Sultan Qaboos University Med J, May 2020, Vol. 20, Iss. 2, pp. e121–124, Epub. 28 Jun 20
Submitted 23 Nov 19
Revision Req. 28 Jan 20; Revision Recd. 8 Apr 20
Accepted 6 May 20
https://doi.org/10.18295/squmj.2020.20.02.001

EDITORIAL

The Future Importance of Travel Health in the Middle East

Oman's opportunity to enhance its services

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الأهمية المستقبلية للصحة المتعلقة بالسفر في الشرق الأوسط

فرصة سلطنة عُمان لتعزيز خدماتها

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Travel health (TH) is a specific medical discipline designed to prevent and manage illnesses associated with international travel. TH is usually delivered through primary healthcare (PHC) with support from specialised units and central public health authorities. There is an ever-increasing number of international travellers often visiting destinations with new health risks not known at home. Every effort should be made to protect these travellers against health risks, such as malaria or yellow fever, at their destinations.

International travel reached 1.4 billion travellers in 2019.[1] As international travel is increasing in popularity, so too is the risk of associated disease outbreak. Known culprits are megacities with high population density, centralised food production, an ageing population and an increasing number of immunocompromised people.[2] Concurrently, travellers and migrants may carry with them infections from the countries they visited or moved from and the receiving country must ensure that these infections do not pose a risk to the resident population. Risk of spreading infections by travellers from one country to another is regulated through the International Health Regulations of the World Health Organization (WHO).[3]

Oman is a culturally diverse country and has a heterogeneous population of around 4.6 million people. Of these, approximately 2.7 million (58.8%) are Omani nationals and 1.9 million (41.2%) are expatriates.[4] Omanis, as is the global trend, are travelling across borders more than ever before. Throughout history, Oman and Tanzania and particularly Zanzibar, remain intricately connected locations. East Africa has always been a common travel destination for Omanis and this rise in popularity in international travel is making it even more so; in fact, direct flights from Muscat to Zanzibar have resulted in strengthened trade links. Other common ports of call are Mecca, Saudi Arabia, where many Omanis travel for *Hajj* and *Umrah*, and South Asia, particularly India, Bangladesh and Pakistan, home to the large migrant expatriate population who live and work in Oman.[5] In addition, many Omanis go for medical tourism especially to Thailand and India.

Oman's Ministry of Health (MoH) is in the process of establishing a TH service at a national level; this is part of meeting the needs for national health security, meeting the requirements and preparedness for epidemics and the commitment of the government to reach universal health coverage. Oman has a sophisticated and well-organised PHC system that offers care at no cost to citizens. The system is poised to provide pre-TH care to Omanis looking to travel internationally.[5] In this editorial, we will discuss the needs of the population and how the MoH will expand its services to address these requirements.

Protecting Travellers in Oman

The purpose of the TH service is to establish and integrate pre-TH services into PHC in Oman's public and private healthcare facilities. The TH service shall ensure that PHC physicians and nurses are equipped with up-to-date information of public health threats abroad and of imported infectious diseases into Oman. Although a pre-TH service is already well established for *Hajj* travellers, it still needs to be expanded and made accessible to all travellers.

The existing pre-TH service includes a sustained supply of relevant vaccines and drugs, especially for malaria chemoprophylaxis. A recent review of severe malaria cases imported into Oman underline the need

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for prophylaxis as only 1 in 13 of these cases had taken preventive measures.[6] The TH service will be supported by the "TRAVAX" decision support computer system (Glasgow, UK, https://www.travax.nhs.uk/) maintained by Public Health Scotland, providing on-line up-to-date information.

One study found that only 22.5% of residents of Oman departing from Muscat International Airport had received pre-travel advice, only 6.9% had taken any pre-travel preventive measures like a prescription for malaria chemoprophylaxis or immunisations and only 38.2% had TH-insurance coverage.[7] Another study among primary care physicians found that 58.3% had given a pre-travel consultation during the month prior to travel and 79.6% had given a post-travel consultation, concluding that TH does currently occur in PHC.[8]

To people looking forward to a trip abroad, the expanded TH service will provide statistics on the use of vaccines and malaria prophylaxis and disseminate information on side effects from vaccines and malaria prophylaxis that may arise. Travellers will also receive counselling on non-communicable diseases and some recommendations in case they are travelling for medical tourism.

Protecting the Country

Infections travel with people. To ensure rapid diagnosis, treatment and notification, any illness acquired abroad that may be of national public health concerns must be dealt with swiftly and systematically.

The TH service will strengthen the existing surveillance of infectious diseases in the country by ensuring early diagnosis and providing adequate treatment of infections acquired outside of the country at all levels of healthcare and in both public and private facilities. PHC facilities will receive information on imported infectious diseases into Oman via the existing weekly bulletin published by the Directorate General of Disease Surveillance and Control. This ensures that surveillance of imported infections prevent public health events and are in accordance with the International Health Regulations of the WHO.

Post-travel surveillance in travellers and migrants can be difficult; better access to expert consultations on illness in travellers and migrants is needed. We propose to establish a "fever service"—a hotline for public and private TH clinics and hospitals in Oman providing access to specialised physicians and nurses functioning as nodal centres for comprehensive pre- and post-travel advice. The model is the "imported fever service" established in the UK where patients difficult to diagnose at their local health centre or hospital can be discussed with specialists.[9]

A recent review of imported infections in Oman from 1999 to 2013 found that approximately 8% of notifiable infections in Oman were travel related. In addition, 78 cases of dengue fever, 80 cases of measles and 2 cases of polio were all imported. Of the imported infections, 73% came from Asia, 23% from Middle Eastern countries and 4% from Africa.[10]

The outbreak of dengue fever in Muscat, Oman, in 2018 to 2019 due to travel illustrate how an imported disease can cause an outbreak.[11] Reintroduction of malaria is a continued risk with between 900 and 1,500 travel-related cases diagnosed every year. A few limited local 'first generation' malaria outbreaks have occurred, the largest in Mabela, Muscat Governorate in 2015 with more than 50 cases. However, the outbreak was effectively controlled within two months.[12] A case of imported cholera resulted in a secondary case after delayed diagnosis.[13]

The dengue and malaria outbreaks were identified through the routine surveillance of infectious diseases in the country. The dengue outbreak was able to happen because the vector, *Aedes aegypti*, has become established in Muscat; this illustrates how ecological factors related to vector characteristics can allow new pathogens to be introduced by travellers.[14]

Surveillance also needs to include multi-drug resistant bacteria. Considerable work has been done between the Gulf Cooperation Council countries and it is well established that resistant bacteria is spread between countries via travellers whether they are asymptomatic carriers or arrive with a presenting infection.[15–17] A case of colistin-resistant *Escherichia coli* isolated in Oman, where the plasmid carrying the gene coding for colistin resistance could be traced to China, illustrates the international spread of multidrug-resistant bacteria.[18] Indeed, it has been suggested that travellers from countries with a high level of multidrug-resistant gram-negative bacteria should be screened.[19]

Addressing the Expatriate Population

Travel-related infection in Oman is primarily imported by migrant expatriates who are responsible for a staggering and unfortunate 86% of travel-related infections.[8] This places the experience of expatriates of utmost importance and an issue that needs addressing. Most people relocating to Oman for work come from South Asia and since the primary risk factor for travel-related illness transmission is visiting family and friends, this puts this group at high risk of importing infections such as malaria.[5] Though healthcare services are provided free of charge for citizens, expatriates have limited access to the system yet are able to access an enhanced level

of TH. Accessing this service is helpful in two-fold, it improves the health of the migrant working population while reducing the risk of disease transmission to the country at large.[5]

Now is the time to target the residents of Oman who need the services most. The opportunity is present and the need is paramount. Currently, clinical care is provided at no cost to expatriates who have pre-existing communicable diseases such as malaria and tuberculosis. The challenge remains to remove barriers to access and decrease/eliminate the cost to deliver pre-TH care that includes vaccination and treatment of communicable diseases for expatriates. Regarding malaria specifically, there is an increasing concern about asymptomatic malaria and its impact on countries, such as Oman, which are free of the disease yet where the *Anopheles* mosquitos that transmit malaria exist. In reaction to this and other travel-related illness concerns, the MoH is working with the private health sector to set up private TH clinics poised for access by expatriates to receive an enhanced level of TH care thereby improving their personal health status and reducing the risk to the indigenous population of Oman.

International Collaboration

Oman participates in GeoSentinel, an international disease surveillance network established by the International Society for Travel Medicine, collecting data on illness in returning travellers. GeoSentinel's aim is spotting new trends in the worldwide movement of disease.[20–22] Oman will be an active participant in the GeoSentinel collaboration and will benefit from pre-publication access to information on new international disease trends and access to an international network of highly experienced TH specialists and public health experts.

Governance

The TH service will be executed by PHC centres under the supervision and guidance of the MoH. Regular meetings between the Directorate General of Disease Surveillance and Control, Directorate General of PHC, and Directorate General of Health Services will ensure continuous adjustment according to the needs of the traveller, the PHC services and public health surveillance.

The MoH will continuously evaluate public and private healthcare services and publish statistics of the activities. The MoH will also ensure that the necessary vaccines and drugs such as malaria chemoprophylaxis are available. Evaluation of training workshops will be implemented and it will be ensured that training opportunities are matched with the development of the service.

Oman is prepared for enhanced pre- and post-TH services to tackle travel-related illnesses which threaten the health of the country's population. Oman's geographical position in the Middle East and its melting pot culture pose three risk factors for travel-acquired illness: (1) pilgrimages for *Hajj* and *Umrah*; (2) strong bonds with East Africa; and (3) a large population of migrant expatriates from South Asia. However, Oman is well prepared and positioned to meet these challenge because of the country's state-of-the-art public health laboratory and diagnostic resource facilities, broad access to a well-operating PHC system, and sophisticated electronic health records and notification system that operates throughout all MoH health centres.[5]

The future of travel medicine is at a proverbial crossroads and the move to seize the opportunity to enhance these services in Oman will be of great benefit to both expatriates and nationals.

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