

Why we need a study on the Trend and Pattern of Imported Infections in Children in Britain

Godwin Oligbu^{1*}, Nafisa Badat² and Akinlolu A³

¹Paediatric Infectious Diseases Research Group, Institute for Infection and Immunity, St. George's, University of London, UK

²Faculty of Medicine, Imperial College London, UK

³Department of Paediatrics College of Medicine University of Ibadan

*Corresponding author

Godwin Oligbu, Paediatric Infectious Diseases Research Group, Institute for Infection and Immunity, St. George's, University of London UK, E-mail: godwin.oligbu@nhs.net

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Abstract

There is increasing globalisation and displacement of individuals due to war and environmental disaster. Infections are being transferred from one country to other resulting in unprecedented humanitarian crisis, and children being the most vulnerable. There is lack of data and adequate preparation by frontline health care workers to address these emerging diseases. This manuscript highlights the urgent need for a study on the recent trend and pattern of imported infections in children in Britain and to raise the awareness among healthcare workers

One of the fastest growing and largest economic sectors across the globe is International tourism. The sector is enjoying continuous diversification and expansion, and travellers are increasingly pursuing new destinations. These destinations often include less privileged areas. In addition, as the world is expanding in population but shrinking into a global village, there is increase in intercontinental travel. The risk of infections may be increased from one place to another. Notably, an infected returning traveller may not seek immediate healthcare support after return to the UK or may delay this for days or weeks simply because clinical signs and symptoms may not develop for weeks or even months after his or her return, thus making it difficult to establish relationship between past travel and imported infections [1].

An imported infection would be defined as an infection in a returning child traveller of which the incubation period is compatible with acquiring the infection abroad. And a child in this context is 0 to 16 years of age. The study should assess the age distribution of the commonly imported infections in paediatric population and to guide clinicians, patients and other stakeholders of public health management.

Estimates show that global international travel has risen to 1.2 trillion in 2016, from 903 million in 2007 from 25 million trips in 1950. An overwhelmingly large proportion (i.e. 46%) of destinations include subtropical and tropical regions and an increase of 5% per year is predicted in travelling to the Middle East, East Asia, and Africa. Considering the pattern of international travel from the UK, there were less than 30 million trips in 1987 which increased to almost 70 million in 2007 in which 9.8 million were outside European or North American destinations. With a 65.7 million visits abroad by UK residents in 2015 [2]. In 2016, over 19million visitors stayed overnight in London, and the 2nd largest in the world after

Bangkok [3]. The number of visits to tropical countries has been increasing since 1996 at an average rate of 8% per annum [1, 2]. Additionally, during 1987–2007, travel to UK from all over the world was estimated to have been doubled from 16 million to 32 million visits. Among these, 4.5 million visits belonged to regions outside North America or Europe. Young children constitute 4% of overseas travellers, but make up nearly a quarter of all travel-associated admissions. It is estimated that over 280 million households globally will make at least one international trip per year by 2025. The global economic contribution was over 7.6 trillion U.S dollars in 2016 [3-5].

A number of studies have emphasised increasing frequency and changes in patterns of imported infections in England carried by the travellers and related implications for English hospitals. However little is known of imported infections in paediatric population in England. A prospective study done by Andrew et al, 1998 with 58 children showed that the commoner infections were malaria, traveller's diarrhoea and hepatitis [6-8].

The travel history of the patients with emphasis on geographical area during clinical history taking procedure is very significant in patient management and has wider implications for public health [9,10]. The importance of travel history is reflected by British guidelines on the management and control of viral haemorrhagic fevers, which heavily rely on epidemiological evidence [11].

Furthermore, similar risk assessment algorithms are employed regarding emerging infections such as drug-resistant tuberculosis, severe acute respiratory syndrome, and pandemic influenza [12-14].

Skin disorders, gastrointestinal symptoms and/or fever are most commonly travel-related imported diseases in paediatric population according to International surveillance [15]. Associated

gastrointestinal infections and Diarrhoea are the most common travel-related problems among children. Children and Infants with diarrhoea get dehydrated rather quickly as compared to adults [16]. The aetiology of travellers' diarrhoea (TD) in children is same as adults. Malaria is very serious life-threatening disease commonly acquired by paediatric travellers. Paediatric travellers are particularly at high risk if they are not given chemoprophylaxis. High levels of parasitemia can be developed in children with malaria. Various acute malaria conditions include seizures, shock, coma, and even death. Initial symptoms in children with malaria mimic several common causes of febrile illness in children and thus it quite common that diagnosis and treatment may be delayed [17].

Paediatric travellers having frequent and prolonged travel are as likely to get dengue as children in dengue-endemic areas. A study reported 8 children having acute dengue infection after their visit in Caribbean areas; dengue shock syndrome and/or dengue hemorrhagic fever developed in three of them. Mosquito repellents and other mosquito protection measures are the most effective to prevent dengue [18].

As compared to adults, children have more exposure to soil or sand and thus are more likely to get infectious diseases which include hookworm infestation, ascariasis, visceral or cutaneous larva migrans, strongyloidiasis, and trichuriasis [19]. Protective footwear and gloves should be provided to children and infants and also play sheets when they are playing at the ground in tropical regions. The habit of spreading clothing on the ground perpetuates the spread of infection. It is better to iron clothing and/or diapers dried in open air for prevention of infestation with fly larvae [20].

Rabies is more common in children than adults. Bats across the globe have the potential to transmit rabies virus [21]. Children are vulnerable to mammal-associated bites and injuries and in case of an incidence, wound cleansing, debridement, and careful exploration for foreign body are essential. Generally, leave the wounds to heal by secondary intention to permit drainage of wound fluids and prevent infection [22,23]. Injured child should be promptly evaluated for assessment of rabies post exposure prophylaxis [24].

Chikungunya also became an important public health problem across the globe after numerous outbreaks worldwide, for example 2009 outbreaks in Malaysia and Thailand. The vector for this was *A. albopictus*, which also has the potential to spread Dengue and Zika virus. This most invasive mosquito species was also discovered in 2003 in Ticino's border with Italy and has since spread across southern and western Europe [25-29]. Urbanization, Climate changes and international transport are suspected to facilitate enlargement in the endemic areas for chikungunya as well as other vector-transmitted infections which poses a threat to English public health which is previously considered to be a safe region [30].

Another potential life-threatening illness is Chagas disease, which has affected over 10 million people, and it originated from Latin America mainly. Although England is free of the vector (*Triatominae* spp.), yet the disease is chronic in nature and combined with migration flow from endemic countries may have significant impact on public health in England [31]. Chagas is transmissible to the autochthonous population potentially through contaminated blood products and it may cause chronic and congenital diseases [32]. Paediatricians need to improve their knowledge of Chagas disease and efforts are

required to screening of travellers to control the spread as well as screening and controls in organ donation, blood banks, and in at-risk pregnant women [33].

Pandemic A (H1N1) influenza declared a Public Health Emergency of International Concern by WHO in 2009. Intense surveillance was recommended to achieve eradication [34]. Initially, Pandemic A (H1N1) influenza cases diagnosed, were decreasing, in tourists and students exposed to the disease in the UK, the USA, Argentina, and Spain. After the Intense surveillance a progressive decrease in A (H1N1) influenza cases was observed in Europe, which reflects that widespread management of patients at numerous levels of health systems is an effective method to curb the disease and achieve eradication [35].

Finally, with recent wars and displacement of people, including children, there is a global resurgence of hitherto controlled diseases and the emergence of new ones with redistribution of existing infectious diseases. Many of the most common infectious diseases, and particularly those transmitted by vectors, are highly sensitive to unstable environment and poor human control of its environ. New and resurgent vector-borne communicable diseases, including arboviruses, such as dengue, Zika and Ebola, and malaria are evident widely [36]. Other infectious diseases, such as cholera have shown increased outbreaks in famine and poverty stricken areas of the world, especially in camps.

Changes in infectious disease transmission patterns are unprecedented in this current climate. There is a need for a better understanding of the causal relationships, in order to predict the future impacts of these on children's health. In addition, paediatricians are likely to see an increasing number of cases due to human and environmental displacement. An international collaborative effort with an early and integrated model of care is required to resolve this. Meanwhile, there is urgent requirement for a study on the trend and pattern of imported infections in our population. This will undoubtedly include increased active surveillance activities, studies to elucidate the modes of indigenous transmission, and preventive measures.

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