

The application of Individual Prophylactic and Therapeutic Kit by soldiers of the Polish military contingents

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Summary:

Due to the new experiences gained during stabilisation missions in Iraq and Afghanistan, new medical kits have been introduced to the Polish Army such as: a paramedic rucksack, a medic rucksack, Individual Prophylactic and Therapeutic Kit for a soldier and an observer, and individual medical package. The paper describes the application of Individual Prophylactic and Therapeutic Kit in the contemporary battle field. Various parts of the rucksack equipment have been depicted, illustrated and presented taking into account both its composition and the specific use of its components. The proposed kit involves providing first aid to one person (maximum two) by a casual rescuer.

Key words: first aid, Individual Prophylactic and Therapeutic Kit, first aid kit, military rescue, tactical rescue, rescuer training.

The concept of first aid means a fast organized action conducted by people or a person from the vicinity of the victim, who has sustained an unfortunate accident. Efficient and competent performance by trained medical personnel during first aid on the contemporary battlefield is very often decisive for the outcome of further treatment – it often determines the life of the victim. First aid is usually granted at the accident site and these first steps to prevent loss of life and health in the area of combat operations are granted by the soldiers involved in the Polish military contingents in the world. Although providing first aid is possible based on a complete improvisation with fortuitously available resources, but prophylactic preparation of even minimal emergency equipment (first aid kit) may facilitate the operation and greatly improve its effectiveness.

The first criterion for selection of rescue equipment are our needs, from car kits to sophisticated specialist rescue equipment.

The second criterion is the preparation of a rescuer. We supply ourselves in the equipment and measures that can be safely used. Specialized equipment such as resuscitation equipment, drugs, or evacuation equipment require additional (usually complicated) training. Therefore, in the basic first-aid kit it is particularly risky to place drugs or specialist equipment. The package of the first-aid kit should satisfy the conditions of mechanical resistance, clear purpose, convenience (portability). Traditional storing of the first-aid kit in a cardboard box, plastic bag or in a locked office closet is excluded. There should always be the possibility of quick delivery of the first-aid kit to the scene instead of moving the victim to the place where it is stored. In case of the factory first-aid kit it is better to have several easily accessible, simple dressing kits (prominently displayed in the 'critical' points of the building) than one large specialized set locked in the ambulatory or a storage.

A model basic first-aid kit should contain the following dressing materials and rescue equipment:

- instruction for first aid in case of emergency,
- torch or a disposable chemical flashlight,
- scissors of a knife,
- sterile gauze dressing (gauze compresses) – 4 packs,
- hydrogel burn dressing (WaterJel®) – 2 packs, 20 x 20 cm
- elastic bandage – 4 packs,
- scarf bandage – 2 pcs,
- codofix (elastic mesh dressing) – 2-3 sizes,
- safety pin – 4 pcs
- isolaide resuscitation device,
- rubber gloves – 3 pairs,
- thermal insulation foil silver-gold (foil NRC) 1 – 2 pieces,
- 2 rolls of plain plaster,
- plasters with dressing (several sizes).

Proposed kit assumes providing first aid to one person (maximum two) by a casual rescuer. Anticipating the eventual possibility of major accidents and losses, the number of the various content elements should be increased or preferably place there several sets.

The guidelines of first aid should be as simplified as possible (rather pictures than text) so that a casual rescuer without specialist training could safely use the content without making further damage to the victim of an accident. It should also contain a reminder of emergency telephone numbers, ambulance, fire brigade, etc., according to the needs and circumstances.

A torch can be used to call help and be essential in case of evacuation of endangered areas. An alternative to the usual torch is a disposable chemical emergency flashlight ('Safety Light'). Quite often, in order to provide assistance, it will be necessary to cut the car seat belts, clothing of the injured person, or dressings using a knife or scissors. Scissors with rounded ends (so-called dressing scissors) are convenient and safe checked for example by cutting a cardboard or a nylon tape.

The first layer of each dressing is usually constituted by a gauze dressing (not a cotton wool, lignin, toilet paper, oakum, etc.). A pack of sterilized gauze dressing is usually referred to as the 'compress gas'. An elastic bandage would be the best to attach the gauze to the wound (a bandage rather not gauze, which is usually torn during dressing). In addition, a roll of a bandage could be a roll pressing the pressure dressing, whereas two rolls may stabilize and seal a possible "foreign body" in the wound.

A scarf bandage (made of cotton canvas, interlinings, or foil) can be used for covering large injured surfaces, burns, attaching dressings on the head, temporary 'slings'.

Elastic mesh dressings of various widths (Codofix®, Elastofix®) are a convenient novelty among dressings. They can be used to attach dressings as elastic, mesh sleeve (stockings).

According to the standard adopted by the National Rescue-Firefighting System, hydrogel dressings should be a dressing of choice for all burns. According to current data, this dressing significantly reduces pain and complications.

Safety pins are used for temporary slings made of jacket tails, to pin a slit cloth or the ends of a dressing. Contrary to previous military guidelines safety pins are no longer used to pin wounds or to pin a tongue to the chin of the victim in order to restore the patency of the respiratory tract.

Usual sticking plaster is used for sealing and attaching a dressing or to secure a wound. An ordinary, linen one instead of paper and foil plasters. In chemical rescue a plaster may be used to seal the tears of evacuation overalls.

Small plasters are sufficient for minor scratches, cuts or grazes. Their application is more for hygienic and aesthetic matters than actual rescue in emergency cases. Simultaneously, it is the most commonly used item of first-aid kits in the plants.

Providing first aid at body damage and injuries is always associated with the risk of contact with blood. For protection against the infection it is advised to use rubber protective gloves (not necessarily a sterile pair, but rather not those made of foil, because they tear during putting them on). According to the recommendations for the National Rescue-Firefighting System, nitrile rubber gloves have optimal parameters.

Disposable masks for resuscitation (isolaide resuscitation device or Resusci Face Shield®) were introduced in a similar purpose as the gloves. It is a piece of foil with plastic mouthpiece and valve or filter that allows a possible substitute resuscitation using mouth-to-mouth technique.

The last essential item found in the first-aid kit is a thermal foil (NRC). The injured are often exposed to considerable heat loss, while waiting for medical assistance and transport to the hospital. A screen of silver and gold foil NRC, which reflects about 80% of infrared radiation and is windproof and waterproof, can provide effective protection against heat loss. The injured should be wrapped with the silver side of the foil. A typical foil (220 x 160 cm) is usually sufficient to secure an adult. NRC foil can also serve as a protection against overheating – in such case its silver side should be turned to the sun so that it would constitute a mirror reflecting the sunlight.

The proposed first-aid kit does not contain cotton wool, a piece of rubber (stasis, tourniquet), medicines and disinfectants. As it was previously mentioned, cotton wool should not be used to dress wounds, as it is extremely difficult to remove the its fibres during change of a dressing and it may hinder the healing of wounds or cause purulence. Cotton wool can only be a possible lining for stiffening dressings in case of fractures. A wide tape like a belt or a tie (reduced risk of local tissue damage) is suggested to temporarily staunch bleeding from limbs wounds rather than narrow rubber tube (stasis). Tourniquets are generally used in case of mass accidents or trauma amputation.

It is not recommended to place disinfectants in the first-aid kit. Open wounds, burns should not be disinfected (recommendation does not apply to the specific field conditions). The reason is that if someone suggested with the old way of dealing with burns will pour a second degree burn with e.g. salicylic alcohol, he will cause a series of complications including severe pain shock, additional tissue burn with alcohol, severity of the inflammation, damage to the nerve endings by the alcohol and neurotoxic salicylic acid. Iodine i.e. alcohol iodine solution in potassium iodide apart from the effects of alcohol causes uncontrolled absorption of iodine into the body. Gentian would act in the same way as it is also an alcohol solution. Moreover, it should be noted that there are people allergic to iodine or gentian. Dyes also make the surgical assessment of the injury impossible.

Hydrogen peroxide solution is too unstable as for the purposes of first-aid kit in the factory, and its possible preparation of perhydrol carries a risk of preparing to concentrated caustic solution.

The kit does not contain other agents such as rivanole and potassium permanganate, requiring troublesome dissolution before use.

Drugs are deliberately not included in the first-aid kit. Drugs typically placed in the kit are usually drugs requiring oral administration (swallowing), so the pharmacological effect can be expected after some time from the ingestion – in typical conditions after 20-40 minutes. Usually, we do not have such a luxury during first aid. Moreover, the injured in shock has relatively ischemic gastrointestinal tract what greatly hinders the absorption of the drug and significantly increases the risk of choking, nausea and vomiting, and irritation of the gastric mucosa. In injuries it would be desirable to administer analgesics, however the pain medications available in pharmacies without the prescription are too weak or are in the form impeding administration (oral - excluded, suppositories - controversial in the application). Moreover, leaving any drugs in

generally accessible first aid kit factory creates the risk of abuse and accidental poisonings (which is not included in the group insurance contract). The person placing the first aid kit in the workplace is responsible for their content. Placing medical carbon for treatment in case of poisonings can be taken



Figure 1: A) The bag of Individual Prophylactic and Therapeutic Kit. Model Soldier. B) The bag of Individual Prophylactic and Therapeutic Kit with equipment. Model: PKW Soldier Asia/Summer

DESCRIPTION: A bag made of Condura material intended for storing and transporting of drugs and medical materials. The inside is divided in the way enabling generic placement of the equipment.

into consideration, because even though requiring large quantities. it is safe, passive medication.

First-aid kit should contain self-expanding bag for substitute breathing (Ambu, Laerdal, VMB), military individual dressings, eye rinsing glass, a collar for stabilisation of the cervical spine (may be disposable) and evacuation sheet or a rescue board.

Individual Prophylactic and Therapeutic Kit, introduced in 2006, serves for providing first aid to the soldiers usually in form of self-aid.

The individual prophylactic and therapeutic kit for soldiers leaving to the area of combat operations, particularly in the region of Asia and Africa consists e.g. of miniature suction pump for removing ticks and venom of other venomous animals. It is related to as Aspivenin, Extractor or Anti-tick.

The device acts as a suction pump. It is used for suction (aspiration) of the venom after bites of insects (mosquitoes, wasps, bees, hornets, etc.), vipers and scorpions. The device is also used to remove ticks from the human body. Vacuum created at the end of the pump causes 'sucking' a tick off the body without leaving any of its parts. It is perfect for the needs of the first aid. In more complex cases, consultation with a physician is required. Due to the very tight, the rubber seal, the efficiency of the pump is guaranteed for a very long time.

Directions for use:

- 1) Apply as soon as possible after the bite or noticing a tick on the body.
- 2) To prepare the device for use, press the rubber plunger until it stops.
- 3) Place the ending of the device to the body to the area of the introduction of venom (where the tick has clung). A bite should be located in the central part of the position of the ending.
- 4) Press the device against the body and thus keeping the pressure gradually, slowly pull the plunger to the correct position.
- 5) Hold in this position for 10-15 minutes. Repeat the procedure if necessary.
- 6) Disinfect the bite site with disinfectants.
- 7) Wash the ending of the device with soap and water and then disinfect with a disinfectant

Contraindications:

Do not use the device on wounded skin around the eyes and the external genital organs. The device should not be applied in children below 3.

One-minute use of the device may prevent serious consequences of bites by:

- hornets,
- wasps,

- bees,
- mosquitoes,
- horseflies,
- ants,
- blackflies,
- indigenous spiders.



Figure 2: A pump removing ticks and venom. Model: Aspivenin.

DESCRIPTION: ASPIVENIN® produced by the French company ASPIR® is a miniature suction pump generating negative pressure of 0.75 At and thus non-invasively and painlessly removes all the venoms and toxins. Regardless of its basic function of sucking toxins, ASPIVENIN® produces an additional effect i.e. generated negative pressure stops the blood circulation in the local net of capillaries and prevents the further spread of the toxins in the body. This device, thus, serves as a tourniquet without causing adverse effects associated with its long-term use while waiting for medical assistance in more severe cases.

Two-minute use sucks off the entire tick. Three-minute use prevents the effects of bites of:

- vipers
- spiders (e.g. Southern black widow, tarantula),
- venomous fish (e.g. stingray, Trachinus)
- scorpions.

Another component of the individual prophylactic and therapeutic kit is a gel used to disinfect the skin and mucous membranes as well as in treatment of infected wounds, carbuncles, abscesses, mixed skin inflammations. The gel is called Rivel.



Figure 3: RIVEL 0,5% gel 30g.

DESCRIPTION: Rivel gel is used for skin and mucous membranes disinfection and for the treatment of infected wounds, carbuncles, abscesses, mixed skin inflammations (bacterial and mycotic)

Action: RIVEL is a convenient, gel with rivanol mainly used in the treatment of skin inflammations and wounds. Active ingredient of the preparation acts on the skin surface and also penetrates deeper, acting as disinfectant and preventing infectious agents from penetrating into the wound. As a result, redness and swelling subsides, a sensation of warmth or pain disappears, the inflammation is reduced and the wound heals faster. The preparation does not irritate the skin and mucous membranes.

Indications: disinfecting of skin and mucous membranes, disinfecting of superficial skin damages (lacerations, harms, skin abrasions), disinfecting of wounds, furuncles, abscesses, mixed skin inflammations (bacterial and mycotic), on insects bites.

Contraindications: diagnosed hypersensitivity to ethacridine lactate, acridine derivatives or other auxiliary ingredients.

Dosage: Apply a thin layer of gel on the affected skin or mucous membrane 2-3 times a day (more often if necessary). The gel can also be used under the dressing.

Composition: Active ingredient 1 g of gel contains 5 mg of ethacridine lactate (Rivanolum 0.5%). The other ingredients: Macrogoli 7 glyceroli cocoas, triethanolamine, Eumulgin B3, Nipaguard MPA, polyacrylic acid, purified water.

Malarone

Malarone as a very important drug included in the individual prophylactic and therapeutic kit

It contains two active ingredients, atovaquone and proguanil hydrochloride, having biocidal effect on the agamonts of *Plasmodium falciparum* parasite present in the blood and liver.

Malarone is used for:

- prevention of malaria caused by *Plasmodium falciparum*
- treatment of acute, uncomplicated malaria caused by *Plasmodium falciparum*.

Because Malarone is effective against infections caused by the strains of *Plasmodium falciparum* susceptible and resistant to other drugs, it is recommended for the prevention and treatment of malaria caused by *Plasmodium falciparum* strains that may be resistant to other antimalarials.

Composition: each pill of Malarone contains 250 mg of atovaquone and 100 mg of proguanil hydrochloride; other ingredients: poloxamer 188, microcrystalline cellulose, hydroxypropyl cellulose, povidone K30, sodium starch glycollate (Type A), magnesium stearate, hypromellose, titanium dioxide (E171), iron oxide red (E172), macrogol 400 and polyethylene glycol 8000.

Possible side effects: in the doses used for malaria prevention and treatment, possible adverse reactions caused by Malarone are usually mild and transient. Side effects that may be caused by Malarone and various ingredients include: abdominal pain and diarrhoea, headache, anorexia, nausea and vomiting, coughing.

- 1) Vascular and lymphatic system: anaemia, neutropenia (reduced numbers of white blood cells), pancytopenia (a decrease in all types of blood cells) in patients with severe renal failure.
- 2) Endocrine system and metabolism: anorexia, hyponatraemia (low levels of sodium in the plasma).
- 3) Digestive system: abdominal pains, nausea, vomiting, diarrhoea, gastric disorders, oral mucosa inflammation.

Dosage and further information: daily dose of Malarone should be taken at the same time.

To prevent malaria: Preventive administration of Malarone should begin 24 or 48 hours before coming to the endemic area with the incidence of malaria. Treatment should be continued throughout the period of residence in an endemic area, but for no longer than 28 days. Administration should continue for 7 days after leaving the endemic area. The recommended dosage of Malarone is one tablet once a day.

To treat malaria: The usual dose for adults is 4 tablets once a day for 3 days. For children the dose depends on their bodyweight:

- 11-20 kg - 1 tablet once a day for 3 days
- 21-30 kg - 2 tablets once a day for 3 days
- 31-40 kg - 3 tablets once a day for 3 days
- over 40 kg - dose as for adults.

Package: 12 tablets of Malarone

Contraindications: hypersensitivity to atovaquone or proguanil hydrochloride, or any other auxiliary ingredient and in the prevention of malaria caused by *P. falciparum* in patients with severe renal failure.

Loperamide

Loperamide is another drug in the individual prophylactic and therapeutic kit. It is an organic chemical compound, opioid antidiarrhoeal medication. It is one of the opioid substances, but it does not pass completely through the blood brain barrier, and thus there is no typical opioid effects on the nervous system what allowed its free use in medicine without the consequences of addiction. In medicine, it is the most widely distributed under the trade name - Laremid.

INDICATIONS: Symptomatic treatment of acute and chronic diarrhoea of various origins (with the exception of acute bacterial diarrhoea).

Dosage: Oral. Adults and children over 12 years of age: acute diarrhoea - two tablets initially, followed by one tablet after each loose bowel movement., the maximum dose is 8 tablets a day, chronic diarrhoea



Figure 4: LOPERAMID WZF 2mg pills, a'30

DESCRIPTION: Strong acting antidiarrhoeal medication. The effect of a reduction in the incidence and number of bowel movements. The effect is maintained for approximately 24 hours. Medical use: in the symptomatic treatment of acute and chronic diarrhoea occurring in functional disorders or inflammatory bowel disease, in patients with external fistula of the ileum (ileostomy) after colectomies or extensive resection of intestines to reduce the volume of excretion.

- initially 1 tablet 2 times a day, increase the dose to 4 tablets, if necessary (up to 6 tablets a day). In chronic diarrhoea loperamide should not be used longer than 10 days. Children aged 6 to 12: 1 tablet after each abnormal bowel movement (Do not administer more than 2 tablets in children aged up to 8 and 3 tablets in children aged below 10 in any 24 hour period). This medicine is not recommended for children under 6 years old. While the use of loperamide adequate amounts of water and mineral salts should be taken. In the case of no improvement within 48 hours, discontinue treatment and contact a physician. Familiarize yourself with the properties of the medicine described in the leaflet before use. Before using this medicine, check the expiry date stated on the label. Do not use after expiry date. Keep the medication in a tightly closed container, out of reach and sight of children and as required by the manufacturer.

Possible side effects: skin rash, abdominal pains, flatulencies, nausea and vomiting, constipation, drowsiness, dizziness, dry mouth, loss of appetite. Side effects may include tiredness, dizziness or drowsiness. Therefore, it is advisable to exercise caution when driving or operating machinery. When a person is allergic to loperamide or to other ingredients when a person takes opioid analgesics, or if you are or think you are pregnant and when breastfeeding preparation should not be used during pregnancy unless your doctor decides otherwise. It should be used with caution in nursing mothers.

Panko

The individual prophylactic and therapeutic kit consists also of preparation Panko, which is an effective preparation against bites of mosquitoes, ticks and many other insects including blackflies. It ensures 8-hour protection. Application of this preparation consists of the exact application of the preparation to the bare body parts and clothing (except for leather clothing and synthetic materials). Apply indirectly on the face and neck – first spray hand, and then gently spread.

Fig. 7



Figure 5: Panko – Spray against mosquitoes and ticks, 75ml.

DESCRIPTION: it is an effective preparation against bites of mosquitoes, ticks and many other insects including blackflies. It effectively deters insects, soothes the bites and ensures 8-10 hour protection. Panko contains DEET – the most effective repellent.

Radiosun



Figure 6: RADIOSUN Sunburns cream; 100 ml tube.

DESCRIPTION: Radiosun is a soothing and calming cream with a complex action. It can be used in all types of burns: UV, thermal, and also in radiation-induced reaction of the skin after radiotherapy.

Its soothing and soothing action owes to unique composition formulation (Aqua, Olive oil, Myristal Myristate, Olive, Glycerin, Reynoutria japonica extract, panthenol, SQUALENE, Sylibum marianym Extract, Carbomer, Suttocide, Parfum Mentha).

The cream is efficient to use, easy to spread and leaves a soft protective layer on the skin. Very well absorbed. It soothes, softens skin burns occurring after exposure to UV and thermal burns, alleviates sensation of tension and itching of the skin, reduces heat and burning sensation, redness, soothes, smoothes and firms the skin. It effectively nourishes and lubricates the skin, neutralizes free radicals, and helps the skin barrier function.

Dermatological and application studies have not confirmed any irritating and allergenic action of the preparation. Moreover, Radiosun® is appreciated by specialists who recommend it to patients suffering from radiation-induced reaction of the skin after radiotherapy, because it soothes and calms the skin so that patients can feel comfortable. To obtain satisfactory results on the irritated skin, gently spread the cream several times a day.



Figure 7: MED. PLUS, UV protecting cream-emulsion 75 ml

DESCRIPTION: Cream provides effective, high protection of the skin of each type, prevents sunburn, SPF 30UVA + UVB.



Figure 8: Dermaplast Universal. Sticking plaster.

DESCRIPTION: Hypoallergenic sticking plaster made of a waterproof foil protecting from dirt is ideal for fast and hygienic dressing of small wounds. Apply to dry and clean skin.

Individual package includes:

- 4 pcs Ø 22 mm;
- 6 x 9 mm x 38 mm;
- 8 x 16 mm x 57 mm;
- 12 pieces of 19 mm x 72 mm;
- 10 pieces of 25 mm x 72 mm.



Figure 9: Cha-ha 0,2% on-irritating antiseptic fluid; 75 ml.

DESCRIPTION: Diluted solution ready for use, intended for the general hygienic skin disinfection. The active ingredient in Cha-ha is chlorhexidine. Fluid has a broad spectrum and long duration of antibacterial activity. It does not contain alcohol and does not irritate and sting the skin, even when the skin is particularly sensitive with damaged epidermis, or injured. It does not dry skin, and stain. Preparation can be used as an antimicrobial agent, effective in disinfecting and cleansing the skin of hands and body. Designed for external use only.

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Figure 10: Anida, glycerine – aloe vera hand cream with vitamin A, E, 75 ml

DESCRIPTION: The content of aloe vera extract soothes irritations. Ideal moisturizer. It protects and regenerates skin exposed to the adverse external conditions.