



Bed Bugs: Current Treatment Guidelines

Charleen McNeill, PhD, Anna Jarrett, PhD, FNP-BC, and Marilou D. Shreve, DNP, PNP-BC

ABSTRACT

Bed bugs have been around for at least 4 millennia. Although the incidence of bed bugs was dramatically reduced after World War II, the United States is now experiencing a significant resurgence. Despite the increased prevalence of bed bugs, many report knowing little or nothing about them. Health care providers need contemporary guidelines regarding the prevention and treatment of bed bugs to combat this persistent pest. Herein we provide education on the epidemiology, life cycle, clinical presentation, diagnosis, and comprehensive treatment of bed bugs to include eradication and potential mental health complications.

Keywords: arthropod bites, bed bugs, *Cimex lectularius*, infestation, treatment guidelines

© 2017 Elsevier Inc. All rights reserved.

All authors are assistant professors in the Eleanor Mann School of Nursing at the University of Arkansas in Fayetteville. Charleen McNeill, PhD, RN, the corresponding author, can be reached at cmcneill@uark.edu. In compliance with national ethical guidelines, the authors report no relationships with business of industry that would pose a conflict of interest.

Bed bugs have been around for at least 4 millennia, as identified in 3,500-year-old fossils from an Egyptian village and referred to by the likes of Aristotle and Aristophanes.¹ Although they were prevalent in the United States until World War II, the wide use of pesticides, like dichlorodiphenyltrichloroethane (more commonly known as DDT), dramatically reduced their prevalence.² The US is now one of many countries experiencing a resurgence of bed bugs,³ likely due to increased global travel, a growing number of regulatory restrictions placed on insecticides like DDT, and enhanced tolerance to the newer organic compounds used in the treatment of bed bugs.⁴ Recently, bed bugs were found to be present in all

50 states, and 95% of pest management professionals surveyed reported encountering an infestation in the past year.⁵ Bed bug infestations occur wherever humans live and congregate, including homes, apartments, college dorms, hospitals, day-care centers, movie theaters, and places of worship. One in 5 Americans either had a home infestation or knew someone who encountered bed bugs in their home or while traveling.⁶ In 2016, the cities reporting the most infestations included: Baltimore; Washington, DC; Chicago; New York; and Columbus, OH.⁷ In spite of their increased prevalence, many people have little or no knowledge about bed bugs.⁸ The nexus of this lack of knowledge, combined with the dramatic resurgence of a public health concern, has

This CE learning activity is designed to augment the knowledge, skills, and attitudes of nurse practitioners and assist in their understanding how to diagnose and treat patients with bed bug bites.

At the conclusion of this activity, the participant will be able to:

- Identify patients at risk for bed bug infestation.
- Create prevention/treatment plan for patients with bed bug exposure/symptoms.
- Assess patients for bed bug physical/psychological symptoms and sequelae.

The authors, reviewers, editors, and nurse planners all report no financial relationships that would pose a conflict of interest. The authors do not present any off-label or non-FDA-approved recommendations for treatment.

This activity has been awarded 1.0 Contact Hours of which 0 credits are in the area of Pharmacology. The activity is valid for CE credit until July 1, 2019.

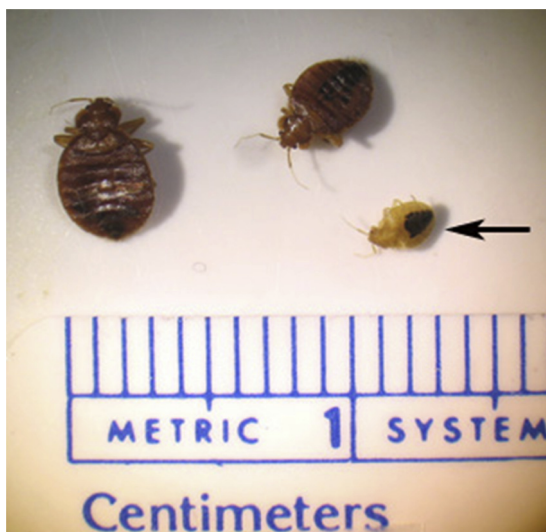
placed health care practitioners in a unique position to address this problem. Thus, health care professionals need to be educated on the epidemiology, life cycle, clinical presentation, diagnosis, and treatment of bed bugs. Office visits should include guidance and client education, not only for those clients who experienced an infestation, but also for clients who could likely encounter bed bugs.

EPIDEMIOLOGY

There are over 75 species of *Insecta: Hemiptera: Cimicidae*, commonly known as “bed bugs,” a hematophagous arthropod of the family *Cimicidae* within the order of *Hemiptera*.⁹ The 2 genres and species implicated in human infestations are *Cimex lectularius* and *Cimex hemipterus*. *C hemipterus* lives in tropical environments, but *C lectularius* is an urban dweller. They are called *C lectularius* both singularly and in the plural. Better known as the “cryptic bed bug,” *C lectularius* can live practically anywhere. It is called cryptic because it is able to hide in small spaces and many believe it to be invisible. Microscopic evidence suggests a mature *C lectularius* is approximately the size of an apple seed¹⁰ (see Figure 1).

Although researchers have detected > 40 pathogens in bed bugs, most information published before

Figure 1. *Cimex lectularius* sizes (photo courtesy of the US Centers for Disease Control and Prevention).¹¹



2014 reported no evidence that bed bugs transmitted any disease-causing organisms to humans.⁹ US Centers for Disease Control and Prevention fact sheets have recently reported that *C lectularius* is not a vector of disease; however, a recent study provided evidence that *C lectularius* could transmit *Trypanosoma cruzi*, the parasite that causes Chagas disease, one of the most prevalent and deadly diseases in the Americas.¹¹ Therefore, concluding bed bugs do not transmit infectious diseases may be premature.¹²

The medical significance of bed bugs is the inflammatory process their bite induces.¹¹ The bite may initially go undetected because bed bug saliva contains an anesthetic. An allergic response to the saliva can produce inflammation that becomes a reason for medical concern.¹³ Immunosenescence or immunosuppression due to medications or medical diseases may result in reduced, delayed, or no allergic response to bed bug bites. Due to differences in individual sensitivity to the bites, it is possible for persons sleeping in the same bed to have variable responses.¹⁴

LIFE CYCLE

Reproduction occurs via insemination of the female *C lectularius* by a male through her abdominal cavity.¹¹ Throughout their adult lives, females lay up to 5 eggs each day in sheltered locations, such as mattresses, baseboards, and box springs of beds (see Figure 2).

Thus, the life cycle of the *C lectularius* begins with eggs, which hatch in 4-12 days.¹¹ They hatch into first nymphal instars and go through 5 nymphal stages, with each stage requiring a blood meal lasting only 5-10 minutes before molting into the next stage. Unlike the nymphs, adult *C lectularius* can survive for long periods without feeding, but may take several

Figure 2. Natural habitat of *Cimex lectularius*—mattress inseam (photo courtesy of the US Centers for Disease Control and Prevention).¹⁵



Download English Version:

<https://daneshyari.com/en/article/5569795>

Download Persian Version:

<https://daneshyari.com/article/5569795>

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