

Is an adequate travel history being documented in recent traveling adult patients presenting with fever to the Emergency Department at Mater Dei Hospital?

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In recent times, with the increasing ease and needs for travelling, one can say that the world has become a global village where millions travel from one side of the globe to another within a relatively short time. In Malta, due to the recent socio-economic growth and needs, travelling has increased exponentially. Inevitably this resulted in people becoming more exposed to endemic communicable diseases and thus consequently presenting to the local Emergency Department (ED) for management. Amongst the vast clinical signs of infectious disease, fever is the most prevalent. Its presence, accompanied by a thorough travel history, should alert the Emergency Physician to follow specific diagnostic, infection control and public health pathways.

In this audit, 234 case notes of travellers presenting with fever to the ED were analysed for a travel history. The scope was to ascertain how informative these histories were. Results obtained showed that in the absolute majority of cases there was incomplete or non-pertinent travel documentation.

This audit provides a good insight into this potentially dangerous habit which needs to be curtailed. The authors propose a checklist proforma to be filled for every patient presenting to the ED with a fever after being abroad a month before the onset of symptoms.

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INTRODUCTION

Travelling to and from Malta, including to destinations with tropical and subtropical climates, has increased in recent years. According to the Maltese National Statistics Office, nearly 2.8 million travellers visited Malta between January and December 2019,¹ while 706,797 Maltese citizens travelled to foreign destinations during the same period.²

Throughout the years, the World Health Organisation (WHO) and the Centre for Disease Control and Prevention (CDC) have issued various alerts on outbreaks worldwide and pandemics. To name a few, there were the:

- 1918 H1N1 pandemic which caused the death of around 50 million people worldwide
- 1957 – 1958 H2N2 pandemic which caused the death of around 1.1 million people
- 1968 H3N2 pandemic with an approximate 1 million loss of life
- 2009 H1N1 pandemic when an estimate of 151,700 to 575,400 people passed away worldwide

Recently, at the time of submission but before this audit was conducted, there is an ongoing COVID-19 pandemic which was declared in the first quarter of 2020.

In recent years the CDC also issued several travel notices to international travellers.³ To highlight the increasing frequency of such alerts, it is sufficient to note that there were ten such alerts issued between September and October 2019:

- 30th October 2019 – Dengue in Asia and Pacific Islands
- 29th October 2019 – Ebola in the Democratic Republic of the Congo

- 9th October 2019 – Dengue in the Mediterranean Region
- 8th October 2019 – Chikungunya in Ethiopia
- 8th October 2019 – Polio in the Philippines
- 7th October 2019 – Yellow Fever in Nigeria
- 3rd October 2019 – Dengue in the Americas
- 30th September - XDR Typhoid fever in Pakistan
- 13th September 2019 – Dengue in Africa and the Middle East
- 12th September 2019 – Hurricane Dorian in the Bahamas

In Malta, a considerable number of alert notifications have been issued over the years by the Directorate of Health Promotion and Disease Prevention, namely Ebola virus (2014 and 2015), Middle East Respiratory Syndrome (2015), Zika (2016), Chikungunya (2017) and COVID-19 (2020).

This audit aims to highlight the importance of taking a thorough travel history from patients presenting to the Emergency Department (ED) with fever, keeping in mind the frequency of outbreaks, epidemics and pandemics in correlation to the ease of worldwide travelling.

A clear example of the potential of how quick a simple outbreak can evolve in a full-blown pandemic with the ease of modern travelling is the current COVID-19 pandemic. In December 2019, the WHO was notified of several cases of pneumonia in Wuhan City, Hubei Province of China of which the causative microorganism did not correlate to any previously known viruses. On the 7th January 2020, the Chinese authorities confirmed that the virus was a novel coronavirus. On the 11th March 2020 the WHO director-general declared '118,000 cases

in 114 countries, and 4291 people have lost their lives' and therefore 'COVID-19 can be characterised as a pandemic'.⁴ This means that within three months of an outbreak in a region in the far east, the whole world became infected.

Emergency Departments receive patients with fever every day. Although the majority of cases are not related to travel, the authors through their experience in this field of work, perceived that an accurate and thorough travel history was not always forthcoming in febrile travellers presenting to the ED. A detailed travel history is essential as highly infectious diseases will require heightened infection control measures such as personal protection equipment (PPE), specialised rooms to assess, manage and nurse these patients in the Emergency Department and admission to specialised infectious disease wards. Moreover, even if not easily transmissible, certain infections require special diagnostic tests which may not be routinely requested unless their possibility is inquired and they may be therefore missed or misdiagnosed.

This audit aimed to study whether Emergency Physicians were obtaining and documenting an adequate travel history for patients with documented fever for all the above-mentioned reasons. It was also the scope of the authors, that if a deficit in travel history taking was proven, to propose the need for a travel history checklist proforma to be attached to the emergency notes when

encountering patients who present with fever shortly after returning from abroad.

MATERIALS AND METHOD

This is a retrospective analysis of foreign, non-resident patients who had arrived from abroad in the previous 21 days and who presented to the Emergency Department with a fever between the period of December 2017 and June 2018. Fever was defined as a temperature of 37.5° C or higher.

Such cohort was chosen as it was easier for the hospital IT database to filter out these patients as they are all given a temporary identification number ending with the letter F. Patients with Maltese citizenship have an alternative identification number and there was no reliable way on how their travelling possibility could be ruled in. Thus, it could be reliably assumed that patients with identification numbers ending with the letter F had to have travelled to Malta at some point.

The 21-day period was chosen as the recent time travel definition since this would include the incubation period of most known and common infectious agents.

Patients under the age of 16 were excluded as this cohort of patients are seen at the paediatric ED which is manned by the paediatricians. Since our authors work in the main ED patients had to be 16 years and above. Table 1 summarises the inclusion and exclusion criteria for the study.

Table 1 Summary of the study's inclusion and exclusion criteria.

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none">• Patients over the age of 16 years.• Patients presenting to the Emergency Department with a fever of 37.5°C or more.• Patients presenting with the above criteria to Mater Dei Hospital ED between December 2017 and June 2018.• Patients identified with an 'F' number Emergency Department number (please refer to text).	<ul style="list-style-type: none">• Patients under the age of 16 years.• Patients presenting outside the study period.• Patients who were not identified with an 'F' number Emergency Department number (please refer to text).

Following the retrieval of these identification numbers, a Microsoft Excel sheet was created to document the information gathered from each case notes. Keeping in mind what the authors would have wished to see in the case notes of travellers presenting to the ED with fever, the following data was sought for:

- The patient's demographics: age, gender, nationality
- The degree of fever; its onset and any diurnal variation
- The history of travel in the previous 21 days including airports and stop-overs
- Known infectious risk behaviour while abroad like recreational drug misuse,

unprotected casual sexual encounters, blood transfusions or surgical interventions, history of animal/insect bites and possible exposure to contaminated food and water

- Vaccination History
- Symptoms according to the specific organ systems.

A six-month study period was chosen from December 2017 to June 2018.

Permissions to collect this data were duly obtained from the Data Protection Officer and the Chairperson of the Emergency Department at Mater Dei Hospital. Ethical approval was also obtained through the

University of Malta Research and Ethics Committee according to the declaration of Helsinki.

RESULTS

A total of 234 case notes, of patients who fell within the audit's inclusion criteria, were analysed.

In Figure 1 one can appreciate the vast range in age presentation of this cohort of patient. The mean age was of 34.2 years with the oldest age at presentation being that of 90 years. This was a British national and presented to the Emergency Department with fever and confusion.

Table 2 shows the native continent of origin of eligible patients who travelled to Malta and presented with fever during the study period. Although most patients were of European nationality, this did not depict the true picture as from where they travelled before arriving in Malta. This can be said of course for all the other patients. Indeed, only 9 out of 234 patients (3.8%) were inquired about the country they visited during the last 21 days prior to presentation with fever. These results expose the first fault in the system of travel history taking, where the hospital's database is not catching any previous travel before ED registration.

Figure 1 Shows the range age distribution of the patients who presented to the ED with fever post travel. As for gender, 91 were females while 143 were males.

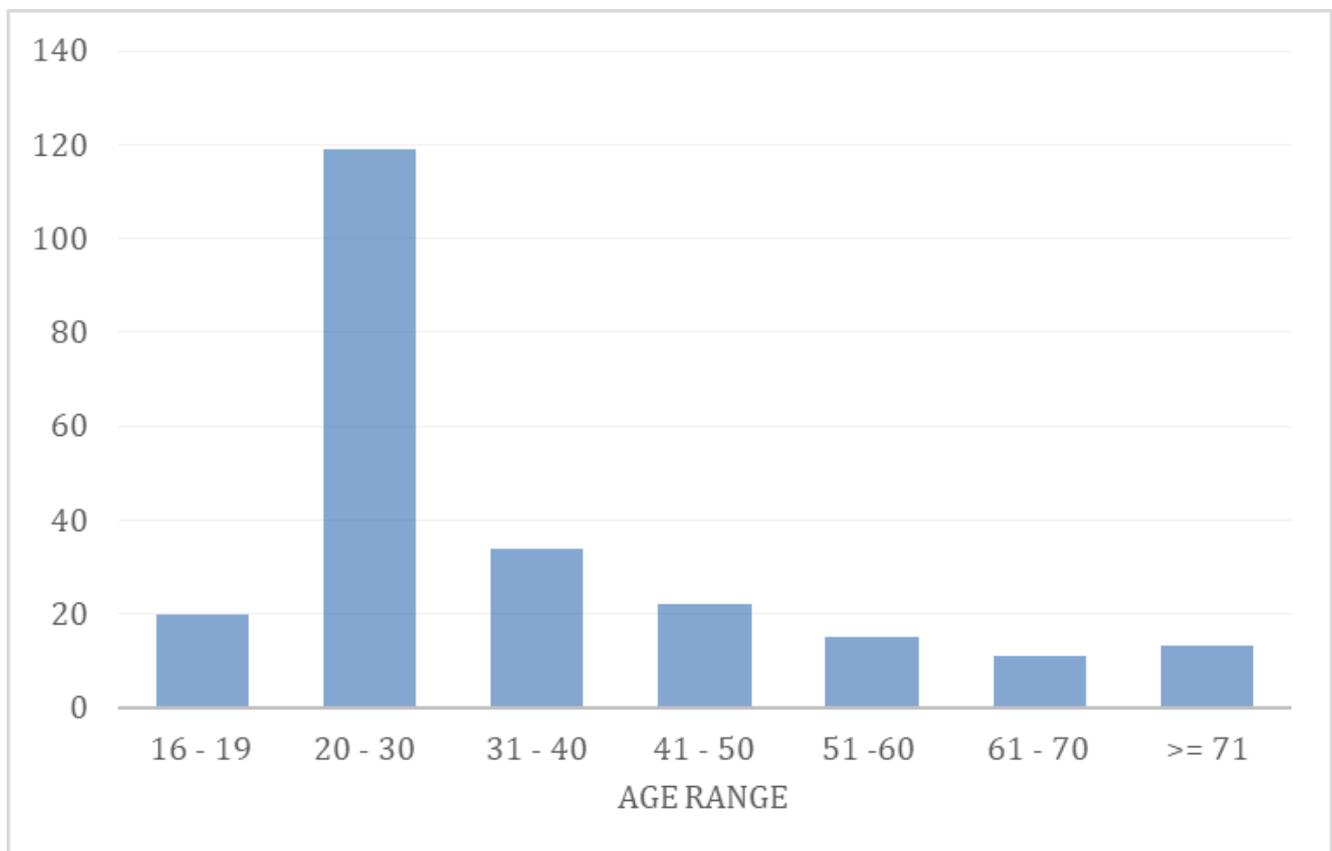


Table 2 Native continent of origin of eligible patients who travelled to Malta and presented with fever during the study period.

Continent	Number of patients	Percentage of patients
Australia	3	1.2%
North America	4	1.7%
South America	4	1.7%
Africa	18	7.7%
Europe	156	67%
Asia	20	8.4%
Unknown nationality	29	12.3%

On inquiring about the nature and the character of the fever, while 201 out of 234 patients (85.9%) were asked about the duration of fever in days, only 3 out of 234 patients (1.3%) were asked about any diurnal variation.

With regards to the documentation of symptomatology, Table 3 shows the documented numbers of specific systemic enquiries. Five main categories pertinent to common infectious disease manifestations

were chosen. Gastrointestinal symptoms (48%) were the most asked followed by respiratory symptoms (36%).

Table 4 shows the paucity, almost nil, documentation of risk events or behaviours related to fever of unknown origin. Documentation of relevant travel immunisations and/or prophylactic medications was found in only 2 out of 234 patients (0.9%).

Table 3 Documentation of the number of recent travelling patients presenting with fever to the ED who had specific systemic enquiry documented.

Systemic Enquiry	Number of patients with documentation of the specific systemic enquiry findings, out of 234 patients.	Percentage of patients with documentation of the specific systemic enquiry findings, out of 234 patients.
Respiratory Symptoms	85	36%
Gastrointestinal Symptoms	112	48%
Urological symptoms	48	21%
Skin manifestations	22	9%
Others including neurological	99	42%

Table 4 Documentation of known risky events or behaviours related to fever in travellers.

Known Risks for infections	Number of patients with documentation of these specific risks, out of 234 patients.	Percentage of patients with documentation of these specific risks, out of 234 patients.
Unprotected/Casual sex	1	0.4%
Exposure to contaminated food and water	4	1.7%
Any intravenous drug abuse, need for operations and / or need for blood transfusion	1	0.4%
Exposure to animal and / or insect bites.	2	0.9%

DISCUSSION

Up to the period of this audit, there were many biological threats throughout the years and at the time of publication, there was the ongoing novel COVID-19 pandemic which created global havoc and total revisions of most healthcare systems.

The importance of an adequate travel history, when managing patients presenting with fever, is taught in medical schools and its importance is highlighted in many acute medicine modules, yet this audit has shown that doctors do not give it its due importance. One may argue that many relevant questions might have been asked in real life but they were not documented. However, as the adage goes, if it was not written down, it never happened.

Infectious diseases are usually spread via the respiratory, oral, dermal or sexual routes. Their initial presentations are usually quite ambiguous and vague like fever, lethargy, malaise and various systemic presentations.

Travelling per se might increase the risk of communicable, endemic diseases which might affect personal health and wellbeing. Such risks should be sought for prior to travelling, especially if it entails visiting unfamiliar or remote areas.⁵ The risk of becoming infected will depend on the purpose of the trip, the accommodation sought and the behaviour adopted by the traveller.⁶ Certain countries are known to be endemic to diseases such as Ebola, Dengue, Lyme Disease, Malaria, Chikungunya and much more and thus travellers should educate themselves on what precautions need to be taken to reduce the risk for exposure. The need for vaccination should be checked prior to travel.⁶

In more recent and actual times, the pandemic spread of the COVID-19 disease was directly related to travelling from areas with outbreaks. Indeed, the CDC issued articles advising that one can contract COVID-19 during travelling. Whole articles issue information on what needs to be done before, whilst and after travelling to minimise the risk of exposure.⁷

Travel history indeed became the first filter question to identify the at-risk patients presenting to the ED. Unfortunately, this happened only due to a heightened known global threat. Example admitting an active tuberculosis as a routine chest infection in a normal hospital ward, due to a lack of a proper travel history, may be dangerous not to mention its discharge into the community without adequate treatment and containment.

The results obtained in this audit show that there is a significant lack of documentation and even unawareness of the potential harm caused by travel-related communicable diseases. A travel history is in reality not very laborious but one may argue that in a fast-moving, time and resource-constrained ED, this is an extra and a thorough, time-consuming history is time-wasting. The authors disagree with such argument and argue that in an era where the world has become a 'global village', due to heavy population movements secondary to trade, work and leisure, it is important to exercise constant surveillance to contain the communicable disease as much as possible. Our audit has shown that doctors are not giving a travel history its due importance unless there is a compulsory, high alert imposed by the international or local infection control specialists. There is even lack of some basic history like sexual history. In our study only one patient had a sexual history for unprotected sex recorded and this is a basic question that one asks during medical history taking for fever of unknown origin.

Although the researchers did not investigate the reasons for such lack of documentation, we could assume that these include work pressure, language barriers, decreased awareness of the importance of travel history and absence of a designated space for travel

history on the Emergency Department clerking sheet. In our study only one patient had a sexual history for unprotected sex recorded and this is a basic question that one asks during medical history taking. The authors believe that this is not good practice.

The researchers are therefore proposing the use of a ready-made checklist which should be used at all times for all patients who present to the ED with fever and recent travel history. Figure 2 shows the proposed checklist which is essentially a one-page document, which can be added on to the current ED clerking sheet, and mainly incorporates the essential and important information that needs to be documented. If this proforma is uploaded on an electronic platform together with the electronic ED documentation, it can be further made easier by offering the options for drop-down choices.

This proforma should be filled for all those patients presenting with fever and who admit to travelling to and from abroad in the previous one month. This is because such proforma includes basic symptomatology, high-risk presentations and contact information which will aid the diagnostic, infection control and contact tracing/ public health pathways. It also doubles up as an easy aide-memoire for the less experienced doctor.

The authors acknowledge the limitations of this study which are mainly the:

- Exclusion of travellers who are local residents and who were excluded for ease of data retrieval as mentioned in the methodology section. This would have been a very important control group to cross-reference with.
- Exclusion of paediatric (under the age of 16 years) patients
- Data collection relied only on the documentation in the emergency history notes

Figure 2 Proposed Checklist Proforma for patients presenting to the ED with fever and with a history of travelling in the last one year.

Patient's name: _____ Age: _____ Hospital Number: _____	
Patient's Telephone Number: _____ Patient's Next of Kin Telephone Number: _____	
Temperature: _____ °C (oral, rectal, skin) (delete as necessary)	Any diurnal variation of fever? Yes / No (specify as necessary: _____)
General Systemic Enquiry: malaise, fatigue, anorexia, skin rash, bruises, yellowish skin discoloration, diaphoresis,	
Respiratory Systemic Enquiry: cough, sore throat, sneezing, dyspnoea on exertion, dyspnoea at rest, nocturnal dyspnoea, sputum production & colour _____, haemoptysis, pleurisy, wheezing, other _____ (delete as necessary)	
Cardiovascular Systemic Enquiry: chest pain, dyspnoea on exertion, dyspnoea at rest, nocturnal dyspnoea, lower limbs swellings, other _____ (delete as necessary)	
Gastro-intestinal Systemic Enquiry: nausea, vomiting, diarrhoea & colour _____ & daily frequency _____, haematemesis (fresh blood), coffee ground vomiting, abdominal pain, malaena, fresh bleeding pr, other _____ (delete as necessary)	
Genito-urinary Systemic Enquiry: dysuria, ↑urine frequency, nocturia, foul smelling urine, discoloured urine & colour _____, haematuria, bleeding or discharge pv, penile bleeding or discharge, other _____	
Neurological Systemic Enquiry: headache, meningism, sensory disturbance, motor disturbance, gait problems, visual problems, auditory problems, anosmia, tremors, other _____ (delete as necessary)	
Musculoskeletal Systemic Enquiry: myalgias, arthragias, joint swellings, joint stiffness, other _____ (delete as necessary)	
Predisposing factors for fever in travellers: (specify & delete as necessary)	
Travel History: Place/s travelled to in the last one year, including dates and length of stay: _____ _____	
High Risk Events: Contact with known infectious persons, unprotected/ casual sex, IVDU, surgery or invasive procedures in the last one year, animal/ insect bites, contact with sewage or highly contaminated environments, ingestion of possible contaminated food/ drink, other _____	
Immunizations / Prophylactic travel treatments:	

Another important limitation is that the 21 days post-arrival time limit might be too short to include all possible communicable diseases.

However, going through 234 case notes of travellers presenting to the ED with fever, did shed light on the need for doctors to acknowledge more the importance of a proper travel history when managing fever in travellers and to document it properly.

This study was performed and concluded before the onset of the COVID-19 pandemic. The authors acknowledge that this event has changed the whole modus operandi of EDs around the globe and the early, thorough travel history of febrile patients has become crucial. Indeed, the authors recommend for a

re-audit to be carried out during the pandemic times and to investigate whether this event changed the doctors' proper travel history records.

CONCLUSION

This audit has shown that although Emergency Physicians are aware that the population visiting the Emergency Department is a varied one, documentation still leaves much to be desired. Proposal of a ready-made proforma is made and this should be used at all times for patients who present to the Emergency Department with fever and a recent history of travel.

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