

Severe swine flu may be helped with chemotherapy

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Researchers at Karolinska Institutet and Astrid Lindgren Children's Hospital report in *The Lancet* on the use of a new treatment concept to combat severe swine flu. One of the very sick patients, being cared for with a heart-lung machine at the hospital, deteriorated further after a number of weeks. With an aim to break the vicious circle, the physicians tried a combination of chemotherapy and cortisone, after which the patient's condition improved rapidly.

Given that chemotherapy is generally given to infected patients only with extreme caution, the researchers behind the recently published case study feel that instead using it with the aim to treat such a severe infection may be viewed as something of a paradigm shift.

"Of course, we're absolutely delighted with the successful outcome considering both the highly complex clinical picture and the controversial treatment we found ourselves compelled to give," says Jan-Inge Henter, Professor at Karolinska Institutet and senior consultant at Astrid Lindgren Children's Hospital. "It may seem contradictory to use chemotherapy for a severe infection, but as far back as 2006 we published a hypothesis in *The Lancet* that chemotherapy could be effective against [bird flu](#)."

The researchers' underlying biological hypothesis was that some severely infected patients suffer the risk of dying from the body's immune response to the infection. A disorder known as haemophagocytic lymphohistiocytosis (HLH) is characterized by that some [white blood](#)

[cells](#) in an over-activated immune system eat up other cells in the body. In this patient, treated at Astrid Lindgren Children's Hospital's ECMO Center, the physicians wanted to use chemotherapy to suppress the over-reacting immune system by knocking out some of the immune-active cells.

"Despite over four weeks of intensive treatment, the patient's [lung function](#) hadn't improved, and both the blood counts and the liver values had worsened markedly," says Kenneth Palmer, senior consultant and section manager at the ECMO Center. "We were worried that the patient wouldn't survive and were therefore ready to try the unconventional treatment that professor Henter had proposed. Together we discussed the treatment in depth both internally and with relatives, and after careful consideration we decided to go ahead."

"Within just a week of starting the new treatment, the patient had improved tangibly, and within two weeks we were able to stop ECMO treatment altogether," says Bernhard Holzgraefe, consultant at the ECMO Center.

The researchers behind the study are careful to point out that the treatment concept of [chemotherapy](#) and cortisone should be used only in very special situations. The treatment must also be tested on far more patients before the effect is proven. But according to Jan-Inge Henter, who heads up several international HLH studies, the hypothesis is supported by the fact that it is young, healthy patients who are often worst-hit during pandemics of severe forms of influenza, such as the Spanish Flu in 1918.

Astrid Lindgren Children's Hospital is part of the Karolinska University Hospital. ECMO stands for extracorporeal membrane oxygenation.

More information: Jan-Inge Henter, et al. Cytotoxic therapy for

severe swine flu A H1N1. *The Lancet*, online 17 december 2010.

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