

Modern dental care for military units in the armies of the world – a literature review

Współczesne zabezpieczenie stomatologiczne jednostek wojskowych w armiach na świecie – przegląd piśmiennictwa

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Abstract. There are differences in medical backup in different armies around the world. This is why it is important to get to know the structure and organization of medical backup in different foreign armies. This knowledge will help improve our own dental treatment among the soldiers of the Polish Army system in the future. Each country has a different individual approach implemented for this issue. This is due to structural differences in the army itself, financial contributions for dental care, cultural differences, or experience in missions. The backup looks different in the soldiers' homeland than on a mission to a foreign country. It often turns out that social and living conditions there are drastically different than those of the native country. These are not only the differences noticed by the authors of this article. There also exist nuances in the decision-making process in the area of ability to serve inside the home country and outside its borders, and the manner in which highly specialized staff that can serve in the structures of military dentistry is acquired.

Key words: dental backup, field hospital, organizational structure, stabilization missions

Streszczenie. Zabezpieczenie medyczne w armiach świata jest różne, dlatego ważne jest poznanie struktury i organizacji zabezpieczenia medycznego w armiach obcych państw. Pomoże to w przyszłości poprawić system leczenia chorób jamy ustnej u żołnierzy Wojska Polskiego. W każdym kraju podchodzi się do tego zagadnienia w sposób indywidualny, co podyktowane jest różnicami strukturalnymi w samym wojsku, nakładami finansowymi przeznaczonymi na zabezpieczenie stomatologiczne, różnicami kulturowymi czy też doświadczeniem misyjnym. Inaczej bowiem wygląda zabezpieczenie w kraju stacjonowania żołnierzy, a inaczej na misji w obcym państwie. Często okazuje się, że warunki bytowo-socjalnie są tam odmienne od tych znanych w rodzimym kraju. Nie są to jedyne różnice zauważone przez autorów powyższego artykułu. Dostrzeżono również niuanse w sposobie orzekania o przydatności do służby zarówno w kraju, jak i poza nim oraz w sposobie pozyskiwania wysokospecjalistycznej kadry, mogącej pełnić służbę w strukturach stomatologii wojskowej.

Słowa kluczowe: zabezpieczenie stomatologiczne, szpital polowy, struktura organizacji, misje stabilizacyjne

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Introduction

Military dentistry is an inextricable element of military medicine. It is not possible to discuss one without taking into account the other. This is the reason why it is crucial to get to know how health care, particularly dental care, functions in other armies in the world. Thorough analysis and comparison of different situations with the situation of our national army shall allow to improve the condition of health care in the Polish Army.

Dental backup in different armies of the world varies from one another. In some armies it is of high level

with military dental clinics in operation, whereas in other there is no sufficient infrastructure or personnel – officers-physicians who could provide sufficient care in military units. There is also a significant difference between dental care within our country and that provided on international missions. All those details have a decisive impact on the efficiency of the military health care and care an ill soldier may receive.

Dental backup in the Polish Army

In 2002, the Military Medical Academy and the Medical Academy in Lodz were merged to form the Medical University of Lodz. Within the structures of this entity, there is a military – medical faculty aimed at the academic formation of the future military medical staff for the Polish Army in collaboration, with the Military Medical Training Center in Lodz. Military physicians were also supposed to be drawn from civilian structures in the form of voluntary transfers to the army. However, the system had proved little attractive for civilian doctors and, consequently, little efficient. This situation led to the decrease in the number of physicians in the Polish Army [1]. In 2008, the main reason for doctors to leave the army was retirement. It constituted 77.02% of all the cases of leaving the army in the medical corps [1]. Such condition was caused by the lack of attractiveness of working in the army, heavy workload, problems with concluding specializations in medical fields, and low earnings in comparison to colleagues working in civilian structures of medical care, and the need for extensive availability of army physicians [1]. Changes made in the beginning of the 21st century aimed at the improvement of the operation of the military health care by adjusting it to the reality of professionalization of the Polish Army, have, in truth, limited or even impaired it [1]. Current dental care system implemented in the Polish Army does not function properly. Namely, there is a lack of active officers – physicians. At present, 36 military dentists are working (as of 2016). Their number is smaller than that of military pharmacists or veterinarians. In many military units, dental offices are closed as up until recently there had been no legal possibilities to open such points in accordance with the 15 April 2011 Act on Healthcare Institutions [2] or there had been no sufficient dental personnel. Often equipment of dental offices, which is not being used, is transferred to commercial divisions and subsequently liquidated or sold by the Military Property Agency to the civilian market. Also, the posts of dentists in the Polish Army, which are not occupied, are routinely liquidated by the unit commanders or transformed into other positions [1]. Because of that, dentists have no clear or precisely defined path of professional development, let alone their military career [1]. Those are the main reasons why doctors and dentists leave the army [1].

According to the latest provisions of the law, a dentist can specialize in an area of his/her choice 15 days a month. The rest of the time must be spent at the military unit. The specialization is not forced upon by the unit commander or a supervising physician. The specialization is carried out at a hospital or a military clinic which is nearest to the doctor – officer's residence [1]. However, not every voivodship has such facilities. The author

of this article had to carry out his specialization at a military clinic located 120 km away from the home unit. It should be mentioned that such training is non-chargeable on the basis of a volunteering agreement. This means that all the commuting, accommodation, or compulsory specialization courses must be covered by the military physician him/herself.

Currently doctors may specialize in all areas of dentistry. However, only few hospitals have maxillofacial surgery wards or clinics where such specializations in dental surgery or maxillofacial surgery may be carried out. Those are clinical hospitals in Wrocław, Bydgoszcz, and the Military Medical Institute in Warsaw. Additionally, specializations in dental surgery and other areas may be conducted in clinics that operate at military hospitals (in Szczecin, Krakow, Warsaw, Bydgoszcz, and Wrocław), and the Military Institute of Aviation Medicine in Warsaw and the Central Military Health Service Center "CePeLek" which is also located in the capital.

In the current military decision-making process in the Polish Army, the condition of one's dental hygiene is one of the decisive factors in whether a person may or may not serve outside the country. A person with tooth decay should not be qualified as fit for an international mission [3]. Even one instance of tooth decay may disqualify a person from being sent on a mission. If such person is already on a mission, however, he/she should be evacuated from the battlefield.

Operation of a dental office looks quite different on missions. There, the need for dental care is very pressing. For example, in Afghanistan, in the Polish Military Contingent, there was an operating dental practice. It formed a part of the Polish Field Hospital stationed in Ghazni. It was a reference level 2+ unit, namely, a field hospital extended to include a pharmacy, dental office, and emergency room. The staff of the dental office includes one officer – dentist and one nurse (a civilian or non-com officer). There is no CT scanner or prosthetic laboratory in the field hospital [4]. In various cases, the dentist goes on a mission without any specialization. The dentist's principal activities included conservative and root-canal treatment, extraction of uncomplicated teeth, and removing plaque. If there were any complicated dental cases (for example, extractions of impacted teeth), such patients were sent for scheduled treatment to the Dental Clinic in Bagram where American specialists served [4-5].

In the French army, however, the procedure of treating patients on missions was radically different. If any dental problems emerged among the staff serving outside the country, such people were immediately evacuated in the medical helicopter MEDEVAC (Medical Evacuation) to the nearest French base with an operational dental care practice. For example, during the mission in Mali in the period from February 2013 to May 2013,

15.7% cases of air evacuation (MEDEVAC) due to dental reasons were registered [7].

In the Polish Military Contingent things looked different. If a soldier was stationed in a smaller base where there was no Polish Field Hospital, he/she had to wait for road transport, which, in turn, was organized after several days of waiting. During this time, the patient remained under the care of a paramedic who would administer pain killers available in the paramedic's backpack. To summarize, dental patient was not an evacuation priority for the Polish Military Contingent. Due to financial reasons, medical helicopters were not called for such cases. Such patients, in spite of pain, had to wait patiently for the convoy evacuation to the Polish Field Hospital in Ghazni [5,6].

Dental backup in the United States Army

The method of classification in the allied armies is much more restrictive than in Poland. A soldier with untreated teeth has no right to go abroad. Additionally, it should also be stated that soldiers in the home country have guaranteed dental care provided by the state, for example, in the US Army, there are hospitals in military bases with adequately equipped and staffed dental practices [8].

US Army should be considered a model to follow as dental care there is on a very high level. Cases of dental problems among US soldiers occur very rarely. Having been on a mission twice, the author has noticed only a few cases of dental interventions among American personnel in the base of Ghazni. This goes to show that the verification in the United States is very efficient and admits no possibilities of cheating as it often happens in military medical boards in Poland. The strength of the system is also backed up by the centralized and fully computerized system of the verification of soldiers who remain in active service and in the National Guard [8]. Also, the Canadian army has such computerized system of patient base [9]. This considerably facilitates the decision-making process regarding the ability to serve outside the country (mission to Iraq) and within its borders [8]. It should be mentioned that in numerous American bases there are hospitals with dental offices [10]. The clinic in Fort Hood in Texas can serve as an example [11]. Dental problems among American soldiers are thoroughly treated. For candidates who wish to be sent on international missions, the verification process is very restrictive. The command does not want to generate additional costs of dental treatment for the soldiers stationed in the theater of operations. Such treatment is the source of problems related to medical evacuation or provision of specialized equipment or materials.

It is estimated that during the mission to Iraq from June to July 2011, the United States Army spent as much as 21.9 million dollars for the treatment of dental cases and other non-battle injuries. It should be stated that the process of treatment of many of those issues has not yet been completed which shall certainly generate still higher costs [12].

The entity responsible for health care in the US army is the Army Medical Department Center and School (AMEDDC&S). This is the center that coordinates the training and further work of all the military physicians, including dentists, inside the country and outside its borders. On the other hand, U.S. Army Dental Command (DENCOM) is the entity responsible for the dental care itself. It is subordinate to the command of the military health care, U.S. Army Medical Command (MEDCOM). DENCOM is divided into areas of responsibility where dental centers and prosthetic laboratories operate. They are to provide care for all the American soldiers stationed in the bases in the USA and outside it (Germany, Italy). The United States Army has six areas of responsibility. DENCOM's principal tasks include treatment of decayed teeth, preventive dental care, scientific research, training of subordinate employees, and sending specialized dental staff on international missions [13].

Currently, in the United States there are 29 dental clinics. They are aimed at the provision of assistance for the soldiers stationed in the garrisons inside the country. Their principal activities include conservative dental care (principally amalgam fillings), dental surgery (without implants), dental prophylaxis with the instructions of hygiene, and basic periodontal treatment (scaling). Dental practices of this kind can also perform imaging diagnostics, bite-wing and panoramic dental x rays [14].

For the expeditionary forces, on the other hand, exists the Expeditionary Medical Support System (EMEDS). It is a highly specialized unit that consists of physicians and mid-level personnel intended to operate outside the country. It was first used during the flood in Houston in 2001. This unit's aim is to secure medical and sanitary needs of soldiers both inside the country and on missions, and provide care to the victims of natural disasters. Apart from personnel, this medical group includes all the hospital infrastructure. EMEDS Basic is sent abroad when the contingent number exceeds 2.000 people. This team also includes a dentist. It is a lower level of reference of medical teams sent outside the United States. The following one is called EMEDS + 25. It provides health care for groups of 5.000 people [11,15]. In this unit, within the structures of the dental clinic, dentists performs complex surgical procedures, including extractions of impacted third molar teeth. It is generally permitted for a dentist who has determined professional

experience and has undergone adequate trainings to perform complex tooth extractions [10].

Dental backup in the Canadian Army

Canadian Army has a special division whose purpose is to manage matters related to the training and activity of military dentistry, called Canada for Dental Service (CFDS). It forms a part of the Canadian Military Forces. The structure of this unit includes 119 officers, some of whom are dentists, and the rest performs administrative tasks. Also non-com officers take part in the provision of dental care. There are 201 of them, including dental technicians and hygienists. Dental service also employs 110 civilians: dentists, hygienists, assistants, nurses, and receptionists. Officers of the dental care use uniforms of the Land Forces, despite the type of force in which they serve. Since 1995, dental service has been commanded by an officer of the rank of the Brigadier general. This year also marked the decrease in the military ranks in the medical command due to financial reasons [9,16]. Currently, Canadian dentists are subordinate to a colonel, and not, as it had been before, to the Brigadier general. The commanding unit managing dental care is commanded by a colonel from main headquarters in Ottawa. There are 26 dental divisions under his command, including two in Europe. Three major centers are qualified as dental clinics and are commanded by officers in the rank of lieutenant colonels. Apart from general dentists, prosthetists, periodontists, and maxillofacial surgeons are in service in those clinics. Smallest clinics located in military units are commanded by captains or majors. There are few specialists in those small facilities. This is why when a more difficult case emerges, such a patient is sent to a facility with a higher reference level. The patient may be directed to a larger military clinic, a civilian clinic, or a private practice [9,16]. In general, the tendency is to achieve full dental health in soldiers who serve in line units. The dental condition is assessed with the use of NATO STANAG 2466 standards [6,9,10,16]. CFDS subdivisions must be able to help any soldier anywhere in the world, particularly those on international missions [9,16].

This is the reason why the division of assistance for the soldiers in need outside the borders of Canada is rather specific. There are three reference levels of dental clinics on missions. The first one provides emergency aid to patients with pain related to stomatognathic system. The second level, called the sustaining level, is intended for urgent cases. The third level, on the other hand, is a specialized level where patients with complicated problems of the stomatognathic system are directed. Specialists, such as maxillofacial surgeons, treat patients on this highest reference level. Up until recently,

dentists also could use clinics located on two floating hospitals, namely HMCS (Her/His Majesty's Canadian Ship) "Protecteur" and HMCS "Preserve". It is thanks to them that the entire spectrum of tests, including x-rays (without panoramic images) would be performed. However, at present both ships have been withdrawn from service. Activities aimed at obtaining new ships with technical backup are currently under way [9,16].

Expeditionary forces have two systems of dental clinics at their disposal [9,16]. Those are: a road-based transport clinic, Dental Special Equipment Vehicle (SEV) and an air transport clinic, Air Transportable Dental System (ATDS). The latter is also used by air forces. The road transport clinic (SEV), also known as the Mobile Dental Clinic (MDC) is a self-sufficient unit that can operate together with mission forces. It consists of non-armored 2.5 ton trucks equipped with an air-conditioned clinic section. The module is furnished with full dental equipment, tools, materials and personnel which operates this mobile clinic. The staff consists of two-people dental team: the doctor and a dental assistant. A tent with reception and waiting room can be optionally installed nearby. In order to secure power needs, a 10 kW power generator is used. Unfortunately, the whole set is quite heavy and slow, which is why there are certain limitations to its mobility in mountainous areas. Setting all the materials takes approximately 60 minutes after which the staff is ready to work. The other type of providing dental care on mission is the system based on air transport (ATDS). It may be used during short-term operations as all the equipment fits into a 400-pound box. It is intended for emergency treatment, which is why a great advantage of this type of clinic is its compact size and speed of transport. The set may be laid out in a tent or an abandoned building. Its principal parts are: a dental chair, an air compressor generating high pressure connected to it, and dental tools. The entire set is powered by a 5 kW power-generating device. Additionally, the entire module can be equipped with a portable x-ray set [9,16].

Dental backup in the Army of Great Britain

British Army has a system called Defense Medical Services (DMS). Its jurisdiction covers all the military health service in different types of forces (Navy, Land Forces, Aviation, and Special Forces). A part of the DMS is Defense Dental Services (DDS). 1.085 people serve in this unit, namely, dentists-officers, dental hygienists, dental assistants, technicians, and nurses. The majority of procedures are carried out in the dental centers inside and outside the country, especially created for that purpose. The main headquarters of the DDS and the entire DMS

are in Staffordshire and they cover 12 smaller medical districts located in Great Britain, and also Germany and Cyprus. Defense Dental Services also conduct activities on military missions outside home units. The purpose of the activities of those dental offices on missions is to ensure an operational stomatognathic system for the soldiers who serve in the theater of war operations [17]. The forces stationed outside the country borders also have at their disposal outpatient services and hospitals located on warships, where dental offices also operate. Up until recently, British Army had three floating hospitals of this kind. They were located on the HMS (Her Majesty's Ship) Ark Royal (currently withdrawn from service), RFA (Royal Fleet Auxiliary) Argus, and HMS Ocean. Thanks to them, British Army is able to guarantee dental care for soldiers while the forces are moving in the area of war operations [18].

To become an officer-dentist in the British Army, one must graduate from a civilian dental higher education institution or be a dentistry student on a military scholarship (the army covers the costs of the entire process of education). Then, after completing the third year of studies, the candidates go through a verification process before the committee from the Royal Army Dental Corps. This classification process allows to participate in an 11-week basic training program, Professionally Qualified Officers' Commissioning Course in the Royal Military Academy, in the town of Sandhurst. This course familiarizes the cadets with basic expressions and commands used in the army and military drill and rules to follow while handling weapons. The training is very difficult and exhausting for the cadets. Once having successfully completed the above-mentioned training and obtaining the promotion for the rank of a lieutenant, the students are qualified to participate in the Army Medical Services Entry Officers Course (EOC), where they study the specifics of working as a military dentist. After having completed this part of the training, the officers receive a promotion for the rank of a captain and begin their service in a dental office in a military unit. It is then that the soldier's training process is over. The officer's salary in the rank of a captain is £ 67.000 a year. It depends, however, on the function performed in the military structures and it can be much higher than that [19].

Dental backup in the Army of Czech Republic

Armed forces of Czech Republic have a very extensive system of health care in place. Both soldiers and recruits are treated in military hospitals located all over the country. Principal military hospitals include those located in Bechyne, Hradec Kralove, Prague, Prostějov, Práslavica, Vyskov, Zatec, Brno and Olomouc. Their activity is

financed from the resources provided by the Ministry of Defense and the general health insurance fund. Nevertheless, those hospitals also provide assistance to civilians, which constitutes almost 90% of all the services. Dental clinics operate at those hospitals. The main clinical hospital is the one located in Prague. Its task is to train future professionals of military medicine [20]. Currently, 17 dentists, including 9 officers, are employed for the needs of the army. The professional training of a dentist last 5 years.

Expeditionary forces, on the other hand, have two field hospitals at their disposal. Those medical units are equipped with tents and containers that can be transported to any region of the world. Their structure also includes a mobile dental practice. For evacuation processes, road armored transporters and aircraft (Casa C-295 and Airbus A-319 CJ) are used. It is very helpful given the involvement of the Czech Army in the military conflicts in the world within the NATO and UN peace missions [20].

Conclusions

The above-described examples demonstrate differences in the armed forces of different countries. However, every army that wants to be a force to be reckoned with on the international arena must have medical units in its structure. A characteristic that medical services in different countries share is its universality. Apart from medical activity, they also have its scientific and didactic structures. Some countries involved in operations outside their borders have their subdivisions adapted in such a way that they can provide assistance on international missions. Another difference is the manner in which medical care staff is obtained for the army. Some countries do it on the basis of civilian physicians who sign contracts with the army after completing their medical training. Others, on the other hand, train their own physicians in military higher education institutions. Despite numerous shortcomings and deficiencies, the Polish Army does not lag behind other countries' military forces. However, besides having adequate structures and subdivisions, it lacks personnel to man the structures. Additional problem for every soldier serving in a line unit is lack of operational outpatient services or a dental clinic at the site where he/she is stationed. For example, in the Lodz voivodship, there is no military hospital or clinic that can provide services for the army. This is why soldiers must seek assistance in private dental practices at their own expense or use public health-care system outside the walls of their military unit. In the 21st century, a sad reflection comes to mind – medicine goes further and further away from the soldier serving on the first line.

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