

American College of Occupational and Preventive Medicine 2011 Annual Meeting, Orlando, Florida, October 31, 2011

Bed Bugs Beyond Beds

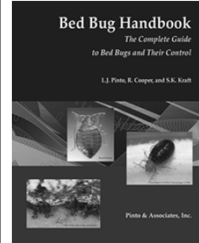
Managing a New Challenge
in the Medical Workplace



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Techletter.com

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- Other than the *Bed Bug Handbook*, which we publish, I have no financial interest in any of the products or services mentioned in this presentation

The Growing Bed Bug Problem



Wikimedia

Here's What I'll Talk About

1. Past as Prologue
2. How Bed Bugs Are Changing Our World
3. Responding to Bed Bugs in a Medical Office
4. Reducing the Risk of Bed Bugs to On-site Service Providers

Take Yourself Back to 1930s



- “Chinches” or “chinch bugs” or “wall-lice”
- Pest status
- Sites of infestation
- Bed bug control

Now, slide forward to 1950s



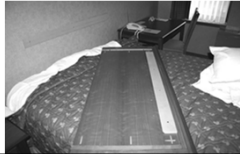
- DDT “miracle”
- Other miracle insecticides
- Changes in house-keeping
- Household crowding less common
- Bed bugs became an occasional and rare pest

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How Bed Bugs Are Changing Our World



Left photo Fletcher et al. 2002, maine.gov



Bed Bugs in America Today



- Bed bugs in all 50 states
- 20% of public encountered bed bugs; 30% in urban areas
- 80% have seen, heard, or read about bed bugs
- 13% personally know someone with bed bugs
 - 40% avoided entering the infested home
 - 33% discouraged those infested from visiting

Source: 2010 Bed Bugs Without Borders Survey. NPMA and University of Kentucky.

Bed Bug Trends

- Hotels, motels
 - Low class
 - High class
- Apartments
 - Low income
 - Seniors/disabled
 - Any
- Single family homes
- Nursing homes
- Hospitals
- College dorms
- Hostels
- Shelters
- And now...non-bed sites

Bed Bugs Beyond Beds



Some Non-Bed Sites

office buildings	laundries	restaurants
theaters	schools/day care	clothing stores
donation centers	gyms/health clubs	shopping malls
libraries	taxis, trains, buses	moving vans
aircraft	churches	postal system
community centers	police stations	morgues
TV studios	medical clinics	waiting rooms
used/rental furniture	web and mail order business	

... any location frequented by people...and some that are not

PMPs (%) Servicing Specific Sites

Sites	2010	2011
Office buildings	18	38
Nursing homes	25	46
Hospitals	12	31
Schools and day care	10	36
Theaters	5	17
Transportation	9	18

Source: 2011 Bed Bugs Without Borders Survey. NPMA and University of Kentucky.

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Bed Bug Biology Comparison

Bed Site vs *Non-Bed Site*

- | | |
|---|--|
| <ul style="list-style-type: none">• Concentrated around sleeping and resting areas• Population grows through reproduction• Populations grow to high numbers• Active at night | <ul style="list-style-type: none">• Bugs wander and spread unpredictably• Populations grow slowly by repeated introduction• Populations typically low but widespread• Active at night at first but shift to day |
|---|--|

Why Have Bed Bug Problems Been Exploding?



1. Worldwide Travel



2. Underground Economy



3. Costs of Bed Bug Control



4. Insecticide Resistance

- Moderate to high levels of resistance in numerous field populations
- Primarily pyrethroids but also resistance to some other classes
- DDT cross-resistance (in part)
- Primary issue is residual effectiveness not contact effectiveness

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5. Poor Recognition



6. Secondhand furniture



7. Rising Tide of Bed Bugs



Bed Bug Myths—1

- You only get bed bugs if you are dirty.
- Only poor people and foreigners get bed bugs.
- If only we had DDT, we could get rid of bed bugs.
- Bed bugs are too small to see.
- Bed bugs mainly live in beds.

Bed Bug Myths—2

- I will no longer have bed bugs if I:
 - Throw out the bed
 - Leave a room or my apartment vacant for awhile
 - Put my furniture in storage
 - Spray enough insecticide, or use the pro's insecticide
- It can't be bed bugs because I get bitten but my partner does not

Inconvenient Truths About Bed Bugs

1. Bed bugs are an ever-growing problem
2. More and more people are living in bed bug-infested homes
3. Bed bugs are efficient hitchhikers on purses, briefcases, clothes, shoes, books, files, etc.
4. So, all sites in urban areas face the risk of an introduction of bed bugs
5. There are no “magic bullet” solutions available
6. There are bed bugs in everyone's future, both at home and at work


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Medical and Social Impacts of Bed Bugs



Photos: upper right, worldlifecenter
lower right, Fletcher et al. 2002, maine.gov

Physical Effects



Photos © Harold Harlan

- No documented disease transmission
- Allergy and asthma
- Bite reactions
- Infections/scarring

Latency of Bed Bug Bites (Proposed)

<u>Bite</u>	<u>Bite Response Latency</u>
First bite	No reaction
2nd bite	6-10 days
3rd bite	2 days
4th bite	Hours
5th bite	Immediate response

Note: ~ 15% of those repeatedly bitten remain insensitive

Source: Reinhardt K. et al. Sensitivity to bites by the bed bug, *Cimex lectularius*. *Medical and Veterinary Entomology* (2009).

Mental Health





Photo worldlifecenter


- “Misery” factor
- Emotional distress
- Behavioral changes
- Insomnia
- Depression
- Delusions of parasitosis

Social Issues and Impacts



- Poor personal esteem
- Behavioral impacts
- Over-reactions
- Social ostracism
- Refusing to notify
- Chemical overexposure
- Bed and furniture disposal

Why Bed Bugs Pose Special Problems in Medical Facilities



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1. Bed Bugs Typically Not Noticed at Low Population Levels

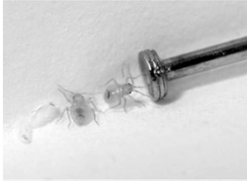


Photo © Stoy Hedges

- Active when dark (usually); rarely seen
- Bed bugs do not feed every night
- Can go for months without feeding
- Bites go unrecognized if staff not alerted to problem

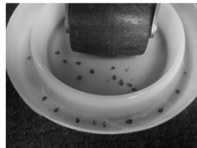
2. Visual Inspection Is Difficult, Time Consuming, Prone to Failure



Photo © Bed Bug Central

- Very cryptic, small
- Not clustered
- Not in traditional sites
- Inside cubicle dividers, underneath raised floors, beneath cove moldings, in folders and files, computers, equipment

Inspecting a Medical Facility



3. Bed Bugs Readily Disperse to New Locations

Photo © Bed Bug Central



- Bed bugs walk to new locations nearby
- Bed bugs hitchhike to new locations that can be far away

4. Identifying the Point of Introduction Is Problematic

- Patients or visitors bringing bed bugs from home on clothing, possessions
- Staff bringing bed bugs from home
- Bed bugs hitchhiking on items shipped in (furniture, records, equipment)
- Bed bugs “migrating” from attached, adjacent infested sites next door, above, or below.

5. Reintroduction of Bed Bugs Is a Constant Threat



Photo Tipping Points



Photo © S. Doggett (ICPMR)

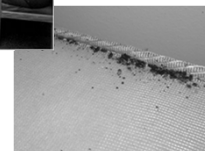


Photo © Bed Bug Central

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6. Some Items in Offices Are Difficult and Expensive to Disinfect



Photo © Bed Bug Central

- Medical equipment
- Computers
- Copy/fax machines
- Other electronics
- Security devices
- File cabinets of sensitive information
- Personal items

7. And a Minefield of Other Issues

- Implications of an “unsafe” environment from bites, allergies, taking bed bugs home, perceived risk from insecticides
- Confidentiality concerns
- Legal implications of:
 - Staff or patient being blamed for “infestation”
 - Staff or patient being blamed for home “infestation”
- Potential for bad PR, work actions, union disputes, lawsuits, complaints to health department, etc.

How to Respond to Bed Bugs in a Medical Office*



Photo Phoenix Janitorial

* See NPMA Guidelines: Response to Bed Bugs in Medical Facilities

Bed Bugs Guidelines, Medical Facility

1. Things to Avoid



- Don't overreact
- Don't have staff apply insecticides
- Avoid general and widespread insecticide sprays
- Avoid stigmatizing those responsible

Bed Bugs Guidelines, Medical Facility

2. Be Proactive



- Bed bug action plan
- Bed bug prevention
- Bed bug awareness and education
- Insecticide review committee
- Encasements

Bed Bugs Guidelines, Medical Facility

3. Response



- Get specimens
- Choosing a pest control company
- Professional inspection
- Actions before service
- Pest control options
- Scope and intensity of service

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Response Guidelines for Bed Bugs:

4. Bed Bug Prevention



- Monitoring and detection
- Minimize bed bug harborage sites
- Good laundry practices
- Special considerations in assisted living or longterm care
 - Furniture
 - Cleaning/steaming

Major Decisions for Administrators With Ongoing Bed Bug Problems



- Disclosure and education
- Resources for workers' homes
- Scope and intensity of service
- Extent of ongoing inspections and monitoring

Take Home Messages

1. Once established, bed bugs are difficult to eradicate in medical and office settings
2. Detection, NOT insecticides, is most critical
3. Expect to repeat a cycle of service and inspection/detection for months
4. Expect a reintroduction of bed bugs
5. Prevention and monitoring programs are essential to prevent another outbreak

Bed Bug Risks to Home Service Providers



- Hitchhiking bed bugs
 - Clothes
 - Bags and possessions
 - Shoes
- Bites
- Transferring bed bugs to other clients
- Being blamed for spread
- Bringing bed bugs home

Photos NIH (top); Missouri DHSS (bottom)

Education and Training of Service Providers...

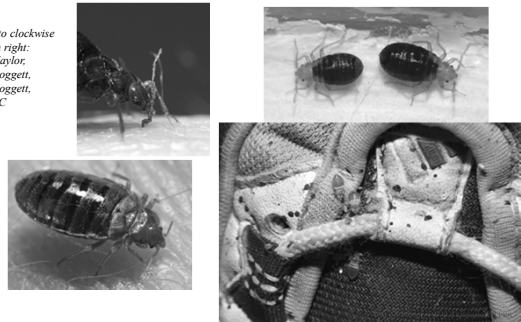


- Bed bug biology
- The actual risks from bed bugs
- How to identify high-risk locations for bed bugs
- Lessen the risk bed bugs will get on clothes or possessions
- Precautions to take at home

Photo CDC

What Are the Actual Risks?

*Photo clockwise
from right:
R. Naylor,
S. Doggett,
S. Doggett,
CDC*



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How to Recognize a Badly Infested Residence—1

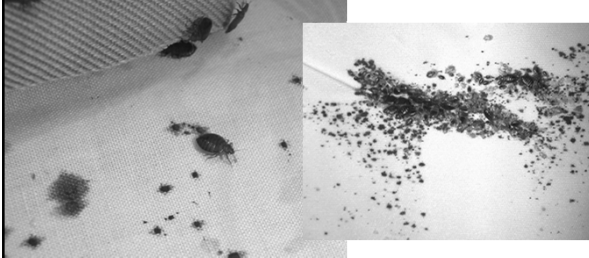


Photo H. Harlan

Photo R. Cooper

How to Recognize a Badly Infested Residence—2

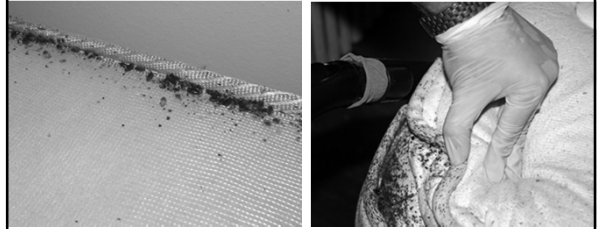


Photo R. Cooper

How to Recognize a Badly Infested Residence—3

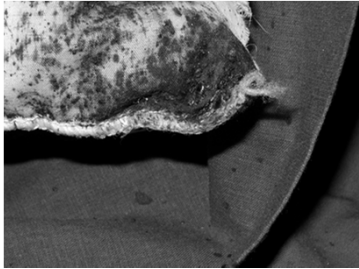
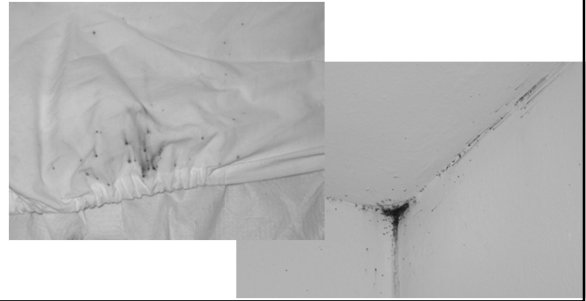


Photo L. Pinto

How to Recognize a Badly Infested Residence—4



How to Recognize a Badly Infested Residence—5



Photo R. Cooper

Money Makes a Difference



Photos Phila.gov (top); Clark Cty, WA (bottom)

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Special Problem Sites —1 Low-Income Apartments



- Low income
 - Residents
 - Property
- Building condition
- Over-crowding
- Clutter
- Sub-renting
- Noncooperation

Special Problem Sites—2 Assisted Living/Senior Housing



Photo VA

- Disability, illness, being bedridden
- Inability to cooperate
- Mental health issues
- Vision
- Cognitive problems
- Clutter
- Hospital beds, wheelchairs, other equipment
- Warm temperatures
- Many social interactions

Special Problem Sites—3 Transitional Housing/Shelters



- Clients often bring in bed bugs
- Rapid turnover
- Group living
- Crowding/clutter
- Financial issues
- Emotional and psychological issues

Photos ADA.gov (top); HHS/ACF (bottom)

Preventing Bed Bugs on Clothes or Possessions-1



Photo © Eric's photography/iStockphoto

Preventing Bed Bugs on Clothes or Possessions-2



What About PPE?



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Taking Precautions at Home



- Washer/dryer
- PackTite™

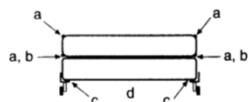


Photo R. Cooper

At Home: Isolate Sleeping Areas



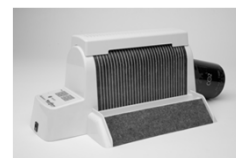
Self-Inspect Home Periodically



- a = mattress seams
- b = edge between mattress and box spring
- c = space between box spring and bed frame
- d = inside boxes, shoes, etc. under bed



Consider Using Bed Bug Dogs or Other Detection Tools



Supplies and more information
www.bedbug.com

Questions or Comments

