ACADÉMIE NATIONALE DE MÉDECINE

Bedbugs in 2024: realities, risks, and deceptions [1]
Press release from the French National Academy of Medicine
April 5, 2024

The common bedbug (Cimex lectularius) is a blood-sucking pest which has caused concern and a strong media coverage in the last months of 2023. This nocturnal and gregarious insect, dependent on Man for thousands of years, was well known before the Second World War (1). By the 1950s, it had disappeared from daily concerns, at least in large cities. Subsequently, the ban on the use of insecticides that were effective but too dangerous for human health, such as DDT (dichlorodiphenyltrichloroethane) and the emergence of resistance to other insecticides, has favored its growth, first in the United States, and then in Europe. In France, the percentage of infected households, around 7% in 2014, was estimated at 11% in 2023 (2).

The other causes of this growth are numerous: increasing cases of contamination during travel, increase of the second-hand market (furniture, particularly bedding), global ignorance of the insect (appearance, size, behavior, lifestyle) (3), and dilapidation of some housing making it easier to colonize a building.

The current media coverage of the bedbug, particularly on social networks, regarding its presence and its macroscopic appearance, undoubtedly explains its increasing identification by a greater number of people. If most infestations affect homes, these parasites can be transported by humans to multiple sites (hotels, youth hostels, public transport, cinemas, hospitals, restaurants). All major cities in the world are affected, as are places of large ground gatherings or pilgrimages (4.5). All social classes are affected, and the lack of treatment associated with lack of hygiene can worsen the situation.

The nocturnal behavior of these insects, combined with their ability to hide very effectively in wall cracks away from the light, makes it difficult to detect their presence. Bedbugs can feed on other species (rats, guinea pigs, rabbits, birds, cats, etc.) without the owners being aware of their presence at home (6).

Bed bugs are usually detected by their victims after bites, or by visual inspection of bloodstains, eggs, exuviae (molts) or insects themselves. They usually bite uncovered areas such as face, neck and arms. Some people can harbor bedbugs in their home without any visible lesions, and 20% of people do not react to the bites (7) which follow the line of a blood vessel, are generally painless and will only be felt after several hours. The typical skin lesion, similar to that of other arthropod bites, is an erythematous and itchy papule with a diameter of 5 mm to 2 cm, capped by a hemorrhagic crust or vesicle (8). It has never been demonstrated that bedbugs could cause the transmission to humans of any of the 45 pathogens they can harbor (including Bartonella spp.) (9).

The diagnosis is based on a careful and systematic search for any evidence of the presence of the insect (adult or juvenile bedbugs, eggs, excrements, traces of blood) using simple tools such as a flashlight and a magnifying glass. The search should be carried out in places of frequent spread: beds (60%), chairs and sofas (23%), walls and ceilings (3%), plinths (2%), other furniture (1%) and wooden objects (3%) (frames, bedside tables, etc.) (9). If in doubt, there are many additional tests on the market that can detect the presence of live or dead bedbugs. This diagnosis can be confirmed by the passage of a trained bedbug sniffing dog (a practical demonstration of the dog's efficiency at work can be offered, before the intervention, through a specific score by hiding a control bedbug), which is the most effective diagnostic method (97.5% success rate). The charter currently proposed by the Union of Experts in Canine Bed Bug detection makes it possible to fight against the heterogeneity of dog training.

Treatment must favor mechanical and thermal means of control (10): vacuuming surfaces, freezing clothes and small infested objects at – 20°C for at least 48 hours, machine washing at 60°C for at least one hour, steam cleaning at 120°C (effective in eliminating all developing stages of the parasite), heating tents. As a remedy, chemical disinsectisation with authorized products (6) is necessary, twice for an effective elimination, while at the same time respecting the rules of their use. The first application kills the adults and larvae, but does not affect the eggs, which justifies a second application, a month later, to kill the newly hatched young bedbugs.

In this context, the National Academy of Medicine recommends:

– information to the public on the interest and means of diagnosing bedbug infestation at home and, in particular, an educational sheet on how to report risky behavior when traveling (leaving a suitcase on the bed in a hotel …);

– regular inspection of bedding and sites at risk of spread (holiday rentals, hotels, cinemas, public transport, etc.) with the creation of sheets indicating self-inspection carried out by professionals;

– a certification/labelling process, to guarantee the expertise of professionals working in this field (certification of the dog handler/sniffer dog duo, and of pest control companies) and the labeling of effective products;

– a warning to occupants about the risk of rapid spread of bedbugs within a building and about the need for treatment which, to be effective, will be long and expensive, pointing out that insurance companies are not currently involved in the fight against these pests;

– the inclusion of a section on bedbugs in policies on home hygiene.

References

– Usinger R. L., Monograph of Cimicidae – Hemiptera-Heteroptera), Thomas Say Foundation, vol. 7, College Park : Entomological Society of America, 1966, 585 p.

– Anses, Rapport relatif aux punaises de lit: impacts, prévention et lutte, 2023, 257 p.

– Berenger J. M., Pluot-Sigwalt D., Présence en France de la punaise de lit tropicale, *Cimex hemipterus* (Fabricius, 1803) (Hemiptera, Heteroptera, Cimicidae), *Bulletin de la société entomologique de France*, 2017, 122, (4), p. 423-427.

– Potter M. F., Rosenberg B., Henriksen M., Bugs without borders: defining the global bed bug resurgence. *Pest World*, 2010, 18 (8), 20.

– Hwang S. W., Svoboda T. J., De Jong I. J. *et al.*, Bed bug infestations in an urban environment. *Emerg. Infect. Dis.*, 2005. 11 (4), 533.

– Morand C., La punaise de lit (*Cimex Lectularius*): résurgence d'un nuisible. Thèse pour le doctorat vétérinaire, École nationale vétérinaire d'Alfort, 2014.

– Kemper H., Beobachtungen über den Stech- und Saugakt der Bettwanze und seine Wirkung auf die menschliche Haut. *Z. Desinfekt*. 1929, 21, 61–67.

– Delaunay P., Blanc V., Del Giudice P. *et al*., Bedbugs and infectious diseases. *Clin. Infect. Dis.*, 2011, 52 (2), 200-210.

– Lai O., Ho D., Glick S., Jagdeo J., Bed bugs and possible transmission of human pathogens: a systematic review, *Arch Dermatol Res*. 2016 Oct;308(8):531-8.

– Anses, Punaises de lit: prudence avec les produits utilisés, Vigil'Anses n°18, Le Bulletin des vigilances de l'Anses, Novembre 2022

[1] Press release from the Academy's Rapid Communication Platform.

CONTACT PRESSE : Virginie Gustin +33 (0)6 62 52 43 42 virginie.gustin@academie-medecine.fr ACADÉMIE NATIONALE DE MÉDECINE, 16 rue Bonaparte – 75272 Paris cedex 06 Site : www.academie-medecine.fr / Twitter : @Acadmed