



Nirsevimab Implementation in MN-CMS EHR

Introduction

On June 18th 2024, Cabinet approved funding for a Respiratory Syncytial Virus (RSV) immunisation program utilising Nirsevimab. This decision aimed to reduce significant morbidity caused by RSV and associated hospitalisations/ICU admissions and the annual strain on healthcare resources by proactively reducing RSV infections and hospitalisations through immunisation. The Maternal & Newborn Clinical Management System - Electronic Health Record (MN-CMS - EHR) Medications Workstream were involved in national and local initiatives, contributing significantly to its success.

The aims were to:

- Accurately record Nirsevimab administration ensuring adherence to national guidelines for RSV prophylaxis, the MN-CMS-EHR Medications Workstream, composed of pharmacists and clinical informatics experts, developed functionality within the EHR to record patient-specific medication administration based on age criteria
- Document consent for administration, refusals and non-administrations due to clinical contraindications recognising that not all patients would receive the medication
- Design a clinician-alert-system understanding the importance of timely administration, the team designed a clinician-alert-system which was crafted following the Institute for Safe Medication Practices recommendations. This alert triggers when clinicians access a patient's record without documented Nirsevimab administration or non-administration, ensuring proactive engagement and reducing missed doses
- Enhance accuracy in medication documentation, an alert prompting clinicians to scan the QR code on the Nirsevimab product ensures that medication details, including batch and expiry information, are captured in the patient's record.

Additionally, processes were established to ensure the status of Nirsevimab administration is visible throughout the patient's EHR and is included in the electronic discharge summary to the GPs for continuity of care.

Background & Research

Respiratory Syncytial Virus (RSV) is a common respiratory virus that typically causes mild, cold-like symptoms. While most people recover within a week or two, RSV can be serious, especially for infants and older adults. In infants under one year of age, RSV is the most common cause of bronchiolitis—inflammation of the small airways in the lungs—and pneumonia. It also stands as the leading cause of hospital admissions due to acute respiratory illness in young children under five years old. By the age of two, nearly all children have been infected with RSV at least once, but the antibodies developed do not prevent future infections throughout life.

In Ireland, annual RSV outbreaks occur during the winter months, with the highest numbers of infections typically reported in December and January. These outbreaks lead to a significant influx of paediatric patients, affecting the capacity of paediatric units nationwide. The strain extends to neonatal care units, impacting the ability to transfer babies who need specialised procedures or expert assessments. Additionally, paediatric Accident & Emergency departments experience increased patient loads, and hospital wards are often converted into RSV wards during peak seasons.

With Cabinet approval in place an immunisation programme utilising Nirsevimab was commenced to reduce infant RSV infections and hospitalisations through immunisation that would mitigate the annual strain on healthcare resources. The MN-CMS EHR Medications Workstream with over ten years of experience was well-equipped to react swiftly to changes in practice and implement advanced functionalities to ensure a successful agile development to support the Immunisation programme.

To accurately record Nirsevimab administration and ensure adherence to guidelines for RSV prophylaxis, the team developed functionality within the EHR to record patient-specific medication administration based on age criteria. Recognising that not all patients would receive the medication, they also implemented a system to capture and document reasons for non-administration, such as patient refusal or clinical contraindications.

Understanding the importance of timely administration, the team designed a clinician-alertsystem. This reminder triggers when clinicians access a patient's record without documented Nirsevimab administration or non-administration, ensuring proactive engagement and reducing missed doses. Initially, the alert was run silently to balance validity and prevent alert fatigue. The design of the alert-system was carefully crafted following the Institute for Safe Medication Practices (ISMP) recommendations, focusing on principles such as target audience, source credibility, clinical importance, visual design elements like font size and colour, affirmative wording, and optimal placement within the user interface.

To enhance accuracy in medication documentation, an alert was implemented to remind clinicians to scan the QR code on the Nirsevimab product. This ensures that medication details, including batch and expiry information, are accurately captured in the patient's record. Additionally, processes were established to ensure the status of Nirsevimab administration is visible throughout the patient's chart, including during critical workflows like discharge planning, thus enhancing continuity of care and facilitating clinical workflows designed to maximise Nirsevimab uptake

Positive Effects of the Technology

The MN-CMS EHR team efforts focused on patient safety and workflow integration across clinical teams. By leveraging their extensive experience from previous implementations and the use of clinical decision support, they were able to design an optimal workflow and user experience. The team engaged in both formal and informal discussions with users to ensure the new processes fit seamlessly with existing clinical practices and considered how Nirsevimab would be administered and by whom. By meticulously integrating clinical expertise with advanced EHR functionalities, the Medications Workstream in collaboration with other national teams and subject matter experts exemplifies how dedicated teams can drive significant advancements in public health initiatives.

This collaboration ultimately contributed to the success of the project.

The Medication Workstream's proactive approach and innovative development and use of the EHR has significantly contributed to the successful launch of the Nirsevimab

immunisation program. Their efforts demonstrate excellence in clinical informatics and have had a tangible impact on patient care, healthcare resource optimisation and support significant advancements in public health initiatives aimed at keeping infants healthy and alleviating the strain on paediatric units across the country. The development of the MN-CMS EHR to record Nirsevimab immunisations considerably reduces the administrative burden compared to paper based sites, minimising manual data entry and improving accuracy.

The team recognised the importance of monitoring the program's impact and implemented advanced analytics and reporting mechanisms. Resources were secured to develop advanced analytics on Nirsevimab uptake rates across MN-CMS sites, ensuring real-time visibility into the program's success to date and opportunities for improvement. Weekly reports were generated combining MN-CMS EHR Daily Delivery Reports with Nirsevimab prescription and administration records. This provided instantaneous visibility into uptake rates and helped identify potential gaps in administration.

The impact of the program has been significant. Cumulative national uptake is above 80%, surpassing initial targets and potentially preventing hundreds of paediatric admissions due to RSV. Some paper-based sites have reported immunising more babies than live births, prompting analyses of data correlation between births and immunisations. The MN-CMS EHR team's rigorous reporting is based on all babies born, offering a higher fidelity of data compared to paper-based sites which may not be able to record their work with the same level of detail. There is significant potential to do very detailed analyses to examine determinants of immunisation uptake including maternal/family sociodemographic characteristics, facilitating targeted public health messaging for those groups with lower uptake rates.

This work not only improves patient outcomes, at the moment there is an approximately 90% reduction in RSV hospitalisations in the relevant infant age groups, but also sets a standard for excellence in healthcare informatics.

Future plans

The Medications Workstream's proactive approach and innovative use of the EHR have already significantly contributed to the successful launch of the Nirsevimab immunisation program and its benefits. This will benefit paediatric units across the country and ultimately the new Children's Hospital.

Through national-level discussions, resources were secured to further develop advanced analytics and the team are currently developing analytic approaches to measure immunisation rates and determinants of uptake. This work will use advanced analytic techniques in order to measure how uptake is influenced by maternal medical and sociodemographic characteristics. These analyses will also measure the impact of deprivation on immunisation uptake, informing public health messaging in order to minimise the impact of RSV across society.

In the future this system innovation will be scalable to all 19 maternity units in the country as well as the community based elements of the programme. Through the existing messaging service an accurate record of the immunisations will be available in GP systems also. It is important to note that the techniques and analytics used for the Nirsevimab reporting can be further developed and implemented for any future programmes or projects.