A US biosecurity committee is deciding whether crucial research on H5N1 bird flu is too dangerous to publish. The work shows a few mutations that might allow H5N1 bird flu to cause a lethal human pandemic.

The work was reported by New Scientist in September but its formal publication has now been delayed by fears that the information could be dangerous in the wrong hands, including those of other researchers. Virologists argue that publication is essential for keeping watch on natural H5N1, which poses a far greater threat.

H5N1 kills more than half the people it infects, but cannot be readily passed from person to person. Ron Fouchier of the Erasmus Medical Centre in Rotterdam, the Netherlands, reported at a flu conference in Malta in September that giving H5N1 two mutations known to adapt it to mammals, then passing the modified virus repeatedly between ferrets, led to further mutations and an H5N1 that was just as deadly but spread readily in airborne droplets. The five mutations involved have occurred separately in wild H5N1.

The work was submitted to the journal Science, but has now been passed to the US National Science Advisory Board for Biosecurity, a committee of researchers which advises on whether published research "may be misused to pose a biologic threat". Its advice is not binding, but it is influential.

Human mistake

"The benefits of publishing this work do not outweigh the dangers of showing others how to replicate it," says Thomas Ingelsby of the Center for Biosecurity at the University of Pittsburgh in Pennsylvania, which has long warned of bioterror risks.

Someone might try to make it into a weapon, Ingelsby says, but a more likely threat is that more scientists will work with the modified virus, increasing the likelihood of it escaping the lab. "Small mistakes in biosafety could have terrible global consequences," he says.

"The potential for escape of that virus is staggering," says D.A Henderson, also at the Center for Biosecurity, who spearheaded the eradication of smallpox. If a highly contagious virus with a 50 per cent kill rate got loose "a catastrophe would result", he adds, especially given the world's slow and limited ability to make vaccine. There is a precedent, he notes: the mild H1N1 flu that circulated before 2009 escaped in 1977 from a lab in Russia or China.

The Rotterdam team will not comment while the review is underway, but at the conference in Malta they said the experiment was approved by Dutch and international reviewers before it began, and no one suggested it should not be published. It was performed at the equivalent of BSL4 – the highest bio-safety level.

Nature vs nurture

Researchers familiar with the work say the risks are overstated. "Nature is much more likely to come up with highly pathogenic influenza than we humans," says Peter Palese of Mount Sinai School of Medicine in New York.

Daniel Perez of the University of Maryland in College Park says publishing will generate more
biosecurity, not less. That's because it will show which mutations to look for in natural H5N1 – and why more such monitoring is needed. "H5N1 is out of control," he says.

"A bit of a wake-up call on flu might not go amiss," agrees Peter Doherty of the University of Melbourne in Australia, who won the Nobel prize in physiology or medicine in 1996 for work in viral immunity and now works on flu. "H5N1 is mutating a lot, and virologists need to know the ferret study so they can watch for those mutations," he says. "The real bioterror threat comes from nature itself."

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