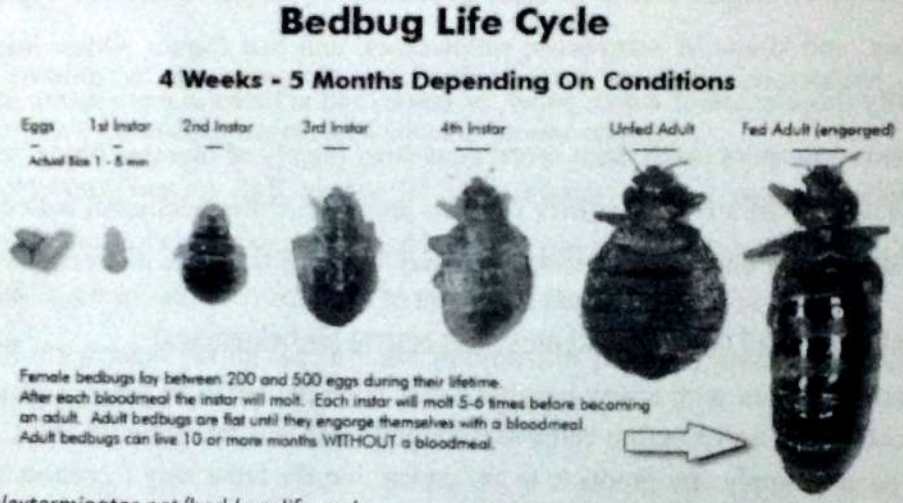
BED BUG CONTROL – STANDARD OPERATING PROCEDURES FOR WARD MANAGERS

Introduction

Bedbugs are generally nocturnal creatures which reach peak activity before dawn. They are *negatively phototactic* (adverse reaction to light), which, combined with *positive thigmotaxis* (reaction to contact) ensures that they hide away in cracks or rims of furnitures and mattresses among others, as described below. In their search for a blood meal from hosts, bedbugs respond to body warmth, carbon dioxide and other olfactory cues. If prevented access to beds by ground barriers, they may climb to the ceiling to drop themselves down from there on structures such as beds with resting humans/animals. They can go without food for several months to a year and even longer. Their retiring habits, coupled with the power to fast for long periods, make their eradication difficult and/or need several control/debugging operations (3 to 4 consecutive treatments at least every 10 to 15 days).



Source: http://www.pestcontrolexterminator.net/bed-bug-life-cycle

Their presence being concealed in the environment, control of bed bugs requires a bundle of interventions known as "integrated pest management," which encompasses the use of nonchemical means of control as well as the judicious use of insecticides. Otherwise, inadequate response often leads to a spreading of the infestation, with subsequent escalation of costs.

Bedbugs do not fly or jump and depends on physical contact to move from one surface to another. This is achieved by ***active transmission*** which is the crawling of bugs across contiguous areas *e.g.* from one room/bed to another; and ***passive transmission*** which occurs by the inadvertent transfer of these bugs from place to place via objects (*e.g.* clothes, bags, and infested furniture) by man. It is important to note that bed bugs do not live on humans but solely feed on them, largely at night. Movements of patients/staffs coming from infested wards are important means of colonisation of hospital wards by bed bugs: The first colonizers eventually increases gradually due to lack of proper housekeeping practices. Therefore, upon receiving the first notification of a possible infestation, the steps to follow should include positive identification of the insects, determination of the infested area extent, and consideration of nonchemical interventions to be employed, as well as risk assessment of non-affected areas to minimize the risk of future infestations.

The role of ward managers is crucial to minimize spread of bed bugs and to deter their proliferation. They are to:

(i) Encourage staff to report bugs and respond quickly to complaints

(ii) Ensure proper application of the provided Control Protocol for aggressive elimination of bugs;

(iii) Raise staff awareness about bedbugs;

(iv) Institute a prevention program, centred on awareness;

(v) Cooperate with staff and other agencies in preventing and controlling bed bugs; and,

(vi) Encourage staff to follow guidelines and cooperate with management.

Actions to Be Taken upon Identification of a Bedbug

Bedbugs prefer to live in dark, hidden cracks in close proximity to people. Therefore, typical spots for finding them include the seams, piping, and straps of mattresses; pillowcases; and bed frames. Other frequent hiding spots include furniture pieces, especially those made of wood, paper, or fabric, and at times in equipments including electrical trunking or underneath. Dark brown tiny spots (excrement spots, consisting mainly of digested blood deposited by bedbugs) and a pungent smell, are all signs that are used to identify bed bug presence. Other additional indicators are patient complaints and evidence of bites. The number and location of bedbugs may vary and therefore different control scenarios exist:

1. <u>One or more bedbugs found on a patient himself (or among his belongings)</u>

- Exchange patient clothes with a new hospital gown. Clothing are to be put in a plastic bag, sprayed with 90% isopropyl alcohol and sealed before being sent for hot water laundering (temp >60°C) or frozen for >24 hrs.
- There is no need to apply any products to the patient but the latter may be requested to bath thoroughly if in poor hygienic state.
- To sensitise patients (and their family) regarding domestic bedbugs management
- Room should be inspected in case it was previously infested (For instance the bed bug may have come off the bed and not from the patient)
- In case the room is positive, apply corrective measure (see below).

2. <u>Low (<10) bugs from ward/room or roughly 10% beds infested</u>

- Inspect adjoining rooms/side wards/nurses station etc.
- General vacuuming* to be carried out and steam cleaning of beds, sofas/spongy chairs to be carried out.
- Bedframes and furnitures to be sprayed with 90% isopropyl alcohol, Linen and curtains to be placed in a plastic bag, sprayed with 90% isopropyl alcohol and sealed before being sent for hot water laundering
- Do not add new beds/ furniture to the room.
- After 10 days re-inspect to verify for presence of bedbugs during a second vacuum cleaning and steaming exercise. If still positive, notify VBCD.

** It is important to ensure that vacuum cleaning is undertaken in a slow pace to ensure that the maximum of bugs and eggs are aspirated in the process. The dust bags must be taken out with utmost care and disposed properly, preferably by incineration.*

3. <u>High (>11) bugs from ward/room or roughly > 40% beds infested</u>

- Inspect adjoining rooms/sidewards/nurses station etc.
- Notify VBCD, which will determine extent of infestation through in-depth investigation
- To liaise with nearest **Health Office** for follow-up actions after entomological survey of VBCD

Infested bed frames are to be removed from the room and sent to an external area previously identified by the Management for insecticide treatment

- Arrange with Management for closure of ward/transfer of patients to other wards (based on severity of infestation) during insecticide treatment. Note that insecticide treatment may be repeated every 10 days and that after spraying, rooms are to be well- ventilated for 24-48 hrs to allow for dissipation of vapours before re-introduction of patients. Note that control would most likely be carried out in a "work from the outside, in" (from adjacent rooms first till the infested main area) to gain more efficient control.

Routine maintenance activities to prevent colonisation:

- Ensure that torn mattress covers are being replaced, since exposed sponge are favourite hiding and breeding places for bedbugs. Covers should be as seamless as possible to prevent harbourage of bugs.
- Mess rooms/dormitories of staff are to be kept decluttered so as to offer less harbourage sites as possible to bugs
- Ensure regular cleaning and sweeping of wards, offices, mess rooms are undertaken. Aerosol insecticides can be used during routine cleaning procedures, subject to proper safe use.
- Health Care Assistants/Nursing staff getting in direct contact with a patients belongings/linen, should be sensitised to isolate their work clothing in sealed bags (for hot laundering at the end of the day; including shoes to be treated with isopropyl alcohol) so as not to propagate bugs in their residences.
- Ensure that staff not present during the shift are informed of potential presence of bugs in the ward so as to take necessary precautions

Role of other Hospital Cadres

- Responsible Officers for wheelchairs/stretchers should ensure that these are routinely vacuumed/steamed/treated with 90% isopropyl alcohol. (It has been noted that in some hospitals such as SSRNH, these are important mode of passive propagation of bugs).
- Cracks and crevices within the infrastructure of the ward should be identified so that these are caulked by Maintenance Services.
- Procurement Unit should launch bids for other insecticides not routinely available on the local market after consulting with the VBCD. These include *combination* compounds such as acetamiprid (*nicotinoid family*) and bifenthrin (*pyrethroid family*) active ingredients, or other pyrethroids and adjuvants/growth regulators to be used on a rotational basis. This will reduce risks of bedbugs developing insecticide resistance to these.
- Hospital Administrators are to provide all necessary support to control bedbugs by considering the latter a being of High Importance.

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