SUBJECT: Integrated Pest and Vector Control Plan	REFERENCE #	
CLINTON REGIONAL HOSPITAL DEPARTMENT: Plant Operations	PAGE:	
	EFFECTIVE:	
APPROVED BY: Quality Board & Management	REVISED:	REVIEWED:

POLICY: Integrated Pest and Vector Control Plan

DEFINITION:

Vector control combined with an Integrated Pest Management (IPM) system ensures infection and disease control from pests and their vector-borne diseases.

Plant Operations, Environmental Services, hospital staff, and Infection Control Practitioners work together to ensure a clean, safe and healthy environment of care within the hospital buildings. If pests are noted to be present in a hospital area a Pest Reporting Form is to be filled out and delivered to the Infection Control Director.

AUTHORITY FOR THE PLAN:

INTEGRATED PEST AND VECTOR CONTROL PLAN

STATEMENT

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- **PROCEDURES**

The plant operations manager or maintenance staff will spray ORTHO HOME DEFENSE INSECT KILLER FOR INDOOR AND PERIMITER2 chemical every month or as needed

for pest control. Twice a year Clinton Regional Hospital will hire Quick Draw Exterminating to spray exit doors and the lawn for pest control. Clinton Regional Hospital's maintenance staff will check all bait boxes at exit doors and around the perimeter and rebait as needed.

Vector Control is primarily concerned with mosquitoes, flies, rats and mice. However, this plan incorporates other types of medically important vectors such as ants, cockroaches, birds, fleas and spiders.

ANTS

FACTS and HABITS

Ants enter buildings because the weather outdoors is too extreme or because they are foraging for food. Any type of food can attract them. Location of the nest can aid in control because ants are social insects. Killing large numbers of individual ants will not solve an ant problem. Determine the kind of ant species. Most never enter buildings; others build their nests near buildings and forage indoors. Others may nest indoors. Local weather conditions may be the determining factor. Ants follow definite trails the pest control provider can use to find the nest.

Some ants deposit earth on the soil surface when they construct the nest, creating noticeable anthills. Nests may be constructed next to or under the foundation, under sidewalks, driveways and patios, or in decaying logs or tree trunks.

Indoors, ants may nest in walls, behind baseboards or under the building. Often, ant trails show entry through cracks far from the nest. Ants also nest in decayed or rotting wood.

IPM CONTROL METHODS

Prevention:

Indoors: Store food in tight containers. Remove plants and reduce moisture sources, including condensation and leaks. Follow good sanitary practices, and give particular attention to drain boards, window sills, door thresholds, and cracks and crevices.

Outdoors: For successful control and possible colony eradication, it is essential to locate and apply an ant-labeled pesticide to all entry locations where ants can invade a structure and where they are foraging for food. Additionally, baits are also effective when properly placed where ants are present. Using caulk and screening to exclude ants is effective. Sanitation, including removal of debris and wood piles from around structures removes nesting and hiding areas. Home-made bait of syrup mixed with boric acid powder (3 tsp. BA + 10 oz. syrup) in a small container may be effective (not to be used in patient care areas).

All bait traps are to be set and maintained by Plant Operations or HOSPITAL approved commercial pest control vendor.

Chemical Controls

Insecticides indoor: Products that contain boric-acid, permethrin, bifenthrin, and cypermithrin, and commercially prepared ready-to-use sprays are all effective.

Remember to pay particular attention to places where ants enter the room. **Anyone who sees ants** should report this information to Plant Operations so they can relay the information to the pest control technician.

The pest control provider may apply chemical controls that meet our IPM guidelines, when needed. Never use insecticides onyour own at the hospital.

COCKROACHES

FACTS and HABITS

Cockroaches exit their hiding places at night and feed on all types of food-stuffs as well as starchy materials such as book binding glues. During the day, roaches congregate in dark places such as inside kitchen cabinets and under sinks, behind plumbing fixtures, in closets, behind appliances and baseboards, and around bathroom fixtures. American and Oriental cockroaches often hide beneath buildings or in dark, damp, sheltered locations.

IPM CONTROL METHODS

Cockroaches, like other insects, require adequate food, water, and shelter to proliferate. Removing food resources, reducing water resources, and eliminating hiding areas are part of an effective control program.

Prevention:

Sanitation Measures

- Clean cupboards, drawers, floor drains, kitchen appliances, and sinks to remove food particles and grease.
- Clean grease from the microwave, stove, and walls.
- Put garbage in a container with a tight-fitting lid or in a sealed plastic bag.
- Take garbage to the Dumpster when needed.
- Store foods in the refrigerator or seal them in ant- and roach-proof containers.
- Keep kitchen counters and shelves clean.
- Mop floors regularly. Keep pots, pans, and dishes clean. Don't leave dirty dishes out.
- Remove cardboard or linens from floor surfaces.

Reduce Water Sources and Entry Points

- Report leaky, sinks, toilets, drains and water pipes and holes to facilities maintenance for repair.
- Weather-strip around doors and windows where roaches may enter.
- Exclusion by caulking and screening of points of entry are important steps in control.

Chemical Controls

Chemical controls of any kind are to be applied only by the pest control provider for the buildings. **No one should ever** apply pesticides brought from home, it may be hazardous to other building occupants, and may interfere with the current IPM strategy. Ready-to-use sprays of insecticides that contain permethrin, boric acid, and bifenthrin are effective. Roach sticky traps can help with control and aide in identifying areas with high concentrations of cockroaches. **RATS and MICE**

FACTS and HABITS

They contaminate food. Rodents eat or contaminate (through urination and defecation) one-fifth of the world's food. A single mouse or rat can deposit 70 droppings a day (approx. 25,000 a year). Over a period of a year, a pair of rats will shed one million body hairs. Facilities professionals must inspect for rodent droppings, especially in undisturbed areas like pantries, storage areas, and along walls.

They damage buildings and materials by gnawing through plasterboard, wood, vinyl siding, fiberboard, cinder block, aluminum siding, and lead sheathing. They can cause fires by chewing through the insulation on electrical wires. Mice canseriously damage books, paintings, clothing, and stored materials.

Mice breed every four weeks, producing a litter of six young each time. Anyone in the hospital buildings who suspect mice, act fast and call Plant Operations. Starting at three to four months old, rats breed four to six times per year. Each litter contains about eight "pups." With a good food supply and plenty of hiding places, one pair of mice or rats can turn into hundreds within a year.

They are tough. They have been found at the bottom of coal mines, on top of 15,000-foot mountains, and living inside meat lockers in below- zero temperatures. They can squeeze through holes the size of a dime and swim over a half-mile of open water, even against a strong current of sewage.

Control Options

mountains, and living [illegible]
through holes the size of a dime
strong current of [illegible]

Control Options

HOSPITAL's pest control provider and PLANT OPERATIONS will pursue the following options to solve this problem.

This information is to give a better understanding of the complexities a rodent control program using IPM techniques and they consist of:

DETECTION and MONITORING

- Identify foul odors. Look for scattered rat droppings, holes, and burrows near common pathways, feeding locations, or nesting sites.
- Look for scratches and sharp gnawing marks on the bottoms and corners of doors and walls, on ledges, and on stored material.
- Look for dark, greasy rub marks caused by the rat's oily fur repeatedly brushing against painted surfaces or wooden beams.
- Check for tracks and tail draglines on dusty surfaces indoors and in loose soil and mud outdoors.
- Examine food packages for damage.

IPM CONTROL METHODS

Preventative Maintenance

- Seal small holes with 1/4-inch galvanized hardware cloth or copper mesh and caulk.
- Check for gaps around exterior doors and seal with weather stripping. Door sweeps can be used to prevent rodent entry.
- Inspect and repair damaged air vents, louvers, vent pipes and shafts, tile roofs, and gaps around the chimney.
- Clean out debris in attics, basements, closets, lockers, and lounge areas.
- Store foods in tightly closed metal, glass, or plastic containers.
- Rinse all cans, bottles and plastic containers before recycling and discarding.
- Make sure garbage can and Dumpster lids seal tightly when closed.
- Do not leave food or crumbs on counters, tables or on the floor overnight.
- Regularly clean under the refrigerator and stove. Open the stovetop and remove food and grease.
- Clear away brush, weeds, and heavy ground covers, especially around foundations.
- Set up a schedule to regularly clean dumpsters, garbage cans, and other trash containers thoroughly.

Trapping

- Killing rodents instantly with a trap is possibly the most humane method of control. If using a trap, use expanded-trigger traps whenever possible. If this is not practical as in some areas glue-boards should be used and checked frequently when in use.
- Place traps in areas where they are inaccessible to anyone.
- Use effective baits: for Norway rats, use a piece of bacon or a slice of a hot dog; for

roof rats, raisins and nuts; for mice, gumdrops and raisins. Since rats are sensitive to changes in the environment, traps should be pre-baited. Place baited traps out for several days without setting the trap. Check traps daily to see if bait was taken. Once rats take the bait, add fresh bait and set the trap.

- Set three traps side-by-side and perpendicular to the wall with the triggers facing the wall. Alternatively, set two traps end-to-end and parallel to the wall, with the trigger facing out.
- Place traps for roof rats on tree limbs, under vegetation, on backyard trellises and fences, and other aboveground sites.
- All traps should be inspected daily, and stale baits should be replaced.

Chemical Controls

Chemical controls for rats and mice will be avoided if possible. Rats and mice poisoned indoors may die inside of walls, heating ducts, ceilings, or other inaccessible areas. The decomposing bodies provide a food source for other pests and cause extreme odor problems.

HOSPITAL's pest control provider may need to apply chemical controls as a last resort. All chemicals are required to meet IPM guidelines. Never use rodenticides (rat and mouse poisons) on your own.

FLIES

FACTS and HABITS

Flies breed in food waste and animal feces. Flies can be a menace to public health and can carry disease-causing organisms ranging from viruses and bacteria to microscopic roundworms. Fly management is important in disease prevention between human and domestic animals.

HOSPITAL's pest control provider and Plant Operations will pursue the following options to solve this problem.

DETECTION and MONITORING

- Inspect the area to determine where the flies are breeding or the points from which attractive odors are originating.
- Inspect the area to determine where flies enter. Check doors and windows for entry points.

IPM CONTROL METHODS

Prevention: Indoor Sanitation Measures

- Keep trash receptacles closed and as clean as possible
- Remove trash frequently

- Keep food areas clean and free of food debris
- Promptly fix leaky drains or garbage disposal units, and remove any food waste that has accumulated under sinks or on floors. .
- Replace or fix garbage can lids. Tight covers on sturdy garbage cans can reduce the local fly population by 90 percent if garbage is well wrapped.

Physical Control ***Options***

- Use tightly fitted window screens on any window that can be opened(16-mesh) to prevent fly entry.
- Install a ceiling fan that moves at least 1500 cubic feet of air per minute at entry sites with high foot traffic.
- For occasional invaders, use a fly swatter. Aim the fly swatter about 11/2 inches behind the fly before striking--flies take off backwards.

FRUIT FLIES

FACTS and HABITS

Fruit flies are a common pest. They infest homes, offices, restaurants, cafeterias, supermarkets, food processing plants, and breweries. There are many different kinds, but all have similar physical characteristics and habits. It is common to see a group of small flies, sometimes with tiny red eyes, hovering over one area or flying in small, slow circles. They seem to appear out of nowhere, in ever-increasing numbers.

Fruit flies are attracted to ripe or rotting fruits and vegetables, vinegar, cider, beer, and any yeast resulting from fermentation. It takes very little food to breed fruit flies. Hundreds can breed in the residue inside an "empty" ketchup bottle; thousands in one dirty garbage can.

HOSPITAL's pest control provider and Plant Operations, will pursue the following options to solve this problem.

DETECTION and MONITORING

Getting rid of fruit fly infestations is a three-step process. First, track down each breeding site. Second, remove the rotting and fermenting material that allows flies to breed. Finally, prevent new food material from accumulating and attracting new flies.

Check these breeding sites:

- Stored fruits and vegetables. Check for rotten items in bags and refrigerator bins.
- Food scraps. Look under counters.
- Empty bottles. Fruit flies can breed in the residue of "empty" returnable or discarded wine, beer, milk, ketchup, and other bottles.
- Garbage cans. Food scraps and sticky residues should be removed by periodic washing.

- Cleaning water runoff. Mopping and cleaning water can carry food "goo" under walls and into cracks in broken tile and damaged grout.
- Utility sink. An encrustation of food can buildup on a sink used as a common drain for dishwashers, potato-peeling machines, mop basins, etc.
- Traps and drains. Check for leaking grease traps and broken or stagnant floor drains.
- Dishcloths and mops. Old, forgotten dish cloths and mops can sour, ferment and become a breeding site for flies.
- Food carts. Food scraps and sticky residues should be removed by aggressive washing.

IPM CONTROL METHODS

Insecticide treatment is not an **effective** measure for controlling fruit flies. At best, the treatment only kills a portion of the active adults. Unless the source of the problem--the breeding site--is eliminated, more and more new adult flies will emerge each day.

BIRDS

FACTS and HABITS

Birds carry diseases and other pests that affect humans and eat garbage. Bird droppings are acidic. They deface and even erode buildings, statues, and vehicles. Masses of droppings can pose slipping hazards on porches, walkways and fire escapes. Messy nest sites are also a source of litter. Diseases are another important consideration in bird management. Birds also carry a number of human diseases. These diseases include histoplasmosis, cryptococosis, encephalitis and salmonella. Birds are also associated with external parasites (*ectoparasite*), and other pests. Chicken mites feed on young Birds and invade buildings when they leave the nest. Welts and skin infection may result from mite bites. Birds carry fleas, ticks, and mites that may bite humans and possibly transmit disease.

Birds build nests in protected areas. Building ledges, bridge support framework and similar man-made structures are usual nesting sites. Breeding occurs in all seasons and Birds raise several broods each year. Birds eat about one pound of food perweek. They prefer seeds and grains with some amounts of fruit, insects and green feed, but will also eat garbage.

IPM CONTROL METHODS

Reduce food sources. Prohibit feeding of Birds. Careful garbage disposal and storage will eliminate this food source. Exclusion is another effective management tool. Bird-proofing measures include screening and eliminating roosting ledges with tightly stretched parallel strands of wire, slinky and spiky wires, sticky repellents and non-lethal electric shock

systems. Slinky and spiky wires and sticky repellents should be used sparingly, if at all, because they collect debris and sticky repellents may also melt and run in hot weather. To control Bird mites from entering to the interior of buildings include sufficiently sealing windows and other exterior building entry sites.

FLEAS

FACTS and HABITS

The most common office flea is the cat flea. Cat fleas are found on cats, dogs, skunks, raccoons and other animals. Cat fleas eat over 15 times their weight in blood each day. They don't need that much food, but the excess in their poorly digested droppings are sticky and dislodged from animals by scratching.

DETECTION and MONITORING

Fleas usually bite humans on the leg and ankle areas. Bites in the upper torso are not from fleas. Physical reaction includes swelling, itching, and occasional secondary bacterial infections caused by scratching the bite.

Newly hatched fleas can hitchhike to work on the clothes of employees walking to work or with animals at home. They usually bite surrounding employees, but not the carrier. They are sometimes associated with feral cat populations, or may come from a breeding source at work (e.g., a guide dog). An employee may not notice (up to four hours) a bite until after arriving at work and may mistakenly report fleas in the office.

Obtaining specimens is important in determining the source of fleas. Flea species associated with nests, rodents, and small-animal control programs may require different treatment.

Monitoring devices

- "White sock method": After walking on the floor, check socks for fleas
- Filtered vacuum test: Check vacuumed debris for the presence of fleas
- Sticky traps and light traps

IPM CONTROL METHODS

When fleas have not bred at a site, chemical control is not necessary to eliminate the flea population. Even if fleas have laid eggs, offices do not usually foster appropriate conditions for flea maturation or breeding. Because most fleas enter offices through a secondary host and have not bred there, chemical control should be a last resort. Employees should consider that flea problems may originate at home and are infesting the workplace.

Light traps are useful for monitoring flea populations. The light attracts fleas and catches them on a yellow sticky trap. Blinking light traps are 35% more effective than non-blinking traps, and it traps all the fleas within 20 feet in three days. If the trap catches no fleas, no treatment is required. If the trap catches a few fleas, it is an effective control and will not require further treatment, either.

Insect growth regulators (IGRs) and borates can flea-proof carpets and prevent breeding. Do not use borates on valuable fibers. Boron reacts with natural dyes (blacks and browns turn red) and the abrasive particles act like sand, cutting carpet fibers.

Mechanical Control

- Bird- and rodent- proof where these animals may host fleas.

Physical Control

- Vacuum all rugs, furniture, between baseboards, and the floor, including closets.

Chemical Control

- IGRs and inorganic dusts
- For cats and dogs: IGRs and Vitamin B complex

SPIDERS

FACTS and HABITS

Spiders and their insect prey thrive on the multitude of harborage opportunities afforded by cluttered storage areas such as garages, storerooms, attics or laundry rooms. Boxes in attics are a common harborage for brown recluse and other spiders. PMPs have little control over clutter but can encourage the home or business owner to improve the situation. Tips include removing clutter and organizing stored materials on wall shelving, off the floor. This allows PMPs to access the floors to apply a crack and crevice treatment and distribute sticky traps.

DETECTION and MONITORING

- **Control Options**
- **HOSPITAL's pest control provider and PLANT OPERATIONS will pursue the following options to solve this problem.**
- Corners of windows, closets or rooms where web-building spiders frequent.
- Unfinished basements and crawlspaces, at corners, floor/wall junctures or sill plate/header areas.

- Attached garages, targeting especially the ceiling-wall juncture above the overhead garage door.
- Active webs or around harborages in attics. Care should be taken not to direct sprays onto stored materials. Instead, treat the attic flooring or structural components around stored items.
- Entry points around windows, doors and utility penetrations or weep holes.

IPM CONTROL METHODS

1. Thorough inspection and monitoring

2. Species identification

3. Use of non-chemical methods

4. Selective use of insecticides

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