



Pest Pressures in Health Facilities

28 Locations

Servicing over 1,700 medical facilities each month

CHAPTER 1

Bed Bugs

CHAPTER 2

Rodents

Chapter 3

Cockroaches



Pest Pressures in Health Care

CHAPTER 1

Bed Bugs

What are Bedbugs?

- Bedbugs are **grey to reddish-brown** insects
- **Oval and flat** (easy to enter cracks)
- 1/16" to 3/16" (or 1 to 6 mm)
- Body shape and habits enable them to avoid detection



PROLIFIC

- Female lays 1 – 5 eggs / day
- 200 – 500 eggs laid in lifetime
- Eggs hatch in 6 – 10 days
- Five nymphal instars
- 4 – 16 week life cycle
- 3 – 4 generations / year



SECRETIVE...

- Inactive and hidden during the day
- Peak activity during night time hours
- Infest bed (or couch) and items in immediate proximity to bed primarily
- Spread further from bed as infestation becomes more severe
- Hitch rides to new and exciting places!



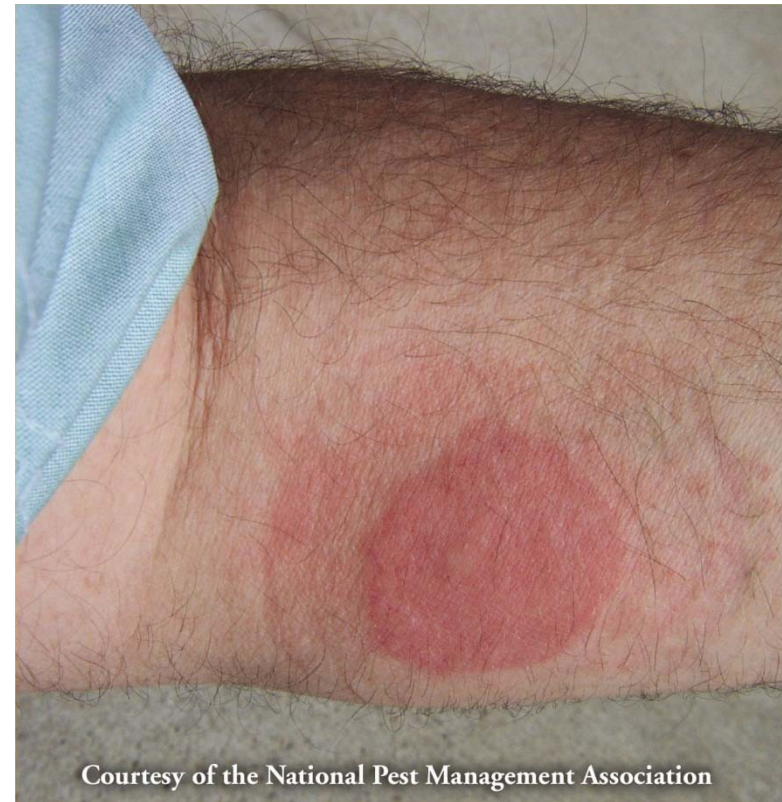
Presence of Bedbugs can be indicated by:

- **Live or dead insects, caste skins**
- **Blood spots** on bed sheets & pillows
- **Fecal specks** in cracks and other hideouts
- **Skin reaction**
- **Smell**- high infestation levels



BED BUG BITES

- Spots are >1.5cm
- May take up to 9 days to occur
- Subside to red spots
- Sensitivity to bites increases with repeated exposures



BED BUG BITES

- Mostly located on the upper body - neck, shoulders, arms and upper part of the back
- Also common on lower legs.
- Currently no proof of disease transmission.



INTEGRATED PEST MANAGEMENT

- Inspection and Monitoring
- Preparation For Treatment
- Vacuuming
- Encasements
- Steaming
- Contact and Residual Insecticides
- Structured Follow-up



THE SCIENCE BEHIND THE NOSE



From a single drop of urine, the sniffing dog learns the marking animal's sex, diet, health, emotional state, and even whether it's dominant or submissive, friend or foe.

Tracking dogs follow a biochemical trail of dead skin cells, sweat, odor molecules, and gasses.

For dogs, a scent article is like a three-dimensional "odor image" - much more detailed than a photograph is for a person.

Dogs can track a scent through snow, air, mud, water, and even ash.

CHAPTER 2

Rodents

1. THE PROBLEM WITH RODENTS?

Physical Injuries
Bites

Allergies / Asthma

Structural Damage



WIRE DAMAGE



LEAD PIPE

1. THE PROBLEM WITH RODENTS?

Pathogens, Parasites and Contaminants

- They are disease vectors of salmonellosis, lymphocytic choriomeningitis, others.
- They are disease reservoirs for the bubonic plague, Hanta virus, Leptospirosis, murine typhus, others

NEGATIVE MEDIA!



Mouse Behaviour

- Commensal(Eat at the table as Humans)
- Nocturnal
- Inquisitive
- Nest in voids
- Prefer seeds, nuts, chocolate, bread
(not too particular)
- Nibblers

Why are they Here?!

Resources!!

- *Food*
- *Water*
- *Nesting Space*
- *Nesting Material*

Required for:

- *Survival*
- *Growth*
- *Reproduction*



Very Important for Rodent IPM!!!

3. Rodent IPM

The Pest Management Program will:

- ✓ Detect pest presence
- ✓ Determine the problem
 - Find the source
- ✓ Pick the right (control) tool for the job
- ✓ Fix (or manage) the problem

Sherlock Holmes meets Mike Holmes!



Detect Rodent Presence



Find the Rodent Source





AGGRESSIVE CONTROL!

Fix the Rodent Problem



Chapter 3

Cockroaches

Cockroaches are the Enemy



Objectives Today

- **Identification & Inspection**
 - Review of the common Cockroaches we encounter
 - Where to find these pesky insects
- **Reporting and Treatment**
 - Treatment process
 - Traditional treatments

Did you Know?



How many species of cockroaches
are there?

- Today about 4,500 species have been identified and described and scientists believe more than 5,000 remain to be discovered or named.

Did you Know?

How long have cockroaches been estimated to have been on the planet?

- Cockroaches go back at least 350 million years

Did you Know

One of the most important residential and food-associated pests worldwide.

* Vector of about 40 species of pathogenic bacteria including: *E.coli.*, *Salmonella*, *Helicobacter pylory.*, etc.

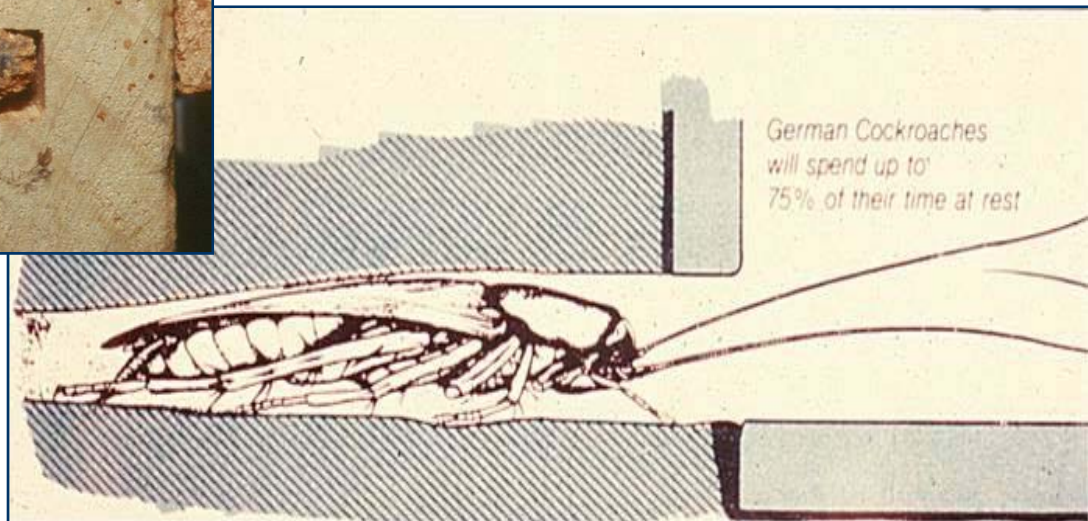
* Allergies and asthma.

Cockroach Behavior

- Prefer to hide in cracks and crevices in the daytime
- Mostly active at night - during which they forage for food, water and mates
- Prefer moist environments

Cockroach Behavior

Are “thigmotactic”



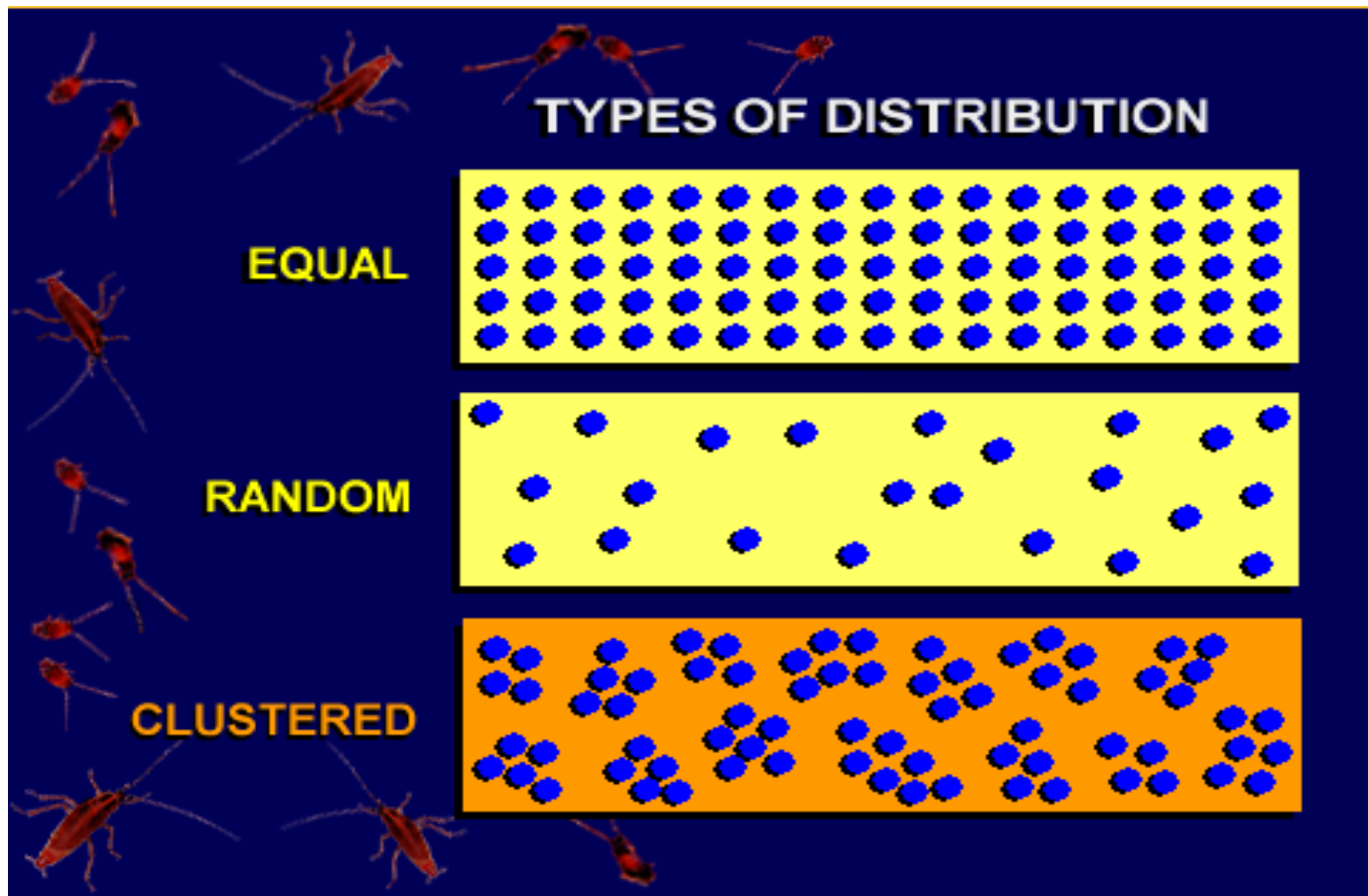
Cockroach Behavior

- They are not social insects but are gregarious
- Most species found living inside buildings are scavengers feeding on a variety of food
- Live in protected cracks and crevices

Cockroach Behavior

- Some species are fast runners, can scale glass, even walk on the ceiling
- They are good "hitchhikers"

Cockroach Behavior



Cockroach Behavior

What 2 species are generally found only indoors?



German/American Cockroach,



Brown Banded Cockroach,
Supella longipalpa

American Cockroach



American Cockroach

- Up to 2 inches or more
- Red-brown
- Recognized by yellow “figure-8” on its pronotum



American Cockroach

- Indoors
 - Prefers warm, very damp areas
 - Sewers, pipe chases, crawlspaces, basements, attics
- Outdoors
 - Its primary harborage is tree holes
 - Also, wood piles, any piles of items, heavy ground cover, flagstones, landscape timbers

American Cockroach

- Produces egg capsules weekly and drops these in “protected” locations
- Takes about 1 year to develop into an adult
- 300 to 500 per year is maximum resulting from one pair under good conditions

American Cockroach

- Will travel 100 to 200 feet from harborage in search of food
- Not a “picky eater” – it will readily eat any insect bait it finds

German Cockroach

Number one cockroach pest

- 5/8 inch long,
tan brown
- Adults easily recognized
by 2 stripes
on pronotum



German Cockroach

BAD NEWS:

* Only 1 mating required to fertilize all egg capsules for lifetime

→ 7 Ootheca, 37 eggs in each (German)

→ 35,000 offspring per female under optimum condition

GOOD NEWS:

* Food and water deprivation = less viable eggs

German Cockroach

- Breeds faster than any other cockroach
- Female carries ootheca until 24 hours before hatching
- Small size allows it to take advantage of more potential harborage sites

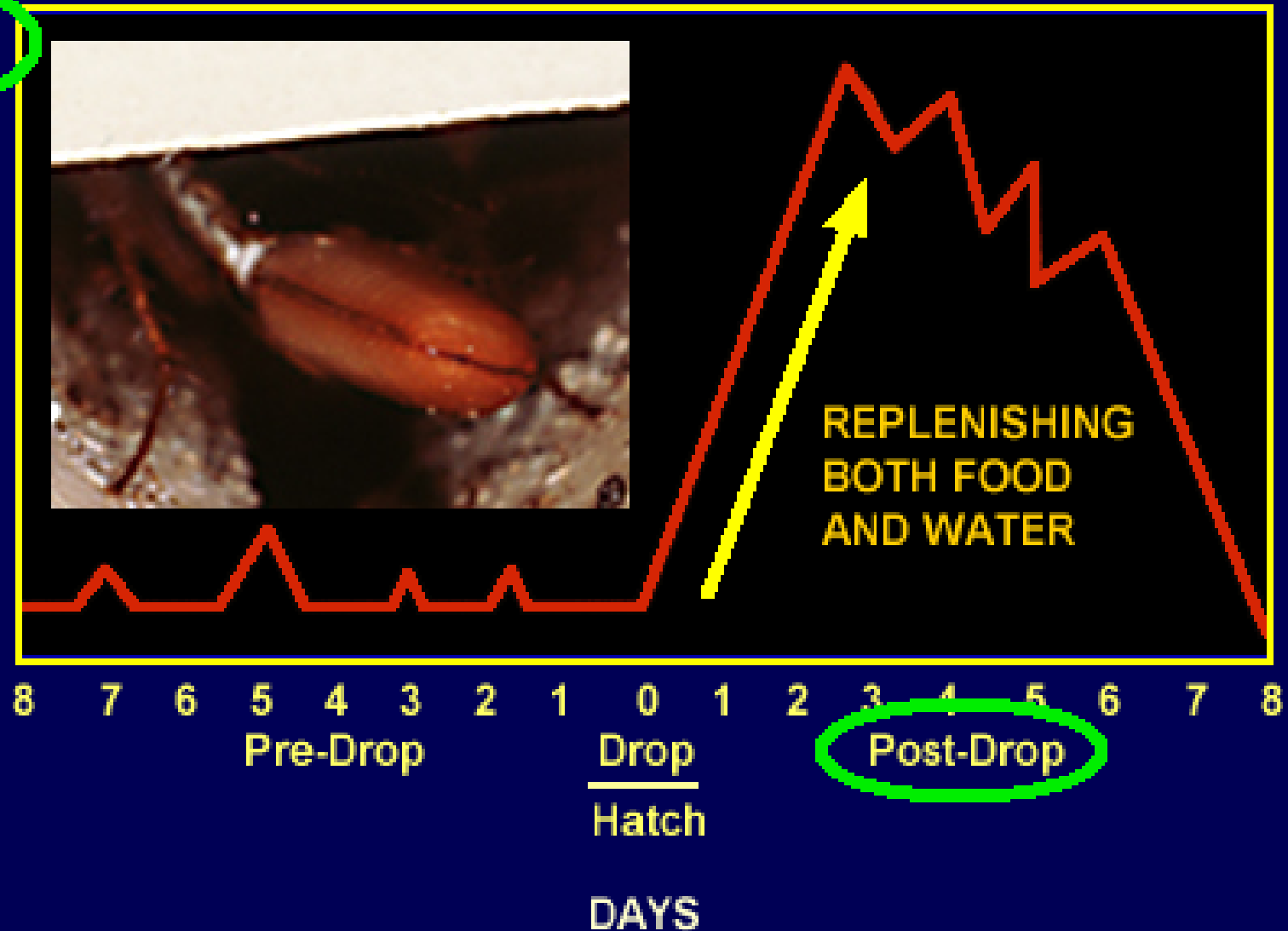
Female German Cockroach Activity Patterns

ACTIVITY
LEVEL

High

Moderate

Low



REPLENISHING
BOTH FOOD
AND WATER

Post-Drop

DAYS

German Cockroach

- Creates “Fecal Focal Points”
 - Also called fecal smears
 - Contains aggregation pheromone
 - Feces often eaten by youngest nymphs
- Invades buildings by hitchhiking
 - Groceries, boxes, used appliances/furniture



German Cockroach

**MATURE POPULATIONS WILL
EXHIBIT ALL LIFE STAGES WITH
UP TO 75% OF THE POPULATION
IN THE NYMPHAL STAGE.**

German Cockroach

- Usually travels no further than 10-12 feet away from harborage for food/water/sex
- Can detect baits from about 12-14 inches



Treatment

- **INSPECTION**
- **INVESTIGATION**
- **MONITORING**

Treatment





FOOD

WATER



HARBORAGE





Control / Elimination

Must get 98-100% control on initial treatment

Focus efforts on cracks & voids – where they spend 75% of their time!

Control / Elimination

Harborage Elimination and Good Sanitation are the final key elements in controlling cockroaches.

Eliminate gaps around counters, pipes entering walls, etc.

A clean facility limits food availability;

A clean facility suppresses reproductive rates;

A clean facility will make control efforts more successful.



Questions?

Thank You.

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