

Bedbug! Bad bug!

Bedbugs occur around the world. Previously, they were common in developing countries but rare in developed countries. However, the rates of infestations in developed countries have increased dramatically since the 1980s because of increased international travel, resistance to insecticides and the use of new pest control methods that do not affect bedbugs. In USA, for example, the U.S. National Pest Management Association reported a 71% increase in bedbug calls between 2000 and 2005. The number of reported incidents in New York City alone rose from 500 in 2004 to 10,000 in 2009.

Bedbugs feed every five to seven days, which suggested that they do not spend the majority of their life searching for a host. When a bedbug is starved, it leaves its shelter and searches for a host. It will return to the shelter to aggregate before the period of light in a day-night cycle to find a mate and avoid getting smashed after feeding.

Bedbugs are obligatory hematophagous insects. They are attracted to their hosts mainly by carbon dioxide as well as warmth. Bedbugs have mouth parts that saw through the skin and inject saliva with anti-coagulants and painkiller. The bedbug pierces the skin of host with its rostrum which is composed of the maxillae and mandibles, which have been modified into elongated shapes. The left and right maxillary stylets are connected at their midline and a section at the centerline forms a large food canal and a smaller salivary canal. The mandibular stylet tips have small teeth and through alternately moving these stylets back and forth, the insect cuts a path through tissue for the maxillary bundle to reach an appropriately sized blood vessel. It takes between five to ten minutes for a bedbug to become completely engorged with blood. It may spend less than 20 minutes in physical contact with its host. Under typical warm conditions, they try to feed at five to ten days intervals. Adults can survive as long as one year without feeding under certain cool conditions.

Although there is no concrete evidence that bedbug can transmit pathogen to human being, it does cause a number of health effects, including skin rashes, psychological effects and allergic symptoms. We should stay alert to bedbug infestation and call for prompt assistance from professionals whenever necessary.

To prevent and control bedbugs infestation at home, the following measures are suggested:

- regular cleaning and vacuuming of premises;
- regular inspection of bedding and clothing and thorough laundering of bedding and clothing with water of 60°C;
- proper environmental sanitation management by maintaining a non-humid domestic environments and avoid using second-hand furniture;
- promptly replace loosened wallpapers and seal off cracks and crevices; and
- correctly identify hiding places and carry out proper remedial treatment whenever necessary.

Triatomine bugs and Chagas disease

Last year, several local press media used a term 'the new AIDS' to report a disease named Chagas disease which caused alarm in USA. The disease is caused by the parasite *Trypanosoma cruzi*, which is transmitted to human mainly by a kind of insect vector called triatomine bugs. Reportedly, over 300,000 Americans have already been infected. Chagas is being called the new AIDS because of its asymptomatic beginnings that can turn to a fatal end if the disease progresses.

Triatomines are primarily nocturnal and feed on the blood of mammals, including human and rodents. Since the blood-sucking bugs tend to feed blood on human's faces, triatomine bugs are also known as "kissing bugs". The insect could be got infected by biting an infected animal or person. Once infected, the bugs pass *T. cruzi* parasites in their faeces. During or just after feeding, they defecate on the person. The person can become infected if *T. cruzi* parasites in the bug faeces enter the body through mucous membranes or cuts in the skin. Fortunately, vector-borne transmission is confined to the Americas, principally in rural areas. However, triatomine bugs are known to occur in Hong Kong. One of the possible vectors, *Triatoma rubrofasciata* has been collected by our office. The bugs can be found both outdoors (e.g. among wood pile with rodent infestation) and indoors. For indoor environment, they hide in crevices in the walls and wooden structures, in and around beds, especially under or near mattresses.

Triatomine bugs are a type of reduviid bug. There are some beetles and non-triatomine reduviid bugs that look like the triatomine bug. *Triatoma rubrofasciata* can be distinguished from other reduviid bugs by the following charactersitics:

1. Pear-shaped body with abdomen dorsoventrally flattened. Orange-red margin on outer edge of abdomen, extending horizontally between segments.



2. 1st antennal segment surpasses tip of head.



3. Beak tapered, not curved. Short hairs on mouthparts becoming progressively longer towards tip.



4. Scutellum broad, triangular to tip. Sides of pronotum with orange-red margin.



To prevent and control Triatomine bugs infestation at home, the following measures are suggested:

- Eliminate the hiding places of the bugs by sealing up cracks and crevices on walls, doors, furniture and windows;
- Avoid keeping wood piles and disused articles near your house;
- Keep the resting places of pets clean and tidy. If possible, have pets sleep indoors at night. Check the pets and their bedding regularly for early elimination of intruded bugs;
- Keep rodent infestations under control;
- Synthetic pyrethroid sprays can be used to control Triatomine bugs. Consult a competent pest control advisor before you decided to do so.