure of skin diseases among Polish soldiers (n=1692) treated in MND CS Field Hospital in Iraq from August 2003 to June 2004.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
allergic diseases	100	25.6
mycoses	66	16.9
pyodermas	64	16.4
viral diseases	57	14.6
epidermis excoriation	27	6.9
acne	12	3.1
miliaria	11	2.8
others	53	13.7
Total	390	100.0

Source: MND CS Iraq. Own studies

Table 2: Structure of allergic skin diseases among Polish soldiers (n=1692) treated in MND CS Field Hospital in Iraq from August 2003 to June 2004.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
contact dermatitis (irritant, allergic)	50	50.0
photodermatitis	22	22.0
seborrheic eczema	9	9.0
dyshidrotic eczema	8	8.0
acute urticaria	4	4.0
others	7	7.0
Total	100	100.0

Source: MND CS Iraq. Own studies

Table 3: Structure of mycoses among Polish soldiers (n=1692) treated in MND CS Field Hospital in Iraq from August 2003 to June 2004.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
tinea pedum	24	36.4
tinea inguinalis	18	27.3
pityriasis versicolor	14	21.2
others	10	15.1
Total	66	100.0

Source: MND CS Iraq. Own studies

Table 4: Structure of pyodermas among Polish soldiers (n=1692) treated in MND CS Field Hospital in Iraq from August 2003 to June 2004.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
folliculitis	32	25.6
furunculus	10	16.9
hydradenitis suppurativa	4	16.4
abscess	4	14.6
impetiginization	4	6.9
impetigo vulgaris	3	3.1
others	7	13.7
Total	64	100.0

Source: MND CS Iraq. Own studies

Table 5: Structure of viral skin diseases among Polish soldiers (n=1692) treated in MND CS Field Hospital in Iraq from August 2003 to June 2004.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
oral herpes simplex	30	25.6
viral warts	18	16.9
herpes zoster	7	16.4
molluscum contagiosum	2	13.7
Total	57	100.0

Source: MND CS Iraq. Own studies

Allergic skin diseases were dominating dermatoses making up 33.2% of all dermatological problems (Tab. 6). Irritant or allergic contact dermatitis and photo-dermatitis occurred the most frequently among them (Tab. 7). Viral diseases made up 26.8% of all dermatoses and herpes simplex labialis was dominating (Tab. 8). Another group were pyodermas (15.9% of all skin diseases) with domination of folliculitis (Tab. 9). Mycoses made up 12.3% of dermatoses. The most frequently treated fungal infections were tinea inguinalis and tinea pedum (Tab. 10). Other skin diseases that occurred in the analysed period, were mainly miliaria and fibroma molle. Similarly as in Iraq, due to common use of prevention against UVA/UVB radiation, sun burns occurred sporadically. Incidence of skin diseases in individual age groups was evenly dispersed and proportional to a number of examined patients in the given age categories.

DISCUSSION

Skin diseases pose one of the most frequent health problems among soldiers taking part in military operations. Although they cause few fatalities, they are a significant cause of combat ineffectiveness, morbidity of military personnel¹⁴. Their importance to military operations is most pronounced in the hot climate, where over half the man-days lost to duty troops and directly related to skin diseases¹⁵. There are many different factors which influence development of skin diseases among deployed military personnel. The most important components are temperature and humidity of air, solar radiation, personal hygiene, as well as social and life conditions^{16, 17}. In subtropical and tropical circumstances, even harmless scratch of epidermis, which would not develop any health problem in temperate climate, can escalate changes¹⁸. Among soldiers of military missions in the Middle East and Central Asia, allergic diseases came to the fore^{19, 20}. Especially dermatitis caused by contact with exogenous material are one of the most frequent dermatologic disorders requiring both outpatient and inpatient therapy during military operations²¹. The main reasons for them is contact with chemical agents (oil, grease), topical drugs, and insects bites^{22, 23}. Correlation between incidence of skin diseases and personal hygiene status is also affirmed. Although soldiers had available hygiene agents (soap, toothpaste, laundry detergent) and change of underwear and bed linen, as well as conditions for washing clothes in a close range (washing machines, laundry rooms),

Figure 2: Illnesses profile among Polish soldiers (n=400) treated in the outpatient clinic of Polish Military Contingent in Afghanistan from November 2003 to October 2005.

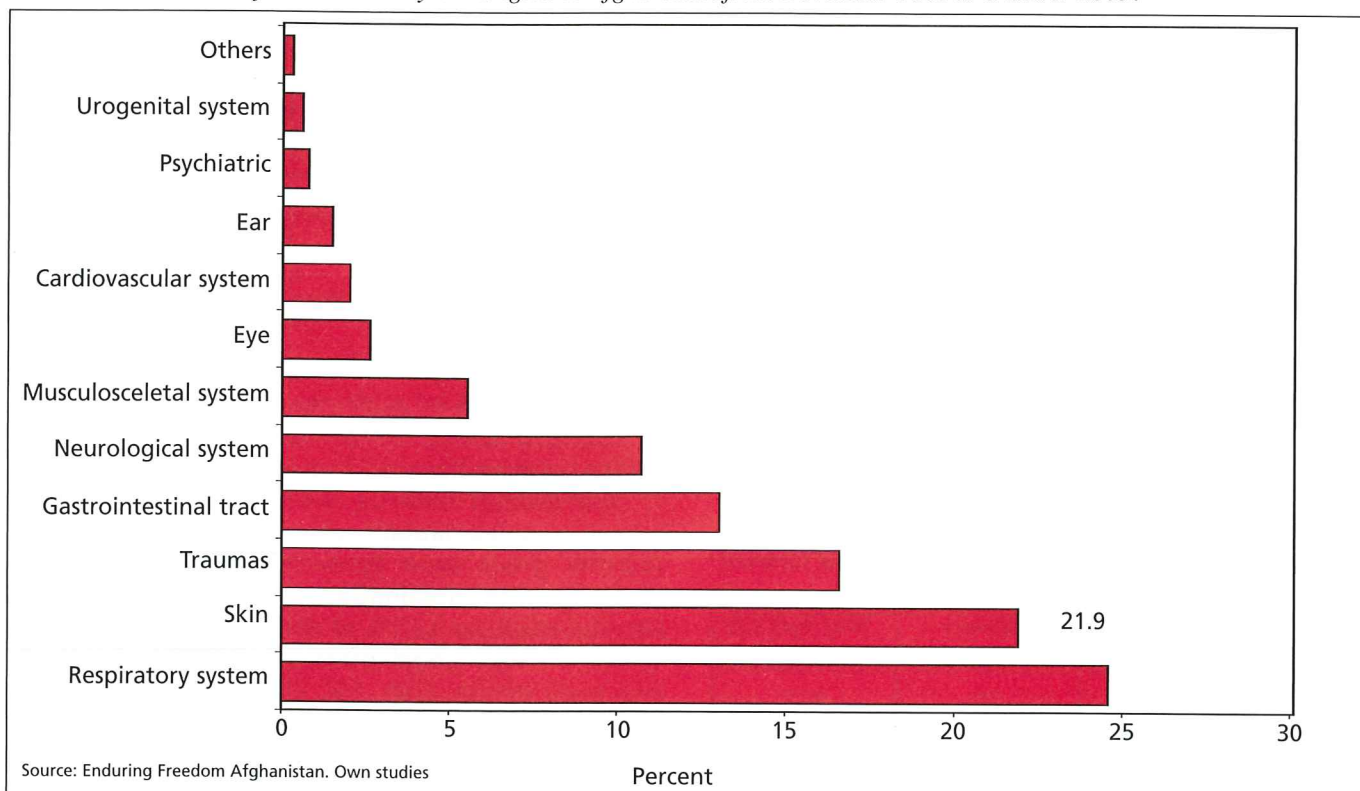


Table 6: Structure of skin diseases among Polish soldiers (n=400) treated in the outpatient clinic of Polish Military Contingent in Afghanistan from November 2003 to October 2005.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
allergic diseases	73	33.2
viral diseases	59	26.8
pyodermas	35	15.9
mycoses	27	12.3
miliaria	7	3.2
fibroma molle	6	2.7
others	13	5.9
Total	220	100.0

Source: Enduring Freedom Afghanistan. Own studies

Table 7: Structure of allergic skin diseases among Polish soldiers (n=400) treated in the outpatient clinic of Polish Military Contingent in Afghanistan from November 2003 to October 2005.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
contact dermatitis (irritant, allergic)	26	35.6
photodermatitis	21	28.7
cheilitis	15	20.6
acute urticaria	7	9.6
dyshidrotic & seborrheic eczema	4	5.5
Total	73	100.0

Source: Enduring Freedom Afghanistan. Own studies

Table 8: Structure of viral skin diseases among Polish soldiers (n=400) treated in the outpatient clinic of Polish Military Contingent in Afghanistan from November 2003 to October 2005.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
oral herpes simplex	50	84.7
viral warts	8	13.6
herpes zoster	1	1.7
Total	59	100.0

Source: Enduring Freedom Afghanistan. Own studies

Table 9: Structure of pyodermas among Polish soldiers (n=400) treated in the outpatient clinic of Polish Military Contingent in Afghanistan from November 2003 to October 2005.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
folliculitis	29	82.9
impetigo vulgaris	3	8.6
furunculus	2	5.7
abscess	1	2.8
Total	35	100.0

Source: Enduring Freedom Afghanistan. Own studies

concept of hygiene is understood by every member of the military mission in a very individual way²⁴. The incidence of skin diseases is not dependent on living conditions, or food sanitation and preparation. Members of military operation have similar accommodation (tent or container system), similar access to sanitary devices, medical assistance and basic rules of prophylaxis (suns screen lotions, insect repellents). Food safety is also

Table 10: Structure of mycoses among Polish soldiers (n=400) treated in the outpatient clinic of Polish Military Contingent in Afghanistan from November 2003 to October 2005.

TYPES OF DERMATOSES	NUMBER OF CASES	STRUCTURE RATE [%]
tinea inguinalis	10	37.0
tinea pedum	9	33.4
tinea glabrosa	4	14.8
pityriasis versicolor	2	7.4
others	2	7.4
Total	27	100.0

Source: Enduring Freedom Afghanistan. Own studies

guaranteed. Soldiers of military missions in Iraq and Afghanistan have regular food in dining facilities which is controlled and examined according to the army standards. Potable water comes from controlled sources, and is decontaminated regularly by chlorination and examined by hygiene services of the mission²⁵. Unlimited supply of bottled water is also available. Soldiers of Coalition Forces in the Middle East and Central Asia perform their mandatory tasks based on similar procedures and directives. They deploy for fixed mandatory rotations lasting 6 to 12 months.

The problem of skin diseases before military deployment among the candidates who will serve in the hot climate, in warfare zone is significant, especially with Europeans, whose dermatological conditions in temperate climate can escalate seriously in hot environment¹⁹. Owing to that fact, the right selection and defining contraindications for duty in this climate is essential²⁷. The strongest contraindications for military service in the tropics and subtropics are chronic inflammatory states of skin, such as psoriasis, ichthyosis, sclerodermia, bullous diseases, extensive eczema, extensive red sudamina, anhydrosia, extensive albinism, and active process of mycoses²⁸. Preexisting mycotic changes, in temperate climate, even mild states, such as tinea interdigitalis pedum, may get inflamed in the tropics. It is likely that pyodermas which are very difficult to cure and heal slowly, will pose the same presentation. It must be considered that condition of allergic illnesses may get worse⁸. Medical observations prove that patients with family history of allergies, who were never sick in the temperate climate, are falling ill with allergies in the countries located in the hot ambience. Unfortunately, it is difficult to establish who among soldiers had preexisting skin conditions, and who have suffered from dermatoses for the first time in hot environment. Two factors are involved here. Primarily, the candidates for military deployment consciously conceal their dermatological problems, secondly, health status examination by medical boards is too superficial²⁸. Owing to the fact that every 5th case of morbidity among soldiers of Polish Military Contingents in Iraq and Afghanistan is connected with skin diseases, this group of health problems is very important in an epidemiological and economical point of view. Considering qualification for duty abroad, health

contraindications for departure to the hot climate area and organization of health care specialists for the mission, in significant way can cause decrease the incidence of dermatoses among soldiers who at present time support peace and stabilization operations in the world.

SUMMARY

Skin diseases pose one of the most significant health problems among military personnel stationed in the Middle East and Central Asia. The aim of this study was to examine the incidence of dermatoses in the population of Polish soldiers serving in military operations in Iraq and Afghanistan. Material and Methods: epidemiological assessment was carried out among patients of Polish nationality treated in the outpatient clinic of the Field Hospital in Iraq (Multinational Division Central South) from August 2003 to June 2004 (n=1692), and in the outpatient clinic of Polish Military Contingent in Afghanistan from November 2003 to October 2005 (n=400). Results: dermatoses made up 22.8% of all health problems treated in Iraq, while in Afghanistan – 21.9% (ambulant treatment). The most frequent dermatoses were allergic diseases – 25.6% of all dermatological cases in Iraq, and 33.2% in Afghanistan. Conclusions: high incidence of skin problems among soldiers serving in the hot climate, in warfare zone dictates a necessity of appropriate health qualification of candidates for duty in different climatic and sanitary conditions, and right organization of dermatological health assistance in the mission area.

REFERENCES

1. STULBERG DL, PENROD MA, BLATNY RA. Common bacterial skin infections. *American Family Physician* 2002;66:119-124.
2. ADAMS BB. Dermatologic disorders of the athlete. *Sports Medicine* 2002;32:309-321.
3. PROSE NS, MAYER FE. Bacterial Skin infections in adolescents. *Adolescence Medicine* 1990;1:325-332.
4. SADICK NS. Current aspects of bacterial infections of the skin. *Dermatologic Clinics* 1997;15:341-349.
5. AYALA C, SPELLBERG B. *Dermatology for the Boards and Wards*. Blackwell Science, Inc. USA 2001.
6. BOLOGNIA JL, JORIZZO JL, RAPINI RP. *Dermatology*. C.V. Mosby. USA 2003.
7. BURNS T, BRETHNACH S, COX N, GRIFFITHS Ch. *Rook's Textbook of Dermatology*. Blackwell Publishing Ltd. USA 2004.
8. FRANKEL DH. *Field Guide to Clinical Dermatology*. Lippincott Williams & Wilkins. USA 1999.
9. FREEBERG IM, EISEN AZ, WOLFF K, AUSTEN KF, GOLDSMITH LA, KATZ S, FITZPATRICK TB. *Fitzpatrick's Dermatology in General Medicine*. The Mc Graw-Hill Companies, Inc. USA 2003.
10. KOŹMIŃSKA-KUBARSKA A. *Dermatologia i Wenerologia Tropikalna*. PZWL. Warszawa 1994 [in Polish].

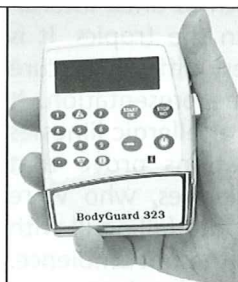
11. KIERZNIKOWICZ B. Wybrane problemy służby zdrowia w zabezpieczeniu medycznym wojskowych kontyngentów ONZ w tropiku. *Skalpel* 1993;3-4:11-17 [in Polish].
12. BUCZYŃSKI A, KOCUR J, KIERZNIKOWICZ B. Ochrona sanitarno-higieniczna i psychiczna żołnierzy misji pokojowych ONZ. [In:] KIERZNIKOWICZ B, KNAP J. Służba zdrowia Wojska Polskiego w Misjach Pokojowych. Eurostar Ltd. Warszawa 2001; pp. 44-51 [in Polish].
13. KORZENIEWSKI K. Analiza epidemiologiczna chorób skóry występujących u osób leczonych w Szpitalu Tymczasowych Sił Zbrojnych ONZ w Libanie w latach 1993-2000. *Lekarz Wojskowy* 2005;81(3):158-162 [in Polish].
14. ARONSON NE, SANDERS JW, MORAN KA. In Harm's Way: Infections in Deployed American Military Forces. *Clinical Infectious Diseases* 2006;43:1045-51.
15. BECKER LE, JAMES WD. Historical overview and principles of diagnosis. In: JAMES WD. Military Dermatology, Office of the Surgeon General at TMM Publications, Washington DC 1994; p. 2.
16. KERDEL FA, JIMENEZ-ACOSTA F. Dermatology: Just the Facts. The Mc Graw-Hill Companies, Inc. USA 2003.
17. JESKE J. Infekcje dermatofitowe u osób powracających z tropiku. *Wiadomości Parazytologiczne* 1999;45(3):395-400 [in Polish].
18. KORZENIEWSKI K. Skóra w klimacie gorącym. *Lekarz Wojskowy* 2005;81(3):181-183 [in Polish].
19. KORZENIEWSKI K. Analiza epidemiologiczna rejonu stacjonowania żołnierzy Polskich Kontyngentów Wojskowych w misjach ONZ na Bliskim Wschodzie. *Lekarz Wojskowy* 2005;81(1):11-15 [in Polish].
20. KORZENIEWSKI K. Analiza zachorowalności żołnierzy Polskiego Kontyngentu Wojskowego w Afganistanie w latach 2003-2005. *Lekarz Wojskowy* 2006;82(1):15-19 [in Polish].
21. CROWE MA, JAMES WD. Allergic and irritant contact dermatitis. In: JAMES WD. Military Dermatology, Office of the Surgeon General at TMM Publications, Washington DC 1994; p. 112.
22. SPERLING L. Skin diseases associated with excessive heat, humidity, and sunlight. In: JAMES W.D. Military Dermatology, Office of the Surgeon General at TMM Publications, Washington DC 1994; pp. 49-50.
23. ZABIELSKI S, KORZENIEWSKI K. Epidemiologia chorób skóry i chorób wenerycznych występujących u osób narodowości polskiej leczonych w Szpitalu Tymczasowych Sił Zbrojnych ONZ w Libanie w latach 1993-2000. *Lekarz Wojskowy* 2003;79(1): 30-32 [in Polish].
24. KORZENIEWSKI K, OLSZAŃSKI R. Problems Concerning Preventive Medicine Among Representatives of Temperate Climate in the Tropics. *Polish Journal of Environmental Studies* 2006;15(4b):87-90.
25. KORZENIEWSKI K. Profilaktyka chorób infekcyjnych i nieinfekcyjnych ze szczególnym uwzględnieniem prewencji zdrowotnej w strefie klimatu gorącego. *Lekarz Wojskowy* 2005;81(3):184-188 [in Polish].
26. KORZENIEWSKI K. Zadania i struktura organizacyjna służby zdrowia Wielonarodowej Dywizji Sił Stabilizacyjnych w Strefie Środkowo-Południowej w Iraku. *Lekarz Wojskowy* 2004;80(4):211-214 [in Polish].
27. KIERZNIKOWICZ B, DĘGA K. Dobór kandydatów do operacji pokojowych ONZ i innych organizacji międzynarodowych w odmiennych warunkach klimatycznych w świetle występujących zagrożeń. [In:] KIERZNIKOWICZ B, KNAP J. Służba zdrowia Wojska Polskiego w Misjach Pokojowych. Eurostar Ltd. Warszawa 2001; pp. 31-43 [in Polish].
28. KORZENIEWSKI K. Kwalifikacja zdrowotna kandydatów do służby poza granicami państwa w misjach pokojowych i stabilizacyjnych. *Lekarz Wojskowy* 2005;81(3):206-209 [in Polish].

Portable Volumetric & Syringe Infusion Systems

- * Ambulatory bag & syringe based infusion systems perfect for use in the field, air or at sea
- * Suitable for fixed (pole mounted) or ambulatory use
- * Can be used in Hyperbaric chambers & Aircraft
- * Wide range of accessories to facilitate ambulatory use in a mobile setting: Lockboxes, carry pouches, etc.
- * CE (Europe), FDA (USA), CSA (Canada) approved



Caesarea Medical Electronics Ltd.
Toll Free: +800-323-575-00
Email: sbarak@cme-infusion.com
www.cme-infusion.com



BodyGuard 323 Infusion Pump

- * Compact & lightweight
- * Infuse at 0.1 to 1200 ml/hr
- * Six Operating Modes
- * Rechargeable, mains power or disposable battery operated
- * +/-3% Accuracy

T34 Syringe Pump

- * Automatic syringe and volume detection
- * 2-60 ml syringes
- * Compact & light
- * 9v battery operated
- * Fixed mode (volume over time)

