

Top risk factors identified for children during influenza pandemics

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Auckland medical scientists have helped to identify crucial risk factors for children most susceptible to life threatening infections from the H1N1 influenza virus.

Lead study author Dr Stuart Dalziel and senior research fellow Dr John Thompson from The University of Auckland worked with an international team of paediatric specialists to identify the risk factors.

It is the first study to detail which clinical factors in [children](#) at hospital arrival with influenza-like illness and H1N1 infection, are associated with the progressive risk to either severe infection or death.

In the study, now on online in the prestigious *British Medical Journal*, researchers examined paediatric cases from dozens of emergency departments in hospitals around the world during the global [influenza pandemic](#) of 2009.

The results enabled the team to pinpoint several clinical [risk factors](#) for severe infections in youngsters who arrive at a hospital with influenza-like illnesses due to H1N1 infections. The information would be invaluable during a pandemic, when emergency departments and primary-care facilities experience large surges of young patients who arrive with [flu-like symptoms](#).

"The basic question clinicians face when they are in the middle of an [influenza epidemic](#) like H1N1 is whether their patient is at risk of severe

complications," says Stuart Dalziel, lead author and a paediatrician at New Zealand's Starship Children's Hospital and The University of Auckland, and Vice-Chair of the Paediatric Research in Emergency Departments International Collaborative (PREDICT) network.

"One of the key strengths of this study is that it provides clinicians with meaningful and more precise information that can enable them to identify those children with fever and flu-like symptoms who are at greater risk of severe complications," he says.

The findings stem from 265 pediatric cases culled from 79 emergency departments of hospitals associated with the Pediatric Emergency Research Networks (PERN) in 12 countries.

The study, which assessed each patient's clinical history and physical examination, identified the following predictors of severe H1N1 infection and potentially fatal outcomes in children:

- History of chronic lung disease
- History of cerebral palsy/developmental delay
- Signs of chest retractions (difficulty breathing)
- Signs of dehydration
- Requires oxygen to keep blood levels normal
- Heart rate that exceeds normal range (tachycardia) relative to age

"Having a more accurate idea of what to look for in paediatric cases, especially during a pandemic, would be especially important to clinicians because it provides crucial guidance for those who would be trying to direct the appropriate levels of treatment for many patients in a short time," said one of the study's co-authors Nathan Kuppermann, professor and chair of emergency medicine at the University of California.

Due to its unparalleled global network of hospitals and patient data, the

PERN study also added weight to the efficacy and use of the anti-viral drug oseltamivir (trade name Tamiflu) to treat the children with H1N1 [influenza virus](#) infections to reduce the severity of infection.

Researchers noted there was good evidence of an association between oseltamivir treatment and a reduced frequency of death in children admitted to an intensive care unit for assisted ventilation.

"This study shows the incredible power of PERN, bringing together five [pediatric emergency](#) research networks and many emergency departments from around the world, to produce this very significant study which has the power to identify the most at-risk children in a future influenza pandemic," said Professor Terry P. Klassen, the study's senior author, CEO and scientific director at the Manitoba Institute of Child Health in Canada.

Provided by University of Auckland

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