1. Introduction and Who Guideline applies to

This guideline is to assist with the assessment, investigation and management of patients admitted with fever (temperature >38.3°C), who have recently returned from travelling abroad. It is intended to provide a broad overview, in order to guide medical teams in all specialties, but especially in ED and the Acute Medical Units. It is not intended to provide an exhaustive list of all possible diagnoses and emphasises the importance of involving the Infectious Diseases team early on. The guideline also links to existing Trust guidelines and procedures, including Sepsis, Malaria, and Ebola (a viral haemorrhagic fever) and SARS-2-CoV (COVID-19).

Bacterial pathogens acquired overseas may have different sensitivity profiles from those acquired in the UK. Adjustments may need to be made to the antibiotic regimes usually recommended in Trust guidelines.

2. Guideline Standards and Procedures

Cases of suspected tropical infection, or when diagnosis is unclear,
can be discussed with Infectious Diseases SpR/Consultant via switchboard

2.1. Baseline Investigations

- In all patients perform baseline
  - **Malaria screen (if travel to endemic area – see below – and even if prophylaxis has been taken)**
  - **SARS-CoV-2 (COVID-19) swab**
  - Blood cultures (include travel history on ICE)
  - FBC
  - U&E
  - LFT
  - CRP
  - Stool cultures (if appropriate)
  - Blood borne virus screen (HIV, HBV, HCV)
  - CXR (if appropriate)
- Ensure blood cultures are flagged as high risk & document travel history on request
- If recent admission to a hospital outside of Leicester then consider CRO screening (rectal swab for carbapenem resistant organisms): https://bit.ly/3E0ZI4q

2.2. General Approach

The flowcharts below provide some guidance as to the initial points to consider in the history taking and examination. These can direct clinicians towards possible diagnoses depending upon the localisation of symptoms/signs, and/or the region to which the patient has travelled, as well as the timeline of travel/return (see incubation periods on page 3)

2.3. Infection Prevention and Control

If there is significant risk of a transmissible infection the patient should be isolated. Please refer to the following guidelines and policies for further information:

- Notifying Suspected or Known Infectious Diseases: http://bit.ly/2G1HRuL
- Preventing Transmission of Infective Agents and Isolation: http://bit.ly/2wtRUcF
- Viral haemorrhagic fever (includes Ebola): https://bit.ly/3MBrCqk
- Tuberculosis UHL Infection Prevention Policy: http://bit.ly/2wsCXr3

Approach to Fever in the Returning Traveller - 1

Cases of suspected tropical infection, or when diagnosis is unclear, can be discussed with Infectious Diseases SpR/Consultant via switchboard

In all patients perform baseline malaria screen, SARS-CoV-2 (COVID-19) swab, FBC, U&E, LFT, CRP, blood cultures, blood borne virus screen (HIV, HBV, HCV), CXR (if appropriate.)

Ensure blood cultures are flagged as high risk & document travel history on request

Relevant PCR tests can be requested on ICE or on a paper Virology request form. Please also send this additional form https://bit.ly/3xq3JhD which will be sent to the Rare & Imported Pathogens Laboratory (RIPL) who may perform additional tests depending on the country of travel. (Please leave the section with sender's information blank as this will be completed by the laboratory)

Isolate if potential infection-control risk: https://bit.ly/38KkZUt for i-Five Assessment Tools

AREA OF TRAVEL: some common diseases to consider and tests (NB this list is not exhaustive)

Americas

North:

Tick borne disease/Rickettsia eg Lyme

- *Serology, PCR*

Chikungunya

- *Serology, PCR*

South

Malaria

Dengue

Chikungunya

Zika

Giardiasis

- *Stool*

Caribbean

Zika

Dengue

Chikungunya

Sub-Saharan Africa

Malaria

- *Rapid test & blood film, see UHL malaria guideline*

Enteric fever

- *Blood culture, stool culture*

Schistosomiasis

- *Serology, stool (ova, cyst, parasite), urine*

Dengue

- *Serology, PCR*

Leptospirosis

- *Serology, PCR*

Measles

- *Viral swab PCR, serology*

Amoebiasis

- *Stool PCR, serology*

South Asia

Malaria

Enteric fever

- *Blood culture, stool culture*

Dengue

Chikungunya

Scrub typhus

- *Serology*

TB

Southeast Asia

Malaria

Dengue

Chikungunya

Zika

Europe

Lyme

Rickettsia

Leptospirosis

Q fever

- *Serology, PCR*

Amoebiasis

- *Stool PCR, serology*

TB

Notes on specific conditions:

- **Enteric Fever (typhoid and paratyphoid)**: Meropenem 1g is not first line option. Follow the enteric fever guideline for choice of agent and initial management: http://bit.ly/UHLEntericFever
- **Malaria**: Do NOT use meropenem alone in suspicion of malaria. Follow the malaria guideline for choice of antimicrobial agent and initial management: http://bit.ly/UHLAdultMalaria
- **Meningitis**: Meropenem 1g is not first line option. Follow meningitis guideline for choice of agent and initial management: http://bit.ly/UHLAdultMeningitis
- **MERS-CoV**: If there is suspicion of Middle Eastern respiratory syndrome coronavirus the patient should be isolated and Public Health England guidelines followed: http://bit.ly/PHEMERS. Please discuss with ID SpR/consultant
- **Viral Haemorrhagic Fever (includes Ebola):** All patients with suspected Viral Haemorrhagic Fever should be discussed with the Infectious Diseases physician or Microbiologist on call before any investigations are requested.
- **SARS-CoV-19:** Trust Policies and Guidelines related to COVID-19: https://bit.ly/3xjBqS3

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Approach to Fever in the Returning Traveller - 2

Travel History
- Where?
- Dates of Travel
- Accommodation
- Activities eg swimming
- Sexual contacts
- Food/water sources
- Pre-travel vaccines
- Malaria prophylaxis (where relevant)

Patient critically unwell
- Malaria test if indicated
- Follow sepsis pathway for initial management
- ICU review if indicated

Malaria possible
- Malaria rapid test and blood film

Malaria test positive
- Treat as per malaria guideline
- Contact ID SpR/Consultant

Malaria test negative
- Repeat malaria test x2
- If positive see above
- If negative consider other causes (see opposite)
- Discuss with ID SpR/Consultant

Focal signs/symptoms

Respiratory:
Treat as community acquired pneumonia if indicated
Consider
- Influenza (send viral throat swab & empiric Tamiflu if suspected)
- SARS-CoV-2
- MERS CoV if travel to Arabian peninsula
- Legionella

Nil focal, consider:
Systemic viral illness (CMV/EBV/adeno)
UTI
Enteric fever
Dengue/chikungunya
Leptospirosis
Rickettsia

Rash/skin:
Dengue
Chikungunya
HIV seroconversion
Rickettsia
Scrub typhus (look for eschar)
Measles

Diarrhoea:
Traveller's diarrhoea
Campylobacter
E. coli
Enteric fever
Giardiasis
Intestinal amoebiasis

Abdominal pain:
Common (eg appendicitis)
Enteric fever
Liver abscess (bacterial, amoebic)
Giardiasis
Pelvic infl. disease

Jaundice:
Exclude life-threatening (eg severe malaria or dengue, leptospirosis)
Acute viral hepatitis
Cholangitis

Typical incubation of some common/tropical infections:

Viral Haemorrhagic fever 21 days
MERS-CoV 2-14 days
Chikungunya 1-12 days
Influenza 2-8 days
Leptospirosis 2-29 days
Dengue 4-7 days
Spotted fever rickettsia 2-14 days
Enteric fever 5-21 days but can present later especially if only partially treated
Falciparum malaria 7-30 days but can present later. Non-falciparum malaria may relapse with inadequate previous treatment and have a longer incubation period than falciparum malaria
Entamoeba histolytica may present months to years after acquisition

3. Education and Training

No specific training or skills required.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Adherence of antimicrobial choice, prescribing, and review in line with Trust policies and guidelines.	Annual Antimicrobial Prescribing Audit	Antimicrobial Pharmacists	Annually	TIPAC AWP CMG Boards

5. Supporting References

- Thwaites GE, Day NPJ, Approach to fever in the returning traveller. N Engl J Med 2017;376:548-60.
- Under 'for clinicians' by country: https://wwwnc.cdc.gov/travel/
- Imported fever service: https://www.gov.uk/guidance/imported-fever-service-ifs
- Zika: https://www.gov.uk/guidance/zika-virus-sample-testing-advice

6. Key Words

- Fever
- Returning traveller
- Febrile traveller
- Tropical infection
- Malaria
- Sepsis

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) Dr Helena White – Infectious Diseases Consultant	**Executive Lead** Medical Director
Contributing Authors (Name and Title) Dr Benedict Rogers – ID/Micro Registrar Dr Ryan Hamilton – Antimicrobial Pharmacist Sarah Hackney – Antimicrobial Pharmacist	**Guideline Reviewed and Ratified by:** Antimicrobial Working Party – 8 March 2022 PGC 20.5.22
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