

Personal Protective Equipment Guidance for Highly Pathogenic Avian Influenza H5N1 Should Be Adapted to Meet the Needs of Dairy Farm Workers

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Highly pathogenic avian influenza H5N1 has been of particular concern for its pandemic potential given its ability to cross from avian to mammalian species [1]. On 25 March 2024, it was detected in dairy cows in Texas, United States and as of 2 July 2024, it has spread to over 100 dairy herds in 12 states [1]. Michigan received a shipment of exposed, asymptomatic dairy cows from Texas on 8 March 2024 [2], and the H5N1 B3.13 genotype has since spread to 26 dairy herds and 8 poultry farms across 11 counties in Michigan as of 16 July 2024 [1, 2].

From March through July 2024, four dairy farm-associated cases of influenza H5N1 have been reported in humans; 1 in Texas [3], 2 in Michigan, and another in Colorado [1]. Details about the fourth case have not yet been published, but the first 3 human cases of influenza H5N1 were acquired from dairy cattle after close

contact with infected animals or their secretions, without adequate personal protective equipment (PPE). The Texas case occurred after direct exposure to ill dairy cows without eye protection or a mask [3]. The first Michigan case occurred after a splash of milk to the eye during milking of an ill cow, without eye or face protection, resulting in unilateral conjunctivitis. The second Michigan case reported respiratory symptoms, and occurred in a farm worker who had administered oral fluids to ill animals while wearing eye protection, but no face mask or respirator.

The current PPE guidance from the Centers for Disease Control and Prevention [4] recommends the following PPE when caring for ill dairy cattle: properly fitted unvented or indirectly vented safety goggles, disposable gloves, boots or boot covers, a particulate respirator (eg, N95 respirator, ideally fit-tested), disposable fluid-resistant coveralls, and disposable head cover or hair cover [4].

This guidance relies upon information on transmission gleaned during influenza A H5N1 poultry outbreaks, which has been extrapolated to the dairy setting; however, there are some key differences that must be noted. The virus has a high mortality rate in poultry animals, typically resulting in culling of the flock. In contrast, dairy cows typically recover from influenza A H5N1 infection with supportive care [5]; however, they require ongoing care and milking for the duration of illness,

resulting in increased opportunities for human exposure over an extended time period. Viral persistence in unpasteurized milk and on contaminated milking surfaces for several hours, indicates that the milking process is a high-risk activity for farm workers [6]; and, based on observations on farms and conversations with farm workers in Michigan, individuals working on impacted dairy farms are generally not wearing recommended PPE during milking or other activities involving direct contact with dairy cattle.

Based on the information collected from Michigan dairy workers, in Michigan we have implemented simplified interpretation of current PPE guidance for improved likelihood of adherence, while reducing potential for human exposure (Supplementary Figure 1). Because cases to date have occurred with direct exposure to animals and secretions, we recommend emphasizing the use of PPE specifically for high-risk activities [4] involving direct exposure to milk or other secretions or when administering oral treatments.

Additionally, the type of PPE must be acceptable to workers. Many farm workers in Michigan are choosing to forego PPE because the requirements seem cumbersome. A simplified message (eg, “protect your face” and “don’t bring work clothes/boots home”) is more readily accepted by the farm workers we spoke to and emphasizes the PPE with

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greatest impact (eye protection over wearing hair and boot covers, for example). Many Michigan farm workers have expressed reluctance to wear N95 respirators due to heat and discomfort. Some farm workers have indicated that safety goggles block their peripheral vision, which is vital to preventing physical injuries when working around large animals.

Although N95 respirators are more effective at protecting against aerosols, a well-fitting surgical mask with a face shield, offers protection against droplets and splashes, which appear to have played a role in the cases detected to date, and we have extensive experience utilizing surgical masks for the prevention of seasonal influenza in health care settings [7]—this is likely to hold true on farm settings where there are no requirements for N95 fit testing or training on correct use. Based on our conversations with farm workers, the majority indicated that a surgical mask with a face shield was acceptable for use while caring for dairy cattle and the farm workers would consider using these items if cattle were ill.

Lastly, we recommend specifically addressing some of the high-risk practices we have directly observed on dairy farms in Michigan—for example, eating and drinking in milking parlors; wearing contaminated clothing and boots home; and lack of handwashing before eating and drinking.

Over the past few years, the public health community has learned the importance of PPE guidance that is nuanced, simple, adaptable, and considers personal preference along with the limitations of the setting in question. During the influenza H5N1 outbreak in dairy farms, we must apply these lessons to a specialized setting with its own set of challenges, or

we risk alienating the population whom we seek to protect. Guidance is only effective if it is followed, and for greater uptake we must take the time to learn about dairy farm practices and understand the needs of the individuals at greatest risk.

Supplementary Data

Supplementary materials are available at *The Journal of Infectious Diseases* online (<http://jid.oxfordjournals.org/>). Supplementary materials consist of data provided by the author that are published to benefit the reader. The posted materials are not copyedited. The contents of all supplementary data are the sole responsibility of the authors. Questions or messages regarding errors should be addressed to the author.

Notes

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