Medical Xpress

Blood signatures to diagnose infection

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Coughing and wheezing patients could someday benefit from quicker, more accurate diagnosis and treatment for respiratory infections such as flu, through a simple blood test, according to scientists.

Dr. Aimee Zaas, presenting her work at the Society for General Microbiology's autumn meeting in Nottingham describes how simply looking at an individuals blood 'signature' can be used to quickly diagnose and treat ill patients and could even predict the onset of a pandemic.

The team, from the Duke Institute for Genome Sciences & Policy and Duke University Medical Center in the US, looked at the blood of otherwise healthy individuals who had been exposed to rhinovirus, respiratory syncytial virus or influenza. The team found each viral infection stimulated the body to produce a very specific set of immune molecules that could be detected in the blood. Recording the distinct blood signatures for each virus in a database and matching them against blood samples from other ill patients pinpointed the cause of disease with more than 95% accuracy.

Respiratory infections, including colds and flu are a common reason for seeking medical help. As Dr. Zaas highlighted, "Current methods for accurate diagnosis are time and labour intensive and are not always accurate. This means GPs are sometimes overcautious and may prescribe antibiotics unnecessarily, for viral infections. During a pandemic, this has real consequences as there is an increased risk of spreading infection."

Dr. Zaas explained how her test works completely differently to current diagnostic tests as it analyses each individual's immune response to infection, rather than the actual micro-organism responsible. "We effectively look at the imprint in the blood that the virus makes, which is as individual as a signature," she said. "Not only is this much more accurate than traditional testing, it also works much faster as it can be done through a simple blood test."

This work was sponsored by the US Defense Department Advanced Research Projects Agency and is part of a large team effort. If developed further, the findings could be used in emergency departments and primary care clinics to diagnose respiratory viral illness. "This could allow patients quicker access to antiviral drugs, but could also give an accurate warning of an upcoming pandemic," explained Dr. Zaas.

Provided by Society for General Microbiology