Correspondence

Small-Particle Aerosolization of Live Attenuated Influenza Vaccine Virus

To the Editor—In their recent study, Bischoff et al [1] exposed subjects to a small-particle aerosol of commercially available live attenuated influenza vaccine (LAIV; MedImmune LLC, Gaithersburg, MD). LAIV was used as a proxy for wild-type influenza to evaluate the protection provided by N95 respirators, surgical masks, and eye protection. Although the study addresses the important question of the efficacy of personal protective equipment and no adverse effects were observed in the small study sample, we would caution other investigators, institutional review boards, and potential study subjects against investigations utilizing small-particle aerosolization of LAIV. As an influenza vaccine, LAIV is administered directly into the nares by the Accuspray device (Becton Dickinson, Franklin Lakes, NJ). The device was designed to generate a large-particle spray to facilitate deposition in the upper respiratory tract, which was confirmed by laboratory characterization and clinical biodistribution studies. Ninety percent of particles by mass were larger than 29–35 microns, and only 0.3% were smaller than 10 microns. Thus, the large-particle spray generated by the Accuspray device differs greatly from the 4.9 ± 1.1 micron particle aerosol generated in the Bischoff study by the described vibrating orifice aerosol generator. Airway deposition varies significantly with particle size, with particles smaller than 5–10 microns much more likely to reach the lower respiratory tract [2]. Additionally, influenza in small-particle aerosol has been shown to be 100-fold more infectious than influenza virus administered by intranasal drops [2]. As a result, the extensive safety database generated by clinical studies and real-world use of commercially available large-particle spray LAIV is not applicable to small particle aerosols or other investigational deliveries of LAIV. Similarly, the results of the Bischoff study regarding LAIV infectivity should not be applied to real-world use of LAIV in the Accuspray device.

Notes

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