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DIA SEAL

Defense Analysis Report

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15 October 2003

(U) Iraq: Sand Fly Diseases Threaten US Personnel**(U) EXECUTIVE SUMMARY**

(U) Leishmaniasis and sand fly fever, diseases transmitted by sand flies, threaten US personnel deployed in Iraq. Leishmaniasis typically presents as skin lesions (cutaneous leishmaniasis), but also can cause obscure symptoms such as fever and progressive weakness (visceral leishmaniasis). Although exact risk is unknown, we estimate that in the absence of appropriate countermeasures, as many as [REDACTED]

[REDACTED] of US personnel exposed to sand flies during the transmission season could develop cutaneous leishmaniasis, and a smaller number of visceral leishmaniasis cases could occur. Moreover, an unknown number of personnel also could develop sand fly fever, which may cause a significant flu-like illness that often is undiagnosed. Personal protective measures reduce the risk of sand fly exposures and remain the primary means of prevention. Habitat abatement, removal of rubbish heaps, and insecticidal spraying also should be considered to reduce numbers of sand flies.

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USC 424;(b)
(3):50 USC
3024(i)

(U) Sand Flies in Iraq

(U) Sand flies, which are common throughout Iraq, serve as vectors for serious diseases, including leishmaniasis and sand fly fever. Sand fly activity in Iraq is seasonal, with the greatest numbers of sand flies typically present during April through November.

(U) US personnel deployed in support of Operation Iraqi Freedom have experienced a high number of sand fly exposures; some service members at locations where numbers of sand flies are high have reported up to 100 bites per person. Moreover, environmental sampling of more than 60,000 sand flies for the leishmaniasis parasite in various parts of Iraq have demonstrated that, depending on the location of the sampling, up to 3 percent of trapped sand flies had been infected with the parasite.

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(U) Transmission and Prevention of Sand Fly Diseases

(U) Sand flies transmit diseases to humans when they bite and take a blood meal. Sand flies are very small (about one-fourth the size of most mosquitoes) and sand colored. They tend to stay in shady areas during the day and begin feeding at dusk. They live in forested areas, caves, rodent burrows, and rock crevices. Personal protective measures such as DEET, bed nets, and permethrin remain the primary means of preventing sand fly diseases.

(U) Leishmaniasis

(U) Leishmaniasis can produce a number of clinical syndromes in humans. Cutaneous (skin) and visceral (kala-azar) are the most common clinical syndromes. Both syndromes typically occur after a lengthy incubation period; more than 6 months is not unusual. Outbreaks of leishmaniasis tend to be related to deforestation, the building of dams, new irrigation patterns, urbanization, and migration of susceptible people (not immune from previous exposure) to endemic areas. Treatment includes use of a controlled therapy protocol, which requires medical evacuation to Walter Reed Army Medical Center. Although primarily transmitted by sand fly bites, the parasite may be acquired through blood transfusion, raising concerns about post-deployment blood donations.

(U) Cutaneous leishmaniasis (CL) typically starts out as a papule and progresses to an ulcerated area. There may be one or more such lesions, which may heal spontaneously or require treatment.

(U) Visceral leishmaniasis (VL), the more serious disease, typically presents with a fever, enlarged spleen and lymph nodes, anemia, drop in numbers of white blood cells, weight loss, and generalized weakness. If unrecognized and untreated, most cases result in death.

(U) Estimated Risk of Leishmaniasis Cases in US Troops

(U) **Current cases:** To date, 44 confirmed cases of CL have been diagnosed in US personnel stationed in Iraq during Operation Iraqi Freedom. These service members have been transported to Walter Reed Army Medical Center for treatment. No cases of VL have yet been diagnosed; however, the incubation period tends to be longer and symptoms are vague, complicating the diagnosis. Historically, 32 cases of leishmaniasis were reported in US troops returning from Operation Desert Shield/Storm. Both cutaneous and visceral cases occurred.

(U) **Future risk:** In the absence of any personal protective measures (PPM), we estimate that a small number of US personnel exposed to sand flies in Iraq could develop CL. Some of these cases may spontaneously resolve or be undiagnosed. A lesser number of VL cases also can be expected. Attack rates of both cutaneous and visceral forms could be higher in certain units exposed to heavily infected sand fly populations in focal areas.

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(U) Sand Fly Fever among US Personnel

(U) Sand fly fever, which is caused by a virus, typically results in flu-like symptoms. Most of the local population are affected as children, and adults are immune. However, US personnel are susceptible; historically, personnel in the region during WWII suffered significant illness, with loss of duty days. Because the actual level of sand fly fever transmission has not been determined in Iraq,

Moreover, because the symptoms mimic flu-like illnesses, cases likely will be under-diagnosed. Although sand fly fever typically will be mild in most cases, severe depression and/or encephalitis may occur in a small percentage of cases.

(U) Prevention

(U) Personal preventive measures to reduce the risk of exposure to sand fly bites remain key to preventing sand fly diseases. Providing appropriate personal protective measures including use of DEET (N, N-diethyl-meta-toluamide), permethrin-treated uniforms, bed nets, and education on the proper wear of the uniform,

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USC 424;(b)
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along with strong command emphasis, limit the risk. Habitat abatement, removal of rubbish heaps, and insecticidal spraying also should be considered to reduce numbers of sand flies.

Prepared by:

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