2013-04-15-025 Avian influenza, human (45): China: H7N9, update
To: (06) Virology, general; (07) Zoonoses, general; (09) Resistance of microorganisms;
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AVIAN INFLUENZA, HUMAN (45): CHINA: H7N9, UPDATE

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A ProMED-mail post <http://www.promedmail.org>
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[1] Latest case count
Date: Sun 14 Apr 2013
Source: English News, Xinhua report [edited] <http://news.xinhuanet.com/english/health/2013-04/14/c_132308110.htm>

China on Sun 14 Apr 2013 reported 11 new H7N9 human infections, bringing the total number of such cases around the country to 60. As of Sunday, Shanghai Municipality has reported 24 infection cases after
3 men were confirmed to be infected with the new strain on Saturday
[13 Apr 2013] afternoon.

Those 3 men include a 73-year-old man, a 54-year-old man, and a 78-year-old man. They all developed symptoms of fever earlier this month [April 2013] and were sent to hospital for treatment. Shanghai Municipal Health & Family Planning Commission on Saturday afternoon confirmed that the 3 were tested positive for H7N9 bird flu virus. 25 people who had close contact with the 3 men have been under medical observation, and none of them has yet shown flu symptoms.

Meanwhile, the city also reported 2 deaths on Sun 14 Apr 2013, bringing the death toll from H7N9 in the country to 13 as of Sunday. A 67-year-old woman and a 77-year-old man died in hospital on Saturday
[13 Apr 2013] night and Sunday morning, respectively, said the commission.

According to the Bureau of Health of east China's Jiangsu province, a 50-year-old man and a 26-year-old man have been confirmed to be infected with the H7N9 virus, while 29 people who had close contact with the 2 have shown nothing abnormal so far.

In the neighboring Zhejiang province, according to a statement from the provincial health department, 4 people have tested positive for
H7N9 and are still in critical condition.

Also, H7N9 bird flu has spread to central China's Henan province and to the capital Beijing in the north, after 2 new cases of infection were reported in Henan on Sunday [14 Apr 2013] morning, and one child tested positive for the strain on Saturday [13 Apr 2013].

As of now, 60 H7N9 human infection cases have been reported nationwide, with 24 in Shanghai, 16 in Jiangsu, 15 in Zhejiang, 2 in Anhui, 2 in Henan and one in Beijing. Of the 60 infected people, 13 have died.

[Byline: Chen Zhi]
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Communicated by:
ProMED-mail Rapporteur Kunihiko Iizuka

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[2] Henan cases
Date: Sun 14 Apr 2013
Source: Channel News Asia, Agence France Presse report [edited]
<http://www.channelnewsasia.com/news/asiapacific/china-h7n9-bird-flu/637804.html>

China's H7N9 bird flu virus spread to a new province on Sunday [14 Apr 2013], with state media reporting 2 human cases in central Henan just west of the area where the disease has been centred. "Two new cases of
H7N9 bird flu infection were reported in central China's Henan province on Sunday," the Xinhua state news agency said. Until Saturday
[13 Apr 2013], when one case was reported in the capital of Beijing, all other instances had occurred in the eastern city of Shanghai and nearby Zhejiang, Jiangsu and Anhui provinces hundreds of miles away.

Altogether, 51 people have been infected (now 60), and 11 (now 13) have died of the disease since Chinese authorities announced 2 weeks ago they had found H7N9 in humans for the 1st time. Experts fear the prospect of such viruses mutating into a form easily transmissible between humans, which would have the potential to trigger a pandemic.
But the World Health Organization (WHO) said last week there was as yet no evidence of human-to-human transmission of H7N9.

Health authorities in China say they do not know exactly how the virus is spreading, but it is believed to be crossing from birds to humans, prompting mass poultry culls in several cities. The United Nations'
Food and Agriculture Organization has said H7N9 shows "affinity" to humans while causing "very mild or no disease" in infected poultry, making it more difficult to find the source of transmission.

China has said it expects to have a vaccine ready in 7 months, but in the article, the US experts said developing one could take "many months."
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[3] Henan cases - more information
Date: Sun 14 Apr 2013
Source: Shanghai Daily [edited]
<http://www.shanghaidaily.com/nsp/National/2013/04/14/Henan%2Breports%2B2%2Bnew%2Bbird%2Bflu%2Bcases/>

Henan province today [Sun 14 Apr 2013] confirmed finding 2 cases of the H7N9 bird flu in humans, the 1st time in the central China province. The Henan Provincial Center for Disease Control and Prevention said the infected are a 34-year-old chef and a 65-year-old farmer. Both are being treated in local hospitals. The chef is in critical condition in Huaihe Hospital in the provincial capital Kaifeng, while the farmer is said to be in a stable condition at an infectious disease hospital in Zhoukou City, according to the center.

The chef developed symptoms on 6 Apr 2013 and was transferred to Huaihe Hospital on 9 Apr 2013. The farmer was admitted to the Zhoukou hospital on 10 Apr 2013 after developing symptoms of high fever and cough. The center checked their samples on 11 Apr 2013, and they were confirmed to contain H7N9 virus. A double check from State Center for Disease Control and Prevention today [Sun 14 Apr 2013] proved it. A total of 19 people who had close contact with the 2 newly infected cases are under quarantine but have not shown any signs of infection, said the centre.
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[4] Origin of outbreak - hidden reservoir?
Date: 11 Apr 2013
Source: Nature News, Nature 496, 145-146 [edited] <http://www.nature.com/news/urgent-search-for-flu-source-1.12762>

Virologists know its name: H7N9. What they don't yet know is whether this novel avian influenza virus -- 1st reported in humans in China less than 2 weeks ago -- will rapidly fizzle out, become established in animal hosts to fuel future human outbreaks, or morph into a virus that can spread easily between people and spark a deadly pandemic.

In a frantic effort to find answers, scientists are bearing down on
H7N9 on multiple fronts: They are testing wild birds and thousands of domestic fowl; analysing the viruses they find; and trying to trace people who have been exposed to infected patients. Chinese health authorities say that they have 400 laboratories looking for genetic changes in the virus. "We are going to be sitting with bated breath over the next month to find out what happens," says Michael Osterholm, who heads the University of Minnesota's Center for Infectious Disease Research and Policy in Minneapolis.

As Nature went to press, 24 [currently 60] human cases, including 8 [currently 13] deaths, had been reported in 11 cities, some a few hundred km apart, in eastern China. So many cases in such a short time over such a wide area -- up from 3 cases in 2 cities a week ago -- is "a very concerning situation," says Osterholm.

Scientists urgently want to find out which sources are stoking the human infections that result in flu-like symptoms and, in most reported cases, severe pneumonia. So far, investigations of the cases remain largely inconclusive: some patients had contact with poultry or other animals just before falling ill, whereas others had not. Late last week, the H7N9 virus was found in chickens, pigeons and ducks in live bird markets in Shanghai and Hangzhou, making markets the leading suspected source. Authorities have since culled tens of thousands of birds and closed down markets in Shanghai, Nanjing and Hangzhou.

The genetic sequences of the H7N9 viruses found in the birds are highly similar to those isolated from human patients, says Chao-Tan Guo, a virologist at the Zhejiang Academy of Medical Sciences in Hangzhou. Although the virus might have come from other sources, including mammals, the pattern of many human cases over a wide area in a short time could be explained by live markets alone, because birds from one or a few sources would be transported to multiple markets, says Malik Peiris, a flu virologist at the University of Hong Kong.

But the various bird species found to be infected may not be the original source, because much cross-infection can occur in live markets. Investigators must now trace which farms and wholesalers the birds came from, Peiris says, and test birds up through the supply chain. Researchers know that H7 flu viruses mainly infect wild birds such as ducks, geese, waders and gulls and that they occasionally jump into poultry flocks.

Kwok-Yung Yuen, an infectious-disease expert at the University of Hong Kong, notes the proximity of the reported human cases to the Yangtze river delta, home to many wild birds, and to Chongming Island near Shanghai, a renowned site for watching migratory birds. "It's likely wild ducks and geese are carrying it," he suggests. But this H7N9 virus has not yet been detected in wild birds in the area. "There is very little specific information on the source of this particular virus strain, its ecology or reservoir, and it is premature to be hypothesizing on the vectors," says Taej Mundkur, who is flyways programme manager for conservation group Wetlands International in the Netherlands. He also co-convenes the Asia-Pacific Working Group on Migratory Waterbirds and Avian Influenza with the Food and Agriculture Organization of the United Nations (FAO).

Wherever the virus originated, a crucial question is whether it could become established in poultry, creating a reservoir that might lead to continued, sporadic human infections. Health authorities in China are trying to learn to what extent that has happened already. Unlike its cousin H5N1 -- which

has killed millions of birds and several hundred people in Asia and elsewhere since 2003 -- H7N9 does not cause serious bird disease, greatly complicating efforts to control it, says Vincent Martin, interim head of the FAO's Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) in Rome. It would be next to impossible to detect H7N9 through routine surveillance for sick poultry among China's 6 billion domestic birds.
"This means stopping animal-to-human transmission is impossible," says Masato Tashiro, a virologist at the Influenza Virus Research Center in Tokyo, the World Health Organization's influenza reference and research centre in Japan.

Each time the virus encounters new human hosts, it has fresh opportunities to mutate and to acquire the ability to spread between people. That does not seem to have occurred yet. But experts say that it will be crucial to identify and track new cases of suspicious severe pneumonia and their close contacts, and to isolate people if necessary. Researchers working on the molecular biology of the virus say that it seems to derive from a reassortment of genetic material from at least 3 known bird-flu groups (see Nature <http://doi.org/k4j;2013>). A key component -- the haemagglutinin (H) protein on the surface of the virus -- already contains mutations known to shift its binding preference from bird cells to those of mammals. Scientists are watching for telltale changes that could signal a shift towards a form that is more transmissible between humans.

Because flu viruses evolve rapidly, comparing viral sequences from each of the human cases might reveal whether person-to-person transmission is occurring, says Andrew Rambaut, an expert in the evolution of human viral pathogens at the University of Edinburgh, UK.
If many patients have very similar viral sequences, then that would imply human spread; if viral sequences are more diverse, it would imply that each person had separately picked up infections from birds.
Only 4 sequences from 4 human cases are so far available, but virologists are sequencing more and posting them on the GISAID flu database.

If human-to-human transmission does start to occur, "further spread may be inevitable," warns Tashiro. Humanity has never been widely exposed to H7 or N9 flu viruses and so lacks resistance to these subtypes. If a pandemic were to occur, it would probably have a severe toll. But it is too early to predict how events will unfold; experts in emerging infectious disease are only just becoming acquainted with the latest villain in their roster.

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[5] Beijing girl's history
Date: Sun 14 Apr 2013
Source: Shanghai Daily, Xinhua report [abbreviated, edited]
<http://www.shanghaidaily.com/nsp/National/2013/04/14/Beijing%2Bcloses%2Bmarkets%2Bas%2Bgirl%2Bdiagnosed%2Bwith%2BH7N9/>

The 7-year-old girl in Beijing has been diagnosed with the H7N9 bird flu strain, the 1st case in the capital, Beijing health authorities said yesterday [13 Apr 2013]. Beijing local authorities announced the closure of all live poultry markets and a ban on live poultry trading in efforts to stem the spread of the virus. The case in Beijing, plus one more reported in Shanghai yesterday, 2 in Jiangsu province, and another 2 in Zhejiang province, raised the number of H7N9 infections in China to 49 [now 51]. All, with the exception of the Beijing case, are located in east China. Last night [13 Apr 2013], the death toll remained at 11, said the National Health and Family Planning Commission.

The girl in Beijing, whose parents work in the live poultry trade in Shunyi District in the capital's northeastern suburbs, developed flu symptoms, including fever, a cough, a sore throat, and a headache, on Thursday [11 Apr 2013] morning. The child, who wasn't named, was taken to Beijing

Ditan Hospital at noon that day and admitted with a lung infection. Her parents, the only 2 people to have had close contact with her, are under quarantine but have not shown any flu symptoms, said the hospital. The child received the drug Tamiflu, as well as intravenous drips on Thursday night, and was later transferred to intensive care after her condition worsened. After oxygen therapy and other treatment, her coughing eased, and her body temperature fell to
37 C [98.6 F] from 40.2 C [104.36 F], said Cheng Jun, deputy president of the hospital.

In Beijing, the city government has set up headquarters to lead efforts in stemming the spread of the disease. 55 labs are available to screen cases. Beijing local authorities closed all live poultry markets and banned live poultry trading. Racing pigeon hobbyists have been ordered to cage their birds, and agricultural and forestry authorities will monitor wild birds.

Authorities slaughtered 503 fowl and ordered the caging of 2700 pigeons in the village where the infected girl lives. Tests of 156 samples collected from the culled birds found no H7N9 virus, said Wang Bin, head of the veterinary department. The girl's parents bought 75 chickens from a trader from Tianjin, 120 km south of Beijing, selling many to villagers.
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[This update covers the following: Human cases of H7N9 for 1st time recorded in a central province: Henan province. The search for the source of the outbreak remains unresolved. Further information has been released about the infection of the young girl in Beijing and her circumstances. Case numbers continue to rise, possibly in part due to improved diagnostic procedures and the greater number of patients that can now be screened. Time will tell. - Mod.CP

A HealthMap/ProMED-mail map can be accessed at:
<http://healthmap.org/r/1zaU>.]

[see also:
Avian influenza, human (44): China (HE), H7N9 20130413.1643923 Avian influenza, human (43): China, H7N9 update 20130413.1643270 Avian influenza, human (42): China (BJ), H7N9 20130413.1642086 Avian influenza (35): China, LPAI H7N9, update 20130412.1641185 Avian influenza, human (41): China H7N9 update 20130412.1641464 Avian influenza (35): China, LPAI H7N9, update 20130412.1641185 Avian influenza, human (40): China H7N9 update 20130411.1638767 Avian influenza, human (39): China (SH, JS, ZH) H7N9 update 20130410.1636073
Avian influenza, human (38): China (SH, JS) H7N9 update 20130409.1633860 Avian influenza, human (35): China (SH, JS) H7N9 update
20130408.1630825
Avian influenza, human (34): China (SH, AH) H7N9, RFI
20130407.1628848
Avian influenza, human (33): vaccine development 20130407.1628472 Avian influenza, human (32): China (SH, AH) H7N9 20130407.1628294 Avian influenza, human (31): China (Shanghai) H7N9 20130406.1626812 Avian influenza, human (30): China (Hong Kong, Taiwan) H7N9, NOT 20130406.1626565
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20130406.16264
Avian influenza, human (28): China H7N9, WHO 20130406.1626360 Avian influenza (28): China (SH) H7N9, OIE, update 20130405.1624901 Avian influenza, human (27): H7N9 update, more fatalities 20130405.1624260 Avian influenza, human (26): China H7N9 case list & map 20130404.1623110 Avian influenza, human (25): China (SH) H7N9, update 20130404.1622647 Avian influenza (27): China (SH) H7N9, avian case 20130404.1621938 Avian influenza (26): China, H7N9, RFI 20130403.0666 Avian influenza, human (24): China (ZJ) H7N9 update 20130404.1621801 Avian influenza, human (22): China (SH) H7N9, fatal: correction
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Avian influenza, human (22): China (SH) H7N9 fatal 20130404.1621700 Avian influenza, human (20): China (JS) H7N9 patient details
20130403.1617279

Avian influenza, human (16): China (SH, AH) H7N9 WHO 20130401.1614707]
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