

941. Concurrent exposure to drug-resistant *Staphylococcus aureus*, influenza A virus, and hepatitis E virus among industrial hog operation workers

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Background. In the US, there is growing evidence that industrial-scale livestock production is a reservoir of exposure to antimicrobial resistant bacteria, including *S. aureus*, and emerging viruses, including influenza and hepatitis E virus (HEV). The public health implications of multi-pathogen exposures at the human-animal interface have not been fully evaluated. We aimed to actively surveil industrial hog operation (IHO) workers to fill critical knowledge gaps about concurrence of exposure to drug-resistant *S. aureus*, influenza A virus, and HEV.

Methods. 22 IHO workers collected 316 nasal swabs before and after an IHO work shift over 7 days and again 14 days after enrollment. Swabs were cultured for *S. aureus* presence and assessed for multidrug-resistance (MDR = resistance to >2 antimicrobial drug classes), tetracycline-resistance (antimicrobial additive to livestock feed), clonal complex (CC), and absence of the *scn* gene (marker of livestock association). Influenza A virus matrix gene and hepatitis E virus (HEV) RNA per nasal swab were estimated by qPCR.

Results. Influenza A virus matrix gene RNA was detected in 10/208 nasal swabs from 8/22 workers. Of the eight workers carrying influenza A virus, six were persistent and two were intermittent *S. aureus* carriers. Four of the eight carried MDRSA and one persistently carried methicillin-resistant *S. aureus* (MRSA) that was also MDR. All eight workers carrying influenza virus also carried HEV in ≥ 1 other nasal swab. Two workers concurrently carried influenza A virus and HEV (1 swab each) – one was a persistent MDR-MRSA carrier and both were carriers of tetracycline-resistant, MDR, CC398, *scn* negative *S. aureus* (livestock-associated clones).

Conclusion. Concurrent exposure to influenza A virus and HEV among individuals who persistently carry drug-resistant, livestock-associated *S. aureus*, MRSA and MDR *S. aureus*, has important public health implications. Future active surveillance is warranted at the human-animal interface and should assess risks of broader transmission (from work into the home and community) as well as the infectivity and pandemic potential of zoonotic pathogen strains.

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