DISINFECTION EQUIPMENT IN THE CZECH ARMY

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Disinfection involves a whole range of measures for achieving the destruction of microorganisms by means of physical, chemical or combined procedures. Its aim is to interrupt the route of spread from a source to a susceptible individual. Disinfection is conducted as a part of the epidemic regimen in every health service establishment, including a military one. Methods and disinfectants of various chemical compositions, concentrations and exposures are assigned for that purpose. We need to differentiate between disinfection in military medical establishments and disinfection measures carried out in the field. While the same criteria for selection and the use of disinfectants apply in military medical establishments as in civilian practice, the situation is different in field conditions.

Disinfection measures in the units under field conditions are conducted with the aim of destroying infectious disease pathogens or their vital carriers in the environment. This means that among the disinfection measures in the field are also disinfection measures that aim to destroy annoying and infection transmitting insects and ticks, and rodent control measures aiming to destroy troublesome and infection-transmitting rodents.

Disinfection in the Czech Army under field conditions is divided into focal and protective disinfection. Protective disinfection aims to prevent the occurrence or spread of infectious diseases in localities and establishments collectively used by troops or used jointly and en masse by troops and civilians. Focal disinfection is carried out under field conditions in connection with the occurrence of epidemic foci both in a natural way and as a possible effect of biological warfare agents used by the enemy. It is therefore an inseparable part of antiepidemic work in the focus of infection. Focal disinfection is divided into continuous disinfection and terminal disinfection.

Continuous disinfection aims to prevent the spread of infection in the epidemic focus and outside that focus. It concerns the disinfection of secretions and faeces and of things infected by them. It is carried out in medical facilities and therapeutical establishments where there are infective patients and persons suspected of infectious diseases.

Terminal disinfection is conducted after evacuation, completion of the disinfection, or after the death of the infective patient. Its aim is to destroy pathogens in the epidemic focus by disinfection of all objects that were in contact with patient suffering from communicable disease.

Physical methods and chemical means are used for an efficient disinfection in the field. The bactericidal effect of high temperature (fire, boiling water and steam) is most frequently used for an efficient disinfection in the field. Fire represents an easily accessible and efficient means of disinfection under field conditions. Incineration is carried out in an open space or in improvised incinerator furnaces. Hot water is used for rinsing various things, and dishes and bedclothes and all the things that are not damaged by boiling are boiled thoroughly. The minimum time for boiling is 30 minutes, the boiling

time increases to 90 minutes when there is a suspicion of contamination with highly resistant pathogens or spores.

The best disinfection effect - under a high temperature and using saturated steam under high-pressure- is achieved by several devices in the Czech Army. In practice big chamber and bath disinfection technology is available. This technology uses the disinfection effect of saturated steam and formaldehyde under normal pressure or when peracetic acid is sprayed into the chambers in a vacuum. The classic examples of this type of devices are: PDP-2, a mobile two-chamber disinfection apparatus, and ZSD, a sterilization-distillation device.

One can characterise PDP-2 as a mobile block unit intended for the disinfection and disinsection of clothes, bedclothes, woollen materials and leatherware. Apart from steam disinfection it is also possible in that device to perform a steam-formaldehyde disinfection. Using peracetic acid it is possible to disinfect in the chambers rubber products, protective masks, individual NBC protective equipments, overshoes, gloves, and other products of rubber and plastics while cold. In case of emergency it is possible to use this device for sterilization. Furthermore, PDP-2 provides medical NBC decontamination of persons and material using overpressure water. Under field conditions it also serves as a bathing set and thus provides hygienic personnel decontamination. Another large-scale apparatus ZSD - a sterilization-distillation device comprises PDP-1 and an attachment. It fulfils all the same functions as PDP-2, but its disinfection and bathing capacity is 50 % lower. In addition, ZSD produces distilled water in a distillation apparatus, sterilizes, and it also enables us to prepare sterile or apyrogenic water.

Furthermore, a small-scale device is also used in the field conditions of the Czech Army. It is represented by MKS, a small bathing set which is a portable single-purpose device for hygienic personnel decontamination. Further, there is a portable field autoclave Aut-41, designed for sterilization of surgical dressings, mouth-screens, gloves, suture utensils, instrumentation, and solutions in a saturated steam under overpressure, and under a temperature of 134 °C. We may also include in small-scale instrument technology MADES, a field portable distillation apparatus - designed for preparation of distilled and apyrogenic water.

For chemical disinfection under field conditions in the Czech Army we use selected means with a wide spectrum of action, which are contained in the field medical sets. These are chlorine preparations, disinfectants containing iodine, active oxygen, derivates of phenol, quaternary ammonium compounds, and other active substances. The field sets are designed for disinfection under emergency situations. For example, in the V-5 set germicidal there are the preparations: Dikonit, Jodonal B, Lyzol, Persteril. As a surface-active agent a detergent is used in the set. The set is designed mainly for surface disinfection, Persteril in the form of aerosol also for a spatial disinfection. The field medical sets have a service life of 20 years and after this period they are updated.

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