RSV study shows potential for vaccine strategies to protect babies

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(Medical Xpress)—Research by the University of Warwick indicates that vaccinating families could protect young babies against a common winter virus which can be fatal for infants under six months.

Respiratory syncytial virus (RSV) typically leads to mild, cold-like symptoms in adults and older children but can be more serious and even fatal in infants under the age of six months as it can lead to bronchiolitis and pneumonia.

The virus is commonly found all over the world. In the UK, outbreaks generally start in November or December and last four to five months, peaking over the Christmas and New Year period.

According to the Health Protection Agency, in England, 28 per 1000 hospital admissions in children aged under one year were attributed to RSV each year.

Globally, the most recent estimates set the RSV pneumonia burden at 33 million cases and up to 199,000 deaths every year.

Up until now it was not clear whether babies under six months were more at risk of an RSV infection leading to severe respiratory disease because it was their first infection and they lacked immunity to the virus, or whether it was down to the age of the babies.

A new University of Warwick-led study, published in the American

Journal of Epidemiology and funded by the Wellcome Trust, has now found that the severe disease risk is principally age-related.

This means the physiological changes associated with growing older – such as for example an increase in size of the small airways of the lungs – are more important in reducing the risk of developing severe respiratory disease than previous exposure to the disease.

This finding is significant because it shows that increasing the average age that a child is exposed to RSV infection would lead to fewer cases developing into severe respiratory disease.

A way to do this is through vaccination.

Development of a vaccine for the key target age group of newborn babies between 1-3 months of age remains elusive despite 50 years of research. However, several promising candidate vaccines are in the development pipeline that could be given to older children and adults.

In the absence of a vaccine for babies, an alternative would be to immunise parents and older siblings of babies who are up to six months old during the period when the virus is most active.

This is known as a 'cocoon' strategy as it does not directly inoculate the baby but instead focuses on those around the infant who are most likely to pass on infection.

Alternatively or in addition, the short term specific immunity that mothers give to their newborn might be extended by vaccination of pregnant women to boost their immunity to RSV, thus increasing the duration of protection in the infant and delaying RSV infection.

Professor Graham Medley from the School of Life Sciences at the

University of Warwick said: "RSV causes more respiratory disease and death in children than any other respiratory virus.

"It is very common world-wide, and people are infected repeatedly through life - if you have a 'community virus' in December in the UK, it is probably RSV.

"Children under six months old are at the greatest risk of death from RSV, and this is the first study to clarify why such young children are at risk - is it because they are so young, or is it because infection at this age will be their first infection?

"The answer is that it is because they are so young.

"This means that if we can protect children until they are older before they become infected, then they will be at a lower risk of dying following infection from RSV.

"The really exciting implication is that we don't have to vaccinate the baby to protect the baby. Instead we could vaccinate family members to stop them infecting the child – the cocoon strategy.

"Or we could even consider vaccinating all school-children to try and reduce the amount of virus circulating around whole the community."

The study, "The Natural History of Respiratory Syncytial Virus in a Birth Cohort: The Influence of Age and Previous Infection on Reinfection and Disease," is based on a cohort of 635 children tracked from birth in Kilifi, Kenya over a period of just under three and a half years.

More information: aje.oxfordjournals.org/content/176/9/794.long
www.hpa.org.uk/Topics/Infectio … /GeneralInformation/