

Low-cost innovation has big potential for treatment of severe pneumonia and hypoxaemia among children, finds new icddr,b study in *The Lancet*

icddr,b has tested bubble CPAP, a form of oxygen delivery and breathing support, showing that it is more effective than the WHO recommended standard at treating young children with severe pneumonia and hypoxaemia.

Dhaka, August 19, 2015 – Research findings from a new study by icddr,b – the world’s largest global health research institution and one of Bangladesh’s most respected organisations – published today show for the first time in a developing country that an alternative form of treatment for hypoxaemia (low levels of oxygen in the blood) and the respiratory distress that results from severe pneumonia in children could be more effective than the standard of care that is recommended by the World Health Organization (WHO). The Bangladeshi scientists collaborated with the University of Melbourne to test the treatment, a circuit that provides oxygen and breathing support, using cheap and readily-available equipment like a shampoo bottle and standard-issue respiration tubes.

The study was [published in the top medical journal *The Lancet*](#), and has shown that the therapy, known as bubble-CPAP (continuous positive airway pressure) was associated with fewer deaths and treatment failures among young children with severe pneumonia and hypoxaemia compared to the WHO standard of low-flow oxygen therapy. The fact that it was trialled using cheap and accessible equipment means that, after further research, it could potentially be rolled out more broadly to rural healthcare facilities in other parts of Bangladesh and other developing countries.

The mortality rate for pneumonia in children remains intolerably high – around 10% in many low-income countries, even with the availability of antibiotics and low-flow treatment.

This study shows that bubble-CPAP could be part of a better solution. Bubble-CPAP has been used in high-income countries for many years, but, until now, whether it would be effective in a resource-poor setting was not well-understood. This is because bubble-CPAP traditionally relies on equipment like mechanical respirators, and these are too expensive to stock for many hospitals in low-income countries.

While the oxygen-therapy circuit has been replicated many times, icddr,b’s study is the first in a developing country to trial the effectiveness of a cheaper version of bubble-CPAP at reducing mortality and treatment failure in the treatment of children under five years of age with severe pneumonia and hypoxaemia.

On the basis of these positive findings, icddr,b's Dhaka Hospital now uses bubble-CPAP as part of the standard of care for young children with very severe pneumonia and hypoxaemia.

“Bubble-CPAP will require more research and investigation before we can advocate for it to be used in other hospitals in Dhaka,” says Dr Chisti, icddr,b's “But the fact that we have replicated the bubble-CPAP circuit using simple and accessible equipment means that this could be scaled up very easily.”

“The innovation could be appropriate for any country with a high child pneumonia mortality rate, like some countries in sub-Saharan Africa or South-East Asia,” he says.

Pneumonia kills more young children than any other single cause in the world, and the bulk of this burden falls on low- and middle-income countries.

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Notes to the Editor

Dr. Md Jobayer Chisti is a scientist at icddr,b's Centre for Nutrition and Food Security and the clinical lead of the intensive care unit at Dhaka Hospital.

About icddr,b

icddr,b (International Centre for Diarrhoeal Disease Research, Bangladesh) is a not-for-profit international health research institution located in Dhaka. Dedicated to saving lives through research and treatment, icddr,b addresses some of the most critical health concerns facing the world today, ranging from improving neonatal survival to HIV/AIDS. In collaboration with academic and research institutions throughout the world, icddr,b conducts research, training and extension activities, as well as programme-based activities, to develop and share knowledge for global lifesaving solutions.