

Chagas Disease as a Disease of Operational Military Significance: Lack of Essential Policies Present a Clear and Present Danger to Service Members

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INTRODUCTION

Background

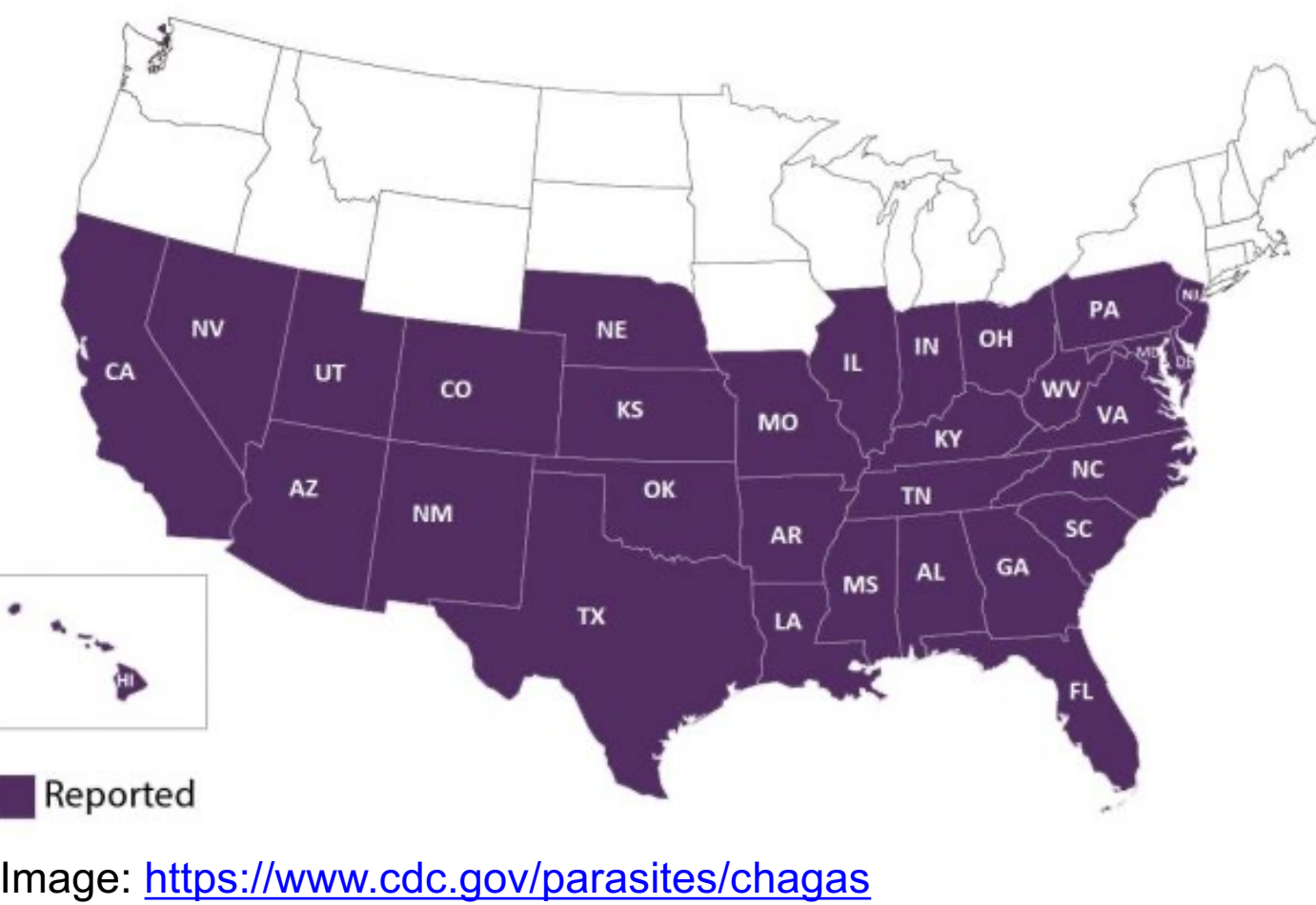
Chagas disease (CD), an infection with the parasite *Trypanosoma cruzi*, is endemic throughout the Americas, resulting in significant morbidity and economic burdens. The “silent killer”, myocardial damage, cardiac pathology and gastrointestinal disease progresses asymptotically until irreversible end-stage heart or gastrointestinal failure is present. While the U.S. is considered a non-endemic country, it is estimated that more than 300,000 people living in the U.S. are chronically infected with the parasite¹. Texas and California, in particular, are becoming recognized as endemic areas for both sylvatic and domestic transmission².

Significance

Approximately 6-10 million persons are infected with another 100 million³ at risk for acquiring infection, including U.S. Active-Duty Service Members (ADSMs) working in the SOUTHCOM and NORTHCOM areas near the U.S. Mexico border region. Figure 1 represents the areas in the U.S. where the vector is found.

Chagas disease is also a significant health threat to military working dogs (MWDs) with infections detected in 8-10% of MWDs at Joint Base San Antonio. This disease affects a number of dogs supporting various units deployed to multiple Areas of Operations (AO) as well as the dogs serving the Department of Homeland Security⁴. Because of the important detection, security, and tracking duties these dogs provide, any loss of duty days from early retirement or death could be associated with increased risk of endangerment to humans. Similarly, the MWDs share risk factors, including an outdoor lifestyle that may increase contact with vectors.

Figure 1: Map showing triatomine vector presence in the U.S.



METHODS

In order to propose appropriate policies for the screening of CD in the U.S. Military and Partner Nation health systems, a comprehensive literature review and analysis of existing military policies for other diseases with similar characteristics such as Tuberculosis (TB), Hepatitis C Virus (HCV), and Lyme disease was conducted. Side by side comparisons were made on surveillance, screening, and treatment protocols to determine best policy recommendations for CD.

OBJECTIVES

The objectives of the overall project were to investigate the risk of occurrence of CD among ADSMs in relation to their exposure to infected vectors of the disease while on active duty as well as conduct an economic and policy analysis of CD in the military. For this paper, a policy analysis was done to suggest actions that can be used to mitigate impact on performance outcomes (e.g., fit-for-duty, career progression), prevent and control CD during deployment and support overall health readiness.

Figure 2: Triatoma Gersteckerii
Triatomine bugs are a type of reduviid bug that can carry the parasite *Trypanosoma cruzi* that causes CD



RESULTS

Tuberculosis (TB)

The Army uses targeted TB testing in all settings⁵. In pre-deployment there is no testing as soldiers are at very low risk for new infection. Universal testing of low- risk populations results in significant numbers of false positives (more than 50%) which leads to unnecessary treatment. The Army and Navy use annual risk exposure assessments to determine their TB exposure history and risk of acquiring TB⁵.

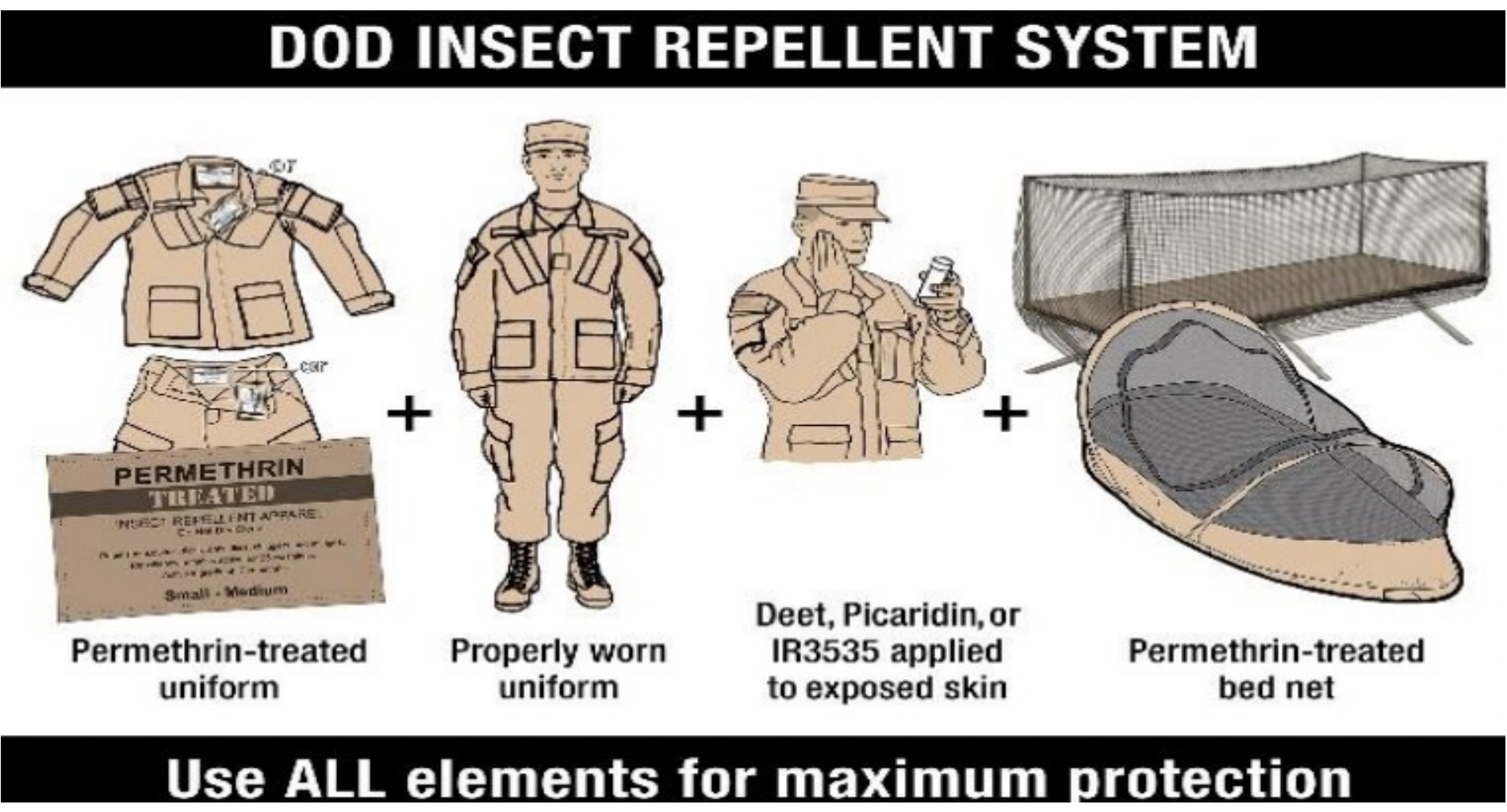
Hepatitis C (HCV)

The Army and Air Force do not require HCV testing at accession⁶. The Navy and Marines Corps require all new applicants to undergo HCV screening prior to entering military service. HCV testing should be considered for persons injured during bombings or other mass casualty events whose penetrating injuries or nonintact skin are suspected to have come into contact with another person’s blood or body fluids⁷.

Lyme Disease

Army began issuing Army combat uniforms (ACUs) treated with permethrin (an insect repellent), which is an important step in the prevention of tick bites⁸. To date, there is no comprehensive tick-borne disease education and prevention program that targets the entire joint defense enterprise⁸.

Figure 3 Department of Defense (DoD) Insect Repellent System. Wearing permethrin-treated clothing, using a DEET-based insect repellent on the skin, and sleeping under a permethrin-treated bed net provides maximum protection from kissing bug bites⁸.



DISCUSSION

The U.S. military has screening, treatment and prevention policies across the branches for several diseases that are similar to CD in their manifestation and management. It is recommended that targeted testing of high-risk individuals for CD be done (e.g., born to Hispanic mothers from Latin America, lived in rural areas of southern U.S. or Latin America, deployed to areas in or near SOUTHCOM or where there is known triatomine activity, bloodborne exposures in the field). In addition to testing, prevention methods such as treated uniforms and surveillance of vectors should be implemented in higher risk areas⁹. If there is a confirmed positive diagnosis in an ADSM, further testing, treatment and monitoring is recommended. Lifelong management of CD may include annual EKGs and follow-up with a cardiologist and/or gastroenterologist¹⁰.

CONCLUSION

CD poses a significant health threat in the U.S. military population, including MWDs. Management of the disease includes increased health screenings, integrated pest management and surveillance to reduce risk. Other more known diseases can serve as models to develop protocols for this important disease.

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