

## Fact Sheet: Malaria and the Military

Malaria has impacted the U.S. Military since the Revolutionary War. In every U.S. military campaign during the twentieth century, malaria caused more casualties than bullets. Six of the last seven U.S. troop deployments were to malarial regions, with Bosnia as the exception.<sup>1</sup>

### Revolutionary War (1776–1783)

- One of the first military expenditures of the Continental Congress was for \$300 to buy quinine to protect General George Washington's troops. Quinine, made from the bark of the Cinchona tree in South America, was used to treat malaria more than 350 years ago.<sup>2</sup>

### Civil War (1861–1865)

- Malaria accounted for 1,316,000 episodes of illness and 10,000 deaths.<sup>3</sup>
- Two soldiers died of disease (primarily dysentery, diarrhea, typhoid, and malaria) for every one killed in battle.<sup>4</sup>

### World War I (1914–1918)

- Approximately 7.5/1,000 Americans quartered in the U.S. were infected with malaria in 1917.<sup>5</sup>

### World War II (1939–1945)

- Malaria caused entire divisions to be ineffective combat units in WWII and the Vietnam War.<sup>6</sup>

### Korean War (1950–1953)

- U.S. military hospitals were inundated with cases of malaria, with as many as 629 cases per week. More than 3,000 cases of malaria were documented in U.S. troops that served during the war.<sup>7</sup>

### Vietnam War (1962–1975)

- Malaria felled more combatants during the war than bullets.<sup>6</sup>
- The disease reduced the combat strength of some units by half.<sup>8</sup>
- The U.S. Army established a malaria drug research program when U.S. troops first encountered drug resistant malaria during the war.<sup>9</sup>

### Operation Restore Hope (1992–1994)

- Malaria was the No. 1 cause of casualties during the operation.<sup>10</sup>
- From the time of deployment through April 1993, malaria was diagnosed in 48 military personnel who had onset of illness while in Somalia.<sup>11</sup>
- Malaria was diagnosed in 83 military personnel (21 Marine and 62 Army) following their return from Somalia. (The Army did not prescribe routine post-exposure primaquine.)<sup>11</sup>

### Imported Malaria in U.S. Military Personnel (1996–1997)

- Thirty-two cases of malaria in U.S. military personnel were reported in 1996: eight in the Army, seven in the Air Force, three in the Marine Corps, three in the Navy, and 11 whose military branch was unknown. Preventive drugs were available in 28 cases; eight people did not use any.<sup>12</sup>
- In 1997, 27 cases of imported malaria in U.S. military personnel were reported. Of the 26 cases where information on use of preventive drugs was available, ten patients were not using any.<sup>13</sup>

### **Malaria in Afghanistan, Iraq, and Liberia (2001–2003)**

- Many soldiers in Iraq walked while eating just to avoid being bitten and infected by mosquitoes.<sup>14</sup>
- In October 2001, a falciparum malaria epidemic that erupted in Afghanistan—during the peak of the military operations—claimed 53 lives.<sup>15</sup>
- When 290 marines went ashore in Liberia in September 2003, 80 contracted malaria. Of the 157 troops who spent at least one night ashore, 69 became infected.<sup>16</sup>
- In Liberia, over a third of U.S. Marines sent in as military advisors to oversee a civil transition have contracted malaria.<sup>17</sup>
- While the same series of health recommendations were given for Liberia as for Afghanistan and Iraq, the risk of contracting malaria in Liberia is 1,000 times higher than in the Persian Gulf or in Central Asia because Liberia has higher transmission.<sup>16</sup>

### **Military Budgets for Malaria**

- The Department of Defense is a leader in malaria vaccine research, with a budget of \$8 million per year.<sup>18</sup>

### **Military Role in Malaria Control**

- Various military institutes including the Navy Medical Research Center (NMRC), Walter Reed Army Institute of Research (WRAIR), and the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) Biosafety Level 4 research facility, investigate disease threat and develop effective countermeasures to protect and sustain U.S. troops.<sup>19</sup>
- WRAIR has a long and successful history in developing and field-testing successful malaria drugs, including mefloquine, halofantrine, and tafenoquine.<sup>20</sup>
- WRAIR and NMRC support malaria vaccine development and evaluation. WRAIR's advanced development efforts are directed toward the clinical evaluation of malaria vaccine candidates.<sup>21</sup>
- Navy Virtual Hospital publishes a pocket guide to malaria prevention and control, which highlights each individual's role in treating and preventing malaria cases.<sup>22</sup>
- To help control of infectious disease such as malaria, the U.S. Marine Hospital Service was active in leading quarantines, ship inspection activities, and rodent and vector-control operations.<sup>23</sup>

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<sup>1</sup> [http://www.defenselink.mil/news/Jul1996/n07301996\\_9607305.html](http://www.defenselink.mil/news/Jul1996/n07301996_9607305.html)

<sup>2</sup> Desowitz Robert S, *The Malaria Capers (More Tales of Parasites and People, Research and Reality)*, W.W. Norton & Company, New York, 1991.

<sup>3</sup> <http://www.imsdocs.com/civilwar2.htm>

<sup>4</sup> <http://www.cl.utoledo.edu/canaday/quackery/quack8.html>

<sup>5</sup> <http://www.jhsph.edu/magazineSpring02/Prologues.htm>

<sup>6</sup> [http://www.defenselink.mil/news/Jul1996/n07301996\\_9607305.html](http://www.defenselink.mil/news/Jul1996/n07301996_9607305.html)

<sup>7</sup> <http://www.cdc.gov/ncidod/eid/vol4no2/feighner.htm>

<sup>8</sup> <http://news.bbc.co.uk/1/hi/world/americas/593122.stm>

<sup>9</sup> <http://www.pasteur.fr/sante/socpatex/pdf/2001n2b/milhou.pdf>

<sup>10</sup> [http://www.defenselink.mil/news/Jul1996/n07301996\\_9607305.html](http://www.defenselink.mil/news/Jul1996/n07301996_9607305.html)

<sup>11</sup> <http://wonder.cdc.gov/wonder/PrevGuid/m0021173/m0021173.asp>

<sup>12</sup> <http://www.cdc.gov/mmwr/PDF/SS/SS5001.pdf>

<sup>13</sup> <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5001a2.htm>

<sup>14</sup> <http://www.rediff.com/us/2003/apr/02iraq2.htm>

<sup>15</sup> <http://www.emro.who.int/rbm/meetings/muscat02/CountryReport-AFG.doc>

<sup>16</sup> <http://www.strategypage.com/fyc0/howtomakewar/default.asp?target=HTATRIT.HTM>

<sup>17</sup> <http://www.sciscoop.com/story/2003/9/10/71246/9252>

<sup>18</sup> <http://usinfo.state.gov/topical/pol/usandun/01052202.htm>

<sup>19</sup> <http://www.nmrc.navy.mil/Pages/idd.html>

<sup>20</sup> [http://wrair-www.army.mil/AboutWRAIR/WRAIROverview/InfDiseases\\_2.htm](http://wrair-www.army.mil/AboutWRAIR/WRAIROverview/InfDiseases_2.htm)

<sup>21</sup> <http://www.pasteur.fr/sante/socpatex/pdf/2001n2b/milhou.pdf>

<sup>22</sup> <http://www.vnh.org/Malaria/Malaria.html>

<sup>23</sup> [http://www.usapa.army.mil/pdffiles/r40\\_12.pdf](http://www.usapa.army.mil/pdffiles/r40_12.pdf)