Proceedings of the Sixth International Conference on Urban Pests
William H Robinson and Dániel Bajomi (editors), 2008
Printed by OOK-Press Kft., H-8200 Veszprém, Pápai út 37/a, Hungary

INTEGRATED PEST MANAGEMENT IN MEDICAL FACILITIES

ROBERT L. KUNST
Fischer Environmental Services, 1980 Surgi Drive, Mandeville, LA 70448
e-mail: rlk@fischerenv.com

Abstract Providing pest control services to modern Medical and Ancillary Care Facilities requires using the latest integrated pest management (IPM) techniques. All aspects of integrated pest management, including pest identification, monitoring, and inspection must be included din the pest control program designed for modern medical facilities. Special emphasis must be placed on specific areas that are normally overlooked in the inspection phase of the treatment. Mechanical, cultural, environmental modification, sanitation, as well as threshold setting, and the judicious use of chemicals are all components of an IPM program for medical facilities. The presentation will review a set of investigative techniques that illustrate the proper methods and means of controlling pests at all levels of a medical complex. Aspects of prevention and control will be presented and discussed in their relationship to the medical care of the patient. Methods of inspection, treatment, and cost and pricing analysis will be presented.
Key Words pest control, health care facilities, pest prevention, hospital pests

INTRODUCTION

Integrated pest management (IPM) can best be defined as a decision making process that anticipates and prevents pest activity and infestation by combining several strategies to achieve a long term solution. This is the definition that is best suited for a professional pest control program for medical facilities. The basic components of this type of IPM program are: 1) Maintenance; 2) Education; 3) Structural Repair; 4) Proper Waste Management; 5) Biological and Mechanical Control Techniques; 6) Judicious Use of Pesticides. These components may not be applied equally to all pest management programs for health-care facilities, but each must be considered.

Hospitals, nursing homes, and primary and secondary health-care operations are made up of an extended complex of non-medical service and office buildings. Many of these facilities and their components are not unique to health care and a represented outside of this industry. Master kitchens in hospitals resemble large commercial kitchens, they have much of the same equipment and operation guidelines; the receiving areas of hospitals generally resemble those of other commercial buildings because of the food vending and serving operations available; patient rooms are similar in layout and organization to hotel rooms, and lavatory areas have counterparts in commercial research facilities. The utility-room areas, lobbies corridors, locker rooms, offices, vending machines, and gift stores that are common components of hospitals may be found in many other types of large building. Hospitals and airports have a lot in common: there is a constant flow of people, and construction and renovation and usually ongoing.

PESTS IN HEALTH-CARE FACILITIES

While there may be a variety of insects and other arthropods associated with health-care facilities, there are no unique hospital pests. There are some insect pests that are typically a minor problem in other (non-medical) situations, but in hospitals and nursing homes can have significant pest status and cause direct or indirect harm to patients and sanitary conditions.

Factors Favoring Pests Entry

The conditions or other environmental factors that favor the entry of pests in health-care facilities include: 1) the arrival of new patients; 2) regular employees that have ongoing pest infestation in their home; 3) medical and service staff that move between a group of hospitals, office, or service buildings; 4) regular

in-take of food and vending supplies; 5) contract laundry and uniform services; 6) flowers and some of the gifts in the Gift Shop can be infested with insects and spiders; 7) utility tunnels that connect buildings and services can provide a route for pests; 8) outside lighting can attract insects and from there they can move indoors; 9) foundation landscaping can provide food and harborage for various pests; 10) dumpsters and trash collection areas (indoors and outdoors) can be a source of pests.

Factors Favoring Pest Survival and Dispersal

There are various environmental conditions that favor or enhance pest survival in health-care facilities. These include: Buildings are generally war, and there are some very hot locations; Food sources of many kinds and in many locations; Food spills in patient rooms; Organic waste of many kinds; Water sources in many locations; Numerous harborages for pests to find harborage and breed; Uneven sanitation programs.

The physical and environmental factors that facilitate pest dispersal in health-care facilities are numerous, and sometimes not easily seen. Conduits for water, steam, electricity, oxygen lines, and heating or cooling systems, provide lateral and vertical routes for pests. Elevator shafts provide vertical access to each floor level, which facilitates the rapid movement of some flying insects. Corridors and wall or ceilings voids allow lateral pest movement. Food carts spread pests from room to room and from the kitchen to rooms (and back again). Laundry carts can spread pests between rooms and from the laundry service holding area to rooms. Mobile medical equipment such IV stands, lights, incubators and gurneys carry pests

Factors Making Pest Eradication or Prevention Difficult

There are many reasons and conditions that can make pest eradication or prevention in modern or well-established health-care facilities. These reasons include: hospitals and nursing homes function 24 hours a day; there is no single time when all locations are accessible for pest management activities; the choice of materials and methods is severely limited; in some areas, such as intensive care units, pediatric units, dialysis units and cardiac monitoring units, the equipment and patients cannot be moved; some residual insecticides have a short life on stainless steel; cleaning measures quickly remove deposits of insecticide; financial problems, which may limit the hiring of professional pest control services; staff ignorance of the risks from pests.

PLANNING A PEST MANAGEMENT PROGRAM

Organizing integrated pest management programs for hospitals and other medical facilities must incorporate these features: Obtain management cooperation; Inspection of premises; Develop recommendations for non-chemical measures; Careful consideration and development of recommendations for chemical treatment; Obtain cooperation of on-site staff; Implement initial treatments; Implement follow-up treatments protocols; Plan to monitor the results. Of all the above keys to a successful plan management cooperation is the single most important. The level of cooperation and commitment to the hospital or nursing home administration will largely determine the effectiveness of the program. Without cooperation at the highest level, it is unlikely that staff in the various departments will cooperate and carry out pest countermeasures.

Inspection

An initial inspection of the premises, inside and outside, must be conducted to identify the type and extent of pest problems and factors contributing to those problems is extremely important. Eight key inspection factors include: 1) Interviewing the Customer; 2) Location of the infestation; 3) Extent of Infestation; 4) Damage where and from what pest; 5) Conductive Conditions; 6) Noting Harborage Areas; 7) Noting Sanitation Deficiencies; 7) Pest Entry.

The tools and procedures for inspecting hospitals and nursing homes will be similar to those used in food handling establishments. Schedules for meals, doctors' rounds, cleaning operations, maintenance schedules, and opening hours for the gift shops, etc. must be examined and taken into consideration. In developing a proper plan a number of concerns must be included.

Non-Chemical Measures

A range of proposed measures will be developed which may include the following: Tight fitting, self-closing exterior doors; Caulk crevices around doors, windows and vents; Fit insect-proof screens on windows and vents; Trim grass around building; Establish a bare strip of gravel, crushed stone, tarmac or concrete against the foundation of the building; Eliminate organic mulches around outdoor planting and indoor planters and substituting crushed shell, stone or gravel; Clean gutters and outside drains; Ensure good drainage under air conditioners; Keep dumpsters closed, and clean and empty them regularly; Eliminate outside bird roosting sites; Replace any exterior insect-attracting lighting with sodium vapor lamps which have low attraction; Seal or screen crevices or utility tunnels from adjoining buildings; Seal crevices around plumbing fixtures, wall-mounted equipment; Repair grouting in wall and floor tiles and repair other cracks in wall; Repair plumbing leaks; Remove unnecessary charts and notices from walls; Check incoming supplies of food, linen, and reject infested items; Upgrade food storage, waste handling, and cleaning programs to reduce the food available to pests; Enforce rules for staff about not eating in non-designated areas (intensive care units); Replace wooden racks, shelves, cabinets, etc., with metal ones to discourage cockroaches which like wooden surfaces; Replace hollow doors with solid-core doors in sensitive areas to prevent them becoming a pest harborage; Use vacuums, steam, cold, heat, and traps where possible; Use sticky traps for insect control in sensitive areas; Use light traps and bait indoors for flying insect control where these will not disturb patients; The non-chemical recommendations should be discussed with the client and an action plan agreed upon which details that does what.

Chemical Measures

Maintaining proper perspective is important when considering the use of pesticides in hospitals and nursing homes. Hospitals are themselves intensive users of chemicals, many of which are applied actually in or on patients, many of which are much more toxic than the pesticides. For example; Instrument sterility, medicines administered to patients. Even for patients suffering acute respiratory distress, it is a common procedure to use noxious, volatile solvents such as trichlorethane and petroleum naptha to remove sticky dressings from their facial or body skin. In preparing a plan you need to break up your strategy into basic components.

Building Exterior

To pests, a building is a living object. The regular changes in barometric pressure and fans force inside air outside carrying heat and odors with it the outside walls of a building absorb heat from the sun during the day that radiates from it during the cool nights. Most pests like what people like: they have heat, odor, and light sensors on their bodies that perform like radar; they guide them to moisture, food and shelter; people, spilled foods, and garbage cans. Even foods being served give off odors (gas) that pests follow to the source.

During the fall months many pests such as crickets, roaches, rats, mice, ants, wasps, ace flies, and cluster flies will leave their normal living areas to over-winter in protected areas. Warm, outside walls, lights, or highly reflective surfaces on buildings will attract pests from a great distance. Any outside crack will allow them to enter the wall voids. In turn, they will enter an inside room through cracks, ceiling vents, and any other openings. Insects and rodents enter buildings as doors are opened and are carried in on people who enter or on packages. All cracks on outside walls should be sealed. All screens should be in good repair. Outside vents, pipes, wires, and fans should be tightly closed when not in use.

Building Interior

One room should be set aside for treating insect-infested equipment, beds, cabinets, tables, and carts. The treatment room must have an independent outside vented air circulation system to prevent insecticides from getting into other parts of the building. When equipment is being treated, the room must be tightly sealed or closed. Food carts transport roaches and spread them to many areas. Carts should be treated in this room and decontaminated with a sanitary wash. All cracks and crevices should be sealed in this room, otherwise flushed roaches could enter into adjacent rooms.

Patient room. Insects enter hospital patient rooms: on luggage and visitor baggage; out of breaks in walls wherever a service line enters room; out of cracks in walls around windows; on service carts; from adjacent rooms. The areas in patient's rooms needing most careful inspection are: bedside stands usually contain cracker, crumbs, candy, and food particles.

Nurses station. In this location, insects are carried in on personal baggage and breed in damp, hidden locations, such as backs of sinks or stoves; gnats and small flies are found breeding around the drain in sinks; out of cracks in walls, ceilings, or floors, and from adjacent areas; seal all cracks around service lines; Empty and clean cabinets and drawers weekly

Operating suite. Insects follow lines in from other supporting areas and enter through cracks and crevices; outside walls attract flying insects during cool nights, and they may enter through cracks in building walls; they may follow bright lights into operating suite; they breed in unsanitary drains within area and enter on carts, and master cased items; seal all cracks and remove all unused materials from drawers and cabinets; remove all spilled solutions from operating table, stands, and floors; wash inside of drawers and cabinets to remove all organic debris; keep all food and beverages out of supporting area adjoining the operating suite.

Autopsy room. Insects enter by following service lines and cracks and crevices in walls, ceiling, and floor; insects and their eggs come in on supplies, baggage, clothing, service carts, and breed inside on hidden waste; scum just under drain plugs; seal all cracks and crevices; remove all organic debris from equipment or other surfaces regularly; keep all cabinets and shelves clean; empty and clean all refuse containers daily; regularly flush and clean refrigeration and floor drains.

Housekeeping rooms. Seal all cracks and crevices; remove all organic debris from equipment or other surfaces regularly; keep all cabinets and shelves clean; empty and clean all refuse containers daily; regularly flush and clean refrigeration and floor drains; keep supplies stacked neatly and stored off of floors and away from walls; rotate inventory; seal all cracks and crevices; hang used mops and brooms; empty into sealed bags all used cartons which may be carrying insects or their eggs; keep foods out of this area; do not transport empty supply boxes and cartons to any other areas within the complex.

General storage room. There is a direct relationship in these areas throughout the hospital or nursing homes between sanitation and roach problems. Incoming boxes may have roaches or roach eggs inside them or between the folds; food supply is low in this area, these newly arrived or hatched roaches enter a crack and follow the utility lines to other areas that contain food, warmth, and moisture; oxygen lines are a direct path to patients' rooms or wards; seal all cracks and crevices; keep stock above floor and away from walls; remove all cartons as they become empty and destroy or place them in sealed containers, keep this area clean.

Repair room. Insects come in with supplies, baggage, and equipment; they follow utility lines, come in on items to be repaired and on carts; insects breed in hidden wastes; strict sanitation requirements in the repair or utility area are just as important as in patients' rooms or wards; the pipes and ducts are the nervous system of any hospital or nursing home, and at the same time they are expressways for roaches to enter any area; clean and organize all parts and equipment; regularly discard all equipment that cannot or will not be used.

CONCLUSIONS

There are many other areas of the facility that require special attention but, the most important thing you can do is to use your investigative skills to search out any areas of problems. This presentation was not meant to and exclusive program on treating hospitals. It was meant to spur you to look in the unusual places; your experience will lead you to the normal areas.