

## **Health prevention in tropics. A safe journey to Ghana**

Van Damme-Ostapowicz K.<sup>1\*</sup>, Krajewska-Kułak E.<sup>1</sup>, Olszański R.<sup>2</sup>, Nahorski WL.<sup>3</sup>, Łukaszuk C.<sup>1</sup>, Lewko J.<sup>1</sup>, Sierakowska M.<sup>1</sup>

<sup>1</sup> Department of Integrated Medical Care, Medical University of Białystok, Poland

<sup>2</sup> Department of Maritime and Tropical Medicine, Military Medical Institute, Gdynia, Poland

<sup>3</sup> Interdisciplinary Institute of Marine and Tropical Medicine, Medical University of Gdańsk, Poland

### **ABSTRACT**

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A significant increase in the number of Polish citizens travelling abroad, including tropical areas, has been noted in recent years. However, tourists are often not interested in prophylaxis before their journey, they are not vaccinated properly or ask for advice at the clinic of tropical medicine. Therefore, concerns about the health of travellers from

temperate climatic zone heading for countries where the sanitary level is low, are justified.

The study presents the principles of good preparation for a journey, considering a trip to Ghana, West-Africa.

**Key words:** journey, prophylaxis, Ghana

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#### **\*Corresponding author:**

Department of Integrated Medical Care

Medical University of Białystok

7a M-Curie Skłodowskiej str

15-096 Białystok, Poland

Tel/Fax: +48 85/ 748 55 28

E-mail: katarzyna.ostapowicz@gmail.com (Katarzyna Van Damme-Ostapowicz)

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## **INTRODUCTION**

The numbers of Polish citizens travelling abroad, both as tourists and for professional reasons, are constantly growing [1, 2]. Polish people often travel to countries that were previously inaccessible for them. A journey to those regions is associated with a significant health-related risk, mostly due to contagious and parasitic diseases present there [3, 4]. Each journey, and especially a journey to tropical countries, should be carefully considered and planned. Thus, the risk associated with the journey may be reduced, although not eliminated [5]. The presented study may surely be a basis for planning a course of actions aimed at preparing tourists properly for a long journey, as well as preparing and making healthcare professionals aware of journey-related problems, which may prevent numerous diseases, disability, the hazardous spread of tropical diseases in society, and even a patient's death [6,7].

Principles of planning a holiday to countries in a different climatic zone

The following principles are the most important for a healthy and safe journey:

- information and doctor's advice
- vaccination and malaria prevention
- insurance
- first-aid kit
- relaxed journey [1].

The promotion of principles which should be applied while preparing for a journey and also the promotion of basic rules of conduct in countries located in a different climatic zone reduces the risk of neglecting some important issues before departure, and therefore, increases the chance of returning in the best of health:

- 1) collect information on your destination and the conditions of your stay
- 2) only drink water from bottles or cans, avoid drinks with ice
- 3) avoid food from uncertain sources
- 4) remember the golden rule: cook, fry, peel or forget about eating!
- 5) use repellents, mosquito nets and avoid night walks – insects are most active after sunset
- 6) use creams with a strong UV filter and wear a hat or a cap
- 7) search for information on the region and environment you are going to stay in, climatic conditions and the weather during a particular season of the year
- 8) collect information on the safety in the country of your destination
- 9) insure yourself
- 10) take obligatory and recommended vaccinations [1,8].

It is very important to remember that six weeks before the departure is the absolute deadline

for reporting to the clinic of tropical medicine. Reporting there later may make the application of vaccines impossible. Some vaccines require administration in several doses, one every several weeks [8, 9].

What tourists have to and should remember about:

- leave in good health; make sure you visit your dentist for a check up before a long journey
- take your blood group card with you
- wash carefully and disinfect any wounds, then cover them with a dressing
- in exceptional circumstances, several syringes and needles bought in a pharmacy shop may come in useful in case of a necessary injection (syringes and needles have to be attested for medical use)
- it is important to refuse any injections if it is possible to take the drug orally
- motion sickness
- exposure to excessive sun shine
- bites and stings: after being bitten by a venomous snake or arachnid, rapid medical attendance and therapy with an anti-venom serum is a priority. A dressing should be applied as quickly as possible. The dressing should be applied on the whole affected limb. The bandaged limb should be immobilised. A person who has been bitten should be calmed down and taken to hospital, as soon as possible.
- problems associated with air travel: otitis media and sinusitis; jet lag or the, so-called, time zone change syndrome, is a disorder of the physiological rhythm of the organism occurring in travellers who pass numerous time zones in a short period of time, for example flying on a long-distance flight; risk of deep vein thrombosis (elaborate a bit on this; it seems that low dose aspirin is not helpful; see guidelines of Am Chest Physicians); altitude sickness or acute mountain sickness; problems related to height anxiety
- contraception
- travelling with chronically ill persons: take all the required medication in quantities sufficient for the whole journey, and a small extra stock. Always carry information, including the names of drugs and their dosage with you. It is crucial to have an appropriate medical insurance that also covers costs of a possible hospitalization and/or repatriation. Physical exercises during a long flight are very important. Patients treated with insulin or oral drugs should have them readily accessible to hand, accessible in hand luggage, along with, so-called, "fast sugar" (sweets, chocolate) and "slow sugar" (sandwiches) in the case of hypo-glycaemia or delayed flights.

- travelling with children older than 5 years. When planning your journey it is the best to avoid countries burdened with a high risk of infectious diseases that cannot be prevented by vaccination in a paediatric patient. Those problems include malaria, but also other diseases for which vaccines exist, but cannot be used in certain age groups, for example, yellow fever and typhoid fever. Avoid the following seasons of the year: hot and monsoon, when high air humidity may be burdensome for a child, and when the risk of food infection is higher in the case of the consumption of locally prepared meals.
  - travelling during pregnancy: a normal pregnancy does not exclude a reasonably planned travel. Passenger flights are recognised as safe for a foetus and a healthy woman up to the 36<sup>th</sup> week of pregnancy. It should be taken into account that a pregnant tourist is less protected against contagious diseases occurring in certain parts of the world, and that is because of limitations in the use of vaccines and drugs during pregnancy. Before a journey, a pregnant woman should obtain appropriate health insurance. Malaria is a very serious problem – both for a mother and her unborn child. The disease sometimes leads to spontaneous abortion or premature delivery, as well to health-related complications in a newborn child. Severe forms of malaria, for which pregnant women are especially prone to, may be life threatening.
  - avoid contact with unrestrained dogs (domesticated), wild animals and animal carrion. If bitten by an animal, first wash the wound with soap and water, then disinfect. Contact a doctor to find out if a vaccination against rabies is necessary.
  - if several months after coming back home from a journey, you have a fever, diarrhoea, stomach ache, skin lesions or pruritus – remember – it may be associated with a journey. Inform your doctor that you have been on a journey in the tropics. Always consult your doctor if you had any risky sexual contacts, even if there are no visible symptoms [8, 10].
  - drugs used for common cold: lozenges, drugs reducing nasal mucosa edema – combined medications available over the counter
  - anti-allergic drugs: loratidine, cetirizine
  - anti-motion sickness drugs: dimenhydrinate
  - altitude sickness: acetazolamide
  - dermal creams: clotrimazole, aciclovir
  - antibiotics may be considered, such as azithromycin, doxycycline
  - dressing and disinfecting materials [1].
- Sources of risk during a journey

According to data published by the World Tourism Organisation (WTO), the number of travellers has doubled in the last decade [11]. People travel for professional reasons, but most of all, in search of attractive places to spend their holidays. Unfortunately, not everybody knows that countries of the hot climate area, where environmental conditions are significantly different from local ones, are burdened with a significant risk of tropical diseases [12]. The development of travel medicine is therefore, a natural consequence of the rapid increase in the numbers of travellers. The risk of becoming ill during a journey may differ and depends, among others, on:

- country of destination, region or area (coast, mountains, or cities only)
- type of journey and conditions of stay:
  - a tourist journey, a business trip, a visit to countrymen living abroad (family and friends)
  - a journey or stay in one particular place (such as a training course)
  - well organised tourist trip on well established routes, or a more demanding expedition to less known and populated areas, using public or local transport, staying overnight in local shelters.
- immigrants who have lived in Western Europe for some time and then travel to their country of origin, sometimes with their newborn babies, and are completely unprepared.

On arriving there, they shift immediately to relatively primitive conditions and often forget about the advice they had been provided with.

- duration of a stay
- experience:
  - previous experience, most importantly – acquired in tropics
  - experience with certain diseases, such as malaria, dysentery, etc. Previous experiences usually have a positive impact on an individual person as they improve their ability to deal with the diseases; sometimes, however, they may act negatively – increasing the sense of panic
- accompanying factors, such as the presence of obscure conditions, taking medicines or – in the case of women – pregnancy or planned pregnancy

### **First-aid kit**

The composition of the first-aid kit depends on the destination, (and on the fact if medications are available there), the length of planned stay and planned activities [9].

A universal kit should contain:

- anti-diarrhoea drugs: diosmectite (Smecta), loperamide, Gastrolit, tanninum albuminatum, antibiotic such as ciprofloxacin, rifaximin
- pain killers and antipyretics: paracetamol, metamizole, drotaverine

• patient's age (infants, children, elderly) [8,10].  
Preventing malaria in travellers

Providing information on malaria is an integral part of the prophylaxis of that disease. Each person travelling to malaria endemic areas should obtain reliable information on a constantly changing, but a genuine risk of contracting the disease, as well as on various preventive measures, which can be taken to avoid malaria [13].

Actions taken to prevent mosquito bites are the first important steps towards a significant reduction of the risk of infection. They constitute an significant means of prevention for people who are to stay in the disease endemic areas for a longer time. They are particularly recommended for children, pregnant women and elderly persons, because they are at a higher risk of a severe form of malaria [14]. In addition, in low-risk regions, actions taken to prevent mosquito bites are sometimes the only prophylactic measures available [14, 15].

Basic principles regarding malaria prophylaxis

- between sunset and sunrise take consequent actions to prevent mosquito bites – use mosquito nets and repellents
- no chemo-preventive agent is 100% effective, but by using them properly you can reduce the risk of malaria significantly
- the choice of an appropriate chemo-preventive agent depends on the country and region of destination
- in one country/region a type of chemoprophylaxis may differ depending on the season of the year, duration of stay and conditions of accommodation
- in the case of a fever developing three months after returning from tropics, malaria should be suspected. A malaria test should be made straight away
- malaria diagnosed early is completely curable and there is no threat of recurrence [10].

WHO recommends the ABCD strategy for travellers to the tropics (Be Aware of the risk, the incubation period, and the main symptoms, Avoid Being Bitten by mosquitoes, especially between dusk and dawn, Take antimalarial drugs (Chemoprophylaxis) to suppress infection when appropriate, Immediately seek Diagnosis and treatment if a fever develops one week or more after entering an area where there is a malaria risk, and up to three months after departure [16].

Water and food

In countries where hygienic standards are low, travellers should not drink tap water:

- choose bottled water, but only if bottles are sealed or opened in your presence (beware of re-capped soft drinks). Unfortunately, local bottled water is not always safe.
- sparkling drinks are usually safer, because they are more acidic

- if bottled water is unavailable, tea or coffee may be a good alternative (boiled water). Remember that in some countries cold, non-boiled water is added to hot tea or coffee.
- ice cubes should be made of safe, potable water. Therefore caution is recommended, even if ice is used in alcoholic drinks (some microbes can survive in low temperature and in alcohol)
- brushing teeth with tap water is associated with risk of infection
- swallowing water while swimming is also a significant source of infection [8,10].
- Water should always be boiled or disinfected. Clearly turbid water should be filtered before boiling and – of course – before disinfecting. Complete removal of microbes from water is almost impossible, but the risk of infection may be significantly reduced by taking the following steps:
  - bringing water to the boiling point is sufficiently safe
  - chemical disinfection with a drop of chlorine or chlorine tablets is a good solution. The effect may be additionally improved if turbid water is additionally filtered beforehand
  - silver-based tablets (silver salts) are not appropriate for water disinfection, and may be used only for the prevention of microbial growth in disinfected water
  - professional explorers are equipped with mobile water filters [8,10].

Furthermore, remember about the basic principle regarding safe eating in the tropics and in countries with low sanitary standards: cook, fry, peel or forget about eating.

The following should be avoided, if possible:

- raw vegetables and cold salads, and generally speaking – not cooked and not disinfected food
- non-pasteurised or non-boiled milk or meals based on non-boiled dairy products (ice-cream, coffee cream, pudding)
- meals based on raw or eggs which have not been boiled long enough
- raw or medium-raw fish, and seafood
- raw or medium-raw meat
- cooked meals that have been left for several hours at room temperature (eat only meals prepared at a high temperature and while hot)
- fruit that could not be peeled, fruit that look damaged
- "local specialties" that do not smell fresh; although infected food may also smell, look and taste normally
- ice-cream from street vendors (industrially prepared ice-cream, directly from a non-tampered package and straight from a freezer may be safe) [8].

Do not trust cold buffets, for they may be dangerous, especially if the food is rapidly cooled with ice and has contact with water from melted ice. Food should be covered, and restaurants and bars where there are a lot of flies, and other insects should be avoided because of risk of vector-borne diseases transmission [8, 9].

#### A safe journey to Ghana

Republic of Ghana – a country in West Africa, on the Atlantic Ocean, it is located between Togo, Burkina Faso and the Ivory Coast. The name of the country in Asante language means "King - Warrior." English is the official language, and Christianity is the dominant religion (68.8%). The poorly developed economy of the country is based on agriculture. The main crop is a monoculture of cocoa beans. Forestry is a significant branch of the country's economy, because 35% of the surface of Ghana is occupied by tropical forests [17, 18].

#### What to remember about

Vaccination against yellow fever is required before entering any country in West Africa. There are some significant sanitary and epidemiological threats: mainly various types of malaria, typhoid fever, yellow fever, meningococcal disease, Hepatitis A, Hepatitis B, AIDS and numerous tropical diseases. However, the level of risk may vary, depending on the place and conditions of stay. It is highly recommended to observe sanitary regulations during a stay. The availability of medical care is highly limited, and accessible only in big cities. The level of the medical service, which is very expensive, is very different from world-accepted standards. More serious medical procedures have to be performed in Europe. The cost of a visit to a physician is approx. 100 USD (including diagnostics, such as a blood malaria test) and a day in hospital costs 100–250 USD [19].

Obligatory and recommended vaccinations before a journey to Ghana

|                       |             |
|-----------------------|-------------|
| Yellow fever          | obligatory  |
| Hepatitis A           | recommended |
| Hepatitis B           | recommended |
| Diphtheria            | recommended |
| Tetanus               | recommended |
| Poliomyelitis         | recommended |
| Typhoid fever         | recommended |
| Meningococcal disease | recommended |

Source: Wojskowy Instytut Medyczny. Zakład Epidemiologii i Medycyny Tropikalnej. <http://medycynatropikalna.pl/kraj/ghana/16> [20].

Ghana is a relatively safe country for tourists. Free travel in the country is unrestrained. The threat of common crimes is present in large cities, mostly in some districts of Accra. Outside the cities, the threat is significantly lower.

However, lonely walks after dark and making acquaintances is highly discouraged [20]. Ghana is considered one of the most stable countries in West Africa. Political reforms are consequently, implemented, and the economy is being transformed there. Prices are usually much higher than in Europe, but they are lower in markets and in street vendors' stands, where the range of products is limited and their quality is usually low. A traveller should remember that haggling is almost compulsory [21-23].

## CONCLUSIONS

The presented paper is important due to the occurrence of problems associated with infectious diseases and tropical medicine also in Poland. Those problems are related to increasingly popular journeys of Polish citizens to tropical countries. The study is justified both from a scientific as well as from a practical point of view. It is widely known that the mobility of people between continents becomes increasingly commonplace, and journeys to tropical countries are more and more popular. Many Polish tourists travel to tropical countries every year, and a significant number of them has no knowledge about the health-related risks present in the country of their destination. This fact translates into a necessary attention to travel-related health problems and careful diagnoses made by physicians and nurses.

#### Conflicts of interest

We declare that we have no conflicts of interest.

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