Fever in the Returned Traveller

Background

- Returned travellers commonly suffer from health problems related to travel, which can present as minor self-limited illnesses or potentially life threatening infections.\(^1\)
- Non-specific viral illness, diarrhoeal diseases and respiratory illnesses are the most common clinical syndromes.\(^3,4\) The most common specific diagnoses among returned travellers with fever are malaria, dengue and salmonella infections including typhoid.\(^3,4\)
- Clinicians who are evaluating returned travellers who are ill must maintain a broad differential diagnosis that includes routine infections, as well as exotic infections and illness that may be non-infectious in nature.\(^2\)
- Returned travellers from Bali will still need investigation for Malaria, even if they have not travelled to rural/remote or the Lombok area.

Assessment

<table>
<thead>
<tr>
<th>Travel history checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where did you travel?</td>
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<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td>When did you travel?</td>
</tr>
</tbody>
</table>
Vaccination status including routine vaccines and travel vaccines?
- Vaccines such as typhoid, provide incomplete protection and travellers are still at risk.\(^2,6\)
- Travellers unimmunised to standard vaccines, such as measles, are at increased risk of exposure abroad.\(^6\)

Malaria prevention strategies
- Malaria prophylaxis is never 100 percent effective and the use of bed nets is the most effective strategy
- Type of medication and dosing regimen
- Adherence to medication and duration of therapy prior to and after leaving an endemic area

Differential Diagnosis

<table>
<thead>
<tr>
<th>Infection</th>
<th>Incubation Period</th>
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<tbody>
<tr>
<td>Malaria</td>
<td>Variable</td>
</tr>
<tr>
<td>Typhoid (Salmonella)</td>
<td>Variable</td>
</tr>
<tr>
<td>Rickettsial infection</td>
<td>Variable</td>
</tr>
<tr>
<td>Dengue</td>
<td>Short</td>
</tr>
<tr>
<td>Chikungunya</td>
<td>Short</td>
</tr>
<tr>
<td>Influenza</td>
<td>Short</td>
</tr>
<tr>
<td>Campylobacter</td>
<td>Short</td>
</tr>
<tr>
<td>Shigella</td>
<td>Short</td>
</tr>
<tr>
<td>Measles</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Viral haemorrhagic fever (Ebola)</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Long</td>
</tr>
<tr>
<td>Rabies</td>
<td>Long</td>
</tr>
<tr>
<td>P.Falciparum:</td>
<td><strong>7 days-12 weeks</strong></td>
</tr>
<tr>
<td>Other malarial species:</td>
<td>weeks to several years</td>
</tr>
<tr>
<td>3 days - 3 months</td>
<td>(usually 8-14 days)</td>
</tr>
<tr>
<td>3-21 days (depending on type)</td>
<td></td>
</tr>
<tr>
<td>3-14 days (usually 5 days)</td>
<td></td>
</tr>
<tr>
<td>1-12 days (usually 3-7 days)</td>
<td></td>
</tr>
<tr>
<td>1-5 days (usually 2 days)</td>
<td></td>
</tr>
<tr>
<td>1-10 days (usually 3 days)</td>
<td></td>
</tr>
<tr>
<td>12 hours-7 days (usually 2 days)</td>
<td></td>
</tr>
<tr>
<td>7-18 days (usually 10 days)</td>
<td></td>
</tr>
<tr>
<td>2-21 days (usually 8 days)</td>
<td></td>
</tr>
<tr>
<td>2-7 weeks (usually 30 days)</td>
<td></td>
</tr>
<tr>
<td>3-8 weeks (sometimes years)</td>
<td></td>
</tr>
</tbody>
</table>

Management

Children are unlikely to present as severely unwell, if indicated please refer to the management for the severely unwell patient.

Non Severely Unwell Patient

Always consider infection control precautions - refer to Rash Management
Take a travel history
Perform a thorough examination including:
- Rashes / skin lesions (dengue, typhoid, rickettsia, measles, leptospirosis)
- Hepatomegaly (malaria, typhoid, dengue, viral hepatitis)
- Splenomegaly (malaria, typhoid, mononucleosis)
- Acute abdomen or GI haemorrhage (typhoid)
- Cough, coryza, conjunctivitis (respiratory viruses, measles)
- Jaundice (viral hepatitis, malaria)
- Lymphadenopathy (rickettsia, toxoplasmosis, brucellosis, HIV, infectious mononucleosis)
- Petechiae (meningococcal disease, viral haemorrhagic fever, rickettsia)
- Neurologic findings: confusion, lethargy, meningism (malaria, meningitis)
- Insect bites and eschars (malaria, dengue, rickettsia)

**Investigations** (to be performed on all returned travellers with a history of fever):
- Blood culture
- Thick and thin blood film for malaria (purple top) - this must be performed on 2-3 separate occasions, 12-24 hours apart, to be reliably negative
- Rapid diagnostic test for malarial Ag (purple top) (only positive in P. falciparum: call Hematology lab for urgent results available 24hr/day)
- FBC
- LFT, EUC

**Other tests to consider:**
- Serology for dengue/arboviruses (+/- the dengue NS1 Ag in the 1st week of illness) (red/gold top)
- Measles PCR on PNA/urine/blood and IgM + IgG for Measles in suspected cases (most frequently identified in unimmunised cases)
- CXR +/- NPA for respiratory viruses
- Stool bacterial cultures and enteric viruses
- Urine microscopy and culture

**Management**
- Depends on the patient's clinical presentation and specific diagnosis.
- If the patient is suitable for outpatient management, consult Infectious Diseases (in hours) prior to discharge. If urgent advice is required after hours contact Clinical microbiology on call.
- If the patient requires admission, the primary admitting team will be General Paediatrics with consideration for obtaining an Infectious Diseases Consultation

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**Severely Unwell Patient**
- Haemodynamic compromise
- Altered conscious state
- Seizures
- Bleeding

Refer to the [Serious Illness](#) guideline
Always consider infection control precautions - refer to [Rash Management](#)

**Initial Investigations**
- Blood cultures
- FBC and thick and thin blood film for malaria (purple top)
- Rapid diagnostic test for Malaria Ag (purple top) - label urgent and call Haematology Lab for result (available 24hrs/day)
- Microscopy and culture of urine, CSF and stool (including rectal swab for ESBL)
- LFT and EUC (green top)
- Coagulation profile (blue top)
- PCR (meningococcal, malaria) (purple top)
- Serum tube (dengue and other serology) (red/gold top)
Treatment
- Malaria positive - refer to Malaria guideline
- Otherwise treat with empirical antibiotics
  - First: IV Meropenem 40mg/kg (maximum 2 grams) 8 hourly then
  - IV Vancomycin 15mg/kg (maximum 750mg) 6 hourly

For Further advice contact the Infectious Diseases Fellow or Clinical Microbiologist (after hours)

References
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Guideline Developed by: Anita Campbell (Infectious Diseases Fellow) July 2015
External Review: PMH Infectious Diseases Team August 2015
External Review: Zoy Goff (PMH Pharmacy Department) August 2015

This document can be made available in alternative formats on request for a person with a disability.
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