MedImmune: Investigator, Research grant. Vaxinnate: Safety Board, none. Seqirus: Safety Board, none.

731. Investigating Clinical Factors Contributing to Continued Antibiotic Therapy in Patients with Viral Upper Respiratory Tract Infections

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Background. It has previously been demonstrated that upwards of 50% of patients presenting to Emergency Departments with symptoms of an upper respiratory tract infection receive empirical antibiotics, and that even with a demonstrated viral infection, 70% of these patients are continued on antibiotics. However, the clinical and biochemical factors contributing to this continued therapy is unclear. This study assessed parameters that may impact antibiotic prescriptions in patients with a confirmed viral respiratory infection.

Methods. Positive respiratory virus PCRs (RVPs) from nasopharyngeal aspirates performed on adult patients presenting to the McGill University Health Centre Emergency Departments and outpatient clinics over a period of 10 days during the peak of influenza season were included. For each patient, antibiotic administration pre- and post-PCR result were determined, as were the presence of leukocytosis, neutrophilia, an abnormal chest X-ray, and sepsis. Each parameter's effect on antibiotic use was then determined.

Results. During the study period, there were 123 positive RVPs included. These consisted of 34% Flu A, 43% Flu B, and 23% were a mixture of other common respiratory viruses. Antibiotics were administered in 38% of patients before the test was resulted and continued in 79% of these patients afterwards. There was no correlation between the presence of leukocytosis, neutrophilia, signs of sepsis or abnormalities on chest X-ray and continued antibiotic therapy.

Conclusion. Despite identification of a respiratory virus infection, patients are routinely treated with antibiotics even without significant evidence of a bacterial process. The impact of testing for respiratory viruses in limiting antibiotic therapy could be improved by education and direct antibiotic stewardship interventions in this population.

Disclosures. **All authors:** No reported disclosures.

732. Description of Diagnoses and Antibiotic Management of Otitis Media and Otitis Externa in Adults

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Background. Otitis diagnoses include acute otitis media (AOM), otitis media with effusion (OME), and acute otitis externa (AOE). AOM and OME occur primarily in children, whereas AOE occurs with similar frequency in children and adults. Treatment with amoxicillin or close observation without antibiotics is recommended for pediatric AOM, and oral antibiotics are not routinely recommended to treat OME or uncomplicated AOE. Data on otitis diagnoses in adults is limited. This study's purpose is to characterize the incidence and antibiotic management of otitis diagnoses in adults.

Methods. A retrospective cohort of ambulatory veterans who presented at one of six VA Medical Centers during years 2014–2016 with an ICD-9 or -10 code for AOM, OME, and AOE diagnoses was developed. Data extracted included demographics, vital signs, diagnoses, and antibiotic prescriptions. Incident density rates for adult AOM, OME, and AOE were calculated and compared with rates for acute rhinosinusitis. Antibiotic prescribing rates were calculated.

Results. Of 4,759 otitis visits identified, the most frequent diagnoses included AOM (38%), OME (25%), and AOE (34%). A single otitis diagnosis was coded in 95.6% of visits and 13.0% had co-diagnosis of another acute respiratory infection (ARI). The incidence density (±95% confidence interval) was 5.4 (5.2, 5.7), 3.6 (3.5, 3.9), and 4.9 (4.7, 5.2) cases per 1,000 patient-years for AOM, OME, and AOE, respectively. For comparison, the incidence density of rhinosinusitis was 16.6 (16.2, 17.0) cases per 1,000 patient-years. Oral antibiotics were prescribed in 48% of visits: AOM (50%), OME (49%), and AOE (47%). Topical antibiotics were prescribed in 32% of AOE visits. The most common oral and otic antibiotics prescribed were amoxicillin/clavulanate (36%), amoxicillin (28%), azithromycin (11%), and hydrocortisone/neomycin/polymyxin (65%), respectively.

Conclusion. Otitis diagnoses in adults were common independent of ARI co-diagnoses, but less frequent than rhinosinusitis. Almost half of the patients received an oral antibiotic including those with AOE and OME, indicating a possible focus for antibiotic stewardship programs. Studies to evaluate diagnostic accuracy and treatment of otitis diagnoses in adults are needed.

Disclosures. **All authors:** No reported disclosures.

733. Incidence and Evaluation of the Change in Functional Status Associated with Respiratory Syncytial Virus Infection in Hospitalized Older Adults

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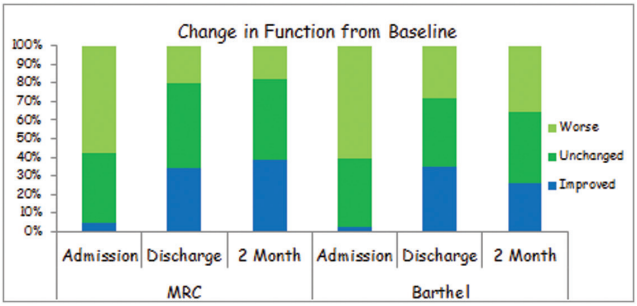
Background. Respiratory Syncytial Virus (RSV) causes severe respiratory illnesses in infants and older adults. Mortality disproportionately affects the elderly, can exacerbate chronic cardiopulmonary conditions and may result in loss of function. The purpose of this study was to determine the incidence of RSV infection in hospitalized adults and evaluate functional changes associated with RSV hospitalization in older adults ≥60 years.

Methods. Adults ≥18 years of age admitted with an acute respiratory infection (ARI) or exacerbation of chronic cardiopulmonary disease (e.g. CHF, COPD, asthma) preceded by an ARI within 14 days were screened. Subjects were included if hospitalized for ≥24 hours with laboratory confirmed RSV and residing in two catchment areas (Rochester, NY and New York, NY). Illness history, comorbidities and demographic characteristics were collected at enrollment. Enrolled subjects ≥60 years underwent functional status evaluation retrospectively 2 weeks prior to hospitalization, at enrollment, discharge and 2 months using the Lawton–Brody Instrumental Activity of Daily Living (IADL) Scale (0–8), Barthel (ADL) Index (0–100), MRC Breathlessness score (1–5) and Mini-Cog instrument.

Results. From October 2017 to March 2018, 2,883 adults hospitalized with ARI were tested and 322 (11%) positive for RSV. Seventy-two adults ≥60 years underwent functional assessment. Mean age was 75 years, 53% were female and 58% demonstrated impaired cognition on admission. Five subjects died during hospitalization and one prior to 2-month follow-up. Interim analysis of 2-month functional assessment was available for 39 subjects. RSV illness resulted in acute functional loss in almost all patients. Although there were no statistically significant differences between mean pre-hospitalization and 2-month functional scores, IADL (6.7 vs. 6.0, $P = 0.27$), ADL (90.4 vs. 88.5, $P = 0.67$) and MRC (2.96 vs. 2.7, $P = 0.57$), 23% of subjects required a higher level of care at discharge. Additionally, RSV hospitalization resulted in decreased ADL scores in 36% of subjects and worsening respiratory function in 18% assessed at 2 months (figure).



Conclusion. Older adults hospitalized with RSV infection demonstrate acute functional decline which may result in prolonged loss of function in some patients.

Disclosures. **A. Branche**, Merck: Investigator, Grant recipient and Research grant. **E. Granieri**, Merck: Investigator, Research grant. **E. Walsh**, Merck: Investigator, Research grant. **L. Finelli**, Merck: Employee, Salary. **A. R. Falsey**, sanofi pasteur: Consultant and Grant Investigator, Consulting fee and Research grant. Gilead: Consultant, Consulting fee. Merck Sharpe and Dome: Investigator, Grant recipient. Janssen Pharmacueticals: Investigator, Grant recipient. Pfizer: Consultant, Research grant. Novavax: Consultant, none. **A. Barrett**, Merck: Investigator, Research support. **L. Saiman**, Merck: Investigator, Research grant.

734. Post-exposure Management of *Influenza* in Roommates at a Tertiary Care Cancer Center

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Background. Post-exposure antiviral chemoprophylaxis with neuraminidase inhibitors (NI) is 80% effective in preventing influenza in household members. In hospital settings, management of exposed roommates has not been specifically addressed in clinical studies. Some experts recommend immunocompromised individuals exposed to influenza to receive therapeutic doses of NI as a preventive measure regardless of duration of exposure. The objective of this study was to determine optimal intervention in high-risk patients exposed to influenza based on duration of spatial overlap and viral testing at the time exposure is recognized.

Methods. MSK is a 473-bed tertiary care cancer center. Infection Control performs contact investigation for cases diagnosed with influenza including baseline testing of exposed roommates using a multiplex PCR test. The primary team is notified of exposures and makes recommendations regarding prophylaxis. Retrospective review of patients considered exposed to influenza during three seasons was performed. Information on spatial overlap, prophylaxis, and viral testing was extracted.

Results. Out of 64 patients exposed, five (8%) developed influenza (table). Baseline testing was done in 51 (80%): none with overlap of <4 days were symptomatic or tested positive; 2/12 with overlap >4 days tested positive. Attack rate for those with exposure time <4 days who did not receive prophylaxis was 2.6%. No breakthrough infection occurred in the prophylaxis group. Post exposure follow-up revealed two more cases for those overlapping >4 days; a single case of breakthrough infection developed at 7 days, resistance testing was not performed, and patient responded to therapeutic doses of NI without persistent shedding.

Conclusion. Duration of overlap in semi-private rooms correlates with secondary cases of influenza. Prophylactic doses of NI are safe and effective for asymptomatic individuals with exposure <4 days to index case. For patients with spatial overlap >4 days, baseline testing is recommended to recognize cases early and interrupt nosocomial transmission.

Overlap Duration, days	Exposed Number	Prophylaxis Administered	Tested at Baseline	Attack Rate % (Prophylaxis Group)	Attack Rate % (No Prophylaxis Group)
<2	34	9 (26%)	28 (82%)	0	4% (1)
2–4	18	5 (28%)	15 (83%)	0	0
>4	12	6 (50%)	8 (67%)	16% (1)	50% (3)

Disclosures. **All authors:** No reported disclosures.

735. Severity and Healthcare Costs of Respiratory Syncytial Virus Hospitalizations in US Preterm Infants Born at 29–34 Weeks Gestation: 2014–2016

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Background. In 2014, the American Academy of Pediatrics recommended against the use of respiratory syncytial virus (RSV) immunoprophylaxis in infants 29–34 weeks gestational age (wGA) at birth without chronic lung disease/bronchopulmonary dysplasia (CLD/BPD) or congenital heart disease (CHD). To inform discussions of the clinical and economic value of RSV immunoprophylaxis in these infants, we compared RSV hospitalization (RSVH) severity and costs incurred by infants hospitalized from 2014–2016 at <6 months chronologic age (CA) for two groups: 29–34 wGA infants without CLD/BPD or CHD and term infants (≥37 wGA) without major health problems.

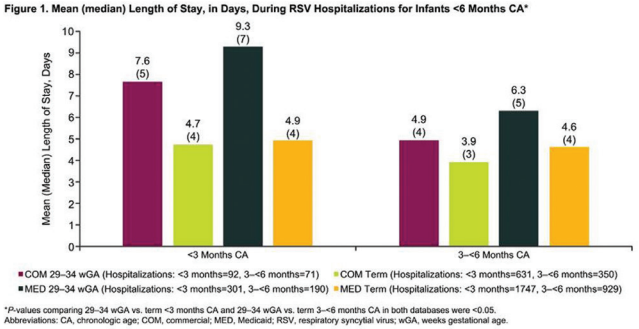
Methods. Births were identified in the MarketScan Commercial (COM) and Multistate Medicaid (MED) databases. Term and 29–34 wGA infants without CLD/BPD or CHD were selected using DRG and ICD-9/10-CM diagnosis codes. RSVH occurring from Julu 1, 2014 to June 30, 2016 while infants were <6 months CA (the period of highest RSVH incidence) were identified by ICD-9/10-CM diagnosis codes. Severity measures were length of stay (LOS) in days, intensive care unit (ICU) admissions, and healthcare costs (paid amounts on reimbursed hospital claims in 2016 US$). Comparisons between term and 29–34 wGA infants were made with *t*-tests and chi-squared tests.

Results. There were 1,114 RSVH in the COM data and 3,167 RSVH in the MED data during the study period. Mean LOS was longer for 29–34 wGA infants than term infants for each age category ($P < 0.05$) and tended to be longer for MED infants vs. COM infants (Figure 1). Thirty-eight percent of COM 29–34 wGA infants and 52% of MED 29–34 wGA infants hospitalized for RSV at <3 months CA were admitted to the ICU (Figure 2). RSVH costs for 29–34 wGA infants were greater than term RSVH costs for each age category ($P < 0.05$) and were greatest among 29–34 wGA infants hospitalized at <3 months CA: $41,104 for 29–34 wGA COM infants and $24,049 for 29–34 wGA MED infants (Figure 3).

Conclusion. RSVH severity and costs were significantly higher for 29–34 wGA infants without CLD/BPD or CHD relative to term infants. Infants hospitalized at <3 months CA experienced the most severe hospitalizations and incurred the highest costs.

This study was funded by AstraZeneca.

Figure 1. Mean (median) Length of Stay, in Days, During RSV Hospitalizations for Infants <6 Months CA*

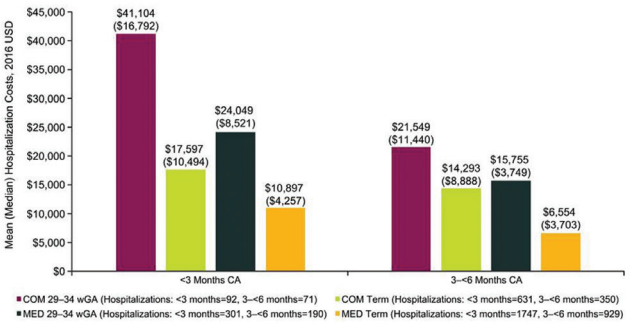


*P-values comparing 29–34 wGA vs. term <3 months CA and 29–34 wGA vs. term 3–<6 months CA in both databases were <0.05.
Abbreviations: CA, chronologic age; COM, commercial; MED, Medicaid; RSV, respiratory syncytial virus; wGA, weeks gestational age.

Figure 2. Proportion of Infants Admitted to the ICU During RSV Hospitalizations for Infants <6 Months CA*

*P-values comparing 29–34 wGA vs. term <3 months CA in both databases and 29–34 wGA vs. term 3–<6 months CA in MED were <0.01. The *P*-value comparing 29–34 wGA vs. term 3–<6 months CA in COM was 0.095.
Abbreviations: CA, chronologic age; COM, commercial; ICU, intensive care unit; MED, Medicaid; RSV, respiratory syncytial virus; wGA, weeks gestational age.

Figure 3. Mean (median) Healthcare Costs, in 2016 US$, for RSV Hospitalizations for Infants <6 Months CA*



*P-values comparing 29–34 wGA vs. term <3 months CA and 29–34 wGA vs. term 3–<6 months CA in both databases were <0.05.
Abbreviations: CA, chronologic age; COM, commercial; MED, Medicaid; RSV, respiratory syncytial virus; USD, US dollars; wGA, weeks gestational age.

Disclosures. **M. Goldstein**, AstraZeneca/MedImmune: Consultant, Research grant and Research support. **L. R. Krilov**, AstraZeneca/MedImmune: Consultant, Research grant and Research support. **J. Fergie**, AstraZeneca/MedImmune: Consultant and Speaker's Bureau, Research grant and Research support. **C. S. Ambrose**, AstraZeneca: Employee, Salary and Stocks. **S. Wade**, Wade Outcomes Research and Consulting: Employee, Salary. **A. Kong**, Truven Health Analytics, an IBM Company: Employee, Salary. **L. Brannman**, AstraZeneca: Employee, Salary and Stocks.

736. Incidence and Etiology of Community-Acquired Pneumonia Requiring Hospitalization Among American Indian/Alaskan Native Adults

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Background. A leading infectious cause of hospitalization among adults in the United States is community-acquired pneumonia (CAP). The etiology and incidence of CAP in American Indians/Alaskan Natives (AI/AN) has not been described.

Methods. We conducted a retrospective study by reviewing the medical records of all AI/AN patients 18 years or older admitted to W.W. Hastings Hospital in Tahlequah, Oklahoma with a diagnosis of a respiratory infection from January 1, 2016 to December 31, 2016. Only patients with a radiographically confirmed CAP were included and those with a recent hospitalization or immunosuppressed were excluded. Patient demographics, comorbidities and results of molecular tests, antigen detection, high quality sputum culture and blood culture were reviewed. Population-based incidence rates of CAP requiring hospitalization were calculated according to age.

Results. From January 2016 through December 2016, 763 patients were admitted with a diagnosis of a respiratory infection, of which 193 (25%) met the inclusion criteria. Of this group, 103 (53%) had at least one pathogen detected: one or more viruses were detected in 47 (24%), one or more bacteria were detected in 63 (33%). The most common pathogens were *Streptococcus pneumoniae* (12% of patients), rhinovirus/enterovirus (11% of patients), respiratory syncytial virus (5% of patients), legionella pneumophila (4% of patients), and human metapneumovirus (4% of patients). The annual incidence of CAP was 13.6 cases (95% confidence interval, 11.9, 15.7) per 10,000 adults, with the highest incidence among adults ages 65–79 (43 cases per 10,000 adults) and those 80 years of age or older (102 cases per 10,000 adults). Seventy-five percent of patients had an underlying medical condition, 47% had diabetes mellitus (DM), followed by chronic obstructive lung disease (38%) and chronic heart disease (32%).

Conclusion. In this AI/AN population, a respiratory pathogen was identified in 53% of the cases despite the use of cutting edge diagnostic tests in most patients. Bacteria were detected more often than viruses. Compared with recent publications of CAP affecting non-Hispanic whites, non-Hispanic blacks and Hispanics, the population described in this study was older and had higher prevalence of DM.

Disclosures. **All authors:** No reported disclosures.