Human Mobility and Disease: A Global Challenge

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Human mobility increased tremendously during the last century, and masses of travelers, workers, migrants, refugees and displaced persons are moving today all over the planet. The progressive ease of mobility makes business connections between different parts of the world much easier, and has led to a large increase in tourism, which now involves all age groups and social classes in the Western world. As a result, it is estimated that, every year, as many as 50 million people from the industrialized world cross international borders to tropical or subtropical destinations, where they encounter different cultures, social habits and economic standards, and, of the utmost importance, a different microbiological environment. The frequent inconsiderate risky behavior of non-immune travelers from the Western world may cause serious infections to occur.

Risk behaviour for contracting infectious diseases may be related to: (1) alimentation; (2) sexual habits; and to (3) the underrecognition of the vector-borne risk, particularly with regard to malaria. The consumption of contaminated food by the nonimmune Western traveler may lead to gastrointestinal complaints or even systemic diseases, such as hepatitis A and typhoid fever. Besides alimentary education, the effectiveness of which has been questioned, safe and effective vaccines are available which may protect travelers from acquiring hepatitis A and typhoid fever. Casual sexual contacts during short-term travel are frequent, and the risk is even higher in long-term expatriates. Apart from the obvious risk of HIV infection, hepatitis B is a substantial threat, given the high HBsAg prevalence rate in various southern countries. Safe sexual practices should be adopted by travelers, and safe and effective vaccines against hepatitis B are available and should be considered by those traveling to areas that are highly endemic for hepatitis B virus.

A large increase in the frequency of imported malaria cases is being seen in areas where malaria has never existed or has been eradicated decades ago, as a consequence of the increasing number of exposed travelers. Imported malaria cases are increasingly occurring in migrants, now resident in malaria-nonendemic countries, returning with their nonimmune children to their country of origin to visit friends and relatives.1 The danger of malaria is often underestimated by the travel industry and travelers, and, even when the risk perception is good, adherence to chemoprophylaxis is often insufficient, possibly because of the fear of side effects.2

Given this situation, it is clear that the knowledge, attitudes and practices (KAP) of travelers play a pivotal role and need to be known, to allow the development of preventive activities to control imported diseases.

Data from previous surveys have suggested that at-risk travelers have poor overall knowledge concerning the risk of infection and preventive measures, and rates of adherence to the World Health Organization recommendations3 are far from optimal.4 Lack of health education among travelers and travel health professionals may play a role in the poor risk perception, as well as the reluctance of the travel industry (which may play a pivotal role in channeling information or, better, in referring travelers to travel medicine professionals) to provide evidence of risk. Attitudes of travelers towards preventive measures have provided contrasting results, according to the survey methodology used and geographic areas. However, most surveys have provided only local data; ample regional variations exist, and worldwide homogeneous data on the KAP of travelers are lacking.

The European Travel Health Advisory Board (ETHAB)5 has taken up the challenge to establish travel health KAP data in a high-risk population. To this aim, a pilot study on KAP focusing on vaccine-preventable diseases and malaria in Western travelers going to tropical areas was carried out in three main European airports6 to validate the questionnaire.

An enlarged survey was then conducted in four different continents. Travelers in the departure lounges of 16 large airports were interviewed, using the same methodology. Data were analyzed in the four different macro-regions using the same statistical methods in order to make results comparable. Even though the travelers were
heterogeneous, the high number who took part (over 8,000) makes this survey one of the widest ever carried out.

The results of the survey have confirmed that as many as 9% of the traveling population (European survey) are over 60 years of age, which dictates new preventive approaches and stresses the need for specific expert advice from travel medicine specialists. In this population, one in four travelers traveled to visit friends and relatives in their country of origin, and this proportion was as high as 40% in New York. Again, as many as about one-third of travelers traveled alone, which is an important risk factor for sexually transmitted disease. These findings confirm that the demographic profile of travelers from industrialized countries to the tropics is changing, and travel medicine specialists are being confronted by a rapidly evolving population.

A large proportion of trips (as many as 44% in the Asian survey) were planned less than 2 weeks before departure (last-minute trips), which may explain the alarmingly low rate of travelers seeking health advice (one-third in Asia, one-half in Europe). More worryingly, the awareness of infectious disease risk has been shown to be alarmingly poor: almost 25% of European travelers going to highly malaria-endemic areas did not perceive malaria to be a great risk, and these proportions were as high as 52% to 56%, 69% to 87% and 63% to 90% for hepatitis A, hepatitis B and typhoid fever, respectively, in the various surveys! Overall, as many as 40% of travelers could not correctly assess the risk of a variety of infectious diseases, emphasizing the need for increased awareness in the traveling population.

When attitudes towards prevention were analyzed, the unwillingness of travelers to abstain from dangerous food (up to 94.5% of European travelers declared themselves to be ready to eat at least one dangerous item!) was confirmed. The perception of vaccines as giving essential protection ranged from 76% (Asia Pacific) to 92% (South Africa), but the prejudice of travelers about safety issues (22% of Asian respondents reported fear of adverse events) and cost are still preventing their use to some extent.

Despite the fact that it was difficult to reliably assess natural immunity and previous vaccinations—there was a considerable potential recall bias—the degree of protection among travelers against hepatitis A and hepatitis B appears to be far from optimal in all settings. In the European survey, only 18% of travelers could be considered to be protected against hepatitis B. The proportion of vaccinated travelers is astonishingly poor: 2% and 3% for this specific journey in Asian travelers for hepatitis A and B respectively. Also, it is interesting to note how low the proportion is of persons traveling with a vaccination certificate (18% in the Asian survey). This is one of the areas on which health education and preventive interventions could focus.

The data on practices with regard to malaria prevention are complex and interesting. European travelers to malaria-endemic areas did not appreciate this risk, even though malaria is a typical travel-related infection. Among travelers going to high-risk malaria destinations, varying proportions, according to the area of departure (40% in Asia Pacific; 83.8% in Europe), carried antimalarial medication. This finding is particularly worrying, since most high-risk destinations were in sub-Saharan Africa. It should also be noted that almost 50% of European travelers going to nonmalarious areas thought they were at risk, and as many as 12% carried preventive drugs. Who advised them to do so?

Large intercontinental, as well as intracontinental, variations were detected: travelers from southern European countries had significantly lower KAP rates than travelers from northern European countries. Despite these variations, we believe that the results of this wide survey warrant the highest consideration, because they confirm the poor perception of risk of infection among travelers to the tropics.

Where are we, the travel medicine professionals? What is our role when faced with this discouragingly low level of awareness of infectious risk among the travelers, which swings from panic regarding SARS to reckless abstention from obvious behavioral precautions during travel?

Our role is to continuously try to raise awareness among international and national bodies of the mounting risk of microorganism circulation, and to urge them to implement effective health education campaigns among the traveling population. KAP trends need to be continuously monitored if control of imported infectious diseases is to be achieved. Standardized airport questionnaire surveys should be carried out at regular intervals, to monitor the success of such interventions. The results of this survey will provide a large baseline dataset against which to compare future trends and the impact of future preventive activities.

References