BED BUG BASICS EH 105A

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BED BUGS

• Class Insecta, Order Hemiptera
  (Bed bugs are related to aphids which use their piercing mouth parts to feed on plant fluids)

• Family Cimicidae – blood feeding insects

• Probably evolved as cave-dwelling ectoparasites feeding on bats, then moved down to tastier hosts.
Bed bugs are a pest like no other. There is no simple, straightforward, or typical treatment. Dissemination of inaccurate information leads to unnecessary financial burden and facilitates spread. Awareness and education are a pre-requisite for prevention, early detection and management.

- Bed bugs have shared a long history with humans.
- Bed bugs migrated along with humans.
- By medieval times were widespread throughout Britain. The first to have bed bugs in large multi unit buildings were the upper class in part due to indoor heating.
- Bed bugs arrived in the new world along with early European settlers.
- Due to changes in living conditions and the proper use of modern pesticides such as DDT by the 1960’s bed bugs were a very limited pest.

WHY IS THERE A RESURGENCE OF BED BUGS WORLDWIDE?
Increased Travel
Changes in pest control materials
Changes in pest control methods
Unknown to us bed bugs developed resistance to a number of currently used insecticides
The significance of their return was underestimated during early emergence.

WHAT DO BED BUGS LOOK LIKE?

- **Size:** Adults 5 mm long (¼ to 3/8")
  Nymphs/instars 1.5 – 3 mm.
- **Shape:** oval, flattened sesame seed size adults
  apple seed size.
- **Color:** light beige - reddish brown - red.

In the adult stage the female is rounded while the males abdomen tapers to a "point".

The Proud Parents
BED BUG BIOLOGY

- Females can lay 200-500 eggs at a rate of 5-7 per week.
- Young emerge in 7-12 days (room temperature)
- Bed bugs go through 5 stages before becoming adults.
- A blood meal is required for each molt but nymphs may feed once per day
- BED BUGS DO NOT FLY BED BUGS DO NOT JUMP

Time from egg to adult varies with temperature a significant factor along with a food source: 1.5 months at 80°F and 4 months at 64°F.

BED BUG ECOLOGY

- Temporary parasites of humans
- Nocturnal and secretive
- Tend to congregate
- Feed only on warm-blooded animals
- Usually feed at night but will feed opportunistically
- Temperature is a factor in their ecology
DON'T JUST THINK OF THEM AS BED BUGS

BED BUGS ATTACK! THEY FEED BY NIGHT

BITES
• Bed bugs pierce the skin and inject saliva which contains an anticoagulant and anesthetic.

• The area may become red and itchy due to an allergic reaction to Cimex saliva.

• The bite itself is painless, but reactions differ with some people showing no signs while others may have serious reactions.

• To date there is no evidence of disease vectoring per CDC and WHO.

• In cases of severe infestations and limited hosts, anemia is a possibility.

METHODS OF BED BUG INTRODUCTION

CAPTIVES

In this instance the bed bug is introduced from another infested location but not by its own locomotion.

Usually by hitchhiking on
• Furniture
• Mattress
• Guests
• Employees
• Clients

VOLUNTEERS

In this case a bug migrates through its own locomotion
• From one room to another
• From one unit to another via pipes, telephone, cable wires, etc.
• Down a hallway after dropping off an unwrapped item being discarded.

WHILE SOME FOLKS ARE THROWING THINGS OUT

Others are bringing them in bed bugs included
The key locations of most inspections will focus around where humans spend the most time.

OTHER SUSPECTS

- FLEAS
- TICKS
- LICE (HEAD, BODY & PUBIC)
- MOSQUITOES
- MITES BIRD/RODENT & SCABIES

NON BITING

- COLLEMBOLA (SPRINGTAILS)
- PSOCIDS
- SPIDER BEETLE

Allergies or Skin irritation
Drug Reactions  Legal/illegal

EKBOM SYNDROME
Delusory Parasitosis
Mental health issue when you imagine insects are crawling or feeding on you.
WHAT ARE WE LOOKING FOR?

• Bed bugs DEAD or ALIVE
• Bed bug eggs
• Cast exoskeletons
• Blood spots / fecal stains

EVIDENCE OF BED BUGS

THE SEARCH
Number one spot in hotels HEADBOARD

Number one spot in homes BOX SPRING

BED BUG MONITORS

PASSIVE INSECT MONITOR

DRY ICE TEMP. -109.3 F

BLACKOUT MONITOR

CANINE DETECTION

DOGS: A good tool but not beyond error and are dependent on continued training of both dog & handler.
BED BUG CONTROL

NON CHEMICAL CONTROL HOT

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Adults</th>
<th>Eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>113°F</td>
<td>90 Minutes</td>
<td>7 Hours</td>
</tr>
<tr>
<td>118°F</td>
<td>20 Minutes</td>
<td>90 Minutes</td>
</tr>
<tr>
<td>122°F</td>
<td>DEAD</td>
<td>10 Minutes</td>
</tr>
</tbody>
</table>

DRY VAPOR STEAMERS are a good tool above 200°.

THERMAL REMEDIATION

BED BUG CHAMBER OF DEATH

HEAT 130° PLUS FOR AT LEAST 30 MINUTES

PACK TITE
DO IT YOURSELF HEAT

Irons can be used for sheets, clothes, pillows, mattresses. Also for ties, gloves, scarves, silks and many other items.

Blow dryers may blow too much and spread bed bugs if not careful. But they still are a tool for some items like suitcases, shoes etc. Place in bath tub or over a white sheet.

Heat guns tend to be too hot as in FIRE!!!!

COLD

COLD below freezing for a long time or flash freeze, most experts agree freezing is not the best long term or stand alone method. US military specifications for freezing furniture and other infested items for bed bugs refers to 0°F for at least four days within a chamber or container. Quick freeze has some use on electronics.

FUMIGATION FOR BED BUG CONTROL

SULFURYL FLUORIDE (A.K.A. VIKANE & PROFUME)
When items need to be bagged consider the use of clear bags.

- They are psychologically less oppressive.
- If you need to locate an item it can be done easily without opening several bags.

**VACUUM**

- Vacuum cleaners are helpful when dealing with accessible bed bugs.
- A crevice tool is required for use in seams and crevices.
- Dispose of bag or empty canister after each use, seal contents and discard.
- Vacuuming is an important prevention tool as well.

**ENCASEMENTS**

Encasing mattress and box spring eliminates the need to discard bedding and provides a smooth simple outer surface that can be inspected, vacuumed and cleaned easily.
Disposal Alternatives

Encasements to salvage mattresses and box springs.
Hot laundering can be used to salvage clothing or any other items that can withstand a hot dry cycle. Pillows, stuffed animals, area rugs, wall hangings, etc.

Dry cleaning may be an option for some items. Other options such as heat chambers or off-site fumigation also exist for salvaging many items, including furniture.

CHEMICAL CONTROL

Chemical control utilizes strategic placement of long term dusts, and the tactical application of limited aerosol and liquid insecticides.

Be sure to follow labels. Contact, residual, dust, aerosol.

DO NOT BOMB FOR BED BUGS

Do not use total release bombs. While it may kill a few exposed bed bugs it may send the rest deeper into voids, sheltered areas and possibly into adjacent units.

DO NOT USE FLAMABLE LIQUIDS LIKE KEROSENE. ALCOHOL CAN ALSO BE HAZARDOUS.
BEWARE OF SILVER BULLET PRODUCTS

Unfortunately there are a number of BB products which make unsubstantiated claims with no legitimate efficacy or safety data.

BED BUG SOCIAL INTERACTION

- While inspection of surrounding units is recommended, sometimes it is who you know that can bring bed bugs to your door.
- This has been observed as a factor in senior residences and as well as in multiple family unit buildings.
- Case workers, home health aids, domestics and a variety of personnel can also be involved or may be at risk.

EDUCATION

Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities

11. Meeting with neighbors and sharing information and resources.
TRANSFER SITE

- TRANSFER SITE is a term sometimes used to denote a spot where a bed bug may or has come off an item or person and may be picked up by another.
- An example of a transfer site might be a bench, school or coat check room.
- Proper vacuuming and other best practices can greatly reduce the odds of transfer.

INTRODUCTION

- The term INTRODUCTION is used to describe a single or limited number of bed bugs which may have been carried into a location but have not established themselves.
- Inspection does not find more than a few bed bugs, no eggs or nymphs.
INFESTATION

INFESTATION is the term used to describe an established site where bed bugs are actively feeding and breeding.

Inspection finds fecal spots, eggs and multiple life stages of bed bugs.

KEEP IN MIND THESE FACTS

- A single bed bug can cause several bites
- Most bed bug activity is found around sleeping and lounging areas.
- There is no preference as to who bed bugs bite.
- Perhaps over 50% of those bitten do not react.
- Elderly tend to have less reaction to bites.
- “Clutter will undermine any treatment”

BED BUG FACTS

DO NOT JUMP
DO NOT FLY
PRIMARILY ACTIVE
AT NIGHT
THEY STAY IN
HARBORAGE
LOCATIONS
DO NOT ROAM
ABOUT

HIGH RISK AREAS
BEDS   FUTONS
CLUTTERED AREAS
UPHOLSTERED ITEMS

CHANGE BEHAVIOR
DO NOT LAY COATS OR
JACKETS IN HIGH RISK
AREAS (clothing bag)
IN AN INFESTED
APARTMENT USE A HARD
CHAIR
KEEP BAGS CLOSED
& OFF THE FLOOR

Don’t bring the little buggers home.
In public places, reduce your bed bug footprint.
In closing, it is important to remember that while some insects may be considered pests, without insects life would be impossible.