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Infection causes over 80% of hospitalisations in young children – UCT research finds

Young children in sub-Saharan Africa experience high rates of hospitalisation from infection, especially pneumonia, a team of University of Cape Town (UCT) and international scientists has found in a study of a South African birth cohort.

"Child morbidity and mortality rates are high across sub-Saharan Africa. Investigating the factors that impact child hospitalisation in sub-Saharan Africa is critical to inform and optimise interventions, manage resources, and accelerate progress towards the Sustainable Development Goals," said Dr Catherine Wedderburn, chief research officer in the Department of Paediatrics & Child Health and the Donald Gordon Neuroscience Institute at UCT.

The study is part of the Drakenstein Child Health Study, a birth cohort in Paarl outside Cape Town. In the study, 1 225 pregnant women were enrolled, followed through pregnancy and childbirth, and children followed from birth through childhood. Children were monitored throughout the first two years for admission to hospital with assessment of risk and protective factors to investigate hospitalisation rates and determinants.

Published in *PLOS Global Public Health*, the study found that 28% of children were hospitalised in the first two years of life despite high vaccination rates and no child HIV infection. The highest rates of hospitalisation were in the first six months of life when children are most vulnerable.

"Over 80% of hospital admissions were caused by an infection – pneumonia being the most common cause. Around one-third of pneumonia episodes were caused by a virus, respiratory syncytial virus (RSV), with almost a quarter of all-cause hospitalisations in the first six months of life due to RSV," said Professor Heather Zar, lead investigator of the Drakenstein Child Health Study and Chair of the Department of Paediatrics & Child Health at UCT.

Zar further said: "HIV remains a health priority in the region, and one focus of the paper was children who are HIV-exposed and uninfected (HEU). Antiretroviral therapy scale-up means that most children born to women living with HIV will be uninfected (<2% transmission). Due to the high antenatal HIV prevalence in South Africa, over 20% of children were born HEU, similar to other countries, including Botswana and Lesotho."

The study found that children who were HEU had a higher incidence of hospital admission compared to HIV-unexposed children, with almost double the risk of admission in the first year of life. They also stayed longer in hospital, an average of six days compared to four days. Raised maternal HIV viral load was a key risk factor for hospital admission in HEU children.

"Children who are HEU appear to be at particular risk in infancy. This suggests the importance of continuing efforts to prevent HIV in women and focusing on managing HIV well," said Wedderburn.

Other drivers of hospitalisation included prematurity and delayed vaccination, whilst breastfeeding was protective against hospitalisation, particularly from gastroenteritis.

With children in South Africa experiencing high rates of hospitalisation, said Wedderburn, preventative efforts to strengthen available strategies are urgently needed. These include promoting breastfeeding (early, exclusive, and prolonged), ensuring vaccinations are given on time, optimising maternal HIV care, and targeting at-risk children, including those with HIV exposure or who are premature.

Zar noted that infectious causes, especially RSV-pneumonia, underly most admissions. "The findings raise possibilities that new interventions to prevent RSV disease, which have recently been approved in high-income countries (either monoclonal antibody or maternal vaccination), may have a large impact in reducing hospitalisation and promoting child health. Advocating for new interventions to prevent RSV in infants in low and middle-income country contexts is now imperative," she concluded.

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