Hope is on the horizon for children suffering from pneumonia

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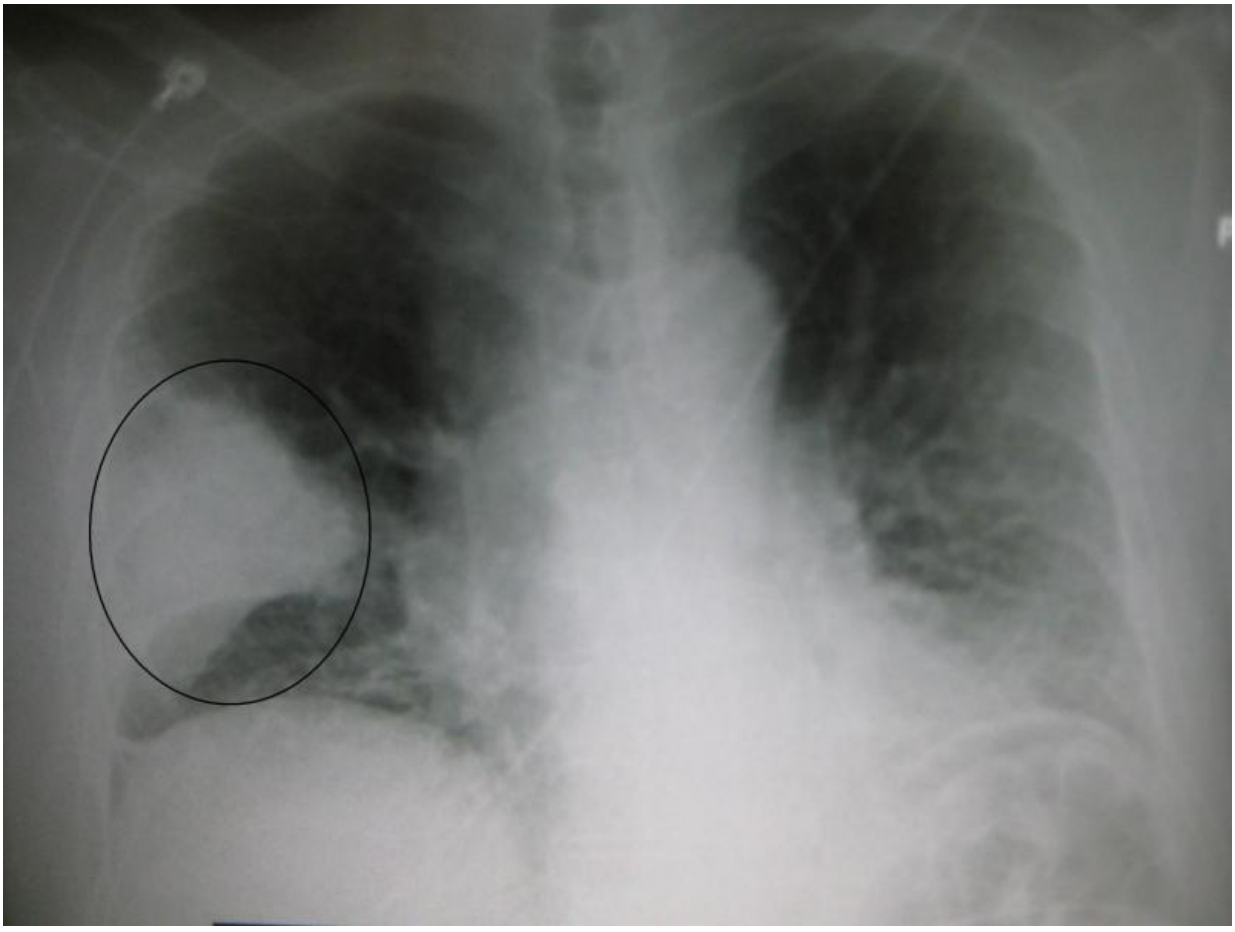

A black and white X-ray picture showing a triangular white area on the left side. A circle highlights the area. Credit: James Heilman, MD./Wikipedia

A drug normally used to prevent tissue rejection following organ transplants could be repurposed to help treat human metapneumovirus (HMPV) infection in children.

A team of Griffith University researchers, led by Dr. Larissa Dirr, Dr. Benjamin Bailly and Professor Mark von Itzstein AO from the Institute for Glycomics, have been testing an approved commercially available library of drugs to see which can inhibit HMPV, commonly known as pneumonia, in an in vitro cell model.

Dr. Dirr said they tested the drugs to see if they blocked binding or replication of the virus and if they could be combined to achieve a stronger antiviral potency.

"Of these evaluated available drugs, we found five candidates with potent HMPV activity and low cytotoxicity," she said.

"One of the drugs that shows strong antiviral activity is mycophenolic acid (MPA) an approved medicine that prevents tissue rejection following organ transplantation and is used for the treatment of certain autoimmune diseases.

"The anti-HMPV effect of MPA is caused by the depletion of guanosine, a nucleoside used in the synthesis of DNA and RNA."

Dr. Bailly said HMPV is responsible for 10–12% of pediatric hospitalizations and has a high mortality rate in immunocompromised people suffering from severe cases of pneumonia.

"To date, there is no approved drug or vaccine available on the market to treat these infections," he said.

"While our research is still at an early stage, if MPA proves to deliver

promising results during our preclinical evaluation, then the process to get MPA on the market could be fast-tracked.

"The next step will be to test MPA in an ex vivo human airway epithelial model or an in vivo animal model.

"We're pleased with the results to date, particularly the required dose of MPA in the in vitro cell model is below the already approved human oral dose."

Director of the Institute for Glycomics and co-senior author on this paper, Professor Mark von Itzstein AO is delighted with the progress of this research.

"The repurposing of existing drugs presents a real opportunity to have useful drugs available to patients in a shorter amount of time," Professor von Itzstein said.

The research, which included Ph.D. student Annelies Van Den Bergh, Dr. Patrice Guillon and Prof Mark von Itzstein has been published in *Antimicrobial Agents and Chemotherapy* and a review about antiviral strategies for HMPV was recently published in *Antiviral Research*.

More information: Annelies Van Den Bergh et al, Drug Repurposing for Therapeutic Discovery against Human Metapneumovirus Infection, *Antimicrobial Agents and Chemotherapy* (2022). DOI: 10.1128/aac.01008-22

Annelies Van Den Bergh et al, Antiviral strategies against human metapneumovirus: Targeting the fusion protein, *Antiviral Research* (2022). DOI: 10.1016/j.antiviral.2022.105405

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