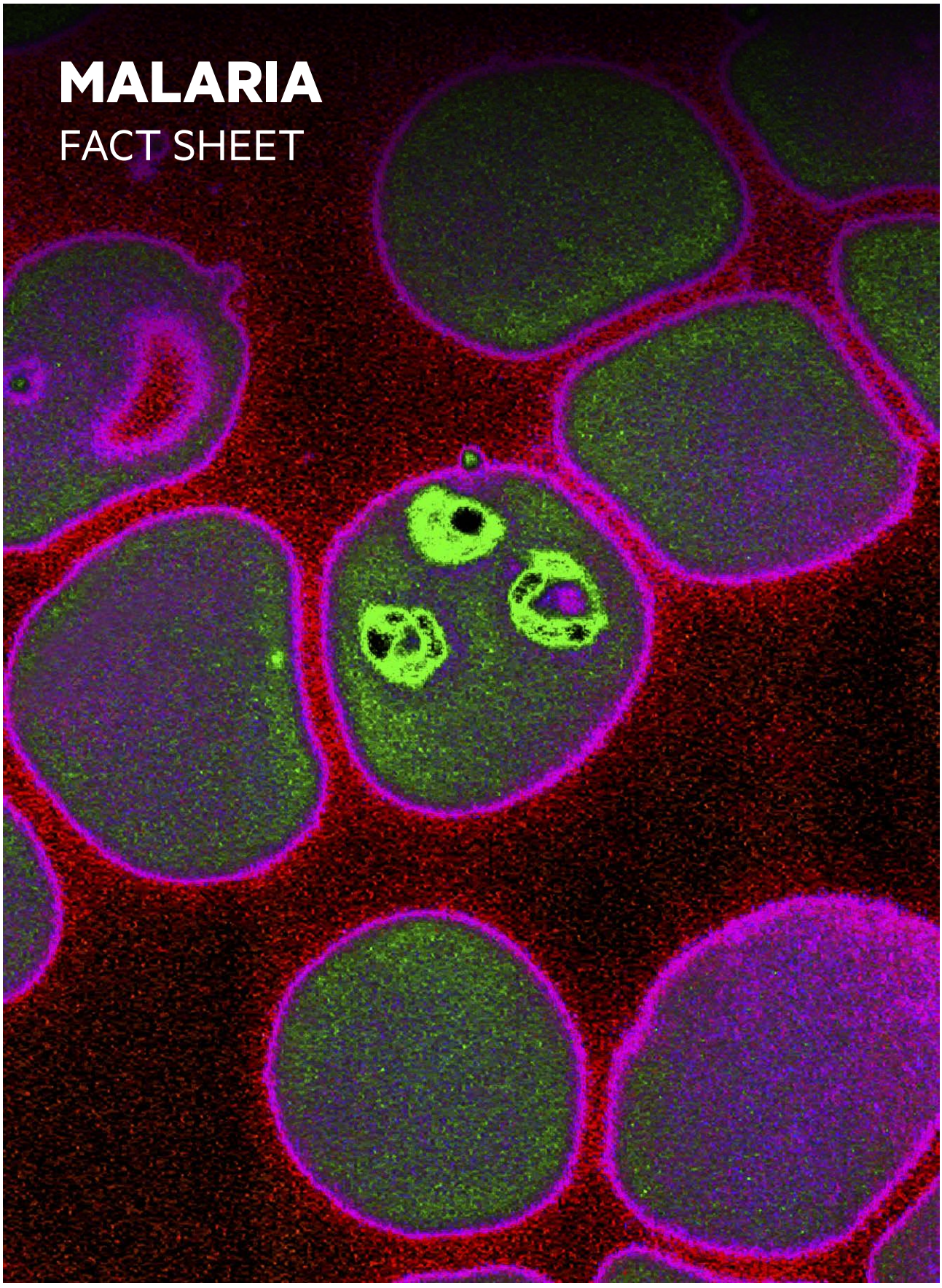
QUEENSLAND MUSEUM

MALARIA

FACT SHEET



Q26-027

Queensland Government

WHAT IS MALARIA?

Malaria is a serious and sometimes fatal infectious disease caused by *Plasmodium* parasites, mostly found in tropical regions. Five species of *Plasmodium* cause malaria in humans: *Plasmodium falciparum* (most severe), *Plasmodium vivax, Plasmodium ovale, Plasmodium malariae* and *Plasmodium knowlesi*.

Malaria is a vector-borne disease, with the microscopic parasites being transmitted to humans through the bites of infected female *Anopheles* mosquitoes.

Human malaria is not endemic in Australia; however, cases may occur in returning travellers. Australia eliminated malaria in the 1960s.



Natural hosts

The 4 main parasites that cause human malaria (*P. falciparum*, *P. vivax*, *P. ovale* and *P. malariae*) are transmitted human to human via mosquito vectors. These types of malaria are not zoonotic as humans are the intermediate host. In contrast, macaques are the natural reservoir hosts of *P. knowlesi*, so this type of malaria is zoonotic.

How is it spread?

Infection is indirectly spread to humans through the bite of infected female *Anopheles* mosquitoes. The transmission cycle is sustained when a female *Anopheles* mosquito bites an infected person, ingests the parasites with the blood meal, and, after the parasites develop within the mosquito, transmits them to another person during a subsequent bite.

While Australia eliminated endemic malaria in the 1960s, *Anopheles* mosquitoes are still present in parts of northern Australia (Far North Queensland, the Northern Territory and remote northern areas of Western Australia). All Australian malaria cases are now imported by travellers originating from areas with endemic malaria, such as Papua New Guinea, Indonesia, Africa, South America and Southeast Asia.

Plasmodium parasites infect other animals in Australia, most notably birds, reptiles and rodents, but do not infect humans.

Malaria parasites cannot be transmitted directly from human to human through casual contact. Very rarely, blood transfusions or organ transplants from infected donors can spread malaria. Congenital transmission (mother-to-foetus transmission during pregnancy or childbirth) is also possible, but rare.

Malaria is not spread through casual contact with infected people. Human-to-human transmission does not occur through normal daily activities.

Who is at risk?

- People who travel overseas to countries or regions with endemic malaria (e.g. Papua New Guinea, Indonesia, Africa, South America and Southeast Asia).
- Migrants and refugees from countries with endemic malaria.
- Military personnel and aid workers deployed to regions where malaria is endemic.
- Pregnant women, young children, elderly people and those with weakened immune systems face more severe illness and complications if infected with *Plasmodium* parasites.

⚠ Australians travelling to Papua New Guinea are at particular risk because of the prevalence of malaria throughout the country. PNG is recognised as the malaria epicentre of the Western Pacific region due to a range of geographical and demographic challenges to providing effective healthcare, especially in rural and isolated areas.

What are the symptoms?

In animals

Non-human primates (monkeys, apes and lemurs) are natural hosts for certain *Plasmodium* parasites. Many species of malaria parasites infect primates, including *Plasmodium knowlesi*, which naturally infects macaque monkeys in Southeast Asia and can cause severe disease in humans.

Symptoms in primates may include:

- fever
- anaemia
- lethargy
- loss of appetite
- enlarged spleen.

Some infections are asymptomatic, particularly in primates that have developed partial immunity.

In humans

Some people may have low-level infections with few or no symptoms, but this is uncommon. Symptoms typically appear 7–30 days after infection. Malaria initially presents as a flu-like illness with cyclical fever patterns.

Symptoms may include:

- fever and chills (often cyclical; occurring every 48–72 hours, depending on the *Plasmodium* species)
- anaemia
- fatigue
- weakness
- headaches
- muscle aches
- nausea
- vomiting
- sweating
- enlarged spleen.

Severe malaria (especially from *P. falciparum*) can cause:

- severe anaemia
- respiratory distress
- kidney failure
- seizures and coma (cerebral malaria)
- death.

⚠ *P. falciparum* causes the most severe form of malaria and can be fatal without prompt treatment. If you develop fever during or after travel to areas with endemic malaria, seek immediate medical attention.

How can I prevent infection?

No malaria vaccine is currently available in Australia. Prevention relies on antimalarial medication and mosquito bite prevention.



Prevention measures include:

- Take antimalarial medication as prescribed before, during and after travel to areas with endemic malaria. Consult a travel medicine specialist at least 6 weeks before travel to determine the appropriate antimalarial medication for your destination.
- Use insect repellent containing DEET, picaridin or oil of lemon eucalyptus on exposed skin.
- Sleep under insecticide-treated mosquito nets.
- Wear long-sleeved shirts and long pants, especially at dusk and dawn when mosquitoes are most active.
- Stay in well-screened and/or air-conditioned rooms.

Other commercially available products such as mosquito (citronella) coils, room sprays and plug-in devices may also provide some protection against being bitten, but people with respiratory issues should use these with caution, and only in well-ventilated areas. Always follow usage instructions for any product that purports to kill or repel mosquitoes.

Antimalarial medication must be continued for 4 weeks after leaving malaria areas. Don't stop early or you may still develop malaria. No antimalarial medication is 100% effective, so it is important to also take measures to avoid mosquito bites.

What treatments are available?

Malaria is treatable if diagnosed early. Treatment depends on the species of *Plasmodium*, severity of disease and drug resistance patterns in the region where infection was acquired. Seek immediate medical attention if you develop fever during or after travel to areas with endemic malaria.

Delayed treatment of malaria can be life-threatening. Always tell your doctor about recent travel if you develop a fever.

If you think you may have been exposed to malaria, please contact your doctor or public health agency for further advice.

Cover: A 600x microscope image of *Plasmodium falciparum*. Courtesy: Alamy/BSIP
Page 2: Malaria prevention relies on avoiding being bitten by mosquitoes, especially in areas with endemic malaria. Wear long sleeves and use an insect repellent containing DEET or picaridin for best protection. Courtesy: Alamy/Eugen Fedorov
Page 3: An *Anopholes* mosquito, a vector of malaria in Africa. Courtesy: Alamy/BIOSPHOTO

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