

First immunological clue to why some H1N1 patients get very ill or die

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An international team of Canadian and Spanish scientists have found the first potential immunological clue of why some people develop severe pneumonia when infected by the pandemic H1N1 virus.

The study analyzed different levels of regulating molecules for 20 hospitalized [patients](#), 15 outpatients and 15 control subjects in 10 Spanish hospitals during the first pandemic wave in July and August 2009. Researchers from the Hospital Clinico Universitario de Valladolid in Spain and the University Health Network found high levels of a molecule called interleukin 17 in the blood of severe H1N1 patients, and low levels in patients with the mild form of the disease.

Interleukin 17 is produced by the body and is important in the normal regulation of [white blood cells](#) which fight infection and disease. In certain circumstances, the molecule becomes "out of control", leading to inflammation and autoimmune diseases. The research paper titled, "Th1 and Th17 hypercytokinemia as early host response signature in severe [pandemic influenza](#)" is published in the December issue of the *Journal of Critical Care*.

"In rare cases, the virus causes lung infections requiring patients to be treated in hospital. By targeting or blocking TH17 in the future, we could potentially reduce the amount of inflammation in the lungs and speed up recovery," says Dr. David Kelvin, the leader of the Canadian team, Head of the Experimental Therapeutics Division, Toronto General Hospital Research Institute, University Health Network and Professor of

Immunology, University of Toronto. Dr. Kelvin added that the clinical applications of this work is still many years away.

Dr. Kelvin did note, however, that a test to determine who has high levels of the molecule is possible in the near future. "A [diagnostic test](#) could let us know early who is at risk for the severe form of this illness quickly," he said, adding that high levels would indicate a failure of the immune system to eliminate the virus, similar to what happened during the 1918 Spanish flu when huge numbers of deaths occurred due to a deadly influenza A virus strain of subtype H1N1.

Dr. Jesus Bermejo-Martin, the coordinator of the Spanish team, thinks that identifying drugs able to regulate the activity of IL-17 may provide alternative treatments for patients with severe [H1N1](#).

Provided by University Health Network

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