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On March 28, 2023 |

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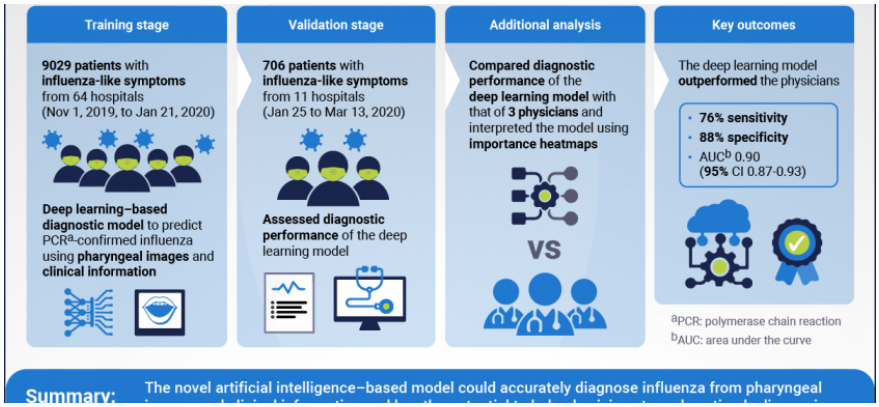

JMIR Publications published *"Examining the Use of an Artificial Intelligence Model to Diagnose Influenza: Development and Validation Study"* in the Journal of Medical Internet Research, which reported that it may be possible to diagnose influenza infection by applying deep learning to pharyngeal images given that influenza primarily infects the upper respiratory system.

These authors aimed to develop a deep learning model to diagnose influenza infection using pharyngeal images and clinical information. They recruited patients who visited clinics and hospitals because of influenza-like symptoms.

In the training stage, the authors developed a diagnostic prediction artificial intelligence (AI) model based on deep learning to predict polymerase chain reaction (PCR)–

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confirmed influenza from pharyngeal images and clinical information. In the validation stage, they assessed the diagnostic performance of the AI model. In an additional analysis, the authors compared the diagnostic performance of the AI model with that of 3 physicians and interpreted the AI model using importance heat maps.

This process led to the development of the first AI model that can accurately diagnose influenza.

Dr Sho Okiyama, MD, from Aillis, Inc said, *"According to the Global Burden of Disease Study 2016, the global burden of influenza is substantial."* Timely and accurate diagnosis of influenza has the potential to prevent widespread transmission of the virus within the population and during subsequent epidemics and pandemics, as well as to prevent the unnecessary prescription of antibiotics in primary care, which is a cause of emerging antibiotic-resistant bacteria.

The COVID-19 pandemic and surge in the use of telemedicine highlighted the importance of accurately diagnosing influenza infection without increasing the risk of spreading the virus through physical interaction. The gold-standard method for diagnosing influenza infection is the reverse transcription–PCR (RT-PCR) of nasopharyngeal aspirates or swabs; however, RT-PCR is not easily performed in primary care, and the result's turnaround time could delay prompt diagnosis and preventive or treatment interventions.

Neither of these tests can be performed through telemedicine, and the sensitivity and specificity of diagnosing influenza using clinical information only are suboptimal. Given the recent increase in the number of patients being diagnosed through telemedicine, an alternative influenza test that can be conducted through telemedicine is warranted.

Dr Okiyama and the research team concluded in their JMIR Publications Research Article, *"we developed the first AI-assisted diagnostic camera for influenza and prospectively*

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validated its high performance. We found that the AI model often focused on follicles, which confirmed previous case reports and series suggesting that visual inspection of the pharynx would help in the diagnosis of influenza infection."

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DOI – https://doi.org/10.2196/38751

Full-text – https://www.jmir.org/2022/12/e38751/

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Keywords – influenza, physical examination, pharynx, deep learning, diagnostic prediction

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