

## World fights new flu virus with latest science

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By Tan Ee Lyn

HONG KONG, May 1 (Reuters) - When millions of people started dying around the world in 1918, doctors and scientists hadn't a clue what was happening. As the epidemic spread, people blamed it on everything from tiny plants to old dusty books.

Then again, they couldn't have known because the influenza virus was only identified in 1933, by a British research team.

But how times have changed.

Just over a month after people started falling ill in Mexico, experts have identified the culprit to be a novel H1N1 flu virus, which carries genetic material that is mostly swine with the rest being human and avian.

Scientists in Mexico, the United States and New Zealand have since posted full sequences of its DNA taken from 34 virus samples in an online public library. And the list is growing.

What this means is scientists everywhere can now use these descriptions to create new tools to fight the virus, such as rapid diagnostic test kits and vaccines.

While the fastest conventional tests take up to two days, scientists are designing highly specific ones that can pick up this swine H1N1 flu virus in four to six hours.

Explaining the "polymerase chain reaction" technique used in the test kit, a scientist with a top government hospital in Asia said: "A well-designed rapid (real time) PCR test should be able to detect specific swine H1N1 virus in a sample by detecting gene sequences that are unique to this virus and no other."

Mark von Itzstein, director of the Institute for Glycomics in Australia's Griffith University, said: "It will rapidly let us indentify if it is swine H1N1, and if it is, we will want to treat the patients within a 48 hour period (after symptoms begin) with Tamiflu, quarantine them and monitor their recovery."

Hong Kong scientists hope to design a PCR kit by next week. The U.S. Centers for Disease Control and Prevention is sending test kits to U.S. states and Mexico but other countries don't want to wait.

"The genetic sequences have just been made available ... many laboratories are rushing to find the best test, it will take one to two weeks (for us to design

one), but we need a lot of validation, we need hundreds of specimen to do that," said microbiologist Yuen Kwok-yung at the University of Hong Kong.

## MANY MYSTERIES

The virus has killed 176 people in Mexico and spread to at least 10 other countries but most of the cases outside Mexico have been mild, an observation that has intrigued everyone.

Nobody knows for sure how this virus came to be, which animal passed it to the first human patient and when that occurred.

But experts expect to find out a little more through analysing its samples and tracking its DNA changes over time.

"The current analysis indicates this is mainly a swine virus, but further whole genome sequencing throughout the pandemic period and comparison with previous purely swine viruses (isolated from pigs) will be able to tell us which genes are mutating to allow pig-to-human transmission and then more efficient human-to-human transmission," said the scientist with the government hospital in Asia.

"If you can sequence full viral genomes at regular time points during the pandemic, you can see how the pandemic strain is evolving with the human pandemic and which genes are evolving in parallel with new clinical and epidemiological developments, for example, say patients now do not get diarrhoea as a routine feature of the current virus strain, but later on, they start to develop diarrhoea -- which gene mutation may have lead to this new clinical feature?"

The virus, which had never been seen until it turned up in people in Mexico, is designated H1N1, within the same family as the seasonal human H1N1 flu virus. But curiously, the H1N1 component in the current human flu vaccine offers no protection.

"We need a new vaccine (to fight the new flu virus), it only takes one amino acid change in the whole protein makeup of the virus to escape the vaccine," said Itzstein.

The CDC is making available virus samples for manufacturers to make a vaccine as needed.

"We will quickly get hold of the seed of the new flu virus ... and produce a vaccine," Japan's Health Minister Yoichi Masuzoe told a news conference on Thursday.

However some experts doubt if that is practical. A vaccine is not expected to be commercially available until 3 to 6 months after licensing, by which time a pandemic may have entered another phase, or may just be over. The World Health Organisation will decide later whether one is needed. (Editing by Andrew Marshall)

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