National Center for Emerging and Zoonotic Infectious Diseases
Center for Disease Control and Prevention

Respiratory Tract Infection (RTI) Pilot Project: The Importance of Respiratory Pathogen Reporting

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NHSN Long-term Care Facility Component

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Objectives

- Discuss burden of respiratory pathogens in older adults
- Review respiratory pathogen surveillance in nursing homes
- Discuss RTI Surveillance Nursing Home Pilot Project
- Review current and future NHSN respiratory pathogens surveillance in nursing homes

Burden of Respiratory Pathogens in Older Adults

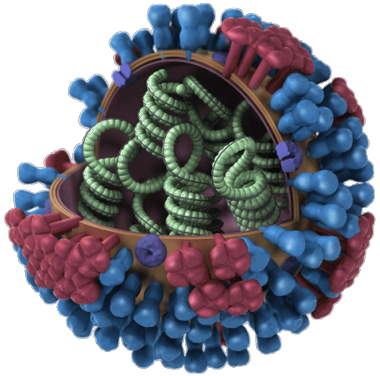
Influenza, COVID-19, RSV

Respiratory Pathogen Burden in Nursing Homes

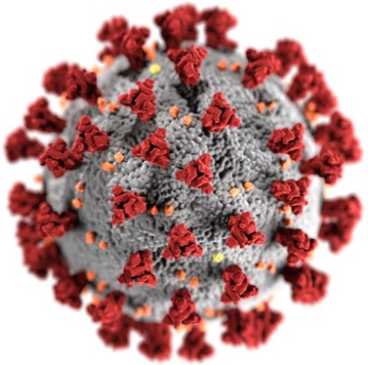
Respiratory Pathogen of Focus:

- Vaccines available for all three
- Confirmatory laboratory tests available
- Prophylaxis and/or treatment available (Influenza and COVID-19)

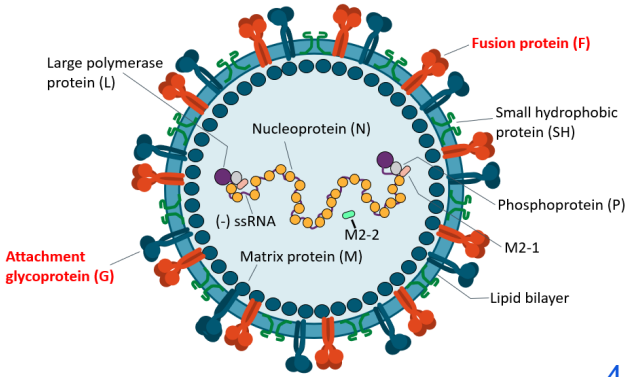
Influenza (Flu)



***SARS-Cov-2 (COVID-19)**

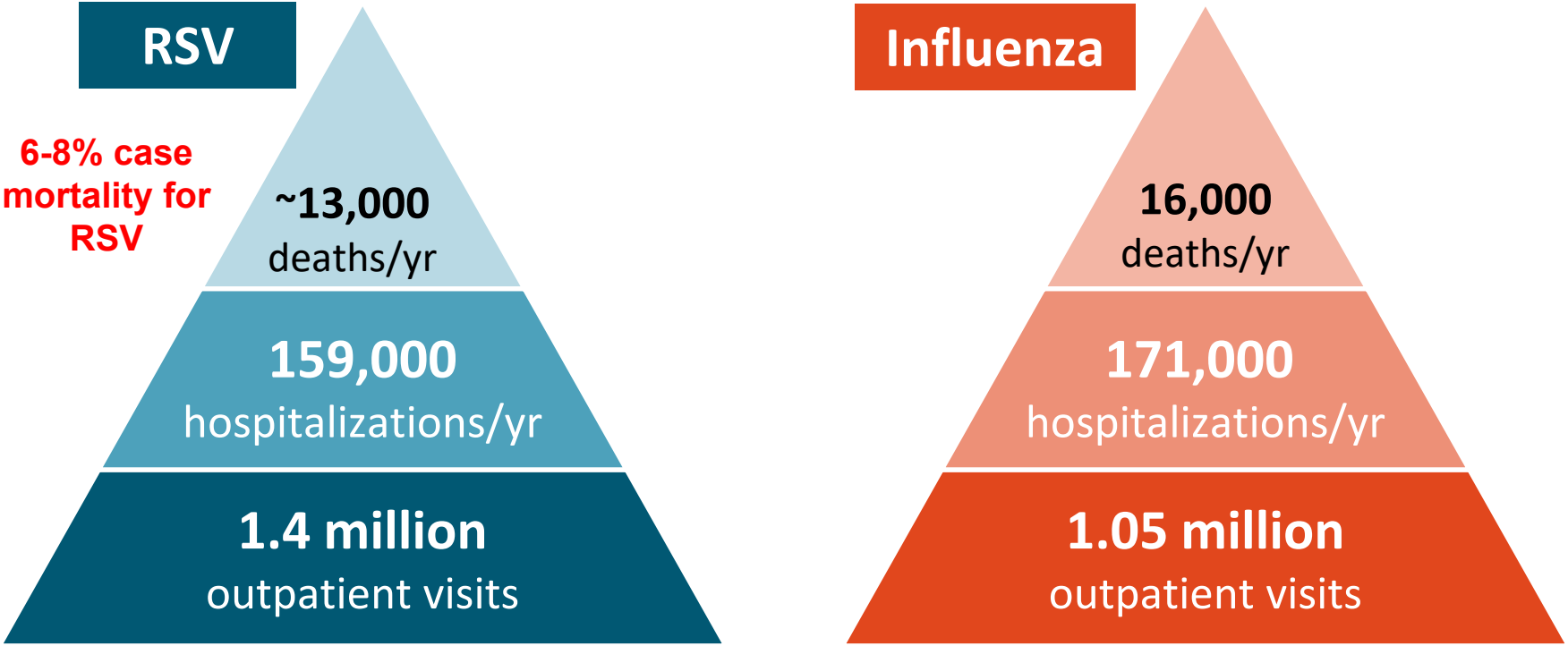


Respiratory Syncytial Virus (RSV)



*SARS-Cov-2 – Severe acute respiratory syndrome coronavirus 2

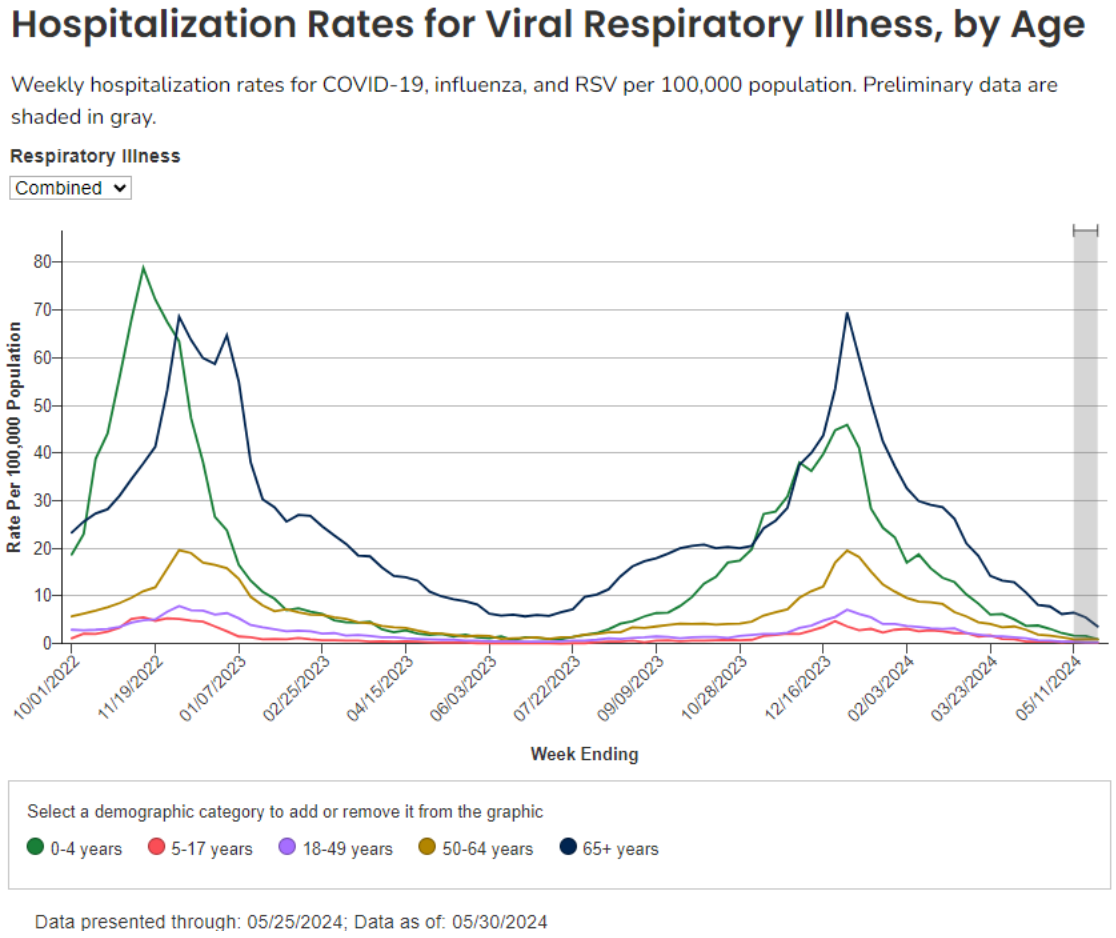
Burden of RSV vs. Influenza: Adults 65 Years and Older



McLaughlin, OFID 2022;9:ofac300. cdc.gov/flu/about/burden/2019-2020.html.

*Adapted from Dr. Angela Branche Presentation

Respiratory Pathogens: Hospitalization Rates by Age



[Groups Most Impacted—Hospitalizations (cdc.gov)]

COVID Infection Rates & Associated Hospitalization among Nursing Homes Residents

TABLE 2. Cumulative weekly rates of incident SARS-CoV-2 infection,* COVID-19–associated hospitalization† and percentage up to date with COVID-19 vaccination§ by facility among nursing home residents, by U.S. region¶ — National Healthcare Safety Network, United States, October 16, 2023–February 11, 2024

Return

Region	No. of facilities	Resident-weeks	No. of SARS-CoV-2 infections	Cumulative weekly rate of SARS-CoV-2 infection (95% CI)*,**	No. of COVID-19–associated hospitalizations	Cumulative weekly COVID-19–associated hospitalization rate†,** (95% CI)	% of residents up to date with COVID-19 vaccination (95% CI)††
Overall	**14,811**	**21,046,590**	**230,105**	**109.3 (108.9–109.8)**	**12,211**	**5.8 (5.7–5.9)**	**40.5 (40.4–40.6)**
Northeast	2,432	4,772,100	54,229	113.6 (112.7–114.6)	2,812	5.9 (5.7–6.1)	47.3 (47.1–47.6)
South	5,508	7,956,877	74,094	93.1 (92.5–93.8)	4,002	5.0 (4.9–5.2)	32.4 (32.2–32.5)
Midwest	4,774	5,619,718	73,134	130.1 (129.2–131.1)	3,782	6.7 (6.5–6.9)	44.7 (44.5–45.0)
Mountain	547	599,880	6,799	113.3 (110.7–116.1)	328	5.5 (4.9–6.1)	41.9 (41.2–42.5)
Pacific	1,550	2,098,015	21,849	104.1 (102.8–105.5)	1,287	6.1 (5.8–6.5)	44.1 (43.7–44.5)

Franklin D, Barbre K, Rowe TA, et al. COVID-19 Vaccination Coverage, and Rates of SARS-CoV-2 Infection and COVID-19–Associated Hospitalization Among Residents in Nursing Homes — National Healthcare Safety Network, United States, October 2023–February 2024. MMWR Morb Mortal Wkly Rep 2024;73:339–344. DOI: http://dx.doi.org/10.15585/mmwr.mm7315a

Surveillance in Nursing Homes

Benefits and Challenges

What is Public Heath Surveillance?

Ongoing systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event to reduce morbidity and mortality to improve health

Early Identification of Respiratory Pathogens

Impact of Surveillance on early identification

- Collecting data for respiratory tract infections (positive tests)
- Ability to see patterns and high case rates in real time

*Adapted from a slide by Dr. Angela Branche

Surveillance Methods

	House-wide (tracking all infections)	Targeted (tracking select infections)
PROS	• Comprehensive • Easier to do in a small facility, or highly specialized population	• Focuses your time and resources • Increases time to explore causes and implement prevention activities • More efficient use of time
CONS	• Very time consuming • Limits depth of data collection • Less time for data analysis and intervention	• Limits scope of infection surveillance • Needs ongoing review and updating • If too narrow, you may miss important events

NHSN LTC Component: Respiratory Pathogens Surveillance Modules

	COVID-19/Respiratory Pathogens Module	COVID-19/Respiratory Pathogens Vaccination
PROS	• Weekly collection of positive tests for residents (COVID-19, RSV, Influenza)	• Weekly collection of vaccination coverage for residents and HCP (COVID-19, RSV, Influenza) • Person level reporting is available
CONS	• Currently data collection is limited to COVID-19, RSV, and Influenza	• Currently data collection is limited to COVID-19, RSV, and Influenza

Surveillance & IPC Challenges – Resident Factors

- **Medically Complex Residents**
  - Identifying infection can be challenging
    - Atypical presentation
    - Often no “in-house” clinician
- **Resident and family expectations about infections**
- **Social isolation**
  - Stigma associated with isolation practices
  - Mental health and well being

Surveillance & IPC Challenges – Workforce Factors

- **Limited in-house clinicians**
- **Lack of IPC/surveillance expertise and training**
- **High rates of staff turnover**

These same factors were expressed during the post pilot focus groups for the *Respiratory Tract Infection Pilot Project*. More information in upcoming slides!

IPC infrastructure	N=990
>=2 additional responsibilities other than IPC	54%
Any specific training in IPC • CIC certification: 3%	39%
Received financial resources to obtain IP education	50%
Facility had >=3 people in IP position within past 3 years	**41%**

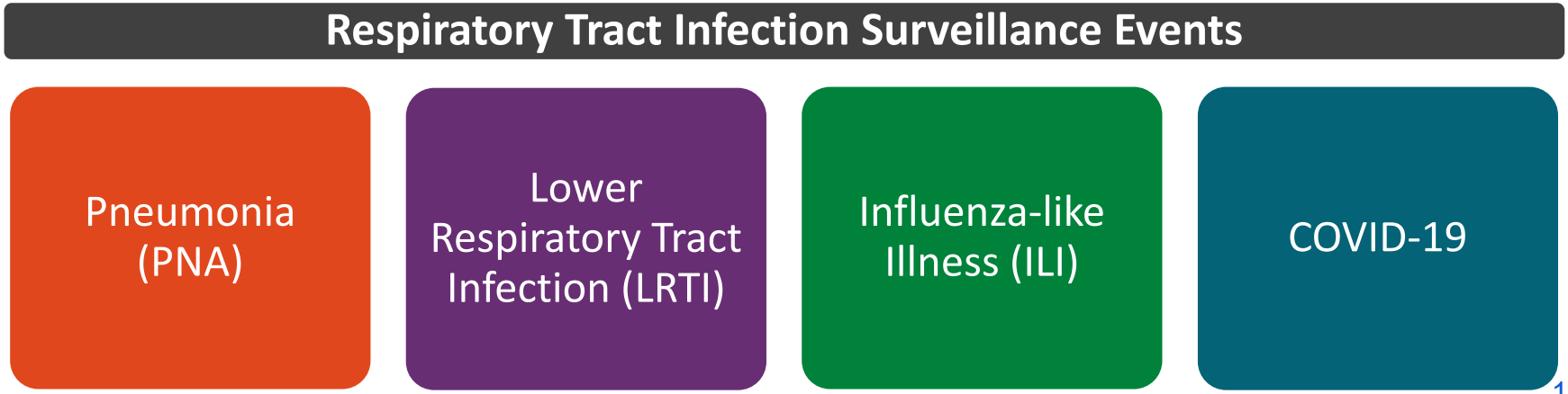
Herzig CTA et al. JAMDA 2016; 17: 85-88

Respiratory Tract Infection Surveillance Nursing Home Pilot Project

Overview and Results

Respiratory Tract Infection (RTI) Surveillance Pilot Project Overview

- Comprehensive Respiratory Tract Infection Surveillance in 24 LTCFs across 5 states in 2021-2022
  - Prospective (PNA, LRTI, ILI) and Retrospective (COVID-19)
- **Primary Objective:** Assess burden and feasibility of performing RTI surveillance in nursing homes



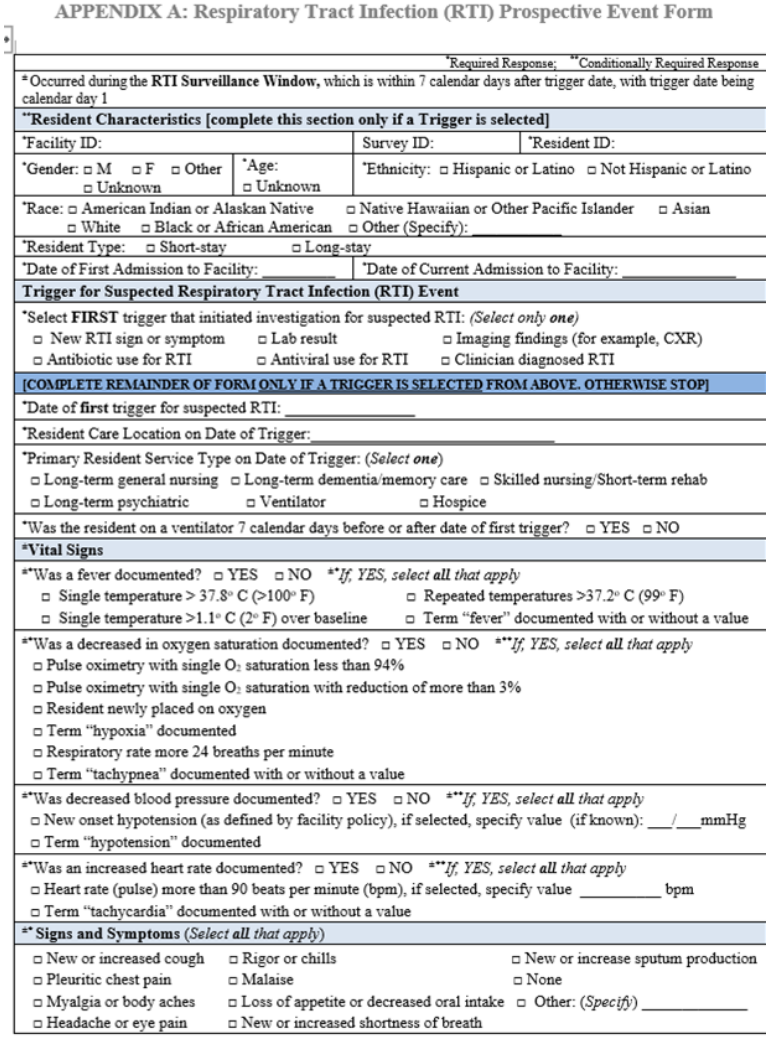
Respiratory Tract Infection (RTI) Surveillance Pilot Project Overview - cont.

- Project was conducted partnering with the Emerging Infections Program (EIP)
- After education was completed for EIP and participating facilities, data collection began
- Once data collection concluded, 2 focus group were held to gather feedback from facilities about their experience with the project

Respiratory Tract Infection Surveillance Events

RTI Pilot Project Form

- Trigger for Suspected RTI Event
- Clinical Criteria
- Laboratory Data
- Clinical Diagnosis
- Surveillance Definitions
- Treatment



APPENDIX A: Respiratory Tract Infection (RTI) Prospective Event Form

*Required Response; **Conditionally Required Response

Occurred during the **RTI Surveillance Window,** which is within 7 calendar days after trigger date, with trigger date being calendar day 1

****Resident Characteristics [complete this section only if a Trigger is selected]**

*Facility ID: | Survey ID: | *Resident ID:

*Gender: ☐ M ☐ F ☐ Other ☐ Unknown | *Age: ☐ Unknown | *Ethnicity: ☐ Hispanic or Latino ☐ Not Hispanic or Latino

*Race: ☐ American Indian or Alaskan Native ☐ Native Hawaiian or Other Pacific Islander ☐ Asian ☐ White ☐ Black or African American ☐ Other (Specify): _____

*Resident Type: ☐ Short-stay ☐ Long-stay

*Date of First Admission to Facility: _____ | *Date of Current Admission to Facility: _____

Trigger for Suspected Respiratory Tract Infection (RTI) Event

*Select **FIRST** trigger that initiated investigation for suspected RTI: *(Select only **one**)*

☐ New RTI sign or symptom ☐ Lab result ☐ Imaging findings (for example, CXR)
☐ Antibiotic use for RTI ☐ Antiviral use for RTI ☐ Clinician diagnosed RTI

[COMPLETE REMAINDER OF FORM ONLY IF A TRIGGER IS SELECTED FROM ABOVE. OTHERWISE STOP]

*Date of **first** trigger for suspected RTI: _____

*Resident Care Location on Date of Trigger: _____

*Primary Resident Service Type on Date of Trigger: (*Select **one***)

☐ Long-term general nursing ☐ Long-term dementia/memory care ☐ Skilled nursing/Short-term rehab
☐ Long-term psychiatric ☐ Ventilator ☐ Hospice

*Was the resident on a ventilator 7 calendar days before or after date of first trigger? ☐ YES ☐ NO

#Vital Signs

*#Was a fever documented? ☐ YES ☐ NO **If, YES, select **all** that apply*

☐ Single temperature > 37.8° C (>100° F) ☐ Repeated temperatures >37.2° C (99° F)
☐ Single temperature >1.1° C (2° F) over baseline ☐ Term "fever" documented with or without a value

*#Was a decreased in oxygen saturation documented? ☐ YES ☐ NO **If, YES, select **all** that apply*

☐ Pulse oximetry with single O_2 saturation less than 94%
☐ Pulse oximetry with single O_2 saturation with reduction of more than 3%
☐ Resident newly placed on oxygen
☐ Term "hypoxia" documented
☐ Respiratory rate more 24 breaths per minute
☐ Term "tachypnea" documented with or without a value

*#Was decreased blood pressure documented? ☐ YES ☐ NO **If, YES, select **all** that apply*

☐ New onset hypotension (as defined by facility policy), if selected, specify value (if known): ___/___mmHg
☐ Term "hypotension" documented

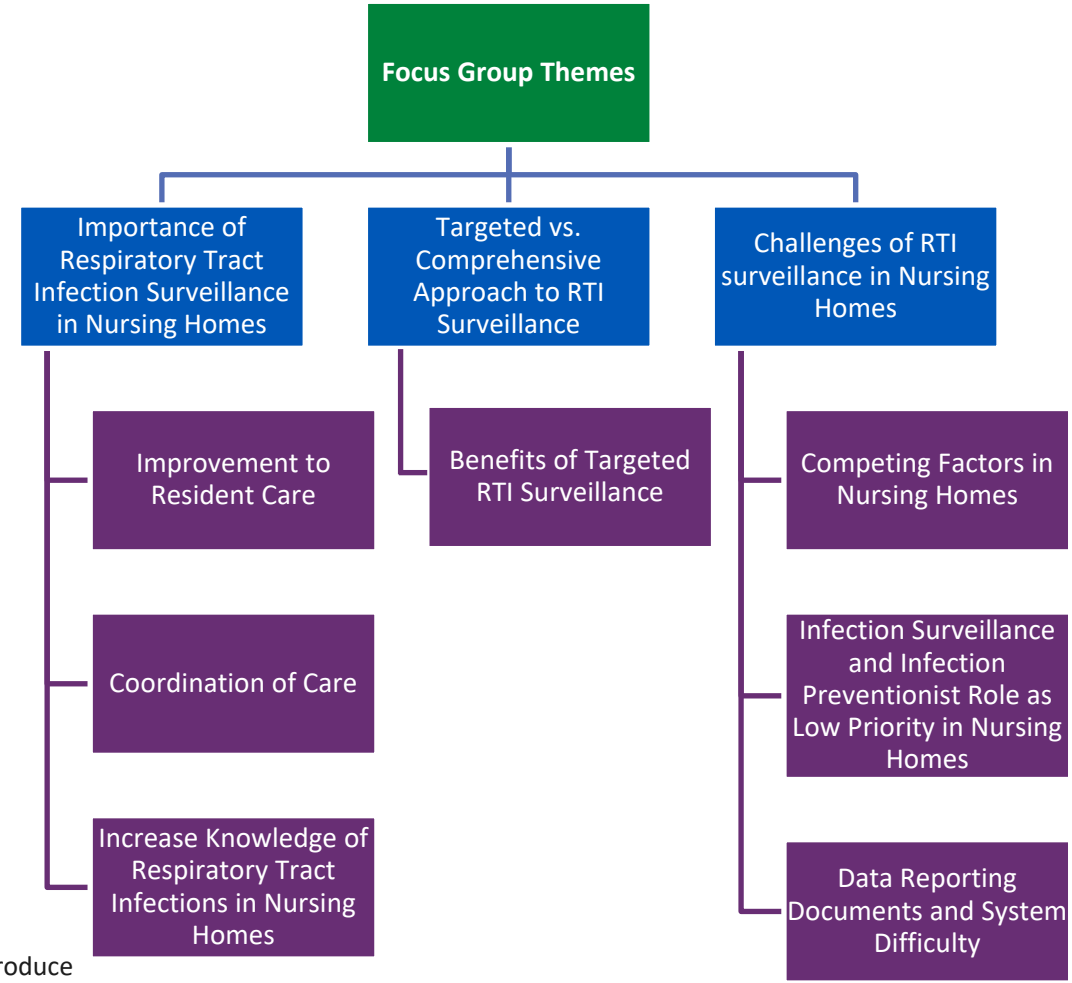
*#Was an increased heart rate documented? ☐ YES ☐ NO **If, YES, select **all** that apply*

☐ Heart rate (pulse) more than 90 beats per minute (bpm), if selected, specify value _____ bpm
☐ Term "tachycardia" documented with or without a value

***# Signs and Symptoms** (*Select **all** that apply*)

☐ New or increased cough ☐ Rigor or chills ☐ New or increase sputum production
☐ Pleuritic chest pain ☐ Malaise ☐ None
☐ Myalgia or body aches ☐ Loss of appetite or decreased oral intake ☐ Other: (*Specify*) _____
☐ Headache or eye pain ☐ New or increased shortness of breath

Prospective Data collection Form



RTI Pilot Project Focus Groups: Participant Feedback

Participant Feedback Quote

- **Value**
  - *"I think for us, it was very important to participate in this because a significant portion of our infections are respiratory related between COVID …… So getting a handle and a better definition is important for us so that we have something to benchmark against….."*
  - *"opportunity for me to kind of put my hands into the side of the community that I've never been in"*

RTI Pilot Project Focus Groups: Participant Feedback- cont.

Participant Feedback Quote

- **Challenges**
  - *"I think the biggest challenge, and it's going to be an ongoing challenge, is that in long-term care, IP was not a valuable role. The regulations have helped and it's growing, but we are still building infrastructure, and from the administrator standpoint, they do not know how much we need to do, how much we should be doing. RTI absolutely needs to be part of long-term care surveillance because it is a big issue and there's many components that can be addressed in it right down at the CNA level and up."*
  - *"But the biggest thing is that, as a culture of long-term care and as the administrator's culture, they do not have an idea how much work needs to go into it, how much work should go into it, and what the future benefits of it would be to be able to benchmark, compare, and make educated improvements because we've never had any of that component."*

RTI Pilot Project Focus Groups: Participant Feedback – cont.

Participant Feedback Quote

- **Coordination of Care**
  - *"I found the project actually helpful and keeping things moving forward and driving the surveillance and kind of helping pull antibiotic stewardship data together and the whole workflow and putting kind of -- putting COVID not as a separate problem but as a part of the whole. So I found it very helpful"*

Current and Future Respiratory Pathogens Surveillance in Nursing Homes

Considerations

Future Benefits and Considerations

- LTC employees indicate a need for increased availability of resources and training for surveillance
- There is a need to increase recognition and support for the IP role in LTCFs
  - Increases surveillance
  - Improves quality of reporting and data

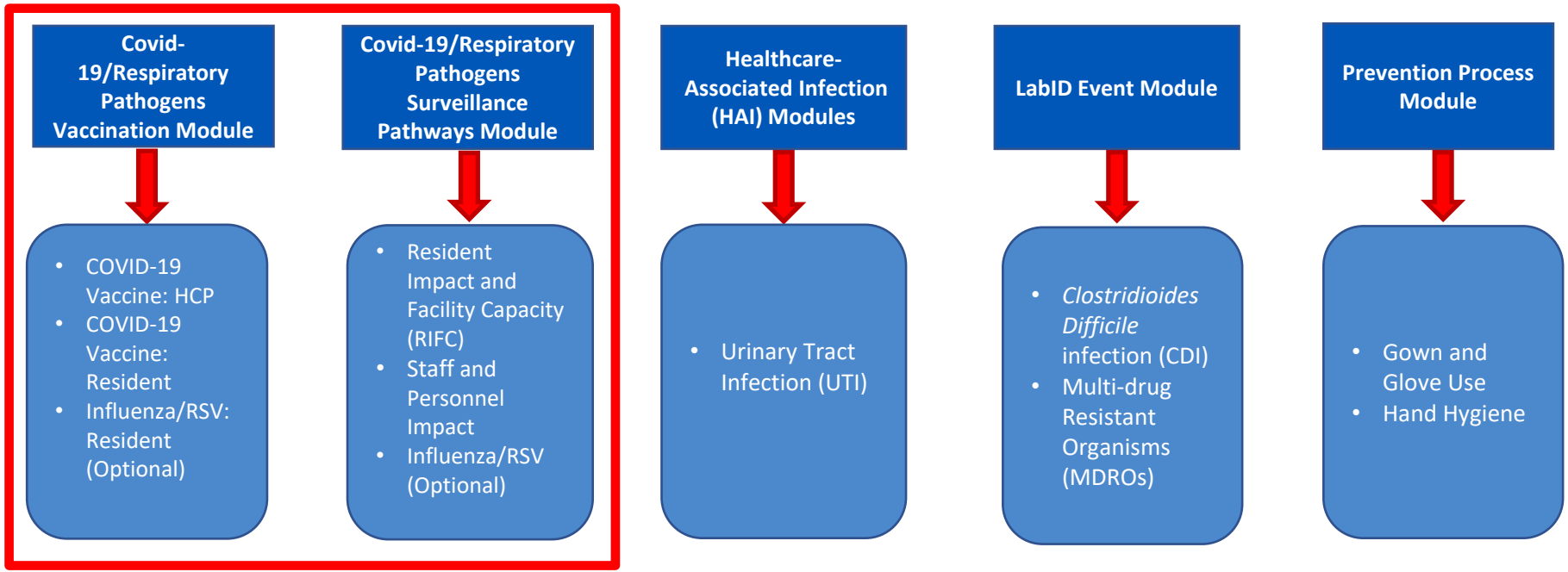
Increased surveillance and improved data quality can lend to early detection of outbreaks and the ability to implement intervention in a timelier manner.

Next Steps

Potential NHSN Reporting in the Future

- Target respiratory tract infection surveillance to:
  - Infections that have the potential to spread rapidly in nursing homes
  - Infections that have early prevention and control policies aimed at mitigating the spread of disease
  - COVID-19, RSV, and Influenza
- Streamlining is more time efficient and facilitates increased quality reporting

Current NHSN LTC Modules



Future Planning: NHSN LTC Modules

Covid-19/Respiratory Pathogens Vaccination Module

- COVID-19 Vaccine: HCP
- COVID-19 Vaccine: Resident
- Influenza/RSV: Resident (Optional)

Covid-19/Respiratory Pathogens Surveillance Pathways Module

- Resident Impact and Facility Capacity (RIFC)
- Staff and Personnel Impact
- Influenza/RSV (Optional)

Healthcare-Associated Infection (HAI) Modules

- Urinary Tract Infection (UTI)

LabID Event Module

- *Clostridioides Difficile* infection (CDI)
- Multi-drug Resistant Organisms (MDROs)

Prevention Process Module

- Gown and Glove Use
- Hand Hygiene

Respiratory Pathogens and Vaccinations Module

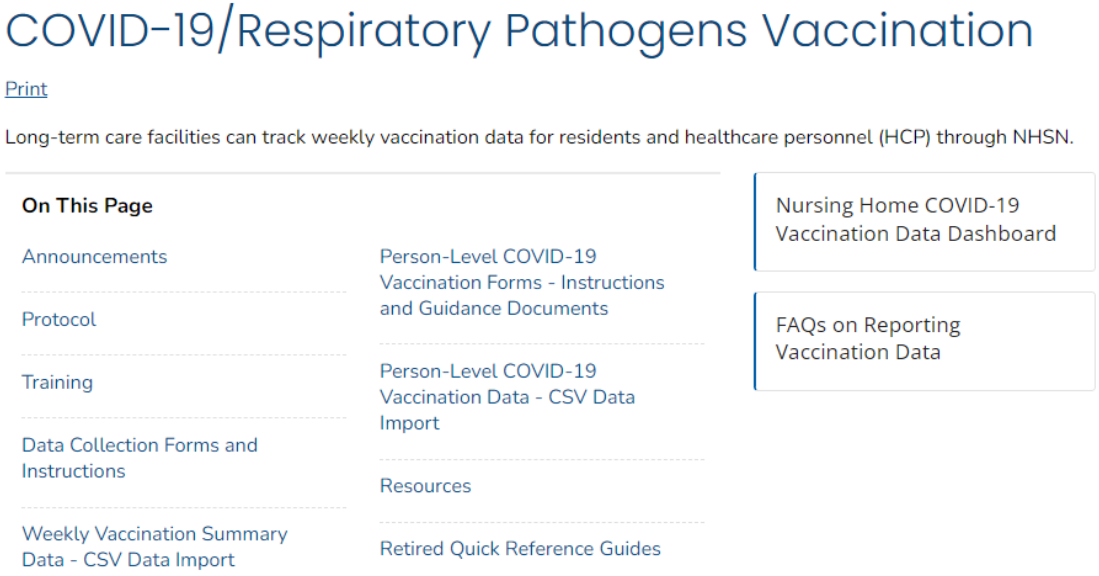
- Respiratory Pathogens Vaccine: HCP
- Respiratory Pathogens Vaccine, Case, and Hospitalizations: Resident

→ **Respiratory Pathogens and Vaccinations Module at the resident level**

Resources

Resource: LTCF COVID-19/Respiratory Pathogens Vaccinations Module

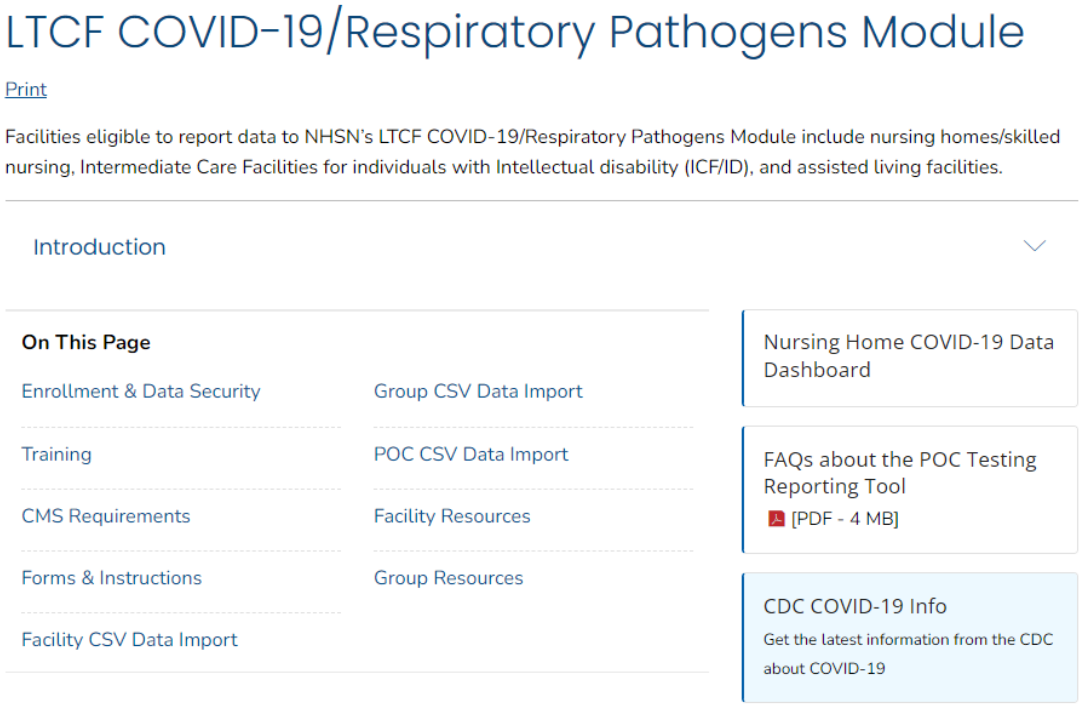
- Training Slides
- Quick Reference Guides
- FAQs
- Data Collection Forms
- .CSV files
- Person-Level Forms



LTCF | COVID-19 /Respiratory Pathogens Vaccination |NHSN | CDC

Resource: LTCF COVID-19/Respiratory Pathogens Module Case Reporting

- Data Collection Forms
- Table of Instructions
- .CSV templates
- .CSV file layout documents
- Training slides



[COVID-19/Respiratory Pathogens Module | LTCF | NHSN | CDC]

Questions or Need Help?

Please use **NHSN-ServiceNow** to submit questions to the NHSN Help Desk. The new portal can be accessed at **https://servicedesk.cdc.gov/nhsncsp** and should be used in place of nhsn@cdc.gov, nhsntrain@cdc.gov, and nhsndua@cdc.gov.

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the U.S. Centers for Disease Control and Prevention.