Results. Among 101,462 pneumonia admissions across 114 VA hospitals, 4% had a DRP detected on culture, 25% had an eDRIP ≥ 4, and 50% received broad-spectrum antibiotics. The Salt Lake City VA demonstrated slightly lower prevalence of eDRIP factors than the national population (table). Within the Salt Lake City VA, the EHR cohort and manually extracted Babbel cohort demonstrated similar prevalence of detected DRP's, DRIP ≥ 4, and 8 of 10 features involved in the DRIP score (table). The eDRIP identified fewer hospitalizations with poor functional status and residence in long-term facilities.

Conclusion. In a large population of veterans admitted for community-onset pneumonia, automated extraction of an eDRIP score from the EHR was promising, though in need of revision. While some extracted features had similar prevalence to manual review, others differed by a factor of 10 or more, which may reflect issues with data extraction. Further work is needed to optimize feature extraction and compare electronic to manual DRIP scores to determine its utility within the VA population.

Table: DRIP score factor prevalence and admission characteristics in the VA pneumonia cohorts and Webb cohort.

Characteristic	National VA EHR (n = 101,462)	SLC VA EHR only (n=863)	Babbel et al cohort * (n=184)	Webb et al cohort ** (n=200)
Admission characteristics		Values		
Mean (SD) age	71 (12)	72 (12)	73 (12)	65 (18)
Percent Male	97	97	99	52
Percent with HCAP criteria met	31	28	47	50
DRIP score factors		Prevalence		
Antibiotic use within previous 60 days	38	31	26	41
Residence in a long-term-care facility	3	0.0	10	21
Tube feeding	2	1.0	3	11
Prior infection with a DRP (1 yr)	1	0.3	2	14
Hospitalization in previous 60 days	27	22	17	35
Chronic pulmonary disease	47	48	45	43
Poor functional status	4	1.3	39	14
Gastric acid suppresion	45	48	52	50
Wound care	5	3.2	5	10
MRSA colonization (1 yr)	6	2.4	5	10
DRIP score "positive" (≥ 4)	25	20	24	40
Microbiology		Prevalence		
Any DRP detected	4.2	1.4	2	33
MRSA	2.1	0.6	Not reported	15
PAER	2.2	1	Not reported	10
Antibiotic administration		Prevalence		
Received anti-DRP coverage	50	43	16	Not reported

VA = Veteran's Affairs, EHR = electronic health record, SLC = Salt Lake City, SD = standard deviation, HCAP = health-care associated pneumonia, DRP = drug resistant pneumonia (MRSA or PAER), MRSA = methicillin-resistant Staphylococcus aureus, PAER = Pseudomonas aeruginosa
* Babbel D et. al. Application of the DRIP Score at a Veterans Affairs Hospital. Antimicrob Agents Chemother 2018; 62:3–5. ** Webb BJ et. al. Derivation and Multicenter Validation of the Drug Resistance in Pneumonia Clinical Prediction Score. Antimicrob Agents Chemother 2016; 60:2652–2663

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2219. Evaluation of Medicare Claims to Assess Burden of Pertussis Disease in Persons Aged ≥65 Years

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Background. Pertussis in adults may be underdiagnosed and underreported; there is limited information on the incidence and severity of pertussis in older adults. We compared pertussis diagnoses identified using medical claims data with national surveillance data to examine the use of claims data as a source for disease burden estimates.

Methods. We examined claims data in persons aged ≥65 years in the United States enrolled in Medicare A and B from January 1, 2008 to December 31, 2017. We identified provider-diagnosed pertussis through pertussis-related ICD9/ICD10 diagnostic codes (033.XX, 484.3, A37.XX). We examined whether any were categorized as inpatient claims and if there were claims for laboratory tests within 30 days of the initial pertussis claim. We estimated claims-based pertussis incidence using person-time for all Medicare A/B enrollees and compared incidence estimates to those reported by the Nationally Notifiable Diseases Surveillance System (NNDSS) for the same period and age group.

Results. Among 27,269,361 Medicare beneficiaries, 24,355 (0.09%) had claims with pertussis diagnostic codes. Of these, 1,875 (7.7%) had claims associated with inpatient hospitalizations; 7,964 (33%) had laboratory testing performed. The mean annual incidence of claims-based pertussis was 11.5/100,000 person-years (range: 9.37 to 14.3/100,000 person-years) (figure). In contrast, 6,722 pertussis cases in persons aged ≥65 years were reported to NNDSS. Among the 5,101 cases whose hospitalization status was known, 783 (15%) were hospitalized. Mean annual reported pertussis incidence was 1.5/100,000 person-years (0.67 cases to 2.63 cases/100,000 person-years) in this age group.

Conclusion. Many more Medicare beneficiaries with pertussis-related claims were identified than pertussis cases in persons ≥65 years reported to public health authorities, suggesting pertussis is likely diagnosed more frequently in older adults than national incidence estimates indicate. A smaller proportion of Medicare beneficiaries with pertussis-related claims were hospitalized compared with reported cases and a majority did not have laboratory testing performed. It is unknown what proportion of pertussis-associated claims represent true pertussis disease.

Pertussis Incidence in Persons Aged ≥65 years in the United States, 2008-2017
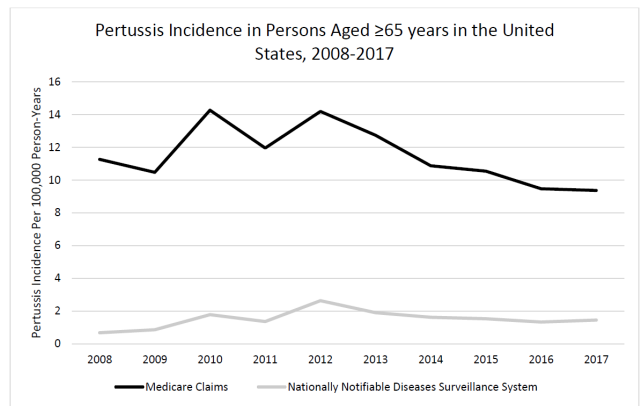
Disclosures. All authors: No reported disclosures.

2220. Comparative Incidence and Burden of Respiratory Viruses Associated with Hospitalization in Adults

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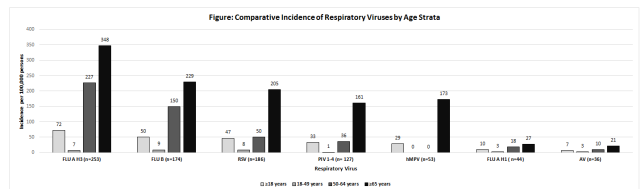
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Background. The population-based incidence and burden of community-onset non-influenza respiratory viruses associated with hospitalization in adults has not been systematically assessed.

Methods. On admission, patients with respiratory symptoms are tested for respiratory viruses by multiplex polymerase chain reaction (BioFire FilmArray Respiratory Panel) as per standard of care at our university teaching hospital (1160 beds). A retrospective study was performed to identify adults who had influenza, para-influenza virus (PIV), respiratory syncytial virus (RSV), human metapneumovirus (hMPV), or adenovirus (AV) detected within 3 days of admission from October 2017 to October 2018. To calculate population-based incidence per 100,000 persons (using 2010 US Census data), the number of cases was adjusted by the hospital's percent market share for zip codes as determined by New York State's all payer data reporting system. To improve the incidence estimate's reliability, only cases living in zip codes for which the hospital had ≥ 60% market share were included. We compared median length of stay (LOS), ICU admission, and in-hospital mortality associated with each virus.

Results. Influenza A (H3) had the highest overall incidence followed by Influenza B and RSV. For each virus, the highest incidence was observed in adults ≥ 65 years old (figure). Overall, 12.9% of cases were hospitalized in the ICU and 4.7% died during hospitalization (table). AV, hMPV, and RSV were associated with the longest LOS. AV, PIV, and RSV were associated with the largest proportion of ICU admissions and deaths.

Conclusion. While Influenza A (H3) and Influenza B were associated with the highest population-based incidence, non-influenza respiratory viruses caused substantial morbidity in older adults. Compared with influenza viruses, AV, PIV, and RSV were associated with greater severity determined by ICU admissions and death.

Figure: Comparative Incidence of Respiratory Viruses by Age Strata

Table: LOS, ICU admission, and in-hospital mortality by respiratory virus

Virus	Median LOS days (IQR)	ICU Admission (n, %)	Deaths (n, %)
Flu A (H3)	3.8 (2.2, 7.3)	21 (8.3%)	9 (3.6%)
Flu B	4.1 (2.2, 7.4)	12 (6.9%)	5 (2.9%)
RSV	5.3 (3.1, 11.0)	33 (17.7%)	12 (6.5%)
PIV	4.9, (2.3, 8.8)	24 (18.9%)	8 (6.3%)
hMPV	5.9, (2.1, 9.3)	6 (11.3%)	3 (5.7%)
Flu A (H1)	3.2, (1.9, 7.0)	4 (9.1%)	1 (2.3%)
AV	6.5, (3.0, 11.2)	10 (27.8%)	4 (11.1%)

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