HOSPITALS & NURSING HOMES

Introduction

Hospitals and nursing homes are made up of complexes of buildings and service facilities, many of which are represented outside of the health care industry. For instance, master kitchens in hospitals resemble large commercial kitchens; receiving areas resemble those of commercial food vending and food serving establishments; patient rooms have much in common with hotel rooms; and laboratory areas have their counterparts in university and commercial research facilities. In addition, utility areas, foyers, corridors, locker rooms, offices, vending machines and gift stores can be found in many other types of large buildings, including railway stations and airports. Indeed, in terms of the heavy flow of people and materials, and the almost constant construction and renovation in a large teaching hospital, hospitals and airports have a lot in common.

Another thing which hospitals and nursing homes have in common with other buildings is pests. Moreover, there are no unique hospital pests — the same pests are found as in any other building where food is stored, prepared and served, and where people live and work. These pests include cockroaches, ants, flies, spiders and rodents.

Some of these pests may be just a minor nuisance in other situations, but in hospitals and nursing homes they can do enormous harm by frightening patients, compromising sterile conditions, spreading diseases and damaging the professional reputation of the facility. For patients in very fragile health, the presence of pests can be life-threatening. Cases are known of cockroaches contributing to the spread of hepatitis, and whenever they walk from drains or bedpans to patients' food, they can spread food poisoning organisms.

Before tackling pest problems in hospitals and nursing homes it is necessary to understand the many factors favouring pests, as well as the many factors which make pest eradication or prevention difficult.

Factors Favouring Pests

Factors Favouring Pest Entry

- The arrival of new patients may introduce pests on personal belongings.
- Employees from infested homes may introduce pests on personal belongings.
- Food provisions can be a source of pests.
- Contract laundry services may be a means of introducing pests with linen.
- Flowers or other gifts for patients may carry pests indoors.

- Pests may invade via utility tunnels from infested buildings in the same complex.
- Pests may crawl or fly in through crevices and unprotected doors and windows.
- Outside lighting and foundation planting may attract pests and increase the likelihood of building invasion.

Factors Favouring Pest Survival

- Warm buildings, and some very hot locations in kitchens, laundry rooms, boiler rooms, etc.
- Food sources of many kinds and in many locations (main kitchen, vending machines, cafeterias, etc.)
- Food spills in patient rooms.
- Organic waste of many kinds and in many locations.
- Water sources in many locations (kitchens, drains, bathrooms, scrub rooms, etc.)
- Numerous harbourages for pests to hide and breed (wall voids, conduits, etc.)
- Uneven sanitation programs.

Factors Favouring Pest Dispersal

- Conduits for water, steam, electricity, oxygen lines, heating or cooling systems, etc., provide lateral and vertical routes for pests.
- Lift shafts provide vertical access to each floor level.
- Corridors and wall or ceiling voids allow lateral pest movement.
- Food carts can spread pests.
- Laundry carts can spread pests.
- Mobile medical equipment such as IV stands, lights and incubators may carry insects.

Factors Making Pest Eradication or Prevention Difficult

- Hospitals and nursing homes function 24 hours a day and there is no single time when all locations are accessible for pest management activities.
- The choice of materials and methods is severely limited by the need to minimize disturbance of patients and activities in hospitals and nursing homes.
- In some areas, such as intensive care units, pediatric units, dialysis units and cardiac monitoring units, the equipment and patients cannot be moved and it is necessary to work around them.
- Cleaning measures can quickly remove surface deposits of insecticides.
- Some residual insecticides have a short life on stainless steel which is a common construction material for equipment in kitchens and elsewhere.
- Financial problems prevent some health care facilities from implementing measures which prevent pest problems.
- Staff ignorance of the risks from pests can cause indifference to the pests and opposition to pest prevention programs.

Planning a Pest Management Program

Because hospitals and nursing homes exist to improve or safeguard the health of their patients, and because pests present various threats to those patients, these establishments have a duty to protect their patients from pests. However, just as the quality of medical and nursing care can vary,

so can the quality of programs aimed against pests.

There are no fast, easy ways of dealing with pests in these situations, particularly if the pests include well- established populations of German cockroaches or ants.

This has often produced a belief among hospital administrators that pest problems can never be solved, and from that pessimistic belief can arise the attitude that it is not worth paying a high price for inevitable failure. However, the only inevitable thing is that if too little money, manpower, materials and skills are committed, there will be failure. Hospital pest problems can and should be solved, but it may take over ten times more money than for current ineffective programs. If this money is not available, despite pointing out the hazards of pests, professional pest management contractors must point out the limitations of what they can achieve for the available money.

Otherwise they may be liable for the adverse health effects of pests they cannot afford to eradicate. The approach that is most likely to succeed against pests of hospitals and nursing homes involves the integrated use of many non-control agent methods and control agent methods in ways which are suited to the various situations. Too often past failures have been because there was an over-reliance on one method or material.

Successes have usually been based on a dynamic mix of methods and materials. Moreover, successful programs are inevitably based on co-operative efforts between pest management professionals and several departments within the hospital or nursing home, particularly housekeeping, food management, maintenance, administration and nursing. The details of an integrated pest management program will vary from place to place, depending particularly on climate, construction methods and materials, pest problems, hygiene and maintenance standards, and the level of commitment of the management Obtaining and maintaining freedom from pests will obviously require a greater effort and financial commitment than if some pests are tolerated. Pest Management Systems includes the use of a range of control agents specially suited for use in hospitals and nursing homes. This system contains the following steps in the sequence they would be taken in a new account.

1. Obtaining management co-operation.
2. Inspection of premises.
3. Developing recommendations for non-control agent measures.
4. Developing recommendations for control agent treatments.
5. Obtaining co-operation of on-site staff.
6. Implementation of initial treatments.
7. Implementation of follow-up treatments.
8. Monitoring the results.

In most cases, because of the likelihood of reinfestation from incoming materials and people, the

above sequence would need to be repeated. In effect, it becomes a cyclical process, but the details of each cycle would vary because actions in the previous cycle would have changed the pest situation.

1. Obtaining Management Co-operation.

The level of co-operation and commitment of 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 co-operate and carry out pest counter measures. The co-operation of the administration can be encouraged by explaining the resources which the contractor is prepared to commit to solving the pest problems and by emphasizing the potential financial harm that can result from not getting rid of pest problems. It is important to point out the certainty of failure unless the administration can open up lines of communication between the contractor and various departments that must co-operate.

2. Inspection of Premises

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. In complex facilities it is useful to first obtain floorplans and to request that a staff member accompany the inspectors at all times for purposes of introductions. In small premises an inspection may only take a couple of hours, but in large complexes it could take several weeks. The cost of the inspection should be billed as a separate operational cost to emphasize the importance of this activity. How well this initial inspection is conducted will largely determine the suitability and effectiveness of later actions.

Note

Some contractors bid on work for new accounts without ever having inspected the hospital. Often the bid is simply based on what the hospital paid the last contractor. Such ‘blind” bidding often perpetuates a terrible situation, because when the new contractor sees the seriousness of the pest problems he realizes he will either have to lose money or perform poor service. This trap can be avoided by selling an initial inspection prior to bidding, and reporting the results of the inspection to the hospital administrator in the form of an audit of the pest situation with recommendations for actions. Such an audit will help the hospital to judge its existing contractor, and it provides the contender with a realistic basis for future bidding. The tools and procedures for inspecting hospitals and nursing homes will be similar to those used in food handling establishments, with the exception that pyrethrum will not be used in areas where it might compromise the health of patients or interfere with laboratory research.

Where the presence of ants is suspected, it will be necessary to place non-toxic baits, such as peanut buffer, around the building to locate infestations. These baits should be inspected regularly after placement to see if they are being fed upon by

ants. For convenience, the bait can be placed on small strips of masking tape for easy removal after the inspection. In addition to noting pest related data, notes should be made of the names of key contacts in all relevant departments. Special areas of risk from pests or pesticides should be noted. Key findings regarding pest invasion routes, factors favouring pests and actual pest locations should be recorded to form a baseline for future comparisons.

3. Developing Recommendations for Non-Control agent Measures

Based on the inspection, a range of proposed non- control agent pest management will be developed which may include the following.

- Fitting tight, self-closing exterior doors, particularly for the kitchen.
- Caulking crevices around doors, windows and vents.
- Fitting insect-proof screens on windows and vents.
- Trimming grass around building.
- Establishing a bare strip of gravel, crushed stone, tarmac or concrete against the foundations of the building.
- Eliminating organic mulches around outdoor plantings and indoor planters and substituting crushed shell, stone or graver.
- Cleaning gutters and outside drains.
- Ensuring good drainage under air conditioners.
- Keeping rubbish containers closed, and cleaning and emptying them regularly.
- Eliminating outside bird roosting sites.
- Replacing any exterior insect-attracting lighting with sodium vapour lamps which have low attractancy.
- Sealing or screening crevices or utility tunnels from adjoining buildings.
- Sealing crevices around plumbing fixtures, wall mounted equipment, etc.)
- Repairing grouting in wall and floor tiles and repairing other cracks in walls.
- Repairing plumbing leak.
- Removing unnecessary charts and notices from walls.
- Checking incoming supplies of food, linen, etc. and rejecting infested items.
- Upgrading food storage, waste handling and cleaning programs to reduce the food available to pests.
- Enforcing rules for staff about not eating in non- designated areas (e.g. intensive care units).
- Replacing wooden racks, shelves, cabinets, etc., with metal ones to discourage cockroaches which like wooden surfaces.
- Replacing hollow doors with solid-core doors in sensitive areas to prevent them becoming a pest habourage.
  Using sticky traps for insect control in sensitive areas.
- Using electrocuting light traps indoors for flying insect control where these will not disturb patients.

The non control agent recommendations should be discussed with the client and an action plan agreed upon which details who does what. Most of these

measures will be conducted by on-site staff or maintenance and building contractors. However, the pest management professional can help prioritize such work from a pest viewpoint. Where hospital or nursing home resources are too limited to implement every recommendation there should be a focus on protecting patient areas with non-control agent measures. This will help reduce exposure of patients to pests and reduce the need for control agent measures in patient areas. There will also be the spin-off that repairing cracks and plumbing leaks, and improving cleaning of patient areas, will have public relations value. Failure of the client to accept the non-control agent recommendation will force a greater reliance on control agent measures and reduce the chances of success. For instance, regularly removing debris and slime from floor drains and sinks is a more certain way of reducing problems of drain flies than periodic applications of insecticide.

4. Developing Recommendations for Control agent Treatments

It is important to maintain a proper perspective when considering the use of pesticides in hospitals and nursing homes, and this perspective must be communicated to the client. Part of this perspective includes the recognition that hospitals are themselves intensive users of control agents, many of which are applied actually in or on patients, and many of which are much more toxic than pesticides which are used in hospitals. These hospital control agents include instrument sterilants, as well as the various medicines administered to patients. Another part of this perspective is that, quite • apart from carrying disease organisms, pests produce control agents that can become airborne and can harm patients.

Examples include the allergens from cockroaches which are present in their exoSkeleton and become loose as a result of abrasions or moulted skin, and which can cause asthma and other allergic reactions, even in healthy people exposed to “cockroach dust”. Nonetheless, even though involuntary exposure of patients to pests is likely to be more harmful than their involuntary exposure to pesticides, it is wise to choose pesticides which meet the following criteria.

- Labelled for use in hospitals and nursing homes.
- Labelled against targets pests (e.g. ants, cockroaches).
- Labelled for sites of use.
- Effective against target pests.
- Low volatility.
- Low odour.
- Good safety record.
- Acceptable to client.
- Good service support from manufacturer.
- Registered for use in the state.

CONTROL AGENTS SPECIALLY SUITED FOR USE IN HOSPITALS products meet the above criteria for most hospital pests and sites, but exactly how they are used will depend on the findings of the inspection, including any special constraints imposed by the client regarding timing of applications etc. In all cases the use of pesticides in hospitals and nursing homes should be in a manner consistent with the

product labelling. Based on the various needs and restrictions, a written protocol should be developed for all proposed uses of pesticides. This should be discussed and agreed upon with the management of the hospital or nursing home. This protocol would describe for each location the target pest, the specific product, the dose rate, the method and site of application, the timing, and any necessary preparation or follow-up measures, including special precautions. Some examples are as follows:

Patient Rooms:
Target Pest: German cockroaches.

Method and site of application.

- Crack-and-crevice applications of using a sprayer fitted with an injection tube. Injections to be made in crevices in walls, around doors and window plumbing fixtures and other crevices where insects are seen or may be present.
- Spot applications using a low pressure light fan spray or paint brush to treat the legs of beds and tables.
- Void treatments using a hand duster to inject infested wall voids via existing openings (e.g. via power Qutlets and switches) or small drilled holes. Injection of hollow legs of tables, etc., as necessary. Timing: During non-visiting hours and preferably after the patients have been removed from the room. Preparations and follow-up: Rooms should have been cleaned prior to treatment and any food removed. Nightstands should be emptied prior to interior treatment, and spray deposits allowed to dry before reuse. Where nightstands are a focus of room infestations, and where it is convenient to remove patients from the rooms, the nightstand should be emptied, removed and treated in a non-patient area and replaced after drying.

Intensive Care Units:
Target Pest: Ants

Method and site of application.
• Void treatment using a hand duster to inject infested wall voids.
• Crack-and-crevice treatment using a sprayer fitted with an injection tube. Injections to be made to crevices from which ants have been seen emerging.
• Spot treatment using a paint brush to apply bands of insecticide around doors, wall-ceiling junctions and wall-floor junctions and to the legs of equipment to intercept foraging ants.
• Wrap double-sided sticky tape around legs of beds, IV stands, oxygen lines and any other equipment connecting with the patient to serve as a backup to insecticide treatments.
Timing: All insecticide applications inside ICU5 should be made when the unit is empty, such as when maintenance work is being conducted. Preparation and follow-up: The rooms should have been cleaned prior to treatment. The methods of treatment should not have resulted in any equipment contamination but, where any has occurred, this should be removed with a clean cloth.

Note; Where it is not possible to remove patients from the ICU, as much as possible insecticide treatment of wall voids should be planned from adjoining less-sensitive areas by injection through the back of the walls of the ICU. When planning injections through the back of walls, the protocol should include measures to avoid any emergence of insecticide onto non-target surfaces within the ICU. For treating crevices or bands inside the ICU while patients are present, paintbrush applications avoid any problems of drift. Of course any such application should have been agreed upon by responsible medical staff, who should plan to be present during the application. However, non-essential staff should not be present during pesticide applications.

For other sensitive areas, such as operating theatres, control agent treatments should focus on keeping pests from entering. Where pests have already entered, the focus should be on targeted applications when the area is not in use. For insects which spend most of their time hiding, such as German cockroaches, the emphasis will be on crack-and-crevice or void injections. Extensive surface applications of insecticides will primarily be confined to outside perimeter spraying with a control agent to kill invaders.

5. Obtaining Co-operation of Staff

Staff co-operation is essential for implementing many of the non-control agent recommendations and for preparing the various locations for insecticide applications. Such preparation includes ensuring that vulnerable food and medical supplies are moved or covered to avoid contamination, moving patients, emptying nightstands and opening locked rooms and cabinets. Once staff cooperation is approved in principle by the hospital or nursing home administration, co-operation is best achieved through staff training about pests. This can be achieved through meetings between the contractor and the staff in each department where help will be needed. The staff should be told how to recognize key pests and about their habits, routes of entry and conditions which encourage pests. In addition, the staff should be told how pests can compromise their departmental work, so that the contractor is seen as an ally in achieving their own goals. The protocol which will be prepared for conducting pest management will define the responsibilities of the contractor and of the hospital and nursing home staff.

6. Implementation of Initial Treatments

Implementation of many of the non-control agent measures such as improving hygiene, sealing harbourages, screening windows, repairing leaks, and changing sources of food supply and laundry services — takes time, money and changes of attitude. Where an actual pest problem exists, an initial offensive based on the use of pesticides will be the only way to quickly solve problems with insects such as German cockroaches or ants. Where the infestation is

widespread, the best way to ensure thorough treatment is to divide the invested area into sectors and to treat these sectors in an agreed sequence. A sector might consist of a functional unit (e.g. x-ray unit, operating theatres) or a physical portion of the building such as a whole wing or a whole floor. Prior to treatment, an inspector should ensure that all prearranged preparation has been carried out in each sector. Where the objective is complete eradication of an infestation, sufficient resources should be committed to treat the whole infested area within a relatively short period of time. This will ensure that there is not an untreated place for any insects to hide and breed. If the initial treatment takes too long, the residual action in the first-treated sector will have worn off before the treatment is completed.

This first-treated sector could then become reinfested from the remaining untreated sectors. To facilitate treatments in large facilities, it is useful to use a lockable cart to safely transport floor plans, protocols, label books, sprayers, control agents, caulking guns, glue board, double-sided tape, etc. This also helps avoid problems of theft of materials. It is good practice for all applications in hospitals to be certified.

7. Implementation of Follow-up Treatments

Following the initial treatments, any previously infested locations should be re-inspected within two to four weeks. Resources should be available to re-treat these old problem areas as well as any newly-discovered or newly reported infested locations. Where the initial treatment was ineffective, the cause of failure should be identified and the new treatment adjusted accordingly. With German cockroaches and ants, the main cause of failure is accidentally-missed harbourages in crevices and voids. Of course, failure will always result when access to infested sensitive areas, such as laboratories, is deliberately denied. These areas will act as permanent reservoirs of pests from which surrounding treated areas will be subject to re-invasion. Where areas are known to be subject to pest invasion, either from outside or from pest reservoirs inside, follow-up will involve regularly scheduled treatments to prevents pests becoming re-established in disinfested areas. In areas subject to flying pest problems (e.g. flower shops), light traps may be useful. In addition, for major facilities, resources should be on call 24 hours a day, seven days a week, to deal with unexpected pest problems.

8. Monitoring the Result

Inspecting for pest populations around the outside of the facility and in staff areas or public areas such as hallways can be carried out discreetly on a regular basis. In staff areas and concealed locations in public areas, sticky traps can be used to reinforce visual inspections. Pyrethrum aerosols or dusts can be used to flush insect from harbourages in non-sensitive areas, but they should not be used near patients with respiratory problems.

In patient rooms and other sensitive areas, even where there has been no recent pest history, inspections should be carried out at least every six months to detect any new pests or situations which encourage pests. In addition, a procedure should be established whereby any pests seen by staff are recorded and entered into a central log which is accessible to the pest management contractor daily. Cases are known where staff deliberately fail to log pest sightings because they don't want the disruption of pest control measures. However, such logs are so helpful in finding new pest problems that it is worth periodically reminding staff of the value of reporting pests, even when staff rules require. It can be pointed out that there is less disruption in dealing with an early localized infestation than when it has become widely established.