

# CONTAGIOUS COMMENTS

## Department of Epidemiology

### Bed Bugs and Beyond

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“Goodnight, sleep tight,  
Don’t let the bedbugs bite.  
And if they do  
Then take your shoe  
And knock’em ‘til  
They’re black and blue!”

19<sup>th</sup> Century American version of an  
old English nursery rhyme

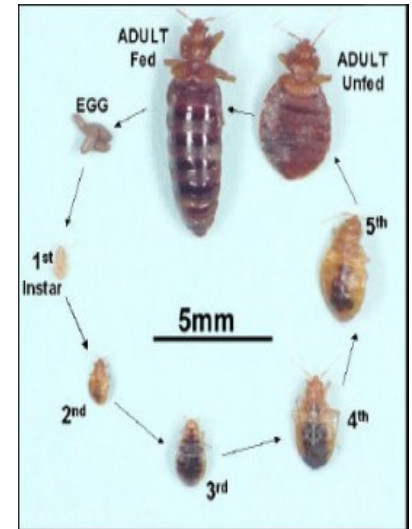
The Children’s Hospital is seeing more patients coming to the hospital with bed bugs found on the patients clothing and luggage. This is part of a worldwide increase in the prevalence of bed bugs in the last ten years. Some factors contributing to this increase are changes in pesticide use patterns, increased pesticide resistance, increased levels of homeless people, and increased social mobility that moves bugs between public locations such as hotels, shelters, dormitories and hospitals. This increase in prevalence has caused significant social angst and at times hysteria regarding these bugs. This is in part because it has been over 50 years since we have seen bed bugs at the present prevalence and the populace has no collective memory of past bed bug problems.

The common bed bug *Cimex lectularius* (Figure 1)



**Figure 1**  
is a member of the insect order Hemiptera, the true bugs, with piercing-sucking mouthparts. Most bugs are winged insects adapted to sucking the sap of

plants. The family Cimicidae has evolved as wingless, blood sucking ectoparasites of mammals and birds. There are approximately 100 known species, most of which live in the nests of birds or bats. There are two species that are ectoparasites of humans- the tropical bed bug, *Cimex hemipterus* (found in the southern US and tropical regions worldwide) and the common bed



Lifecycle of the Common Bed Bug, *Cimex lectularius*  
**Figure 2**

bug, *Cimex lectularius* (cosmopolitan in distribution), which was spread worldwide by European exploration. When humans still lived in caves, they were exposed to cave bats. A host-parasite relationship may have evolved from *Cimex* species that normally fed on bats, “bat bugs”, that would take blood meals from humans when the preferred bat hosts migrated out of the caves. The bedbugs feeding on humans are taxonomically closely related to these “bat bugs” of Europe, Asia and Northwest Africa. In Colorado, a similar situation exists; a local bat bug (*Cimex pilosellus*) is also found occasionally within homes, incidentally feeding on human hosts, when the bats migrate out of the attics of the homes. Interestingly, *Cimex lectularius* is also known to feed on bats, if no other host is available.

*Cimex lectularius* is a small (1mm -7 mm), flat, oval, reddish-brown in color, blood sucking insect that hides during the day and emerges at night to take blood meals from sleeping humans. The small adult size and the very small biting nymph lifecycle stages (Figure 2) coupled with the secretive behavior of bed bugs makes them difficult for humans to notice. Often the only clue to their presence is the discovery of small drops of defecated blood found on bedding (Figure 3), or the presence of bites on the human's body. Close inspection of the mattress and bedding or cracks and crevices in the baseboards near the bed may show the presence of the bed bugs.

Bed bugs usually feed in the middle of the night while people sleep and the bite is often painless. They often feed for less than 5 minutes before the insect is satiated and returns to a hiding



Figure 3

area to digest the meal. A line of bites may appear where several bed bugs have fed along the edge of a sheet or clothing lying next to the skin (Figure 4).



Figure 4

Although the bite may not immediately be felt, people often react to the proteins of the bed bug saliva

introduced during biting. Typically, a reddish swelling ("wheal") may develop, associated with some swelling and itching. There may be little response immediately following the bite, with peak itchiness being noticed at about a week post bite, then gradually declining. Bites may be secondarily infected from scratching.

Bed bugs are, in theory, capable of being efficient vectors of disease. Organisms associated with bacterial diseases such as plague, relapsing fever, Q-fever, and tularemia survive for many days in bed bugs. Nevertheless, there is no proven association of bed bugs with disease transmission.

Bed bug infestations may be suppressed, but not eliminated, by repeated cleaning and sanitizing of the dwelling, laundering of bedding and vacuuming of the environment with emphasis on baseboards using a crevice wand. Use of both professional and consumer pesticide products may be required for full control of infestations. Typical insecticidal compounds used on bed bugs are cyfluthrin, bendiocarb and permethrin. Consulting a professional exterminator is highly recommended. If you suspect a patient may have brought bed bugs into the hospital DON'T PANIC! The Children's Hospital has a policy on what to do and can be found on Planet TCH at [Bed Bugs \(\*Cimex lectularius\*\), Management of Patients with \(IC-006\) Policy and Procedure](#)

## Lice

Hopefully you won't have the heebiegeebies after reading this issue of Contagious Comments! Occasionally we do have patients come in who have lice and this leads to many frantic calls to the Department of Epidemiology. Lice are parasitic insects that can be found on people's heads, and bodies, including the pubic area. Human lice survive by feeding on human blood. Lice found on each area of the body are different from each other. The three types of lice that live on humans are:

- ***Pediculus humanus capitis*** (head louse),
- ***Pediculus humanus corporis*** (body louse, clothes louse), and
- ***Pthirus pubis*** ("crab" louse, pubic louse).

Only the body louse is known to spread disease. Lice infestations (pediculosis and phthiasis) (Figure 5) are spread most commonly by close person-to-person contact. Dogs, cats, and other pets do not play a role in the transmission of human lice. Lice move by crawling; they cannot hop or fly. Both over-the-counter and prescription medications are available for treatment of lice infestations.



Figure 5

In the United States, infestation with head lice (*Pediculus humanus capitis*) is most common among preschool- and elementary school-age children and their household members and caretakers. Head lice are not known to transmit disease; however, secondary bacterial infection of the skin resulting from scratching can occur with any lice infestation.

Getting head lice is not related to cleanliness of the person or their environment. Head lice are spread by direct contact with the hair of an infested person. The most common way to get head lice is by head-to-head contact with a person who already has head lice. Such contact can be common among children during play at

- school,
- home, and
- elsewhere (e.g., sports activities, playgrounds, camp, and slumber parties).

Uncommonly, transmission may occur by:

- wearing clothing, such as hats, scarves, coats, sports uniforms, or hair ribbons worn by an infested person;
- using infested combs, brushes or towels; or
- lying on a bed, couch, pillow, carpet, or stuffed animal that has recently been in contact with an infested person.

Reliable data on how many people get head lice each year in the United States are not available; however, an estimated 6 million to 12 million infestations occur each year in the United States among children 3 to 11 years of age. Some studies suggest that girls get head lice more often than boys, probably due to more frequent head-to-head contact.

In the United States, infestation with head lice is much less common among African-Americans than among persons of other races. The head louse found most frequently in the United States may have claws that are better adapted for grasping the shape and width of some types of hair but not others.

Commonly the Department of Epidemiology receives calls on what to do about a patient that has lice. We do have a policy on lice on Planet TCH and want to control nosocomial spread of the parasite. [Pediculosis \(Lice\), Management of Patients \(IC-012\) Policy and Procedure](#)

Source: Centers for Disease Control and Prevention

### Did you know?

Most spiders are not aggressive and bite only when trapped against the skin. Spiders do not wander into beds. Necrotic lesions that might be called "spider bites" are probably an infection with Methicillin Resistant *Staphylococcus aureus*. Brown recluse spiders that usually cause this type of lesion are rare in Colorado.

## Scabies

### Transmission

Human scabies is caused by an infestation of the skin by the human itch mite (*Sarcoptes scabiei* var. *hominis*) (Figure 6).

The adult female scabies mites burrow into the upper layer of the skin (epidermis) where they live and deposit their eggs. The microscopic scabies mite almost always is passed by direct, prolonged,



Figure 6

skin-to-skin contact with a person who already is infested. An infested person can spread scabies even if he or she has no symptoms. Humans are the source of infestation; animals do not spread human scabies.

### Persons At Risk

Scabies can be passed easily by an infested person to his or her household members and sexual partners. Scabies in adults frequently is sexually acquired.

Scabies is a common condition found worldwide (Figure 7); it affects people of all races and social classes. Scabies can spread easily under crowded conditions where close body and skin contact is common. Institutions such as nursing homes, extended-care facilities, and prisons are often sites of scabies outbreaks. Child care facilities also are a common site of scabies infestations.



Figure 7

### Crusted Scabies

Some immunocompromised, elderly, disabled, or debilitated persons are at risk for a severe form of scabies called crusted, or Norwegian, scabies. Persons with crusted scabies have thick crusts of skin that contain large numbers of scabies mites and eggs. The mites in crusted (Norwegian) scabies are not more virulent than in non-crusted scabies; however, they are much more numerous (up to 2 million per patient). Because they are infested with such large numbers of mites, persons with crusted (Norwegian) scabies are very contagious to other persons. In addition to spreading scabies through brief direct skin-to-skin contact, persons with crusted scabies can transmit scabies indirectly by shedding mites that contaminate items such as their clothing, bedding, and furniture. Persons with crusted scabies should receive quick and aggressive medical treatment for their infestation to prevent outbreaks of scabies.

### Isolation Precautions for Patients with Scabies

When a patient is admitted to The Children's Hospital with scabies, they should be placed on contact isolation until they have been adequately treated for 24 hours.

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Both the Contagious Comments and Bug Watch publications are always posted on The Children's Hospital website at:

<http://www.thechildrenshospital.org/news/publications/index.aspx>

Please return your E-mail address to: Carolyn Brock, The Children's Hospital, Epidemiology – Box B276, 13123 E. 16<sup>th</sup> Avenue, Aurora, CO 80045 or E-mail address: [brock.carolyn@tchden.org](mailto:brock.carolyn@tchden.org).

Thank you for your interest in our publication.

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