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From panzootic to pandemic

INVITERT KOMMENTAR

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The avian influenza panzootic could suddenly become a pandemic. Preparedness and management must be of a higher standard than that of spring 2020.

After 25 years of sporadic outbreaks of avian influenza virus A(H5N1) in poultry across Asia, a variant of the virus has been spreading globally since 2020 via wild birds, effectively becoming a panzootic. The virus has led to high mortality rates among wild birds and poultry (1), as well as sporadic cases in foxes, lynxes and other predators likely exposed through consuming sick or dead birds. Transmission between mammals has been observed on mink farms and among wild sea lions in South America.

In February 2024, this virus was identified as the cause of an outbreak of mild illness and mastitis in a dairy herd in Texas (2). The cows were lethargic, had a reduced appetite and were producing less milk. The milk was full of influenza virus, but the cows survived. Transmission between dairy cows likely occurs via milk in the teat cups of the milking machine. Transmission between different herds may be due to the movement of animals and potentially via personnel and vehicles (2). A total of 800 herds have been affected.

So far, 41 workers on these farms have been infected, mostly with mild symptoms and typically with conjunctivitis (3). The infection may have spread from large droplets during milking or while hosing down the milking parlour (2). Additional cases may have gone unreported, as some workers might not have sought medical care. Cats on the farms have also been infected, likely

through the milk. Most of them die from the illness. In Europe, a small percentage of outdoor cats have tested positive for antibodies against influenza virus A(H5N1) (4), most likely after consuming infected birds.

Since the first known case of avian influenza A(H5N1) transmission *to* humans in 1997, 900 cases have been documented, about half of which have been fatal. Transmission of A(H5N1) *between* humans has never been confirmed. The reproduction number is therefore zero (or close to zero if potential cases are included) (5).

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The danger now is that the virus will achieve efficient human-to-human transmission. For this to happen, it must develop the ability to bind more effectively to receptors in the human upper respiratory tract, rather than primarily targeting those found in the lower respiratory tract, on the conjunctiva and in bovine mammary tissue (1). This evolution can occur through gradual mutations (6), or if the virus acquires entire genome segments from a human influenza virus that has co-infected a pig, another animal, or a human along with A(H5N1) – a process known as reassortment (1, 7). If the population has low immunity to a new virus like this, it can trigger a pandemic.

Norway's pandemic preparedness is better now than it was in 2020, but still far from adequate. If the WHO issues a warning about a potential pandemic influenza virus, the Norwegian Institute of Public Health will assess the risk for Norway. Two key characteristics of the virus must be estimated: human-to-human transmission efficiency and the severity of the illness it causes. Both characteristics can vary considerably depending on age, underlying health conditions and cross-reactive immunity from previous influenza infections or vaccinations. The assessment will primarily be based on analyses of the early cases, the initial spread, the virus's genome and immunity to the virus in a sample of the population.

The risk assessment should form the main basis for the government's pandemic response strategy. The goal of the strategy – elimination, suppression or mitigation – and the characteristics of the virus will guide the choice of infection control measures. Measures from the previous pandemic should not therefore be repeated without a proper assessment of their effectiveness in controlling infection versus their adverse effects on individuals and society.

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The Ministry of Health and Care Services has set up the Committee for Infection Control Preparedness and the Health Emergency Preparedness Council to ensure effective pandemic management (8). New editions of the national health emergency preparedness plan and the national pandemic plan are expected to be released this spring, while the Infection Control Act is set to

be improved. Norway has agreements in place to purchase vaccines to protect the entire population against a new pandemic influenza virus, with the first deliveries expected after 4–6 months. The Norwegian Institute of Public Health is enhancing its knowledge preparedness in collaboration with the universities and strengthening its surveillance of the infection situation to ensure that municipal chief medical officers, hospitals, health authorities and the public receive necessary and timely reports. The Norwegian Institute of Public Health is closely monitoring the situation (9) and holds regular coordination meetings with the Norwegian Veterinary Institute, the Norwegian Food Safety Authority, the Norwegian Directorate of Health and the Norwegian Medical Products Agency.

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