

The practice of travel medicine in Europe

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Abstract

Europe, because of its geographical location, strategic position on trade routes, and colonial past, has a long history of caring for travellers' health. Within Europe, there is great diversity in the practice of travel medicine. Some countries have travel medicine societies and provisions for a periodic distribution of recommendations, but many countries have no national pre-travel guidelines and follow international recommendations such as those provided by the WHO. Providers of travel medicine include tropical medicine specialists, general practice nurses and physicians, specialist 'travel clinics', occupational physicians, and pharmacists. One of the core functions of the European Centre for Disease Prevention and Control-funded network of travel and tropical medicine professionals, EuroTravNet, is to document the *status quo* of travel medicine in Europe. A three-pronged approach is used, with a real-time online questionnaire, a structured interview with experts in each country, and web searching.

Keywords: Europe, recommendations, review, travel medicine

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Introduction

Europe, because of its geographical location, strategic position on trade routes, and colonial history, has a long history in caring for travellers' health. The practice of 'quarantine' (Italian *quaranta giorni*, 40 days) was invented in Italy [1], and this precaution against travel-associated disease was practised widely in the ports of fourteenth-century Europe (1348, Venice; 1377, Ragusa; and 1383, Marseille). Disease is not a one-way 'traveller', and mobility can lead to morbidity in both the source and receiving countries.

Europeans have been stricken by imported diseases that spread rapidly throughout Europe, such as the fourteenth-century Black Death (plague), which originated in Asia, and the sixteenth-century syphilis epidemic, which came from America (but possibly originated in Europe). On the other hand, Europeans have exported and spread diseases such as measles and smallpox [2–4]. In the last century, the health of the colonial traveller was of great importance. The Livingstone exhibition in London (January, 1900) presented an

extravagant array of travel medicine 'commodities' and pre-travel advice to assist travellers in maintaining health and hygiene in the 'deadly tropics' [5]. Burroughs Wellcome & Co. displayed their hugely successful 'Tabloid medical chest' (Fig. 1), which contained essential travel medicines in innovative tablet form (as opposed to old-fashioned powders) that could be used for 'the air, for the earth, for the depths, and for every clime under every condition'. Returning ill travellers were treated at European tropical medicine schools and hospitals [6] that specialized in diseases of the 'tropics', such as



FIG. 1. 'Tabloid first aid'—Burroughs Wellcome's Tabloid medicine chest (Welcome Library, London).

malaria (also endemic in parts of Europe at that time) and filariasis; and in 1889, Sir Patrick Manson published his *Manual of Tropical Disease* [7]. In the twentieth century, with the increasing ease of travel, the need to provide medical care for travellers, both before and after travel, increased exponentially. Business and leisure travel in Europe became part of a 'desirable lifestyle', and was facilitated by the proliferation of low-cost airline travel. High rates of immigration into Europe led to intermingled populations with a strong demand for visits to friends and relatives (VFR). The WHO publishes an annual volume entitled *International Travel and Health*, which aims to meet the needs of national health administrations, practising travel health advisors, tourist agencies, shipping companies, airline operators, and all who are called upon to give health advice to travellers (<http://www.who.int/ith>). The revised International Health Regulations [8] came into force with the aim of helping the international community to prevent and respond to acute public health risks that have the potential to cross borders and threaten international health. New health risks, such as the novel H5N1 avian influenza virus and the pandemic H1N1 influenza virus, have enormous implications for travel and public health.

Today, in the 21st century, travel is faster and easier. To travel around the world takes 36 hours rather than the fanciful 80 days of Jules Verne's Europe in 1873 [9]. There are several players in travel medicine, including general practice health professionals, national and international authorities, occupational health advisors, and the travel industry itself [10]. Travel health is an increasingly complex specialty, and encompasses the identification and epidemiology of travel-associated disorders and diseases and their geographical distribution [11], the pre-travel prevention of these conditions through education, vaccination, chemoprophylaxis, and self-treatment (for certain conditions), and finally the care of the returned ill traveller or the newly arrived migrant or refugee. Disease surveillance is of increasing importance, and two networks, EuroTravNet (<http://www.eurotravnet.eu>) and TropNetEurop (<http://www.tropnet.net>), monitor the epidemiology of travel-associated illness in Europe. In this post-colonial era, migration care is an integral part of travel medicine, and several European institutions have particular expertise in migration medicine.

Travel within, from and to Europe

Europe is the worldwide continental leader in outbound trip volume and international tourism expenditure [12]. Germany generates the most travel-associated spending, 59 billion euros in 2006, as compared with the USA (57 billion) and the UK (50 billion). Other European nations in the top ten

spenders ranking were France, Italy, and the Russian Federation. In 2006, a total of 475 million Europeans travelled internationally (402.1 million within Europe, 24 million to the Americas, 21.2 million to Asia and the Pacific, 16.8 million to Africa, and 11.2 million to the Middle East). In 2006, more than 462 million arrivals were registered in Europe; 53% were travelling for leisure, 17% for business, and, importantly, more than 30% were in the visiting friends and relatives (VFR) category. Travel within Europe has many implications for health. Over 23 million Germans visit the Mediterranean area each year, which involves risks such as diarrhoea, hepatitis A, papataci fever, echinococcosis, and leishmaniasis, and visitors to northern and central Europe face the risk of tick-borne encephalitis.

Profile of Travel-Associated Illness in Europeans Travelling to Tropical Areas

The epidemiology of travel-related infectious diseases in over 17 000 returned European travellers who were ill and presented to EuroTravNet/GeoSentinel sites during the period 1997–2007 has recently been published [13]. Gastrointestinal illness (particularly in tourists), fever (in those visiting friends and relatives) and skin disorders (in tourists) were the most common reasons for presentation in European travellers. Diagnoses varied according to region visited; this regional distribution was most pronounced for acute diarrhoea and some other diagnoses, including malaria, dengue fever, chikungunya fever, rickettsioses, salmonellosis, animal-related injuries requiring post-exposure prophylaxis for rabies, larva migrans, leishmaniasis, myiasis, respiratory syndromes, genitourinary and sexually transmitted diseases, schistosomiasis, and cerebromeningeal infections. Diagnoses also varied according to country of origin and categories of travellers. Ill VFR travellers who returned from sub-Saharan Africa and the Indian Ocean Islands were far more likely to experience *Plasmodium falciparum* malaria than any other group.

Interestingly, significant ORs were observed for European travellers as opposed to non-European travellers, in the context of likelihood of acquiring certain travel-associated infectious diseases. Immigrant travellers account for a large proportion of patients. Fever is the main presenting symptom of European immigrants. Significant ORs for dengue fever, malaria, salmonellosis, genitourinary diseases, respiratory disorders and dermatological symptoms were observed for European travellers as compared with non-European travellers. European travellers, many originating from sub-Saharan Africa, differ from travellers outside Europe mainly because of the characteristics of their immigrant communi-

ties. Physicians in Europe who provide pre-travel advice and who care for returned travellers need to be aware of the expected profile of travel-associated illness in Europe.

Why is the European Centre for Disease Prevention and Control (ECDC) Interested in Travel Medicine?

Travel medicine is an emerging specialty. It includes a wide range of aspects of disease related to travel. Many of these aspects are outside the scope of the ECDC, but others, concerned not only with prevention of infectious diseases during travel but also with risk assessment of imported infectious threats, are related to its mission. According to Article 3 of its founding Regulation, the 'ECDC's mission is to identify, assess and communicate current and emerging threats to human health posed by infectious diseases' [14]. The experience of the ECDC has shown that many of these threats are related to human mobility [15].

Travel health clinics that provide up-to-date advice on risk and risk reduction can be effective in preventing disease [16] and can even be cost-effective [17]. However, the epidemiology of infectious disease risks to the traveller changes rapidly and continuously [18]; those giving travel health advice need to ensure access to up-to-date authoritative sources of information and recommendations. Many countries and organizations, including European Union (EU) member states and the WHO (<http://www.who.int/ith/en/>), produce such recommendations; some of these are reliable, but others are outdated. There are several institutions in the EU and outside the EU dealing with travel medicine, and it is important for the ECDC to evaluate the possible added value of being involved in the field. To identify gaps in the practice of European travel medicine in which the ECDC could play a role, a global picture of community expertise, of the structures and agencies already issuing advice, as well as an evaluation of the accuracy and usefulness of the information provided, should be taken into account in order to avoid duplication of effort (Article 6 of the ECDC's founding Regulation) [14].

Certain roles for the ECDC in this field have already been identified. Imported communicable diseases pose a threat, not only to Europeans travelling abroad, but also to persons exposed to returned travellers who carry contagious disease. Secondary cases of many imported infections in Europe are rare, given the absence of essential vectors in the life cycles of organisms and good sanitary conditions, but new circumstances, such as the introduction of vectors, migratory waves, and intensified international travel, make onward

transmission of imported infections more likely. A good example of how an imported case can lead to a generalized outbreak was the autochthonous transmission of chikungunya virus in Italy in August 2007 [18]. The presence of *Aedes albopictus* in Europe [19] highlights the need for a continuous awareness of dengue and chikungunya virus infection, as imported cases may result in secondary cases occurring within the EU. In monitoring these and other travel-related health threats, ECDC may need advice and guidance for risk assessment and risk communication from tropical and travel medicine experts to improve assessment and response [15].

The SARS outbreak in 2003 illustrated how quickly a new virus could spread internationally in the modern age [20]. This was one of the reasons why the EU decided to establish the ECDC: to help strengthen Europe's defences against future disease outbreaks, which are a constant threat for vulnerable populations, and against many diseases that affect an immunologically naive European population [14].

To fulfil these tasks, the ECDC has established collaboration through a public tender with EuroTravNet (<http://www.eurotravnet.eu>), a network of travel health experts, which supports the ECDC by providing expert advice concerning the detection, verification, assessment and communication of communicable diseases that can be associated with travel and, specifically, with tropical diseases (http://ecdc.europa.eu/en/aboutus/calls/Lists/Calls%20for%20tender/ECDC_DisForm.aspx?List=a70e951a%2D9260%2D4909%2Dbc27%2Dcefd2af6e9a4&ID=301&RootFolder=%2Fen%2Faboutus%2Fcalls%2FLists%2FCalls%20for%20tender). The network will establish a European inventory of travel medicine providers and resources in the EU, the European Free Trade Association, and candidate states [21].

How EuroTravNet Aims to Document the Status Quo of Travel Medicine in Europe

In this, the first year, of EuroTravNet's existence, one of the primary goals is to establish a European inventory of travel medicine providers and resources, using a systematic three-pronged approach:

1. Real-time data are collated with an online, internet-based questionnaire (http://www.surveymonkey.com/s.aspx?sm=t3HkKANexjxKme6ap7GBUg_3d_3d) (consisting of ten questions), the responses to which are entered into a database. The questionnaire is available at http://www.surveymonkey.com/s.aspx?sm=t3HkKANexjxKme6ap7GBUg_3d_3d. In brief, the questionnaire provides data on demographics, the type of travel medicine practice/

institution, the variety of travel health services provided (pre-travel/post-travel, yellow fever vaccination, etc.), the profile of travellers seen, the numbers of travellers seen prior to or after travel, the number of yellow fever vaccinations administered, specific health services that are offered for migrants, and a record of the research and publications of individuals and centres. The questionnaire has been distributed at conferences (including the International Society of Travel Medicine (ISTM) conference in Budapest in May 2009), and there is an active collation of e-mail addresses for travel medicine advisors in individual countries, using websites, yellow fever vaccinating centres, personal contacts, ISTM listings, and a publication in *Eurosurveillance* <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19245>.

At the end of 2009, a broad coverage of travel medicine providers in Europe has been achieved. All EU, European Free Trade Association and candidate states are represented by individuals who have responded to the survey. Those countries with low response rates are actively followed up, and participation from the new EU members and candidates is especially important, as few data on travel medicine in these countries are available. This real-time method has proven ideal for the provision of data on all types of travel medicine practitioners. Respondents can update their data, and all health professionals, including tropical medicine specialists, nurses, physicians, pharmacists, and scientists involved in travel medicine, can be involved. In the future, this ECDC resource listing will be a centre for dissemination of information relating to travel medicine, for networking of centres with similar interests, and for identification of European institutions with particular expertise in migrant health. The contents of the database are not available to third parties, and all data collected belong to the ECDC. To date, over 900 Europeans have completed some parts or all of the questionnaire, and a preliminary analysis will be reported in January 2010.

2. A second tool is the structured interview (Box 1) to enable the creation of a concise document detailing the status quo of travel medicine in member and allied states. The structured phone/e-mail interview consists of 11 questions, and is designed to provide a national picture for each of the European countries. One or two national experts in each country are approached and asked to provide answers to the 11 questions. The questions are distributed in advance, and the experts are free to respond by e-mail or phone.
3. Finally, web searching is used to identify topics and compile tables of websites relating to travel medicine, with a

BOX 1 Structured interview

1. Who are the main practitioners of travel medicine in your country? Please assign a proportion (%)
 - GPs
 - Specialized travel clinics
 - Nurse travel medicine advisors
 - Occupational medicine physicians in companies/institutions (army, etc.)
 - pharmacists
 - infectious disease specialists
 - clinics attached to academic institutions
 - Other?
2. Is there a society of travel medicine in your country? If yes, what is its composition? No. of members?
3. Does this society provide guidelines on travel medicine? Website?
4. If yes, how are these guidelines distributed and how often are they updated?
5. If no, do travel medicine practitioners follow WHO guidelines or other?
6. Is there a central body in charge of yellow fever vaccinating individuals or sites?
7. Are there special requirements including training required for yellow fever vaccination sites?
8. Are there centres in your country with expertise in migration medicine?
9. What do you see as major deficit areas in travel medicine in your country?
10. Do you have ideas as to how travel medicine practice could be improved in your country?
11. Do you think accreditation in travel medicine is necessary? In what form? Certificate in Travel Medicine?

focus on Europe and an overview of global resources (Tables 1 and 2).

The landscape of Travel Medicine in Europe

Within Europe, there is great diversity in the practice of travel medicine. Some countries have travel medicine societies, and provide for an efficient distribution of recommendations. However, many countries have no national pre-travel guidelines and follow international recommendations such as those provided by the WHO or the CDC.

Providers of travel medicine include tropical medical specialists, general practice nurses and physicians, specialist 'travel clinics', occupational physicians, and pharmacists. There is currently a dearth of guidelines regarding the required qualification to practice travel medicine and regarding certification. Each country has a distinct provider type profile, and there is also variation in whether travel medicine (both pre-travel and post-travel) is provided for in the private or public sector. The provision of the yellow fever vaccine is usually regulated by national or regional health authorities in each of the member states and in the UK; there is a formal programme of registration, training, and audit for yellow fever vaccination centres (<http://www.nathnac.org/> (last accessed 30 October 2009)).

Conclusions

The diversity of travel medicine practice in Europe is not, *per se*, negative, and the harmonization of guidelines is not

TABLE 1. Some travel medicine websites in European Union countries*

Austria	http://www.reisemed.at/
Belgium	http://www.itg.be/ITG/GeneralSite/GeneralPage.asp?Page=Medische+Diensten+%2D+Reisgeneeskunde&HT=Medische+Diensten&ST=Reisgeneeskunde
Bulgaria	http://74.125.43.132/translate_c?hl=de&sl=bg&u=http://www.ncipd.org/&prev=/search%3Fq%3Dministry%2Bof%2Bhealth%2Bbulgaria%26hl%3Dde%26client%3Dsafari%26rls%3Dde-de&rurl=translate.google.com&usq=ALkJrhvixwzLqTKPtOFkmQv8456bvOUuiA
Croatia	http://www.mzsr.hr/hr
Czech Republic	http://www.mzcr.cz/Verejne/Default.aspx http://www.e-globals.net/web/ordinace/eng/info_cestovatele.asp
Denmark	http://www.ssi.dk/sw162.asp
Estonia	http://translate.google.com/translate?hl=de&sl=et&u=http://www.tervisekaitse.ee/&ei=N3pcSpOZCceMjAFdglHjDQ&sa=X&oi=translate&resnum=1&ct=result&prev=/search%3Fq%3Destonian%2Bhealth%2Bprotection%2Binspectorate%26hl%3Dde%26client%3Dsafari%26rls%3Dde-de
France	http://www.diplomatie.fr/voyageurs/etrangers/avis/conseils/cartlst.asp http://www.invs.sante.fr/beh/2009/23_24/beh_23_24_2009.pdf
Macedonia	http://www.iph.mk/
Germany	http://www.dtg.de http://www.crm.de
Greece	http://www.keel.org.gr/
Hungary	http://www.antsz.hu/
Iceland	http://www.landlaeknir.is/
Ireland	http://tmb.exodus.ie/latest.asp http://foreignaffairs.gov.ie/home/index.aspx?id=275
Italy	http://www.ministerosalute.it/malattiefettive/paginaMenuMalattiefettive.jsp?menu=viaggiatori&lingua=italiano
Latvia	http://www.ltic.gov.lv/index.php?p=1151&pp=464&lang=259
Lithuania	http://www.ulpkc.lt/tekstai/profilaktika/keliautojams%20rekomendacijos%202009.pdf http://www.ulpkc.lt/ulpkc.imuno.php
Luxembourg	http://www.sante.public.lu/fr/rester-bonne-sante/voyages/index.html
Malta	http://www.health.gov.mt/publications/index.htm
The Netherlands	http://www.lcr.nl/
Norway	http://www.fhi.no/eway/default.aspx?pid=233&trg=MainArea_5661&MainArea_5661=5631:0:15,2386:1:0:0::0:0
Poland	http://www.biuletyn.abip.pl/ucmmit/
Portugal	http://www.ihmt.unl.pt/ConsultadoViajante/consulta.asp
Romania	http://www.ispb.ro/
Slovakia	http://www.fitcom.sk/
Slovenia	http://www.ivz.si/
Spain	http://www.msc.es/en/ciudadanos/proteccionSalud/vacunaciones/docs/recoVacunasAdultos.pdf http://www.msc.es/en/ciudadanos/proteccionSalud/vacunaciones/viajero/home.htm
Sweden	http://www.vaccination.nu/ http://1177.se/start.asp
Switzerland	http://www.bag.admin.ch/infekt/publ/bulletin/d/reisemed%20bu42.pdf
UK	http://www.doh.gov.uk/traveladvice/ http://www.doh.gov.uk/traveladvice/tables.htm http://www.fitfortravel.scot.nhs.uk/home.aspx http://www.travelhealth.co.uk/

*Disclaimer: These websites were identified by web-searching. The listing is not an endorsement of the contents or recommendations contained in the websites listed.

TABLE 2. Some travel medicine websites of global interest

WHO	International Travel and Health		http://www.who.int/ith/en/index.html
CDC	Centers for Disease Control and Prevention		http://wwwn.cdc.gov/travel/default.aspx
TRAVAX	In English	Subscription needed	http://www.travax.scot.nhs.uk/
Tropimed	In English, French and German	Subscription needed	http://www.astral.ch/ALL/tropimed.htm
ISTM	International Society of Travel Medicine	Parts of the website are for members only	http://www.istm.org
MASTA	MASTA, Medical Advisory Service for Travellers	Subscription needed	http://www.masta.org/
Worldwise	New Zealand travel health		http://www.worldwise.co.nz/
Travel Health Online (Shoreland)	In English		http://www.tripprep.com/
Travellers Medical & Vaccination Center	Australian travel health advice		http://www.tmvc.com.au/
National Travel Health Network and Centre, NaTHNaC	Yellow fever vaccination centres in the UK		http://www.nathnac.org/travel/factsheets/YF.htm

necessarily the ultimate goal. There is, however, great potential in Europe for finding common ground in travel medicine practice, for establishing evidence-based advice, and for optimizing practice by learning from neighbour states, as each country has a different type of expertise.

This first tentative step, a collaboration between ISTM, ECDC, and EuroTravNet, which aims to define the current situation of travel medicine in the EU and allied countries, may prove to be a giant leap forwards for travel medicine in Europe.

Transparency Declaration

The authors declare no conflict of interest.

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