Duration of illness and clinical outcomes among patients with medically-attended respiratory infections in Central Wisconsin, USA

Poster P14.156

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Background

Influenza, respiratory syncytial virus (RSV), and SARS-CoV-2 lead to substantial healthcare utilization and quality of life impact. Differences between pathogen and patient characteristics in duration of illness have not been well characterized.

Objective

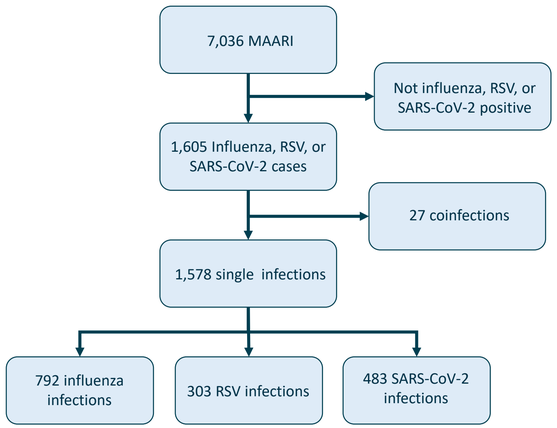
To compare duration of illness and clinical outcomes associated with influenza, RSV, and SARS-CoV-2 among patients with medically-attended acute respiratory illness (MAARI).

Methods

- Participants with MAARI were enrolled in outpatient and inpatient surveillance at Marshfield Clinic facilities from June 2024 through June 2026.
- Case Definition: an illness with new onset of ≤7 days duration with ≥1 of: cough, sputum production, nasal congestion, runny nose, sore throat, wheezing, or shortness of breath; or fever or "feverishness" in children aged <3 years.
- Respiratory specimens were collected and tested by molecular respiratory panel.
- Participants completed up to 4 weekly follow-up surveys after enrollment to assess illness impact and resolution.
- Time from illness onset to recovery calculated as days between self-reported dates of illness onset and illness resolution. If resolution date was not reported, observations were censored at the last survey (enrollment or follow-up) where the participant was known to be ill.
- Adjusted hazard ratios (aHR) comparing recovery rates by pathogen were estimated in Cox proportional hazards models.
- Chronic conditions were those that increase risk of severe COVID-19 and defined by EHR data.
- Clinical outcomes within 30 days of illness onset were assessed using EHR data.

Results

Figure 1. Study enrollment and analysis population.



7,036 participants with MAARI enrolled
11.3% had influenza infection without RSV or SARS-CoV-2
4.3% had RSV infection without influenza or SARS-CoV-2
6.9% had SARS-CoV-2 without influenza or RSV

Table 1. Participant characteristics by virus.

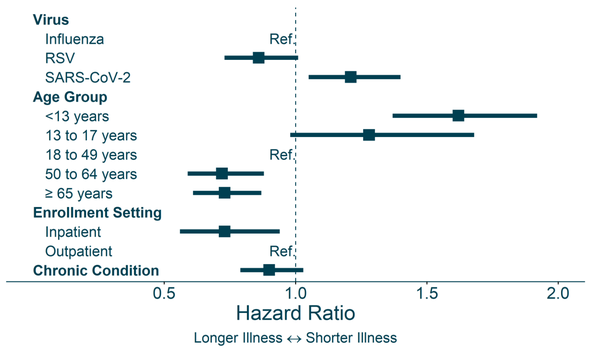
	Influenza No. (%)	RSV No. (%)	SARS-CoV-2 No. (%)
Age Group			
<5 years	86 (11)	116 (38)	44 (9)
5 – 17 years	219 (28)	54 (18)	37 (8)
18 – 49 years	285 (36)	44 (15)	158 (33)
50 – 64 years	92 (12)	43 (14)	89 (18)
≥65 years	110 (14)	46 (15)	155 (32)
Sex			
Female	429 (54)	183 (60)	286 (59)
Male	363 (46)	120 (40)	197 (41)
Non-Hispanic White	679 (86)	266 (88)	430 (89)
Chronic Conditions	437 (55)	157 (52)	323 (67)

RSV cases were younger and SARS-CoV-2 cases were older compared to influenza cases.

All participants completed an enrollment survey; 72% completed at least 1 follow-up survey. Unadjusted median (interquartile range) times from illness onset to recovery were (95% CI):

11 (8, 16) days for influenza (69% with observed recovery)
12 (9, 18) days for RSV (66% with observed recovery)
11 (7, 15) days for SARS-CoV-2 (67% with observed recovery)

Figure 2. Factors associated with illness duration.



Cox proportional hazards models adjusted for age group, enrollment setting, and chronic conditions. Participants without a recovery date were censored at the date of last contact.

SARS-CoV-2 infection, younger age, and outpatient enrollment were associated with shorter illness duration.

Table 2. Clinical outcomes by virus and enrollment setting.

	Influenza	RSV	SARS-CoV-2
Enrollment Setting			
Outpatient, No. (%)	746 (94)	258 (85)	464 (96)
Inpatient, No. (%)	46 (6)	45 (15)	19 (4)
Outpatient Enrollment			
Pneumonia Diagnosis, No. (%)	38 (5)	15 (6)	9 (2)
Inpatient Admission, No. (%)	24 (3)	12 (5)	8 (2)
Inpatient Enrollment + Admitted Outpatient Enrollments			
Pneumonia Diagnosis, No. (%)	25 (37)	24 (42)	10 (38)
ICU Admission, No. (%)	4 (6)	18 (32)	1 (4)
Length of Stay, days, Median (IQR)	3 (2, 5)	4 (3, 5)	4 (2, 5)

Pneumonia diagnoses and inpatient admission were uncommon among those enrolled in outpatient settings. Inpatient admission and pneumonia were most common in the oldest adults for all 3 pathogens, but proportions were similar in older adults and young children for RSV.

Pneumonia was diagnosed in about 1/3 of hospitalized patients with influenza, RSV, or SARS-CoV-2. Adults ≥65 accounted for 60% and 90% of influenza and SARS-CoV-2 inpatient pneumonia diagnoses, respectively. Children <5 years accounted for 63% of inpatient RSV pneumonia diagnoses.

ICU admission was higher among inpatients with RSV (32%) than for influenza or SARS-CoV-2. All influenza and SARS-CoV-2 ICU admissions were among adults; 72% of RSV ICU admissions were among children <5 years.

Conclusions

- Older adults had longer illness durations outcomes compared to children and younger adults and frequent severe outcomes, highlighting the importance of vaccination in this population.
- MAARI patients with influenza, RSV, and SARS-CoV-2 had lengthy recovery times, with SARS-CoV-2 resolving quicker than influenza or RSV after adjusting for age, enrollment setting, and chronic conditions.
- These findings highlight differences in illness trajectory and outcomes and may inform prevention and treatment strategies for pathogen-specific MAARI.

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