



## Concise Communication

# Bat intrusions at a tertiary care center in Iowa, 2018–2020

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### Abstract

We described the epidemiology of bat intrusions into a hospital and subsequent management of exposures during 2018–2020. Most intrusions occurred in older buildings during the summer and fall months. Hospitals need bat intrusion surveillance systems and protocols for bat handling, exposure management, and intrusion mitigation.

(Received 8 June 2021; accepted 26 July 2021; electronically published 16 August 2021)

Bats play important roles in agriculture and ecological stability such as pest control and pollination.<sup>1</sup> They typically roost in trees and caves; however, urban development and deforestation have reduced the availability of natural bat roosts. Consequently, bats have adapted from their natural roost type to human structures.<sup>2</sup>

The prevalence of rabies in healthy bats is low <0.1%.<sup>3</sup> However, in the United States, the most common source of human rabies is exposure to infected bats.<sup>4</sup> Because human rabies is fatal, exposures involving bats require a timely evaluation for rabies postexposure prophylaxis.<sup>5</sup>

Bat intrusions in healthcare facilities have been reported infrequently.<sup>6,7</sup> Here, we describe bat intrusions into a tertiary-care center and the subsequent management of exposures.

### Methods

The University of Iowa Hospitals & Clinics (UIHC) is an 811-bed academic medical center located in Iowa City, Iowa. Established in 1928, UIHC currently covers ~209,000 square meters (~2,250,000 square feet) and contains 6 pavilions constructed between 1928 and 2017. At UIHC, the environmental services (housekeeping) supervisor is notified when a bat is located within the facility (Fig. 1). A trained staff member is sent to capture the bat, and the bat is safely held for 24 hours. In August 2017, we began requiring environmental services to contact the hospital epidemiology department to investigate any possible exposures and to record the intrusion events in the hospital epidemiology call log. A bat exposure is defined as a bite or scratch from a bat or a bat found in a room with a person who is not awake, alert, or verbal. After confirmation that no exposures occurred, the bat is released. We

do not routinely document the bat species. If an exposure is confirmed, the bat is sent to the State Hygienic Laboratory for rabies testing. The rabies test result determines the need for postexposure prophylaxis.<sup>8</sup> If the bat was not captured or the bat was inadvertently released before testing, a risk assessment for a potential exposure was conducted by the hospital epidemiology department.

We retrospectively reviewed bat intrusions recorded in the hospital epidemiology call log during 2018–2020. The date, caller, incident location, description, and actions taken were retrieved. This study was approved by the Institutional Review Board of the University of Iowa.

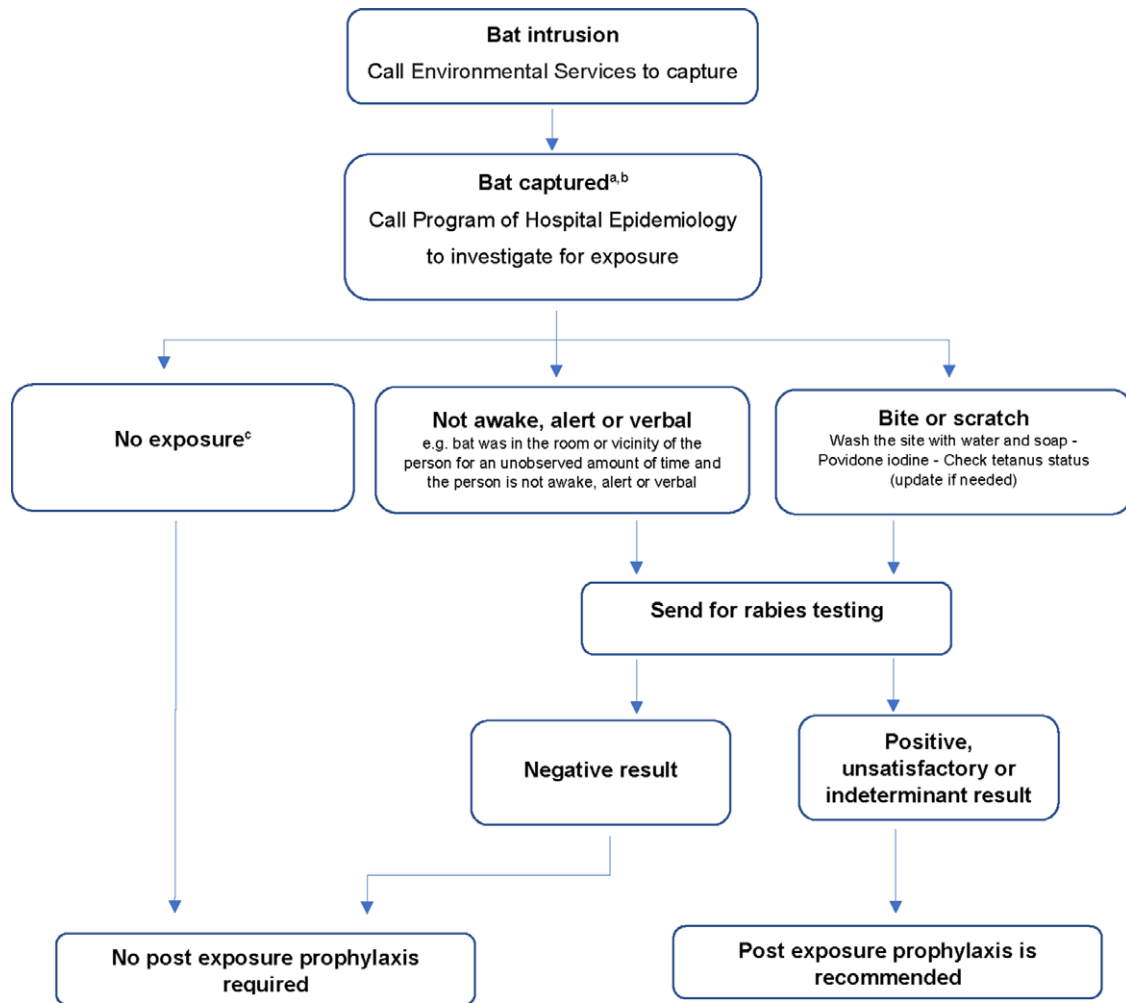
### Results

In total, 67 bat intrusions occurred: 15 in 2018, 28 in 2019, and 24 in 2020. The most frequent locations were hallways or lounges (42%), nonclinical office spaces (14%), stairwells (12%), patient care areas (3%), basements (3%), entrances (3%), and other/unspecified locations (23%). Most bat intrusions (65%) occurred during the summer and fall. The number of intrusions was higher in older pavilions (Supplementary Fig. 1 online). The mean time needed for bat intrusion investigation by the hospital epidemiology department was 15 minutes (range, 5–180 minutes).

Of the 67 intrusions, 2 incidents (3%) were associated with potential exposures to patients. In 2019, a bat was captured in a patient care area and accidentally released before a full investigation of exposures or rabies testing could be completed. This intrusion resulted in 10 patients potentially exposed (not awake, alert, or verbal), with 9 (90%) patients receiving postexposure prophylaxis, and 1 patient declining. In 2020, a bat was captured in another clinical area where 1 patient was not alert. The bat was tested and was negative for rabies; no further action was needed. In both investigations, no healthcare worker nor visitors were exposed.

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**Cite this article:** Alsuhaibani MA, et al. (2022). Bat intrusions at a tertiary care center in Iowa, 2018–2020. *Infection Control & Hospital Epidemiology*, 43: 1948–1950, <https://doi.org/10.1017/ice.2021.355>



<sup>a</sup>If the bat is not captured or is released prior to testing but there was no exposure, no post-exposure prophylaxis is required.

<sup>b</sup>If the bat is not captured or is released prior to testing and there was an exposure, Post-exposure prophylaxis is recommended.

<sup>c</sup>If there was no exposure, release the bat.

**Fig. 1.** Management of bat intrusions at the University of Iowa Hospitals & Clinics (UIHC).

## Discussion

Hospital bat intrusions are an infection prevention challenge. During 2018–2020, there were 67 bat intrusions resulting in 2 exposure investigations (3%). Most intrusions occurred in older hospital pavilions. Hospitals need protocols and trained personnel to ensure appropriate bat handling, exposure management, and risk mitigation strategies for preventing bat entry.

Cases of human rabies in the United States are rare, with only 1–3 cases reported annually.<sup>9</sup> Previous reports have described patients with potential exposures to bats in healthcare facilities. Dziejior et al<sup>6</sup> reported 2 patients with a potential bat exposure after a bat entered the patient care area via a conduit. In a high prevalence area (Austin, Texas), Bailey et al<sup>7</sup> reported a bat exposure in a neonatal intensive care unit with 7 potential exposures among patients, and postexposure prophylaxis was offered because the bat was released before investigation. We reported a similar challenging situation in which the bat was released before a

complete investigation of exposures was performed. In our study and previous studies, no bat exposures to healthcare workers were identified. Because exposure to a rabid bat may have lethal consequences, postexposure prophylaxis should be considered if a rabies test result is not available. Collaborating with public health authorities and timely testing are also important.

We believe that the number of intrusions reported here is a result of the requirement to notify the hospital epidemiology department of every bat intrusion starting in 2017. It is possible that intrusions happened with the same frequency in previous years. Having a surveillance system helped us quantify the frequency of bat intrusions. We implemented house-wide education in 2019 in response to the event where a bat was released before exposure investigation and rabies testing. Education reinforced our bat control policy that includes the safe capture of the bat, assessment of potential exposures, and rabies testing (Fig. 1). Periodic education may increase adherence to the bat policy.

Older buildings are more likely to have bat roosting and intrusions.<sup>10</sup> We implemented a mitigation project aimed at removing roosts and sealing cracks that may serve as pathways into the building. However, the extensive area of our facilities makes periodic mitigation challenging. We have not yet seen an impact of the mitigation efforts on the number of bat intrusions in our facility.

This study has several limitations. We described our experiences at a single tertiary-care center. Bat epidemiology may vary by region. The hospital epidemiology call log may have missed some intrusion events, and it was limited to 3 years (2018–2020) because it began in 2017. Intrusion events before the call log were not systematically recorded. However, we entered every call we received and extensively educated frontline staff on the importance of communicating potential intrusions.

In conclusion, bat intrusions are an infection prevention challenge in hospital systems with older facilities. Hospitals may need animal intrusion surveillance systems, management protocols, and remediation efforts.

**Acknowledgments.** We want to thank the environmental services personnel at the University of Iowa Hospital & Clinics.

**Financial support.** No financial support was provided relevant to this article.

**Conflicts of interest.** All authors report no conflicts of interest relevant to this article.

**Supplementary material.** To view supplementary material for this article, please visit <https://doi.org/10.1017/ice.2021.355>

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