

Europe's bird-flu outbreaks pose little risk to humans

Impact of the viruses will be felt mostly by farmers.

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The duck breeding farm in Yorkshire, UK, where bird flu was identified was closed off to prevent the spread of the virus to other farms.

Three outbreaks of avian influenza virus have been reported in Europe this month. *Nature* explains how European countries are likely to quickly contain the outbreaks, and why the viruses poses little or no risk to people.

On 6 November, German authorities [reported an outbreak](#) of H5N8 virus at a turkey-fattening plant in Mecklenburg–Western Pomerania in the northeast of the country. Around 5,000 birds were reported to be infected and 1,880 died, in a flock of some 30,000 birds. On 16 November, Dutch authorities also reported [an outbreak of the virus](#) near Utrecht, which killed 1,000 birds in a flock of some 150,000 layer and breeding hens.

Then on 17 November, the UK Department for Environment, Food & Rural Affairs [reported an outbreak of H5](#) avian flu in a flock of 6,000 birds at a duck-breeding farm in northern England. Further testing has revealed that there, too, the strain was H5N8.

Has H5N8 been reported in Europe before? And where did it come from?

The H5N8 virus was first detected in poultry in Ireland in 1983¹, and it has since occasionally been detected in the United States and Asia. The current European outbreaks, however, are of a more recent strain of H5N8 that has emerged from genetic mixing of H5 viruses in Asia². The newer virus has caused outbreaks in poultry in southeast Asia since 2010, and in poultry farms in China, and in particular South Korea, this year.

The genetic sequence of the virus involved in the German outbreak is [similar to that of the virus in the South Korean one](#), which suggests that the virus spread from Asia to Europe. How it did so is unclear. If it travelled through poultry trade routes — usually the main driver of the spread of avian flu — outbreaks should have been reported along the way, but this has not been the case. Such outbreaks may have gone undetected or unreported, however.

Alternatively, wild birds migrating over long distances may have carried the virus. Evidence that migration plays any major part in the spread of H5N1 and other highly pathogenic avian-flu strains to poultry farms is contentious, however (see ['H5N1: Into the Americas'](#)

and 'Doubts hang over source of bird flu spread'). Whichever way these strains reached Europe, the spread of highly pathogenic avian-flu viruses beyond Asia — where most of the outbreaks occur — is not unusual.

Does H5N8 pose any health risks to people?

A [risk assessment](#) published by the European Centre for Disease Prevention and Control (ECDC) on 13 November estimated that the risk of H5N8 infecting humans and causing illness was "extremely low". The ECDC report notes that the virus shows a marked preference for avian receptors on cells in the respiratory tract³. Still, it also has the ability to bind to receptors on human cells, and scientists have also experimentally infected ferrets — a model of human infection — with H5N8, although the animals did not develop serious illness. The virus also did not transmit efficiently between ferrets⁴.

The biggest threat posed by the H5N8 virus is to the egg and poultry industries. That economic risk is also minimal in Europe, where animal-health authorities will quickly stamp out such outbreaks.

So H5N8 is not a pandemic threat?

It is impossible to predict which flu viruses might arise and cause a pandemic. As with the 2009 H1N1 strain, pandemic flu viruses remain likely to be detected only after they have already spread in humans in multiple countries.

Scientists nonetheless try to rank the potential pandemic threat of known flu strains to prioritize those worth watching, and thus be better prepared to fast-track vaccine development if it is needed. To do so, they look at factors such as whether viruses have a preference for human or avian cell receptors, and whether they can transmit in ferrets. But [surveillance of flu viruses worldwide is also notoriously sparse](#).

What will authorities be doing to control the H5N8 outbreaks in Europe?

The European Union introduced comprehensive rules in 2005 for dealing with outbreaks of highly pathogenic avian-flu strains. These include culling of affected flocks, cordoning off of zones around affected farms, restricting the transport of poultry, intensifying surveillance for the virus and disinfecting infected premises. People potentially exposed to the virus, such as farmers and veterinary surgeons, will also be monitored for any signs of illness.

European countries have well-developed veterinary and animal-health systems, which will probably stop any spread from these outbreaks quickly. The risk of spread among flocks in Europe is also much lower than in Asia, where there are many backyard farms and live-bird markets, with fewer biosecurity precautions to guard against infections. What Western Europe and Asia do have in common, though, is that they have among the world's highest densities of poultry. So there is no room for complacency.

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Updates

Updated: This article has been updated to reflect the fact that the strain detected in the United Kingdom was confirmed to be H5N8.

References

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