

## **HAZARD ANALYSIS CRITICAL CONTROL POINT (HACCP) – THE METHOD OF CRITICAL POINTS USED TO ASSESSMENT THE THREAT OF INFECTING SOLDIERS WITH THE MYCOSIS IN A MILITARY UNIT**

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In the course of past years one notes a growth of infections, with yeast like fungi of mucous membrane, to the skin of hand and feet (3, 8). In epidemiological research in Poland, yeast like fungi accounted for 27.8–36.8% of the composition of the flora of the mycosis concerning human population.

The factors disposing the occurrence of mycosis among people are numerous and various. One can

divide them to congenital, acquired and environmental factors.

Environmental factors are: unfavourable climate (hot and moist), places of residence with large congestion (boarding-schools, hotels, barracks), open public baths and health offices, low hygienic status of accommodation places, inadequate clothing and footwear made of synthetic fabric, as well as

performing a profession, which is predestining to be infected with mycosis (miners, farmers, dentals, soldiers, yarn and food industry workers) (2).

A soldier comes together with all the factors that are favourable to the occurrence of mycosis during a military service. In the period of growth and early matureness, mycosis can encompass up to 20% of the population. Therefore one can expect, that 20% of the enlisted into the army is ill with mycosis at the moment of being enlisted. Research conducted at CKP WAM showed, that among 150 randomly selected soldiers, 26 (17%) showed no subjective symptoms of mycosis and the presence of fungi could be seen in 51 cases (9). Farmings carried out on the Mycoline sets allowed to identify dermatofits in 56 cases (37%). On this basis, one can assume that the soldiers performing compulsory military service, are a group of high risk, in terms of getting infected with mycosis.

It is worth noticing, that the diagnostic of foot mycosis in military units is very various depending on the method preferred by the particular doctor. Some skin changes as for example: the exuviations, the maceration, the hidrosis and other are often recognized as mycosis. Mycosis reported in a military unit in most of the cases is not confirmed by laboratory examinations. From here probably results a large difference between the number of noted mycosis in army, 3709 fallings in 2002, and with the number of fallings recorded in all Poland, 1889 fallings in 2002 (4, 5).

The above circumstances and the analysis of the course of military service, induced authors to conduct a system identification and evaluation of hazards concerned with enlisting into the army, training process and the period of performing military service. While performing this research an obvious analogy with the system of surveillance over food production with the critical points method (HACCP)(1) occurred.

Proposed system of surveillance over the risk of becoming infected with mycosis would constitute of the following stages:

1. The identification of threats.
2. The qualification of critical points of the inspection.
3. Assessment criteria binding on the point of inspection.
4. The arrangement of the monitoring system.
5. Performing of the correcting actions.
6. The verification of the process.
7. Managing the documentation.

### **Stage 1. The identification of threats.**

We can distinguish three types of mycosis:

superficial, subcutaneous and systemic (6). A soldier can become infected with each of them while performing a military service. The identification of threats should define the types of mycosis, that will be included by monitoring and prophylaxis by the medical services of a military unit. It should be stated, what pantogens and as a result of this, what type of mycosis can be expected on the specific post. The description of identification of threats should encompass both single and repeating events, that a soldier have to deal with from the moment of enrolment, up to the moment of being released from military service and moved to the reserve. As a single event should be perceived eg. receiving of shoes, toothbrush, as a repeating events one should understand eg. every day's toilet, every week's shower and exchange of underwear. The identification of threats and it's description, give grounds to create a scheme of threats concerned with performing military service.

### **Stage 2. The qualification of critical points of the inspection.**

Sanitary and hygienic schema of performing military service, shows where the critical points of analysis, should be determined. The ones in which we can observe a potential threat and its elimination or reduction.

The key factor seems to be the medical point of being accepted to the army, where the recruit would undergo testing, to find out if he came to perform the military service infected or not. From observation of the hitherto existing procedure of acceptance to the military service it follows that no detailed examination in terms of mycosis is performed. The acceptance depends on the verdict of the doctor's committee concerning recruits, where mycosis happens to be omitted. Only in the track of military service, soldier reports illness, which is qualified as acquired during service.

The next checkpoints should be:

- The uniform issuing point (especially shoes),
- The point of vaccination,
- The bath, the toilets, showers,
- Beds, beddings, underwear,
- The doctor's and dental offices,
- The barber,
- The kitchen,
- The guardhouse and restrooms for the soldiers on duty,
- The gym and its' subsidiaries (showers, cloak-rooms),
- The unit's uniform warehouse,

- Others resulting from the specific of the different types of forces (navy, tank units, air force etc.).

On every checkpoint one should answer the question, what will be the consequences of not keeping the basic sanitary and hygienic regulations, and what risk of becoming infected with mycosis results from this. Only then will we receive the answer whether the selected point is critical or not.

### **Stage 3. Assessment criteria binding on the point of inspection.**

A clear criteria of assessment should be defined regarding every point. One should strive, that the evaluation is not dependant upon the controller. Eg. results of breeding sample smear test taken at the critical point. It can be as well a strict mark like 0 or 1, qualifying for 'no' or 'yes' eg. does the dentist use disposable gloves, does the barber use disposable razor or not etc.

### **Stage 4. The arrangement of the monitoring system.**

Activities on all checkpoints should determine a internally coherent system of monitoring. Such a system should contain results of measurement, examinations and checks conducted on particular checkpoint, as to show the current epidemiological situation and the risk of infection. In the system of monitoring one should determine the methods, the frequency (continuous analysis, periodical analysis), people responsible for conducting the research and managing records.

### **Stage 5. Performing of the correcting actions.**

One should determine the period (eg. quarterly) after which the analysis of getting infected with mycosis is done. A growing number of infection can suggest a 'hole' in the system or a hot-spot that haven't been qualified as a critical point. A steady number of infections can suggest what type of preventive actions should be undertaken in order to decrease this number.

### **Stage 6. The verification of the process.**

The seizure of possibly large number of critical points into the system of monitoring the risk of getting infected with mycosis in a military unit, does not guarantee a full success of total elimination of

infections among the soldiers performing military service. But a continuous verification eg. every year, can effect in detecting the formerly omitted points and including them into the system and new phenomenon eg. new fabrics, new types of shoes will be considered in the system of antifungal prophylaxis.

### **Stage 7. Managing the documentation.**

Managing the documentation is a fundamental element of the system. It allows not only to be well informed on the current situation, but also to improve and modify the system. The records can be a valuable source of information for checking services and military health inspections. The records should contain: definitions of all critical points, results of measurements and examinations executed on these points as well as remarks concerning functioning of these points, descriptions of supervisory actions and modifications not forgetting the list of irregularities.

The presented outline of the method of critical points Hazard Analysis Critical Control Point (HACCP) for assesment of infecting soldiers with mycosis in a military unit can contribute to:

- diminishing the number of infections with mycosis in the army,
- making a more accurate diagnosis in the diagnostics of mycosis by the regiment doctor,
- decrease of costs of treatment,
- improvement of the general condition of hygiene in a military unit,
- improvement of the readiness to take actions due to lowering of absence,
- improvement of physical efficiency,
- reliable investigation of claims for indemnity due to an illness acquired in the army.

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