





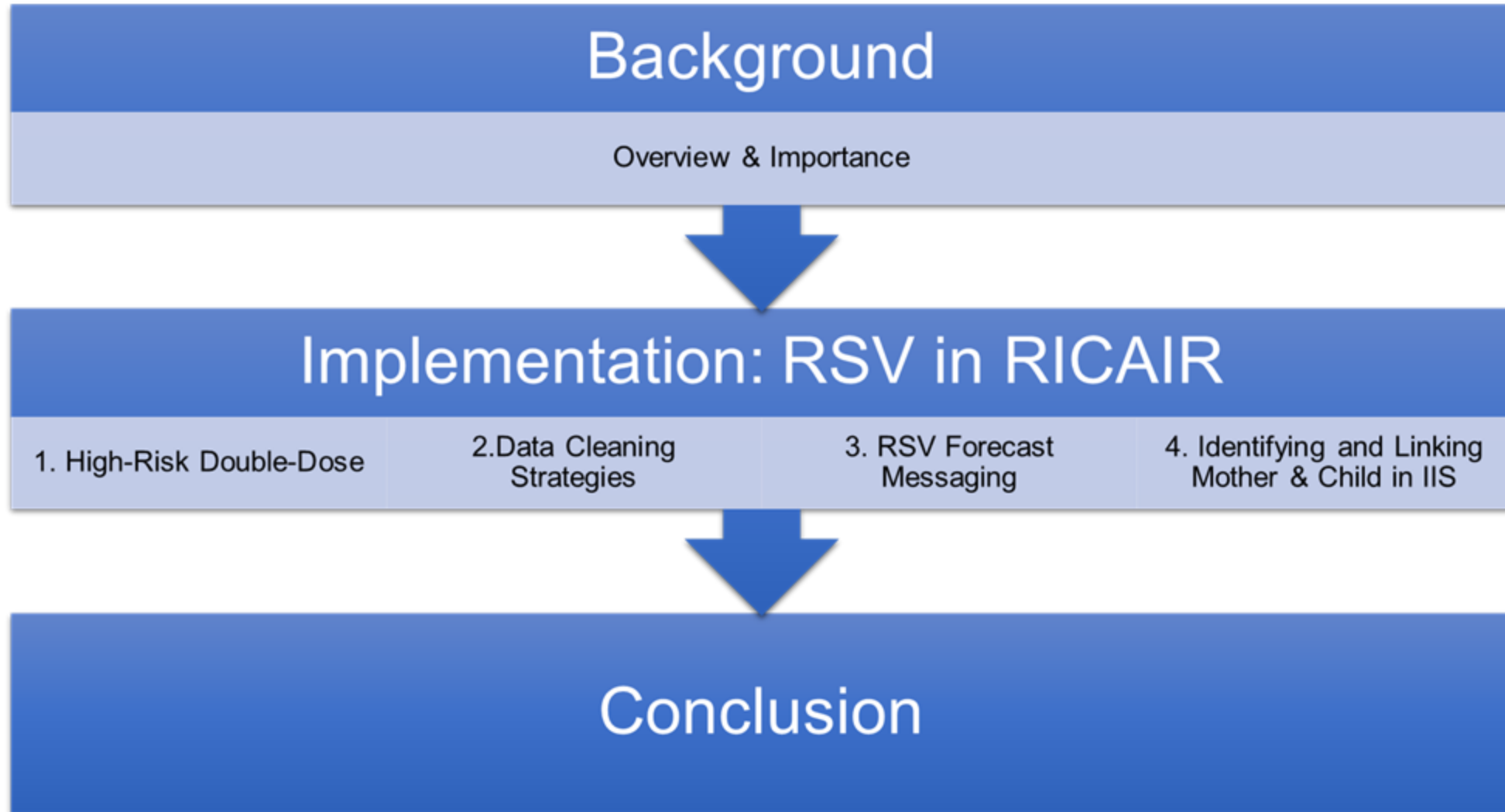
Approaches to Capturing RSV Immunizations

A Comprehensive Approach to Ensuring Effective Immunization Data

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Agenda



- **KIDSNET/RICAIR (Rhode Island Child & Adult Immunization Registry)**
 - Started in 1997; lifelong immunization registry used for preventive care and control of vaccine preventable disease.
 - 1.6 million patient records
 - 21 million immunizations
- **RSV Overview**
 - Respiratory Syncytial Virus (RSV) is a **leading cause of severe respiratory illness in infants, young children, and older adults.**
 - In **2023**, new preventive measures, such as nirsevimab (**Beyfortus**) for infants and RSV vaccines for older adults (e.g., **Abrysvo**), were introduced.



Background



• RSV Impact

- Each year in the United States, RSV leads to approximately...
 - **2.1 million outpatient (non-hospitalization) visits** among children **younger than 5 years old**
 - **58,000–80,000 hospitalizations** among children **younger than 5 years old**
 - **100,000–150,000 hospitalizations** among adults **60 years and older**
 - **As many as 10,000 deaths**

• Local Impact in Rhode Island

- Rhode Island experienced a significant RSV surge during the **2023–2024** respiratory season, contributing to over **900 respiratory-related hospitalizations**.
- Pediatric care capacity was strained
- Simultaneous circulation of RSV, influenza, & COVID-19
 - Led to heightened pressure on healthcare facilities, emphasizing the need for effective immunization strategies and accurate data capture



Limitations & Challenges



- Challenges for IIS
 - **Pregnancy** and birth considerations in tracking doses.
 - **Double doses** and varying dosages by weight complicate tracking.
 - **High-risk** immunization schedules for both infants and adults.
 - A **complex landscape** of products and supply constraints.
- Key Data Quality Challenges in RSV Immunization
 - **EHR & Billing Misalignment:** Some EHRs struggle to differentiate CVX 306/307 as administered doses due to double billing constraints
 - **Improper CVX Substitution:** Some providers manually alter CVX codes to reflect double doses, introducing **data integrity risks**
- Persistent Data Challenges
 - **Gaps in Data Capture**
 - **Inconsistencies Across Systems**
 - **Lags in Reporting Timeliness**

High-Risk Double-Dose



- Age 8-19 months at increased risk entering second RSV season:
 - 1 dose nirsevimab as two 100mg injections at different sites
- 1st dose processes normally in IIS
- 2nd dose on same day for same child:
 - Add to IIS as 2nd dose if:
 - Same provider, AND
 - Different ORC-3, AND
 - Opposite side site OR administered within the correct timeframe (age & season)
 - Otherwise hold in human review
- 366 double-doses submitted since Fall 2023
 - 26 met the criteria; 11 of those met *both* L/R and timeframe

Data Cleaning Strategies



- **Minimizing Duplicate Doses:**

- RICAIR has implemented **data cleaning** techniques to minimize **duplicate doses**.
- Consider age, relative volume, historical/administered, amount of information associated with dose:



- 303/305 vs. 304/314/315 and 71, 93 (more common)
- 303 vs. 305
- 303 vs. 306/307
- 306/307 vs. 315
- 305 vs. 315 (less common)

CVX	Vaccine	Doses
71	RSV-IGIV	200
93	RSV-mAb	1,500
303	RSV Recomb 60+	50,000
304	RSV Unsp	500
305	RSV Biv 60+/Preg	25,000
306	RSV mAb 0.5mL	5,000
307	RSV mAb 1.0mL	5,000
314	RSV Unsp	500
315	RSV mAb Unsp	250
326	RSV mRNA	50

RSV Forecast Messaging



RSV 1 valid doses	03/17/2025 RSV mAb 0.5mL 0m 2d					End of Series
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- Scenarios:
 - Baby who received the infant RSV dose - **End of Series**
 - Baby who is due for infant dose now - **Due now if no prenatal dose**
 - Baby who got infant dose last season and is now 8-19 months – **Recommended if at increased risk for severe disease**
 - Baby who *missed* infant dose last season and is now 8-19 months – **Recommended if at increased risk for severe disease**

RSV 1 valid doses	01/02/2024 RSV mAb 0.5mL 0m 9d					Recommended if at increased risk for severe disease
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RSV Forecast Messaging



- **Flexible integration with Immunization Calculation Engine (ICE):**
 - Mapping Layer: ICE returns evaluation/forecast codes, IIS can customize based on vaccine group, evaluation/forecast code, age, or vaccine
 - User-Centered Forecasting: Actual message that displays in the user interface can be customized as well

Identifying and Linking Mother & Child in IIS



- RSV's infant schedule is unique:
 - Mother during pregnancy
 - Baby after birth
- Identifying and linking mother and child records in the IIS can enhance RSV recommendation and reporting.
- Drawing on patient matching and deduplication strategies, there are several techniques for performing this linkage.

Identifying and Linking Mother & Child in IIS



- In a CDC survey, 33% of eligible pregnant women reported receiving an RSV vaccination. (<https://www.cdc.gov/mmwr/volumes/73/wr/mm7338a2.htm>)
- RI births Oct. '24 - Jan. '25: **88%** linked to the mother's IIS record with **probabilistic matching** on name/DOB of mother (75% with exact matching)
- **32%** of those had a valid pregnancy dose: (38% had *any* pregnancy RSV dose)
 - Correct CVX code
 - Administered 32-36 weeks and at least two weeks before birth, in-season
 - Can't be certain about edge cases because IIS only knows date of administration, date of birth, and weeks gestation

Identifying and Linking Mother & Child in IIS



- Simple case – Healthy infant when the mom was vaccinated with that specific pregnancy, at the right time, with the right vaccine.
- Challenges to labeling the child as "immune" – they won't be truly immune to RSV disease, and high-risk children are still recommended a dose.
- Pregnant persons – only recommended RSV during pregnancy once ever, not once per pregnancy.

Conclusion



- RSV strategies implemented in Rhode Island:
 - Capture RSV immunizations accurately, including 26 double doses
 - Present useful forecasts
 - Improve the data quality of RSV dose administrations reported, including deduplicating up to dozens of duplicate doses per day
 - Link mother and child records
- Given the expected impact of RSV immunization on hospitalizations and deaths, we are confident that the benefits have outweighed the implementation effort.

Questions?





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Additional Slides useful for Q&A



Ensuring Data Quality: Deduplication as a Core IIS Strategy



Why It Matters to Us

- High-quality data drives everything: clinical decision support, coverage analysis, VFC eligibility, and equitable immunization delivery.
- Vaccine-level deduplication is not just a technical fix — it's foundational to **data integrity and trust** in our systems.

Deduplication Best Practices (from the IIS Community for the IIS Community):

- **MIROW 2006 Full Guide** — 100+ pages of deeply detailed, time-tested best practices
- **AIRA 2015 Mini-Guide** — A concise, action-oriented 12-page reference for implementers
- **AIRA Repository** — Central source for all deduplication tools and resources

RICAIR in Action: Following the 3-Phase Deduplication Framework

1. **Phase 1 - Selection:** Identifying and grouping together potential pairs of duplicates
2. **Phase 2 - Evaluation:** Determining whether a selected pair is a true duplicate (i.e., a match)
3. **Phase 3 - Resolution:** For each matching pair, executing a process to resolve the duplicate

Key Takeaway

Data quality is everyone's job — and deduplication is one of our most powerful tools to ensure that what we see in IIS reflects the reality of immunization delivery.