



Knowledge and practices related to plague in an endemic area of Uganda



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ABSTRACT

Background: Plague is a virulent zoonosis reported most commonly from Sub-Saharan Africa. Early treatment with antibiotics is important to prevent mortality. Understanding knowledge gaps and common behaviors informs the development of educational efforts to reduce plague mortality.

Methods: A multi-stage cluster-sampled survey of 420 households was conducted in the plague-endemic West Nile region of Uganda to assess knowledge of symptoms and causes of plague and health care-seeking practices.

Results: Most (84%) respondents were able to correctly describe plague symptoms; approximately 75% linked plague with fleas and dead rats. Most respondents indicated that they would seek health care at a clinic for possible plague; however plague-like symptoms were reportedly common, and in practice, persons sought care for those symptoms at a health clinic infrequently.

Conclusions: Persons in the plague-endemic region of Uganda have a high level of understanding of plague, yet topics for targeted educational messages are apparent.

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Introduction

Plague is a highly virulent zoonosis caused by the bacillus *Yersinia pestis* (Perry and Fetherston, 1997; Pollitzer, 1954; Prentice and Rahalison, 2007). When an epizootic occurs, high mortality among rodents leaves infectious fleas searching for alternative hosts. Most human infections result from an infectious flea bite and present as bubonic plague, characterized by fever and a swollen, tender lymph node. The dissemination of *Y. pestis* through the bloodstream and into the lungs results in pneumonic plague, a fulminant pneumonia characterized by bloody sputum. Pneumonic plague is the only clinical form of the illness that can be directly transmitted from person to person; patients near death can infect close contacts through respiratory droplets (Pollitzer, 1954; Kool, 2005). Although mortality in untreated plague infections ranges between 50% and 100% depending on the clinical presentation, it can be treated successfully if appropriate antimicrobials are administered within 72 h of symptom onset (Perry and Fetherston,

1997; Prentice and Rahalison, 2007; Mead, 2015). A lack of early and effective treatment increases the risk of death and likelihood of epidemic spread (Mead, 2015; Kugeler et al., 2015).

Sub-Saharan Africa, including the Democratic Republic of the Congo (DRC) and Uganda, accounts for most human cases of plague reported in recent decades (WHO, 2010; Kilonzo, 1999). In Uganda, plague is endemic in the northwestern West Nile region, bordered by the Nile River to the East, South Sudan to the North, and DRC to the West and South (WHO, 2010; Kilonzo, 1999; Orochi-Orach, 2002). Persons in Uganda often seek health care from both allopathic medical practitioners and traditional healers or community drug shops (Nuwaha and Muganzi, 2008). The widespread use of traditional medicine and drug shops is attributed to accessibility, affordability, and cultural beliefs (WHO, 2002; Barnes-Dean, 1986), but these practices may delay seeking care and antibiotics from a health clinic, and can contribute to plague mortality.

General knowledge of plague symptoms and health care-seeking practices in the West Nile region of Uganda has not been quantified. These knowledge gaps hinder effective educational and interventional efforts to reduce plague mortality in the region. A survey of household caregivers was performed in the two districts

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of the plague-endemic West Nile region to (1) determine the level of knowledge regarding the causes and symptoms of plague; (2) assess the frequency of possible behavioral risk factors for human plague; (3) estimate the background frequency of symptoms consistent with bubonic and pneumonic plague; and (4) describe health care-seeking behavior of persons with plague-like symptoms.

Methods

In June 2013, a cross-sectional, stratified, multi-stage cluster-sampled household survey was performed in West Nile, Uganda as part of an ongoing collaboration between the Uganda Virus Research Institute (UVRI) Plague Program and the US Centers for Disease Control and Prevention (CDC). This region is composed of two districts (Arua and Zombo) with two predominant tribes, with

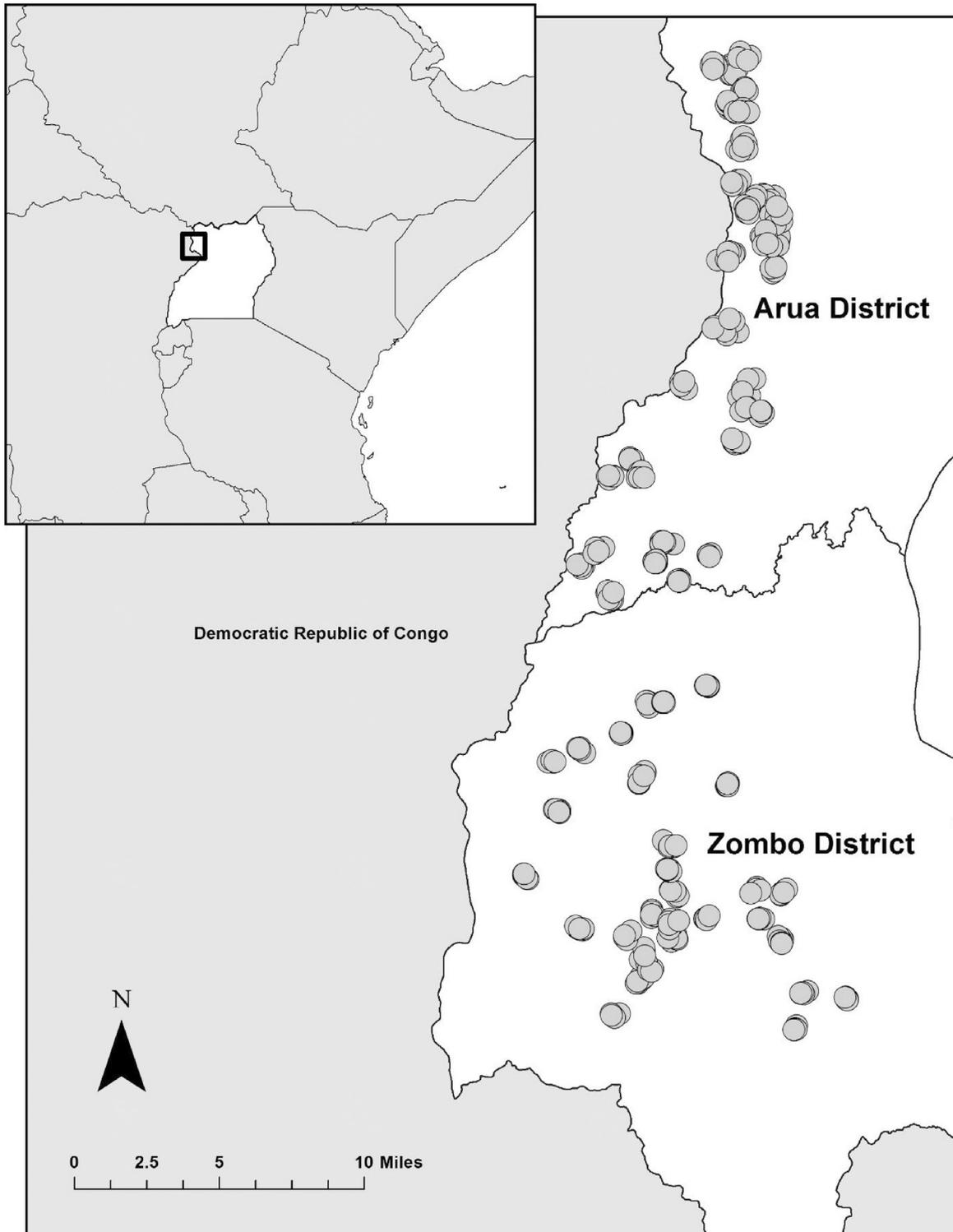


Figure 1. Location of households surveyed to assess knowledge and health care-seeking practices related to plague in Arua and Zombo districts, West Nile region, Uganda.

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