March 25, 2011

Malaria Fact Sheet

1. **What is malaria? -** Malaria is a serious and sometimes fatal disease caused by a parasite that commonly infects a certain type of mosquito which feeds on humans. People who get malaria typically are very sick with high fevers, shaking chills, and flu-like illness. Five kinds of malaria parasites can infect humans: *Plasmodium falciparum, P. vivax, P. ovale,* and *P. Malariae*. Recently, it has been recognized that *P. knowleski*, a type of malaria that naturally infects macaques (a genus of monkey) in Southeast Asia, also infects humans, causing malaria that is transmitted from animal to human "zoonotic malaria'. While infection with any of the malaria species can make a person feel very ill; infection with *P. falciparum*, if not promptly treated, may be fatal. Although malaria can be a fatal disease, illness and death are largely preventable.

2. **What are the signs and symptoms of malaria? –** Symptoms of malaria include fever and flu-like illness, including shaking chills, headache, muscle aches, and tiredness. Nausea, vomiting, and diarrhea may also occur. Malaria may cause anemia and jaundice (yellow coloring of the skin and eyes) because of the loss of red blood cells. Infection with one type of malaria, *Plasmodium falciparum*, if not promptly treated, may cause kidney failure, seizures, mental confusion, coma, and death.

3. **How soon will a person feel sick after being bitten by an infected mosquito? -** For most people, symptoms begin 10 days to 4 weeks after infection, although a person may feel ill as early as 7 days or as late as 1 year later. Two kinds of malaria, *P. vivax* and *P. ovale,* can relapse. In *P. vivax* and *P. ovale* infections, some parasites can remain dormant in the liver for several months up to about 4 years after a person is bitten by an infected mosquito. When these parasites come out of hibernation and begin invading red blood cells ("relapse"), the person will become sick.

4. **Is malaria a common disease? –** According to the World Health Organization (WHO), half of the world's population is at risk of malaria. In 2008, an estimated 243 million cases led to 863,000 deaths. The vast majority of these deaths (89%) occur in sub-Saharan Africa, most of these deaths occur in children under 5 years of age.

5. **Is malaria a serious disease? –** Malaria is the 5th leading cause of death from infectious diseases worldwide (after respiratory infections, HIV/AIDS, diarrheal diseases, and tuberculosis in low-income countries. Malaria is the 2nd leading cause of death from infectious diseases in Africa, after HIV/AIDS. Malaria imposes substantial costs to both the individuals and governments. Direct costs (for example, illness, treatment, premature death) have been estimated to be at least US $12billion per year. The costs are many times more than that in lost economic growth.

6. **How is malaria transmitted? -** Usually, people get malaria by being bitten by an infective female *Anopheles* mosquito. Only *Anopheles* mosquitoes can transmit malaria and they must have been infected through a previous blood meal taken from an infected person. When a mosquito bites an infected person, a small amount of blood is taken in which contains microscopic malaria parasites. About 1 week later, when the mosquito takes its next blood meal, these parasites mix with the mosquito's saliva and are injected into the person being bitten.

   Because the malaria parasite is found in red blood cells of an infected person, malaria can also be transmitted through blood transfusion, organ transplant, or the shared use of needles or syringes contaminated with blood. Malaria may also be transmitted from a mother to her unborn infant before or during delivery ("congenital" malaria).

7. **Who is at risk for malaria? -** Anyone can get malaria. Most cases occur in people who live in countries with malaria transmission. People from countries with no malaria can become infected when they travel to countries with malaria or through a blood transfusion (although this is very rare). Also, an infected mother can transmit malaria to her infant before or during delivery.

8. **Who is at risk of getting very sick and dying from malaria? -** People who have little or no immunity to malaria, such as young children and pregnant women or travelers coming from areas with no malaria, are more likely to become very sick and die. Poor people living in rural areas who lack knowledge, money, or access to health care are at greater risk for this disease.

9. **Where does malaria occur? -** Malaria typically is found in warmer regions (tropical and subtropical countries) of the world where higher temperatures allow the *Anopheles* mosquito to thrive. Half the world's population in 109 countries and territories (3.3 billion people) live in areas at risk of malaria transmission. 35 countries (30 in sub-Saharan Africa and 5 in Asia) account for 98% of global malaria deaths. Large areas of Central and South America, Hispaniola, Africa, the Indian subcontinent, Southeast Asia, the Middle East, and Oceania are considered malaria-risk areas.

10. **If I live in the United States, can I still get malaria? -** Malaria was eradicated from the United States in the early 1950s. However, about 1,500 cases of malaria are diagnosed in the United States each year. The vast majority of these cases are travelers and immigrants returning from malaria-risk areas. Of the species of *Anopheles* mosquitoes found in the United States, the three species that were responsible for malaria transmission prior to elimination (*Anopheles quadrimaculatus* in the east, *An. freeborni* in the west, and *An. albimanus* in the Caribbean) are still widely prevalent; thus there is a constant risk that malaria could be reintroduced in the United States.

11. **I will be traveling outside of the United States. What should I do to avoid getting malaria or other infectious diseases?**

    a. Travelers leaving the United States should: (1) Visit your health care provider 4-6 weeks before foreign travel for any necessary vaccinations, as well as a prescription for an antimalarial drug, if needed. (2) Take your antimalarial drug exactly on schedule without missing doses. (3) Wear insect repellent to prevent mosquito and other insect bites. Your insect repellent should contain DEET as its active ingredient. To prevent malaria, wear insect repellent if out of doors between dusk and dawn when the mosquito that transmits malaria is biting. (4) Wear long pants and long-sleeved clothing. And (5) Sleep under a mosquito bed net (preferably one that has been treated with insecticide) if you are not living in screened or air-conditioned housing.

    b. It would be best to purchase all the medications that you need before you leave the United States. As a precaution, note the name of the medication(s) and the name of the manufacturer(s). That way, in case of accidental loss, you can replace the drug(s) abroad at a reliable vendor.

12. **When should malaria be treated? -** The disease should be treated early in its course, before it becomes severe and poses a risk to the patient's life. Several good anti-malarial drugs are available, and should be administered early on. The most important step is to think about malaria (provide your travel history), so that the disease is diagnosed and treated in time. Since different Plasmodium species require different types of treatment, it is very important to know the infecting species and to seek care from a health care provider knowledgeable about malaria treatment.

13. **For more information:** http://www.cdc.gov/malaria/

This fact sheet provides general information. Please contact your physician for specific clinical information.