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Infection control during filoviral hemorrhagic fever outbreaks: preferences of community members and health workers in Masindi, Uganda

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ABSTRACT

Interviews were conducted with health workers and community members in Masindi, Uganda on improving the acceptability of infection control measures used during an Ebola outbreak. Measures that promote cultural sensitivity and transparency of control activities were preferred and should be employed in future control efforts. We suggest assessing the practicality of body bags with viewing windows, and face shields with or without chin protectors, in future outbreaks.

1. Introduction

Control of filoviral hemorrhagic fever (FHF) outbreaks relies on trust and collaboration between communities and control teams. Control efforts should be culturally acceptable and avoid creating fear and panic. The acceptability of control measures may increase by adapting them to local preferences while maintaining their efficacy and local health workers' confidence in their safety. Experience from past FHF outbreaks suggests that communities disapprove of being unable to: identify health workers wearing protective gear,[1] confirm the deceased's identity[2] and observe the area surrounding the isolation ward.[3]

2. Materials and methods

To elicit preferences for different designs of control measures, in 2007 we interviewed community members and health workers in Masindi district, Uganda, where an Ebola outbreak had occurred in 2000.[4] Community members included families of Ebola patients and Ebola survivors. Health workers included staff and volunteers involved in Ebola control. Semi-structured interviews addressed the following topics: (1) eye protection – goggles vs. face shields (Figure 1A), both available to interviewees; (2) body bag – standard model vs. model with viewing window

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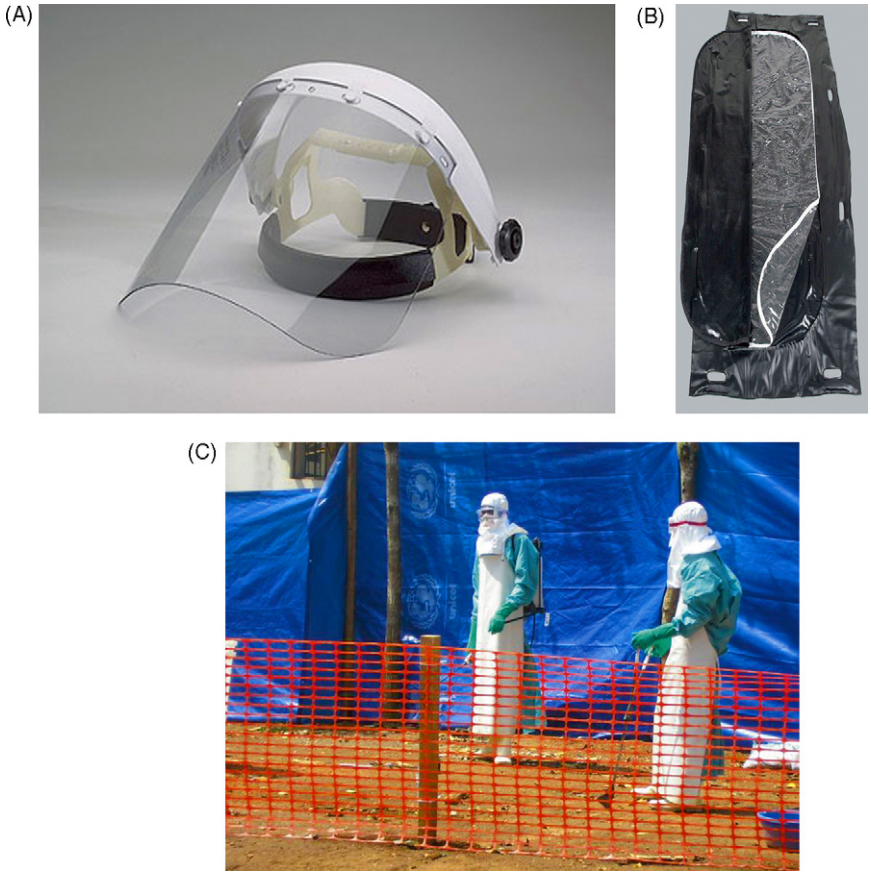

Figure 1. (A) BRINDUS SA980-25 face shield. Photo courtesy of Wenaas UK Limited, used with permission. (B) BioVu Heavy Duty Body Bag. Photo courtesy of Extra Packaging Corporation, used with permission. (C) Transparent fencing material (front) and solid fencing material (rear). Photo courtesy of Médecins Sans Frontières, Spain.

(BioVu Heavy Duty body bag, which contains an interior transparent layer and outer opaque layer each sealed separately; Figure 1B), with BioVu model available to interviewees; (3) fencing design – all transparent mesh vs. all opaque vs. one side transparent and three sides opaque vs. bottom half opaque and top half transparent, with photo of transparent and opaque fences available to interviewees (Figure 1C); (4) color of gear worn by health workers; (5) whether health workers should don protective gear on site vs. prior to arrival in the community. Informed consent was obtained by all participants before the interviews.

3. Results

In total, 20 community members (3 Ebola survivors, 17 family members) and 28 health workers (10 nurses, 10 surveillance team members, 2 doctors, 2 supervisors, 1 burial team member, 1 ambulance driver, 1 cleaner and 1 community educator) were interviewed.

Community members unanimously preferred face shields to goggles, describing them as less frightening because they allow recognition of the health worker and do not distort the appearance of the face. Twenty-one health workers favored face shields, stating that they offer better protection by providing additional solid coverage of the nose and mouth so that the mask underneath could not get wet from splashes of fluids. They thought face shields were more comfortable to wear and would fog less easily than goggles. The fogging of goggles was a common complaint, as described by one nurse, "We are really struggling when, as you breathe in the air, the droplets will block the surface of the goggles and then sometimes moving [around the ward] is a bit difficult." Two surveillance members expressed no preferences, and five health workers (one supervisor, one educator, one nurse and two surveillance team members) preferred goggles. Their concerns included potential splashes along the sides and bottom of the face shield and lack of familiarity with its use. The health supervisor was concerned by the face shield's potential for eliciting negative connotations of 'baton-wielding policemen' using similar visors.

The body bag with viewing window received a strong positive response from all except the ambulance driver and one community member. Community members approved of the opportunity to confirm the deceased's identity and pay their final respects. Despite their fear of Ebola, all community members stated they would come to view the body if the body bag with viewing window was used. They were dissatisfied with the body bags used during the outbreak, describing them as "like a sack of maize – you cannot know

if you are burying beans [in it]." Health workers believed the model with a viewing window was more culturally acceptable and would help alleviate tensions concerning burial practices while maintaining safety. It would help deter suspicions of intentional killings and bewitchment, as described by one doctor: "[Community members] were saying that their people were being bewitched ... We told them, no, this is Ebola ... still they were insisting that their people, they were bewitched." Health workers stressed the need for protocols for: placing the body inside the bag; establishing a safe viewing distance; who should be allowed to view the body (family members, journalists, etc.); and community education regarding the safety of viewing and permissibility of different burial traditions. Concerns were expressed regarding the bag's strength and its effects on the decomposition of the body.

All community members preferred fences composed entirely from transparent material ($n = 6$) or those with the bottom half opaque and top half transparent ($n = 14$). They wanted to view the activities occurring around the isolation ward. They mentioned suspicions of malicious activities occurring in the Ebola ward, such as people being intentionally killed, bewitched or experimented on; one rumor speculated that the Ugandan government was systematically killing people to retake their land. They also suggested transparent fencing would make the isolation unit environment brighter and airier, improving its acceptability. Among health workers, two (one nurse, one surveillance team member) preferred transparent fencing and three (one nurse, two surveillance team members) preferred a combination, but 23 preferred entirely opaque fencing. Most worried that allowing the community to see the isolation area would cause fear and deter patients from seeking care in other wards. They believed solid fencing would deter patients inside the ward from trying to escape, which occurred once during the outbreak, and increase confidence among the community that the disease was contained. They argued that solid fencing was more appropriate to "assert a sort of community no-go zone" and for providing privacy to patients. Two surveillance team members worried that the disease could pass through the holes in transparent fencing.

No community members expressed a preference for the color of gear worn by health workers. However, they found donning protective gear in the community less frightening than seeing health workers arrive fully dressed. This would allow them to recognize the figures as human beings instead of "look[ing] like monkeys" or "cartoons" and to identify the health workers with whom they interact.

4. Discussion

Perceived secrecy during FHF outbreak control activities breeds mistrust and suspicion; disregard of cultural sensitivity leads to opposition and lack of cooperation. Concerns regarding malevolent activities being performed, such as intentional killing for population control and stealing blood or body parts, in part related to colonial violence, are common in Central and East Africa.[5,6] In recent FHF outbreaks, control practices were modified by allowing relatives to view bodies before burial, using transparent fencing around the isolation ward, and having health workers dress in protective clothing on site when making field visits.[1,3,7,8] The preferences expressed in Masindi support, in principle, the continued use of these modifications. Face shields as a method of increasing the transparency and safety of protective gear has been suggested, although, to our knowledge, never implemented.[9] Safety concerns regarding splashes of infectious liquids should be addressed while training health workers. Using a model with chin protector may alleviate these concerns. The body bag with viewing window would facilitate viewing and identifying the deceased and, compared with opening a standard body bag, alleviate concerns about contamination. Community preference for (at least partially) transparent fencing was so strong that its continued use is recommended despite health workers' concerns; however, these concerns should be addressed proactively during staff meetings and training.

We suggest assessing the practicality of body bags with viewing windows and face shields with or without chin protectors in future FHF outbreaks.

Authors' contributions: VNR, PR, WG and MB contributed to the design of the study; VNR and IM collected data; VNR, IM, PR, JJL, WG and MB interpreted the data; all authors revised the paper critically for intellectual content and read and approved the final version. VNR and MB are guarantors of the paper.

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Conflicts of interest: None declared.

Ethical approval: This study was approved by the London School of Hygiene and Tropical Medicine Ethics Committee and the Uganda Virus Research Institute.

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