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>
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<tr>
<th>Travel history checklist</th>
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| Where did you travel?    | Information regarding country specific risks can be found at:  
  • The WHO website who.int/ith under ‘disease distribution maps’  
  • The Centers for Disease Control and Prevention website  
    http://wwwn.cdc.gov/travel/destinations/list |
| When did you travel?     | • Include travel dates and duration of travel to establish possible  
  incubation period |
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>
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<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>
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<td>Chikungunya</td>
<td>Short</td>
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<td>Influenza</td>
<td>Short</td>
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<td>Campylobacter</td>
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<td>Shigella</td>
<td>Short</td>
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<tr>
<td>Measles</td>
<td>Intermediate</td>
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<tr>
<td>Viral hemorrhagic fever (Ebola)</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Long</td>
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<tr>
<td>Rabies</td>
<td>Long</td>
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- P.Falciparum: **7 days-12 weeks**
- Other malarial species: weeks to several years
- **3 days - 3 months** (usually 8-14 days)
- **3-21 days** (depending on type)
- **3-14 days** (usually 5 days)
- **1-12 days** (usually 3-7 days)
- **1-5 days** (usually 2 days)
- **1-10 days** (usually 3 days)
- **12 hours-7 days** (usually 2 days)
- **7-18 days** (usually 10 days)
- **2-21 days** (usually 8 days)
- **2-7 weeks** (usually 30 days)
- **3-8 weeks** (sometimes years)

### 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

**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

8. Traveller’s diarrhoea. In: eTG complete [Internet]. Melbourne: Therapeutic Guidelines Limited; 2015 Mar
13. Typhoid In: eTG complete [Internet]. Melbourne: Therapeutic Guidelines Limited; 2015 Mar
14. Princess Margaret Hospital CHAMP guidelines. Presumed Bacteraemia, Sepsis. Last revised 4th November 2013
15. Malaria In: eTG complete [Internet]. Melbourne: Therapeutic Guidelines Limited; 2015 Mar

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