

Travel Medicine: A Systematic Review

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Abstract

Introduction: Travel medicine is devoted to the health of travelers who visit foreign countries. It is an interdisciplinary specialty concerned not only with prevention of infectious diseases during travel but also with the personal safety of travelers and the avoidance of environmental risks.

Methods: This review examines 15 appropriate papers by PRISMA from 28 papers searched in PubMed via the NCBI Entrez system.

Results: A traveler's health and safety depends on a practitioner's level of expertise in providing pretravel counseling and vaccinations, if required.

Conclusion: The standards of medical care given to travelers before, during and after travel should be as high as those practiced in every other field of medicine.

Keywords: Travel Medicine, Health, Safety

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1. Introduction

Travel medicine has been defined as a specialty that deals with the health of travelers who visit foreign countries [1]. It crosses disciplines and is concerned not only with prevention of infectious diseases during travel but also with personal safety and reduction of environmental risk [2]. At the moment travel medicine is in an epoch where every generation travels more frequently and at longer distances than the previous generation, with a mean increase of 30 million travelers per year from 1995 until today [3]. During the last decades, travel medicine has evolved into a distinct discipline of Infectious Diseases, even though transmission of infectious agents in vulnerable populations through travel has been well known for centuries [4].

Rates of international travel continue to grow substantially, with an unprecedented 1 billion travelers worldwide crossing international boundaries in 2012 [5]. The discipline of travel medicine has developed dramatically over the last 25 years [6]. This development led to the founding of the ISTM in 1991 and of a clinical group devoted to travel and tropical medicine within the ASTMH in 1989 [7]. Most travel medicine care should be performed in a specialized travel clinic by those who have been trained in the field, particularly for travelers who have complex itineraries or special health needs [8]. Primary care physicians and non-specialists should be able to advice travelers who are in good health and visiting low-risk destinations with standard planned activities [9].

2. Methods

2.1. Eligibility Criteria

Published articles were included if they involved case reports of Travel medicine or Vaccine preventable diseases in returned international travelers or The Practice of Travel Medicine were eligible for inclusion in the systematic review. Journal articles published with full text or abstracts in English before 2015 were eligible for inclusion.

Information sources:

The information used in this research was mainly searched

in PubMed via the NCBI Entrez system (<http://www.ncbi.nlm.nih.gov>) for studies on the association Travel Medicine and Practice. Also searched bibliographies of identified reports, including previous reviews, for additional references were used.

3. Results

Travel medicine is a rapidly evolving, highly dynamic, multidisciplinary specialty that requires expertise on various travel-related illnesses, as well as up-to-date knowledge on the global epidemiology of infectious and noninfectious health risks, health regulations and immunization requirements in various countries, and the changing patterns of drug-resistant infections [3].

There is no systematic prospective collection of information on illness related to travel, either for people who become sick or injured whilst overseas or for people who develop disease on their return. Specific studies have also identified variable morbidity from trauma (especially road traffic accidents) [10] and psychiatric disease (including suicides) [11]. Data from medical repatriation companies suggest that accidental injury is the most common cause of morbidity in younger age groups, whilst cardiovascular disease accounts for most of the illnesses occurring in older groups. Vaccine-preventable diseases cause a relatively small number of infections [12]. This is all despite the emphasis given to vaccine delivery in many pre-travel health care settings.

Preventive counseling required for international travelers are:

Food and water consumption (many common travel-related infections are transmitted by contaminated food/water such as Travelers' Diarrhea, Hepatitis A, Hepatitis E, Typhoid fever, Parasitic infections), personal protective measures against vector-borne illnesses, high-risk activities [13].

Vaccinations that might be recommended or required in international travelers are [14]:

cholera, TB, Tick-borne encephalitis, rabies

travelers risk exposure too many infections, including many that are potentially preventable with vaccines [15]. Little empiric evidence exists to stratify travelers into risk groups for vaccine preventable diseases (VPDs). A recently published study from the GeoSentinel Surveillance Network demonstrated that 3% of ill returned travelers presenting with fever had a VPD (Figure 1).

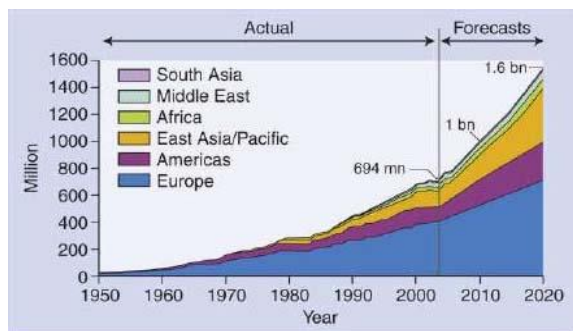


Figure 1. Travelers crossing international borders [10]

What is the magnitude of travel related morbidity / mortality?

20-70% report some illnesses, 1-5% seek medical attention, 3% report fevers, 0.1-0.01% require medical evacuation, 1/100,000 – death (Figure 2) [8, 16].

The key element of Travel medicine is: (Table 1)

Several factors have contributed to the establishment of travel medicine as a specialty field.

Firstly, the number of travelers has increased, as have the length, diversity, and complexity of their travel itineraries and activities [17].

Secondly, formal epidemiologic studies have defined the risk for acquisition of many illnesses, especially for 2 of the most important diseases among travelers, diarrhea and malaria [18].

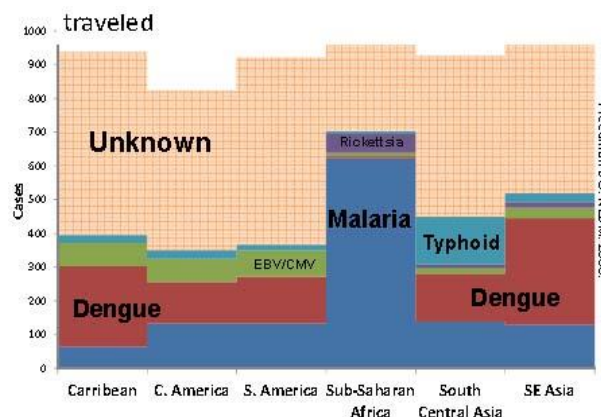


Figure 2. Etiology of fever according to region traveled [8]

Thirdly, there has been tremendous growth in the field of vaccinology, with the release of new vaccines to prevent infections, some which are related to travel [19].

Fourthly, an awareness has developed among practitioners that the prevention of illnesses in travelers includes not only the provision of vaccines and chemo prophylactics but also a discussion of topics such as personal behavior and safety during travel, prevention of altitude illness, and access to medical care in the event of illness [20].

Lastly, there has been the realization that preventing illness in travelers is only a part of the goal of travel medicine.

Table 1. The key element of the Travel medicine [11, 12, 13]

The Key Element	Example	Solution
Immunization	Include: tetanus, pertussis, diphtheria, Haemophilus influenzae type b, measles, mumps, rubella, varicella, Streptococcus pneumoniae, and influenza vaccinations. Yellow fever Japanese encephalitis, rabies, tick-borne Encephalitis, and typhoid fever	Travelers are also recognized new and emerging infectious diseases Identified variable morbidity in Travel medicine Vaccination Complete forms (any illnesses, previous immunizations, etc.)
Education and advice about prevention, food and liquid hygiene Awareness of risk	Traveler's diarrhea Vomiting Malaria	
Personal safety and environmental health	Road and pedestrian safety, risk of blood-borne infections, avoidance of animal bites, sexually transmitted infections, and moderation in alcohol, Effects that air, sea, and land travel, sun, altitude, heat and cold may have on their health.	
Post-travel care	Able to recognize major syndromes in returned travelers (e.g., fever, diarrhea, respiratory illness, and rash) and either provide care for the traveler or promptly refer them for appropriate evaluation and treatment.	

4. Discussion

Travel medicine is the branch of medicine that deals with the prevention and management of health problems of international travelers. A few decades ago, travel medicine, or travel health as labelled by WHO, had to be developed from scratch as an interdisciplinary field to protect travelers from illness and accidents, and ultimately death. Classically, travel medicine focused on individuals traveling to developing countries with prevention and treatment of malaria, traveler's diarrhea, and general vaccinations as its primary goal. Travel medicine has subsequently become a dynamic multidisciplinary specialty that encompasses aspects of infectious disease, public health, tropical medicine, wilderness medicine, and appropriate

immunization. Travel medicine is a common and challenging area of clinical practice and practitioners need up-to-date knowledge and experience a range of areas. A traveler's health and safety depends on a practitioner's level of expertise in providing pretravel counseling and vaccinations, if required. Our findings reinforce the importance of focused training in travel medicine for GP trainees and adequate exposure to patients in the practice setting. Routine vaccinations need to be updated for all parties. The clinician needs to be aware of the risks associated with travel to Anywhere in the world including food and water risks (eg, hepatitis A, typhoid fever, traveler's diarrhea), as well as mosquito-borne (eg, dengue fever, malaria, Chikungunya, Japanese encephalitis) and

other diseases (eg, hepatitis B, rabies). Travel health practitioners should be aware of the complexities, limitations, and difficulties in understanding numerical risk data, as these factors are important in travelers' acceptance or rejection of interventions offered. Knowledge on the global epidemiology of infectious and non-infectious health risks, the changing distribution of drug-resistant infections, and both international and local health regulations and immunization requirements are significant in Travel medicine. The goal of the pretravel consultation is to reduce the traveler's risk of illness and injury during travel through preventive counseling and education, medications, and immunizations as required.

5. Conclusion

Travel has been consistently linked to disproportionate acquisition of travel-related infections such as malaria, hepatitis A and B, and enteric (typhoid) fever compared to other types of travelers.

Cases of hepatitis A, varicella, and measles were acquired despite pre-travel consultation speaks to a potentially lost opportunity for intervention, given the high efficacy of these vaccines. However, we acknowledge that administration of traditionally non-travel associated vaccines may be highly variable between countries and regions.

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Authors' Contributions

Pouria Yazdian Anari contributed in the protocol design, study design, the literature review, quality assessment, article preparation, article review, and the correspondence.

Marzie Vaghefi contributed in the literature search, quality assessment, article preparation, and the article review.

Maria Sepehri contributed in the literature search, language translation, quality assessment, data extraction, and the article review.

Donya Sheybani Tehrani and Mansooreh Habibi contributed in the protocol design, study design, data interpretation, and article preparation and review.

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