The Benefit of the RSV Immunisation Programme in Newborns

Respiratory syncytial virus (RSV) is a common seasonal virus which causes lower respiratory tract infection, with the risk of severe infection and hospitalisation highest in young infants particularly those born during the RSV season. Each winter, 1 in 2 babies in Ireland contract RSV with 4% of infants hospitalised due to RSV(1). In recent years there has been a growing movement to take proactive measures against RSV, with the initiation of the HSE RSV Pathfinder programme in the 2024 winter season(2). The programme aims to protect the highest risk infants from preventable infection by offering free RSV immunisation to those born between September 1st 2025 and February 28th 2026, premature babies born prior to 30 weeks gestational period, infants with underlying medical conditions (congenital heart disease, chronic lung disease of prematurity) and those with less than 1.25kg birth weight (1). The efficacy of the RSV Pathfinder Programme in its inaugural year was exemplified by a mid-season 2024 publication with a reduction in total RSV cases from 656 to 41, hospitalisations from 413 to 24 and ICU hospitalisations from 64 to 5 when compared to the previous 2023/2024 RSV season. This decrease exemplifies the capacity for immunisation programmes to yield both immediate health outcome improvement with HSE Chief Clinical Officer, Dr Colm Henry citing "The reduction in illness and hospitalisations powerfully illustrates the effectiveness of immunisation and vaccine programmes and the protection from serious illness they provide," whilst also permitting system level health burden alleviation(2).

The pertinence of engaging in proactive measures to prevent RSV infections via immunisation programmes is further emphasised by the health burden placed on tertiary children's hospitals during the RSV season. In a 2023/24 study focused on the peak of the RSV season at CHI, 869 RSV hospitalisations occurred 712 of which were at the ward level with a median age of 24.6 weeks, with 157 admitted to the PICU with a median age of 8.3 weeks. The total associated healthcare costs exceeded €6 million, and the period saw a 61% reduction in elective surgeries which coincided with a PICU occupancy in excess of the total capacity(3). Furthermore, a working group evaluation of the efficacy of the RSV Immunisation Pathfinder Programme in 2024/2025 convened by the NHPO communicate the severity of the pre-immunisation landscape. During the 2023/2024 RSV season 1431 children aged <1 were hospitalised with RSV, corresponding to 2.5% of all children <1 in Ireland, with children <1 accounting for 78% of all RSV related – ICU cases. Following the introduction of the RSV immunisation programme in 2024/2025 emergency department presentations saw a 57% reduction, hospitalisations dropped by 76% and ICU admissions fell by 65%(4). The health burden of RSV is further emphasised by RSV's capacity to cause bronchiolitis, pneumonia and RSV related ICU admission. Paediatric bronchiolitis is a lower respiratory tract infection primarily caused by viral pathogens and is the leading cause of hospitalisation in this age group with RSV accounting for 66% of all cases(5). Prior to the introduction of RSV immunisation in 2023/2024 19 infants experienced critical care transfers with 35 neonatal critical care transfers between hospitals occurring for RSV related admissions. Following the introduction of the Pathfinder programme both figures dropped to five in 2024/2025. Of those hospitalised due to RSV bronchiolitis in 2024/2025 those who were immunised with nirsevimab neither required high flow oxygen or intubation. It is estimated that the 2024/2025 Pathfinder programme averted 1030 RSV cases, 440 non-hospitalised ED presentations, 433 hospitalisations and 79 ICU admissions demonstrating a significant reduction in disease burden in this population(4).

During the Pathfinder programme Nirsevimab, a monoclonal antibody for the prevention of RSV was made available to 22,444 infants in September 2024. Nirsevimab works by granting the infant passive immunity to RSV preventing the virus entry into the host cell by binding the F1 and F2 subunits of the RSV surface fusion protein and is protective of RSV for 150 days(6). In comparative studies of Nirsevimab with placebo in 1,490 children born at 35 weeks gestation or more, of those who received nirsevimab in their first RSV season, 1.2% of children developed RSV-induced lung disease compared with 5% in the placebo group. In a similar comparative study of 1,453 children born between 29 and 35 weeks gestation 2.6% of children immunised with nirsevimab developed RSV induced lung disease compared with 9.5% in the placebo group(7). Occurring concurrently with the HSE Pathfinder programme was a region-wide immunisation programme occurring in Galicia, Spain. whilst immunisation rates were approximately 83% in Ireland with an approximate 76% reduction in hospitalisations; in Galicia immunisation rates were recorded at 90% resulting in a reduction in hospitalisations in infants of 82%(8). From taking the breadth of these case studies, trials and pilot programmes into account the picture that emerges is that nirsevimab leads to an 80% reduction in RSV hospitalisations in infants, whilst retaining the dual benefit of alleviating the seasonal pressures on paediatric units and emergency departments(6). In review of the 2024-2025 season, it is anticipated that an additional 800 hospitalisations could be averted this RSV season (2025-2026) with similar immunisation rates observed last year with extension of the programme to a catch up cohort (those born in the 6 months immediately preceding the RSV Season) (6)taking into consideration 46% of hospitalisations were for those over 6 months of age; additionally with uptake rates similar to those observed in Galicia 650 further cases could be averted(3).

The HSE RSV Immunisation Pathfinder Programme is an excellent example of the capacity for public health policy to reduce infant morbidity and protect healthcare systems(6). The major health burden which RSV places on the health system, with 25-39% of elective surgeries in CHI cancelled over the RSV season, and the individuals burden placed on unique patients – within the PICU Cohort 57% were transferred to hospitals outside children and 85% had siblings causing disruption to the family unit at a time of critical illness (3) emphasises the significance of safeguarding individuals society and our health system through proactive policy measures.

1. Health Service Executive. RSV Immunisation For Babies 2025 [Available from: https://www2.hse.ie/conditions/rsv/immunisation/.
2. New HSE RSV immunisation programme significantly reduces infections, serious illness and hospitalisations in babies [press release]. www.hse.ie, 16th December 2024.
3. Ali A, O'Neill R, Treston B, Kitt E, Morris PJ, Healy MA, et al. RSV Burden on Ireland's Tertiary Children's Hospitals: An In-Depth Winter 2023/2024 review. Ir Med J. 2024;117(10):1047.

4. Dr Michael Hanrahan. Respiratory Syncytial Virus (RSV) Immunisation Pathfinder Programme 2024-2025. Evaluation - Executive Summary. Health Protection Surveillance Centre: Health Service Executive: National Health Protection Office; 2025 17th December.
5. Evelyn N. Erickson RTB, Debbie Tristram, Magda D. Mendez. Pediatric Bronchiolitis. StatPearls2025 12th January.
6. HSE Public Health: National Health Protection NCPfPaNaNWaIHP. HSE National Procedure on Nirsevimab to reduce RSV and associated hospitalisations in Infants. 2025 1st August. Report No.: NHPO 0 -NWIHP RSV SOP25.
7. Agency EM. Beyfortus. 2026 23rd February. Report No.: EMEA/H/C/005304.
8. Ares-Gómez S, Mallah N, Santiago-Pérez MI, Pardo-Seco J, Pérez-Martínez O, Otero-Barrós MT, et al. Effectiveness and impact of universal prophylaxis with nirsevimab in infants against hospitalisation for respiratory syncytial virus in Galicia, Spain: initial results of a population-based longitudinal study. Lancet Infect Dis. 2024;24(8):817-28.