Bed Bug Epidemic: Using a Health Risk Communication Approach

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ABSTRACT

Over the past decade, bed bugs have re-emerged as a global public health nuisance. Although these insects are not known to transmit disease among humans, the ease with which they spread has become problematic. Risk communication is one approach that can be used to educate the public about this pest, thereby engaging public participation in addressing this costly public health challenge.

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Introduction

"In 70° F. conditions if 40 bed bugs are placed in a room, in six months their population would reach 5,905 (Kruger, n.d.)." Bed bugs (*Cimex lectularius*) are becoming a growing public health issue in the United States and many other countries around the world. The general public today is not knowledgeable about bed bugs, so when an infestation occurs most Americans seek medical treatment. The cost for this treatment could be expensive (Armed Forces Pest Management Board, 2010). One study estimated an average yearly cost of $3,085 for a homeless shelter (Hwang et al., 2005). The increasing numbers of bed bug reporting, cost of treatment, and negative social stigma associated with bed bugs all lead to the need for effective communication between public health professionals and the public regarding bed bug awareness and prevention.

Bed Bug History in the United States

Bed bugs were common pests in the United States during the early 1900's, but they were essentially eradicated by the 1950's due to high use of the pesticide dichlorodiphenyltrichloroethane (DDT) (ATSDR, 2010). Over time bed bugs have become resistant to DDT and other chemicals such as malathion, carbamates, and pyrethroids. Their resistance to chemicals, along with many other factors, has caused these pests to make a comeback in the United States in recent years (Baumgartner, 2009). In fact, a 2001-2006 study showed that not only was there a yearly increase in manifestations of bed bugs, but there was also an increase in newspaper articles published, news coverage on bed bugs, and lawsuits over bedbugs in hotels and other public establishments (Anderson & Leffler, 2008). During the year 2006 there were over 2,000 lawsuits filed over bedbugs in New York City alone claiming damage, injury, and emotional distress (Baumgartner, 2009). Other possible reasons for the increasing population of bedbugs in the United States include increased international travel, immigrant populations bringing bed bugs into the country, and reduced baseboard spraying in living spaces (Baumgartner, 2009).

Bed Bug Biology

According to the Environmental Protection Agency (EPA), bed bugs are small insects that range from 1-7 millimeters in length. They are reddish brown, have no wings, look flat, and feed on the blood of humans and animals (Figure 1).

Figure 1. Bed bug in early development and adult stage

Source: *Virginia Tech, Department of Entomology, 2008.*

Because these tiny insects feed on blood, they usually hide in tiny crevices near sleeping areas (within 8 feet of the sleeping furniture). Common hiding spots include mattress seams, box springs, bed frames, headboards, dresser tables, behind wallpaper, and under objects around a bed (CDC, 2010; EPA, 2010). Figure 2 provides a graphic

image of bed bugs in a common hiding spot – mattress seams.

Figure 2. Bed bug infestation in mattress seams

Source: *Bed Bug Mattress Covers, 2009.*

There is no race, sex, or age preference for bedbugs, so all people can be affected by bedbug infestations (Schwartz, 2010). Bed bug infestations can occur in apartments, shelters, dorm rooms, hotels, nursing homes, hospitals, cruise ships, etc., regardless of the cleanliness of the establishment. They are also easily transported by people as they move from place to place. Travelling bed bugs can be found in the seams of suitcases, folded clothes, bedding, and furniture. If a bed bug infestation is suspected there are certain signs to look for including dark fecal spots on bedding, white bed bug eggs and egg shells, skin shed by bed bug nymphs as they develop, reddish stains on bedding, and live bed bugs (EPA, 2010).

According to a CDC and EPA (2010) joint statement, when a bed bug bites, the victim will not feel the bite. Most people do not even realize they were bitten until a mosquito-like or flea-like mark appears at the bite's location, and it could take up to 14 days for the mark to be noticeable. The bite mark will likely be swollen, red, itchy, and irritating; and accompanying symptoms might include insomnia, anxiety, and skin problems due to heavy scratching (CDC & EPA, 2010).

Public Health Concerns

Despite the fact that bed bugs continue to increase in numbers in the United States today and it becomes easier to see bed bugs as a growing problem, there are many challenges facing public health professions as they try to educate people and communities about this public health issue. One of the largest problems is the fact that there is currently not a reporting system for infestations. Another problem is the absence of coordination between federal and state agencies regarding bed bug prevention, treatment, and education (Baumgartner, 2009). This causes the response efforts for bed bug infestations to be primarily at the local level, which may not be an efficient use of resources, time, and money. Lack of funding for research and new products to eliminate bed bugs is another challenge facing public health professionals, especially in today's unstable economy (Baumgartner, 2009). Finally, there is no documented evidence that bed bug infestations lead to disease transmission, so it is difficult for some professionals to make bed bugs a priority when there are many other issues that do lead to disease transmission competing for their time and limited funds (Baumgartner, 2009).

A National Bed Bug Summit (hosted by the EPA) was held in 2009 to address some of these public health issues, and workgroups were formed to make recommendations in five areas (research, governmental role, consumer education and communication, pest control operator education and training, and property owner/manager role). Some of the recommendations include:

- demonstrating bed bugs are indeed a public health issue by showing their impacts on society
- providing subsidies for bed bug control
- developing targeted bed bug information for children in school, hotels, dorms, home care providers, etc.
- mandating an integrated pest management certification for bed bug control
- providing education and training for property managers, owners, and tenants (EPA, 2009)

Communication between Health Professionals and the Public

Among the recommendations made by the EPA's National Bed Bug Summit, arguably the most important are the recommendations related to consumer education and communication (EPA, 2009) because education and communication between health professionals/agencies and the public are currently limited. Two major efforts that are currently in place start with the CDC and the EPA. The CDC is working with experts to develop better methods for bed bug control, and they are hoping to develop national strategies to reduce bed bug populations. The EPA is working to develop safe and effective new compounds to control bed bugs. Even with the collaboration between the CDC and the EPA, there is still a need for health agencies and the public to communicate and collaborate to control and prevent bed bug infestations (CDC & EPA, 2010). Rossi and Jennings (2010) recommend passing local legislation aimed at clarification of pest control responsibilities among members of a

community, using dogs to identify bed bug infestations and save limited funds, and creating health programs to raise public knowledge, awareness, and skills related to bed bug identification and treatment. One attempt at a comprehensive public health initiative aimed at bed bug control comes from the Central Ohio Bed Bug Task Force. The Task Force is a collaboration of local governments, health departments, pest controllers, landlord and tenant rights groups, and many more. They work together to prevent bed bug infestations with education, and they communicate with those having bed bug infestations to get them proper resources and information. The task force has information for many target groups including individuals, families, firefighters, schools, health professionals, social service workers, landlords and realtors, hospitality workers, and retail workers (Central Ohio Bed Bugs Task Force, 2011).

Because successful communication efforts are critical in times of epidemics such as that of bed bugs, health professionals from the CDC, EPA, Central Ohio Bed Bugs Task Force, and others should look toward communication theory to effectively communicate about and address the public health threat caused by rising numbers of bed bugs in the United States. Bernhardt (2004) states that public health communication should encompass a multilevel approach with tailored messages for the individual, targeted messages for groups, social marketing for communities, media advocacy to influence policy, and mass media campaigns aimed at the population. These communication theory strategies have shown to be effective in addressing epidemics such as West Nile (Covello et. al., 2001), and therefore may also be a useful tool in addressing the current bed bug epidemic. In fact, the Central Ohio Bed Bug Task Force is already utilizing some of these strategies by having tailored messages for individuals dealing with bed bug infestation and by targeted messages for groups like nurses and tenants. By using more or all of the elements of communication theory, bed bug initiatives are likely to reach more people.

Recommendations

Health educators can play an important role in communication between health professional and the public concerning the bed bug epidemic utilizing health communication theory. Some of the ways in which health educators and other health professionals can go about this is to understand how the media gathers and reports news and use that knowledge to raise public awareness about bed bugs, to advocate for policy change that will address the bed bug epidemic (e.g. tenant and landlord policies), and by framing, or packaging, information for individuals, groups, communities, and the general population. We recommend strategies and information used to address the bed bug epidemic through a communication theory approach should be based upon the EPA's National Bed Bug Summit (2009). Below is a list of Summit recommendations in the area of consumer education and communication:

- Develop targeted bed bug education curriculum
    - Include pictures of early developmental stages of bed bugs, guidance on detection of low-level infestations and prevention
- Develop and disseminate information
    - Focus on identification, biology, prevention, safe treatment options, do's and don'ts, dispel myths, sanitary guidelines, and best practices
- Use internet based outreach
    - Include fact sheets, podcasts, key points
    - Use Facebook, YouTube, and other popular media
    - Have mandatory education of property managers via webinars
- Develop Public Service Announcements in multiple languages
    - Disseminate through multiple channels such as television, radio, billboards, and hotlines
- Collaborate at all levels
    - Industry, associations, federal government, state government, local government, etc.)
- Conduct mini bed bug summits
- Utilize IPM training modules (EPA, 2009).

By combining these recommendations with components of communication theory, health educators and other health professionals will better able to communicate and educate the public about bed bugs in an attempt to eliminate bed bugs in the United States once again.

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