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References

- Brighton SW, Prozesky OW, de la Harpe AL. Chikungunya virus infection. A retrospective study of 107 cases. *S Afr Med J*. 1983;63:313–5.
- Lam SK, Chua KB, Hooi PS, Rahimah MA, Kumari S, Tharmaratnam M, et al. Chikungunya infection—an emerging disease in Malaysia. *Southeast Asian J Trop Med Public Health*. 2001;32:447–51.
- Mazaud R, Salaun JJ, Montabone H, Goube P, Bazillio R. Acute neurologic and sensorial disorders in dengue and chikungunya fever [in French]. *Bull Soc Pathol Exot Filiales*. 1971;64:22–30.
- Gérardin P, Guernier V, Perrau J, Fianu A, Le Roux K, Grivard P, et al. Estimating chikungunya prevalence in La Réunion Island outbreak by serosurveys: two methods for two critical times of the epidemic. *BMC Infect Dis*. 2008;28:8:99
- Centers for Disease Control and Prevention. Arboviral infections of the central nervous system—United States, 1996–1997. *MMWR Morb Mortal Wkly Rep*. 1998;47:517–22
- Hughes RA, Cornblath DR. Guillain-Barre syndrome. *Lancet*. 2005;366:1653–66. DOI: 10.1016/S0140-6736(05)67665-9
- Pastorino B, Bessaud M, Grandadam M, Murri S, Tolou HJ, Peyrefitte CN. Development of a TaqMan RT-PCR assay without RNA extraction step for the detection and quantification of African chikungunya viruses. *J Virol Methods*. 2005;124:65–71.
- Tsai T. Chikungunya fever. In: Strickland GT, editor. *Hunter's tropical medicine and emerging infectious diseases*, part II. 8th ed. Philadelphia: WB Saunders Co.; 2000. p. 246–8.

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Cockroaches (*Ectobius vittiventris*) in an Intensive Care Unit, Switzerland¹

To the Editor: *Ectobius vittiventris* (Costa) is a field-dwelling cockroach and 1 of 4,000 cockroach species worldwide (1). We describe a cockroach infestation of an intensive care unit (ICU). Successful management required knowledge of the ecology of cockroaches and highlighted the need for species-level identification to tailor control strategies.

The University of Geneva Hospitals are a 2,200-bed tertiary healthcare center. The 18-bed medical ICU is located on the ground floor next to an outdoor recreational area and admits ≈1,400 patients/year. Smoking inside hospital buildings by patients and healthcare workers (HCWs) is strictly prohibited. On August 25, 2006, ≈30 cockroaches were observed in the ICU hiding inside oxygen masks, moving around on the light panels below the ceilings, or dropping onto intubated patients during the night.

An outbreak investigation was initiated. All work areas, including sinks and material stock areas, were thoroughly searched for cockroaches. External pest control experts identified only 1 species, *E. vittiventris*, which had presumably entered the ICU through windows facing the outdoor recreational area. The investigation showed that despite verbal recommendations and being repeatedly forbidden to do so, HCWs had opened the windows secretly with screwdrivers so that they could smoke during night shifts. The infestation was halted within 3 days after information regarding the infestation was provided to HCWs and all windows were bolted shut. In contrast to measures required to deal with a reported infestation in a neonatal ICU (2), no other measures such as use of insecticides, review of

the air circulation system, or changes in architectural structures were necessary to stop the infestation reported here.

Cockroaches can cause 2 potentially serious health problems. First, they may provoke allergic reactions (3). Second, they have been suggested as possible vectors of multidrug-resistant pathogens. In particular, cockroaches that live and breed in hospitals have higher bacterial loads than cockroaches in the community (4–6). Up to 98% of these “nosocomial” cockroaches may carry medically important microorganisms on their external surfaces or in their alimentary tracts (4–9) and may disseminate these microorganisms by fecal–oral transmission.

Cockroaches are capable of harboring *Escherichia coli* (6,7), *Enterobacter* spp. (6,8,9), *Klebsiella* spp. (6,7,9), *Pseudomonas aeruginosa* (6,9), *Acinetobacter baumannii* (2), other nonfermentative bacteria (7,9), *Serratia marcescens* (7,9), *Shigella* spp. (6), *Staphylococcus aureus* (6,7), group A streptococci (6,7,9), *Enterococcus* spp. (6,7), *Bacillus* spp. (7), various fungi (6–8), and parasites and their cysts (6). An outbreak of extended-spectrum β-lactamase-producing *Klebsiella pneumoniae* in a neonatal unit was attributed to cockroaches (2). Pulsed-field gel electrophoresis did not distinguish organisms from the insects from those colonizing infants or causing clinical disease (2). Unlike other investigators, we did not cultivate the cockroaches (6,9).

E. vittiventris cockroaches are easily confused with *Blattella germanica* (Linnaeus) (the German or croton cockroach), which is probably the most important cockroach pest worldwide (1,9). In contrast to *B. germanica* (6,9) and other species (online Technical Appendix, available from www.cdc.gov/EID/content/15/3/496-

¹Parts of this research have been presented as a poster at the Annual Meeting of the Swiss Society for Infectious Diseases, Zurich, Switzerland, June 14, 2007.

Techapp.pdf), *E. vittiventris* cockroaches are considered to be harmless and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. *B. germanica* cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and require specialized measures for eradication (10).

E. vittiventris cockroaches live in outdoor areas, do not avoid light, and are active during daytime. Buildings are not a natural habitat. In summer, adult insects can fly inside at night, but because these cockroaches are unable to reproduce inside buildings (1), stopping entry from outside halts the infestation. Entry can be stopped by closing windows or using mosquito nets. There is no existing insecticide for eradication of *E. vittiventris* cockroaches (10), and even if there were, it would not be effective because insects from untreated areas outside would enter continuously (1).

E. vittiventris cockroaches have been recently discovered in Geneva (10) and have become the most frequently encountered cockroaches in urban areas of Switzerland for several years (1). The reason for this finding remains unknown. The summer of 2003 was remarkably hot and dry in central Europe, thus representing a subtropical climate that usually favors the growth and development of cockroach populations (1,7). If this warming trend persists, populations of *E. vittiventris* cockroaches may continue to expand, and similar infestations may occur.

In conclusion, effective control strategies for cockroach infestations depend on identification of cockroach species. In this report, permanent closure of all windows was sufficient to stop the infestation. However, to ensure compliance, it was critical to discuss the purposes of the intervention with HCWs.

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References

- Baur H, Landau-Lüscher I, Müller G, Schmidt M, Coray A. Taxonomy of the field-dwelling cockroach *Ectobius vittiventris* and its distribution in Switzerland. *Rev Suisse Zool.* 2004;111:395–424.
- Cotton MF, Wasserman E, Pieper CH, Theron DC, van Tubbergh D, Campbell G, et al. Invasive disease due to extended spectrum beta-lactamase-producing *Klebsiella pneumoniae* in a neonatal unit: the possible role of cockroaches. *J Hosp Infect.* 2000;44:13–7. DOI: 10.1053/jhin.1999.0650
- Tungtrongchitr A, Sookrung N, Munkong N, Mahakittikun V, Chinabut P, Chaicumpa W, et al. The levels of cockroach allergen in relation to cockroach species and allergic diseases in Thai patients. *Asian Pac J Allergy Immunol.* 2004;22:115–21.
- Paul S, Khan AM, Baqui MA, Muhibullah M. Evaluation of the common cockroach *Periplaneta americana* (L.) as carrier of medically important bacteria. *J Commun Dis.* 1992;24:206–10.
- Fotedar R, Shrinivas UB, Verma A. Cockroaches (*Blattella germanica*) as carriers of microorganisms of medical importance in hospitals. *Epidemiol Infect.* 1991;107:181–7.
- Salehzadeh A, Tavacoli P, Mahjub H. Bacterial, fungal and parasitic contamination of cockroaches in public hospitals of Hamadan, Iran. *J Vector Borne Dis.* 2007;44:105–10.
- Pai HH, Chen WC, Peng CF. Cockroaches as potential vectors of nosocomial infections. *Infect Control Hosp Epidemiol.* 2004;25:979–84. DOI: 10.1086/502330
- Lemos AA, Lemos JA, Prado MA, Pimentta FC, Gir E, Silva HM, et al. Cockroaches as carriers of fungi of medical importance. *Mycoses.* 2006;49:23–5. DOI: 10.1111/j.1439-0507.2005.01179.x
- Elgderi RM, Ghenghesh KS, Berbash N. Carriage by the German cockroach (*Blattella germanica*) of multiple-antibiotic-resistant bacteria that are potentially pathogenic to humans, in hospitals and households in Tripoli, Libya. *Ann Trop Med Parasitol.* 2006;100:55–62. DOI: 10.1179/136485906X78463
- Fédération Suisse des Désinfestateurs [cited 2007 Nov 7]. Available from <http://www.fsd-vss.ch>.

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Cutaneous Anthrax, West Bengal, India, 2007

To the Editor: In most of India, anthrax is not common, probably because a large proportion of the population is Hindu and does not eat beef. However, sporadic cases and outbreaks have been reported (1–6).

On June 8, 2007, a healthcare facility reported 12 cases of cutaneous anthrax in the Muslim village of Sarkarpara (population 361). On August 4, 2007, another facility 50 km away reported 8 cases from the Muslim village of Charbinpara (population 835). These 2 outbreaks, both in Murshidabad district, West Bengal, were associated with the slaughtering of 4 cows. We investigated each outbreak to confirm diagnosis, estimate magnitude (incidence and severity), and identify risk factors. We conducted house-to-house searches to identify case-patients and collected smears from skin lesions.

From Sarkarpara, we identified 45 cases of cutaneous anthrax and 2