

# Personal Protection Measures Against Mosquitoes, Ticks, and Other Arthropods



Jonathan D. Alpern, MD<sup>a,\*</sup>, Stephen J. Dunlop, MD, MPH, CTropMed<sup>b</sup>, Benjamin J. Dolan, MD<sup>c</sup>, William M. Stauffer, MD, MSPH<sup>d</sup>, David R. Boulware, MD, MPH, CTropMed<sup>e</sup>

## KEYWORDS

- Arthropod bites • Personal protection measures • Travelers • Mosquitoes
- Repellants • DEET • Ticks

## KEY POINTS

- Bite avoidance and personal protection measures should be recommended to all travelers.
- Traveler characteristics and destination-specific factors should be considered when deciding which personal protection measures to recommend.
- DEET, picaridin, PMD, and IR3535 are insect repellents that provide adequate protection for travelers against arthropod bites, with the exception of IR3535, which should not be recommended for use in malaria-endemic areas.
- Insecticide-treated clothing in combination with topical insect repellents provides nearly complete protection against arthropod bites.
- In addition to repellents, further methods of modifying the environment, such as insecticide-treated bed nets should be recommended, particularly for travelers to malaria-endemic areas.

---

Disclosure Statement: The authors have no disclosures or conflicts of interest.

<sup>a</sup> Division of Infectious Disease & International Medicine, University of Minnesota, 420 Delaware Street SE, MMC 250 Mayo, Minneapolis, MN 55455, USA; <sup>b</sup> Department of Emergency Medicine, Hennepin County Medical Center, University of Minnesota, 701 Park Avenue, Minneapolis, MN 55415, USA; <sup>c</sup> Department of Emergency Medicine, Hennepin County Medical Center, 701 Park Avenue, Minneapolis, MN 55415, USA; <sup>d</sup> Division of Infectious Diseases & International Medicine, Department of Medicine, University of Minnesota, 420 Delaware Street Southeast, 133 Variety Club Research Center, MMC 284, Minneapolis, MN 55455, USA; <sup>e</sup> Infectious Disease & International Medicine, Department of Medicine, University of Minnesota, MTRF 3-222, 2001 6th Street Southeast, Minneapolis, MN 55455, USA

\* Corresponding author.

E-mail address: [alper054@umn.edu](mailto:alper054@umn.edu)

Med Clin N Am 100 (2016) 303–316  
<http://dx.doi.org/10.1016/j.mcna.2015.08.019>

[medical.theclinics.com](http://www.medical.theclinics.com)

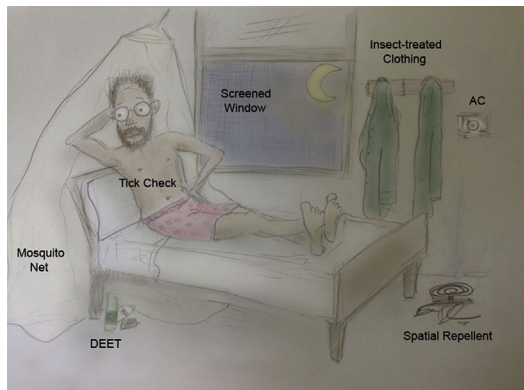
0025-7125/16\$ – see front matter © 2016 Elsevier Inc. All rights reserved.

## INTRODUCTION

Arthropod-associated diseases are a major cause of morbidity in travelers. Arthropods are defined as invertebrate animals with an exoskeleton, segmented body, and jointed appendages, and include mosquitoes, ticks, flies, and chiggers. Among ill returning travelers presenting to travel and tropical medicine clinics, vector-borne diseases (malaria, dengue, and rickettsia) accounted for most systemic febrile illnesses.<sup>1</sup> In another study, malaria and dengue were the most common causes of illness among travelers returning from Sub-Saharan Africa, Latin America, Caribbean, Southeast Asia, Australia, New Zealand, and Oceania.<sup>2</sup> The recent emergence of the chikungunya virus into the Western hemisphere reinforces the importance of mosquito bite avoidance and other personal protective measures as the primary means of protecting travelers from vector-borne diseases.<sup>3,4</sup> Despite being effective, compliance with personal protection measures among travelers to malaria-endemic regions is poor.<sup>5</sup> The pretravel visit serves an important role for vector-borne disease prevention that should not be overlooked. Pretravel advice was associated with a reduced risk of malaria, and malaria-associated morbidity across traveler groups.<sup>6</sup> This article reviews the personal protection measures available for travelers, the evidence behind them, and recommendations for their use in the prevention of arthropod bites in travelers (Fig. 1).

## DESTINATION AND VECTOR CONSIDERATIONS

During the pretravel visit, obtaining a detailed travel itinerary is a key aspect of risk assessment. The planned destination, urban versus rural setting, length of stay, modes of transportation, reason for visit, and accommodation all affect one's risk for arthropod exposures and subsequent vector-borne diseases. Having an understanding of the arthropod vectors present at one's destination is essential to adequately advising the traveler on mitigating risk. For instance, the *Anopheles* mosquito, which transmits malaria, is primarily a nighttime-biting arthropod, and insecticide-treated bed nets may augment repellents and other measures taken, such as chemoprophylactic drugs, when traveling to malaria-endemic areas. Conversely, dengue and chikungunya are viral diseases transmitted by the daytime-biting *Aedes* mosquitoes. Therefore, insect repellents and protective clothing should



**Fig. 1.** "Chance favors only the prepared mind" - Louis Pasteur. Traveler with personal protection measures. (Courtesy of Benjamin J. Dolan, MD, Hennepin County Medical Center.)

Download English Version:

<https://daneshyari.com/en/article/3792390>

Download Persian Version:

<https://daneshyari.com/article/3792390>

[Daneshyari.com](https://daneshyari.com)