

Host: This is the podcast from *Clinical Chemistry*. I am Bob Barrett. Recently there has been a large amount of attention on the novel human influenza A virus, the H1N1 strain, that poses a serious worldwide health threat. Because of the potential for pandemic spread, there is a great need for rapid and accurate tests for the detection of the virus.

We are very fortunate to have with us today Dr. Leo Poon, from the Department of Microbiology at the University of Hong Kong, Queen Mary Hospital, and the Hong Kong University-Pasteur Research Center in Hong Kong, China. He and his colleagues have recently published a paper in the journal *Clinical Chemistry*, describing a new molecular diagnostic assay that allows the detection and quantification of this new H1N1 virus.

Dr. Poon tell us, why is it so important to develop molecular diagnostic assays for the novel human H1N1 virus?

Dr. Leo Poon: Well, because we know this virus only very recently in human, so, so far the WHO recommend only three methods to confirm a case, that is virus isolation, and then the detection of a proper increase of viral type, that is antibody, a specific body, H1N1, and the third option is the molecular diagnosis, like the RT-PCR assay.

And of this assay, the RT-PCR is relatively more sensitive, and you can detect or pick up the patients who are in the early onset within a few hours.

Host: Now, are these assays more sensitive than other diagnostic methods?

Dr. Leo Poon: Well, yes, we know that the molecular assay like RT-PCR array is far more sensitive than the other assay, and to detect those patients who are in the early disease onset.

On the other hand, we found that the PCR assay is at least 500 times more sensitive than the virus isolation method. So, we believe that it would be very useful for picking up those impacts on patients.

Host: Your team simultaneously developed three RT-PCR based assay for the same virus. What were your reasons for that?

Dr. Leo Poon: Because actually we are one of the WHO reference left for H5N1 influenza virus, so we know that quite a lot of countries, particularly in the developing countries, their laboratory facility are very basic, so that's why we actually try to develop different method and provide different options for them, like the RT-PCR assay, which only require very basic laboratory setting.

I think we can provide these options, and then let them choose the one which is more practical in their laboratory setting, and again, setting any one of these molecular test in their lab would be essential for pandemic preparedness.

Host: The emergence of this novel H1N1 had global impact. What are the differences between, let's say, a seasonal flu and H1N1?

Dr. Leo Poon: For the seasonal flu, I think the population has been exposed to these virus for many years, so we have that. But the population have some type of hurt immunity, so the virus — I mean the seasonal flu will not have a major gigantic outbreak within the human population.

But for this, novel H1N1, many of us have not been exposed to this virus, and we don't have immunity to this virus at all. So the test emerged of this novel H1N1, we believe that, that would cause maybe even pandemic. That means a lot of people in the population will be affected at the same time, and quite a number of these people maybe die from the infection.

Host: Well, how are you able to develop these tests in such a short time? I understand you were involved in the discovery of the SARS coronavirus and the rapid diagnosis of SARS during the outbreak that began in late 2002. Did this previous experience help your research during the recent outbreak of H1N1?

Dr. Leo Poon: Indeed yes. I think not only us, but many of the people who — I mean in the laboratory who had gone through the SARS event, I mean they are more relative, they are more well-equipped than in the past.

So, for us many of the investigators in this team have gone through this SARS event, so we know that — like the development of diagnostic test is one of the essential component to control the infection. So, we have the expertise and we have the wide combination of people who can able to develop a test in a very short time.

I think the SARS event has made us have an advantage or at least some more experience in developing our overall response to pandemic or emergence infectious disease more rapidly than in the past.

Host: Well, in your opinion, what's the future direction of this work?

Dr. Leo Poon: Well, the outbreak only started maybe a few weeks ago, so we know very little about this virus. Actually, as I said before, we don't know how this virus behaves in humans. So it would be interesting to look at like the viral in this patient, to see whether the virus behaves quite different from what we know for the seasonal flu.

On the other hand, what needs to be done is to try to improve the technology, like the sensitivity and the robustness of these PCR assay, so that we can able to cope the hard large lump of chemical sample in a very short time. I think this is the work that we are going to do in the next few months.

Host: Dr. Leo Poon is from the Department of Microbiology at the University of Hong Kong and the Hong Kong University-Pasteur Research Center in Hong Kong, China, and has been our guest in this podcast from *Clinical Chemistry*. I am Bob Barrett. Thanks for listening.

Total Duration: 5 Minutes