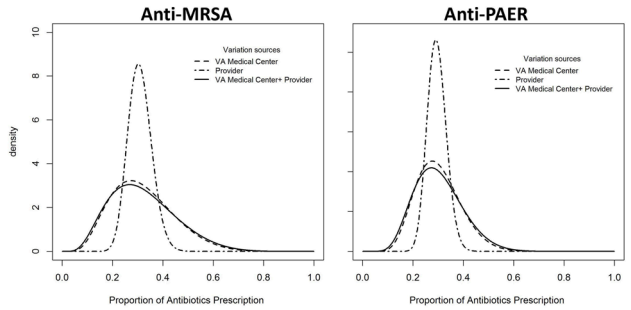
variation further, we conducted (1) quantitative analyses of facility-level versus provider-level variation, and (2) qualitative interviews with emergency department providers.

Figure 1. Variation in empiric use of a) Anti-MRSA and b) anti-PAER among 215,803 Veterans hospitalized for pneumonia across 117 VA medical centers, 2006-2016. Variation was nearly completely explained by facility-level variation for both antibiotic decisions.



Methods. For each hospitalization, we predicted the probability of anti-MRSA and anti-PAER use by fitting machine learning models from 75 patient variables. We estimated the predicted risk of anti-MRSA/anti-PAER and facility features among patients hospitalized at upper versus lower 10% facilities after controlling for patient characteristics. We plotted density curves with the variance attributed to facility and provider alone and together. We then interviewed 16 emergency department (ED) providers at 8 VA facilities using a cognitive task analysis.

Results. Among 215,803 hospitalizations at 128 VA facilities 1/1/2006-12/31/2016, 31% received empiric anti-MRSA and 29% received empiric anti-PAER antibiotics. Hospitalizations at upper-decile facilities had a 50% and 45% adjusted probability of receiving anti-MRSA and anti-PAER antibiotics, compared to 15% and 20% in the lower-decile facilities. Facility features most predictive of anti-MRSA or anti-PAER use after adjusting for patient characteristics were complexity level (33% and 30% in high versus 15% and 20% in low complexity facilities). Variation in empiric anti-MRSA and anti-PAER use was almost completely at the facility level (**Figure 1**). Providers reported social influences from the opinions of other providers during decision-making and a high trust in guidelines and order sets. Consideration of pathogens was not mentioned by any providers at high-prescribing facilities.

Conclusion. Variation in empiric use of anti-MRSA and anti-PAER antibiotics in pneumonia clustered nearly completely at the facility level. ED providers report social influences during decision-making and a high trust in guidelines and order sets. Guidelines, order sets, and facility-level clinical champions that promote consideration of pathogens could be important strategies for de-adoption.

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

1311. Population-based Mortality Rates of Clinical Syndromes Potentially Associated with Pneumococcal Disease in Argentina from 2008-2018

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Session: P-73. Respiratory Infections - Bacterial

Background. In 2012, the 13-valent conjugate vaccine (PCV13) for children < 2 years was introduced in the Argentinean National Immunization Program (NIP) with sustained coverage >80% since then. The 23-valent polysaccharide vaccine (PPSV23) has been available for ≥65 years and at-risk populations in NIP since 2001 and in 2017, it was replaced by the sequential regimen(PCV13/PPSV23). The 2013 National Survey of Risk Factors estimated a coverage of 23.1% for ≥65 years and 16.2% for at-risk populations. We evaluated mortality rates of clinical syndromes potentially associated with pneumococcal disease (PPD)in a 10-year period by age groups, before (2008-2011) and after childhood PCV introduction (2013-2018) in the NIP in Argentina.

Methods. All-age death cases related to clinical syndromes PPD were obtained from Dirección de Estadísticas e Información de la Salud between 2008-2018. ICD-10 codes were used to define PPD: pneumonia (J13-J18) and invasive disease (sepsis – A.40.*, A41.*, A49.*; meningitis – G00.*, G03.9; and other - M00.1, J86.*, J90-J91, B95.3). The yearly mortality rate was calculated per 100,000 people, estimated by the national census, and stratified by age groups. The percentage of change was the difference between the average rate in the pre (2008-2011) and post-vaccination (2013-2018) periods.

Results. In total, 65,947 deaths due to pneumonia (56.7%) and invasive disease (43.3%) occurred from 2008 and 2018. In the younger age groups (< 1, 1-4, 5-17), a 44% reduction was seen in both invasive disease and pneumonia compared to pre-childhood vaccination period, mainly in infants (from 22.2 to 10.2 per 100,000 people). In adult population, a less pronounced reduction was noted in mortality by invasive disease, however an inverse trend occurred in pneumonia in the age groups 18-49 years, 50-59 years, and 60-69 years, from 1.9 to 2.1 (7%), 9.3 to 10.2 (10%) and 18.3 to 19.2 (5%) per 100,00 people, respectively (Fig 1).

Mortality rate change (%) pre and post- pneumococcal childhood introduction

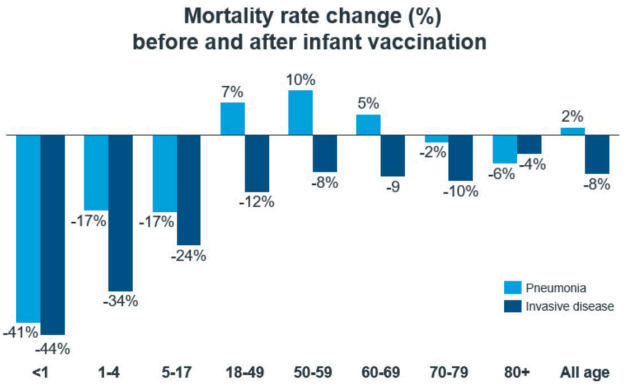

Figure 1. Mortality rate change (%) of clinical syndromes potentially associated with pneumococcal disease before (2008-2011) and after infant vaccination introduction (2013-2018) in Argentina.

Conclusion. Mortality rates declined mostly for infants, and despite the differences observed for the older population, it remains significant. Evaluation of mortality trends are key for decision-making process on current and future prevention strategies using pneumococcal vaccines.

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1312. Evaluation of a Multiplexed PCR Pneumonia Panel in a Tertiary Care Medical Center

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Session: P-73. Respiratory Infections - Bacterial

Background. Syndromic PCR testing for lower respiratory pathogens may give rapid, actionable results to aid in management decisions for suspected pneumonia cases. We sought to evaluate the performance of a multiplexed PCR pneumonia panel compared to routine microbiologic work-up in a tertiary care patient population.

Methods. Sputum and bronchoalveolar lavage (BAL) samples from Keck Medical Center (Los Angeles, CA) inpatients submitted for clinical microbiology work-up Dec 2019-Jun 2020 were tested by a multiplexed PCR panel (FilmArray Pneumonia Panel, BioFire Diagnostics). We compared panel results for typical bacterial pathogens to those of quantitative culture and susceptibility testing. We retrospectively determined the incidence of non-panel respiratory pathogens as detected by standard of care tests in this patient cohort.

Results. 68 of 180 samples yielded 80 positive bacterial PCR results: 34 were detected by both PCR panel and culture and 46 by PCR panel only, yielding a sensitivity of 100% (34/34) for pathogens detected and specificity of 73.1% (114/156) among negative cultures (normal flora or no growth). Concordant results had PCR Bin values ≥10^5 copies/mL whereas all 18 targets detected at 10^4 copies/mL were culture-negative. Among resistance gene targets, the panel detected 12 MRSA specimens, of which MRSA grew in only 4 cultures; E. coli and CTX-M in 1 specimen from which grew normal flora; and multiple gram-negative organisms and KPC in 1 specimen from which culture isolated carbapenem-resistant P. aeruginosa. Quantitation from positive BAL cultures (n=25) correlated weakly with PCR Bin values (R-squared=0.17). Non-PCR panel pathogens were detected in 22 of 180 (12.2%) specimens through routine methods (16 molds, 3 AFB, and 3 non-fermenter gram-negative bacteria).

Conclusion. The pneumonia panel had excellent sensitivity for its target bacterial pathogens, but results were often positive in negative cultures. This could be due to antecedent antibiotic therapy, differences in reporting threshold versus culture, or inability of PCR to discern results from normal flora. Non-panel pathogens were detected in a significant proportion in our population. The pneumonia panel should be implemented and interpreted carefully with consideration of antimicrobial stewardship.

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

1313. Disease Burden and Real-world Clinical Practice for the Treatment of Hospital-Acquired Bacterial Pneumonia Using a Japanese Large-scale Claims Database: A Retrospective Cohort Study

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Session: P-73. Respiratory Infections - Bacterial

Background. With an aging population and increasing healthcare utilization, the frequency of hospital-acquired pneumonia (HAP) is expected to increase. Since

HAP is life threatening, appropriate diagnosis and treatment are required; however, large-scale Japanese data focusing on patient profiles and treatment patterns is lacking.

Methods. The demographics and treatment patterns of HAP were examined using a large-scale Japanese claims database from Jan. 2016 to Apr. 2018. The HAP population included patients who received injection antibiotics ≧3 consecutive days after admission, but not within 2 days after admission, and those whose reason for hospitalization was not pneumonia but had a diagnosis of pneumonia after hospitalization (based on ICD-10 codes).

Results. 2,968 HAP patients (mean age 77 years, 64.9% male) contributing 2,979 total HAP episodes were included. The 12-month pre-index mean Charlson Comorbidity Index (CCI) score was 4.0±3.1 (mean±SD), CCI scores ≧4 comprised 44.0%. Most HAP episodes (77.6%) occurred ≧5 days after hospitalization. During the 12month pre-index period including outpatients, 84.9% of patients had some type of pneumonia record, 9.1% had VAP (ventilator associated pneumonia) records, and 7.4% had anti-MRSA prescription records. For post-index HAP treatment, ampicillin/sulbactam (36.4%, 8.2±3.8 days) and piperacillin/tazobactam (22.0%, 8.8±4.4 days) were frequently prescribed as the first antibiotic prescription. Ceftriaxone (19.4%) and meropenem (9.8%) were also frequently prescribed. Examinations prescribed during HAP: 30.5% blood culture tests, 28.2% sputum examinations and 29.2% urine antigen tests. The overall mortality rate of HAP in overall hospitalization post-index was 22.0%, in which 14.4% of deaths occurred within 30 days. The mean (±SD) length of overall hospital stay was 49.9 (±34.2) days (11.3 days for HAP period), with 12.4% ICU use and 17.6% ventilator use. The median total cost during hospitalization was ¥1,924,848.18 ($19,248).

Conclusion. The data revealed patient characteristics, treatment patterns, mortality rates and healthcare costs in Japanese HAP patients. This database approach should prove useful for discussing antibiotics usage trends in highly aging Japan.

Disclosures. **Masahiro Kimata, PhD**, **MSD K.K., Tokyo, Japan** (Employee) **Yosuke Aoki, MD, PhD**, **MSD K.K., Tokyo, Japan** (Other Financial or Material Support, Honorarium for Lecturing)**SHIONOGI & Co., Ltd** (Grant/Research Support, Other Financial or Material Support, Honorarium for Lecturing) **Adachi Noriaki, n/a**, **MSD K.K., Tokyo, Japan** (Employee) **Takeshi Akiyama, MSc**, **MSD K.K., Tokyo, Japan** (Independent Contractor) **Akiko Harada, n/a**, **MSD K.K., Tokyo, Japan** (Employee)

1314. Descriptive Epidemiology of 30-day Readmissions among Survivors of Hospitalization with Bacterial Nosocomial Pneumonia in the US, 2012-2019

Marya Zilberberg, MD, MPH[1]; Brian Nathanson, PhD[2]; Laura A. Puzniak, PhD[3]; Noah Zilberberg, n/a[4]; Andrew F. Shorr, MD, MPH, MBA[5]; [1]EviMed Research Group, LLC, Goshen, MA; [2]OptiStatim, LLC, Longmeadow, MA; [3]Merck & Co., Inc., Kenilworth, New Jersey; [4]EviMed Research Group, LLC & University of Massachusetts, Amherst, Amherst, Massachusetts; [5]Medstar Washington Hospital Center, Washington, DC

Session: P-73. Respiratory Infections - Bacterial

Background. Nosocomial pneumonia (NP) remains associated with excess morbidity and mortality. The effect of NP on other measures of outcome and quality, such as re-admission at 30 days, remains unclear. Moreover, differing types of NP may have varying impacts on re-admissions.

Methods. We conducted a multicenter retrospective cohort study within the Premier Research database, a source containing administrative, pharmacy, and microbiology data. The rate of rehospitalization at 30 days following the index discharge served as our primary endpoint. We compared NP patients readmitted with pneumonia (RaP) as the principal diagnosis to those readmitted for other reasons (RaO). We also compared readmission rates as function of the type of NP: ventilator-associated bacterial pneumonia (VABP), ventilated hospital-acquired bacterial pneumonia (vHABP), and non-ventilated HABP (nvHABP).

Results. Among 17,819 patients with NP, 14,123 (79.3%) survived to discharge, of whom 2,151 (15.2%) required an acute readmission within 30 days of index discharge. Of these, 106 (4.9%) were RaP, and the remainder were RaO. At index hospitalization, RaP patients were older (mean age (SD) 67.4 (13.9] vs. 63.0 (15.2) years), more likely medical (44.3% vs. 36.7%), and less chronically ill (median [IQR] Charlson scores (3 [2-5] vs. 4 [2-5]) than persons with RaO. Bacteremia (10.4% vs. 17.5%), need for vasopressors (15.1% vs. 20.0%), dialysis (9.4% vs. 16.5%), and/or sepsis (9.4% vs. 16.5%) or septic shock 14.2% vs. 17.1%) occurred less frequently in the RaP group. With respect to NP type, nvHABP was most common in RaP (47.2%) and VABP in RaO (38.1%).

Conclusion. One in seven survivors of a hospitalization complicated by NP requires an acute rehospitalization within 30 days. However, few of these readmissions had a principal diagnosis of pneumonia, irrespective of NP type. This suggests that short-term readmission does not capture the quality of care initially delivered to patients for their NP. Of the 5% of NP subjects with RaP, the plurality initially suffered from nvHABP.

Disclosures. **Marya Zilberberg, MD, MPH**, **Cleveland Clinic** (Consultant)**J&J** (Shareholder)**Lungpacer** (Consultant, Grant/Research Support)**Merck** (Grant/Research Support)**scPharma** (Consultant)**Sedana** (Consultant, Grant/Research Support)**Spero** (Grant/Research Support) **Brian Nathanson, PhD**, **Lungpacer** (Grant/Research Support)**Merck** (Grant/Research Support)**Spero** (Grant/Research Support) **Laura A. Puzniak, PhD**, **Merck & Co., Inc.** (Employee) **Andrew F. Shorr, MD, MPH, MBA**, **Merck** (Consultant)

1315. Ceftaroline Versus Vancomycin for the Treatment of Acute Pulmonary Exacerbations of Cystic Fibrosis in Adults

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Session: P-73. Respiratory Infections - Bacterial

Background. Methicillin-resistant *Staphylococcus aureus* (MRSA) is a prominent colonizer in cystic fibrosis (CF) patients that causes acute pulmonary exacerbation (APE). Vancomycin is the first line treatment for APE of CF; however, optimal alternatives remain poorly defined. The goal of this study was to determine the safety and efficacy of ceftaroline in CF patients presenting with an APE caused by MRSA.

Methods. This study was a single-center, retrospective cohort study from January 1, 2011 to January 1, 2020. The study included adult CF patients admitted for APE with %FEV1 > 10% lower than the patient's baseline. A positive MRSA culture within 90 days before or 21 days after hospital admission and receipt of > 7 days of either vancomycin or ceftaroline was required for inclusion. Patients were excluded for receipt of a lung transplant, > 48 hours of alternative MRSA therapy, renal replacement therapy, or an APE secondary to fungal or mycobacterium infection. The primary outcome was the return to > 90% of baseline lung function measured by discharge %FEV1 in comparison to baseline %FEV1.

Results. Fifty-six patients were included in the analysis (22 ceftaroline; 34 vancomycin). There were no differences in baseline characteristics (Table 1). Eleven (50%) patients in the ceftaroline group and 19 (56%) in the vancomycin group met the primary outcome (P = 0.79) (Figure 1A). FEV1 measurements at baseline, admission, and discharge were not different between treatments (Figure 1B). Patients treated with ceftaroline had a longer length of stay during hospital admission, 14 days (IQR 13-14) vs.10 days (IQR 7-14), P = 0.01. Other secondary outcomes were similar between the ceftaroline and vancomycin groups, respectfully, including 30-day readmission rate, 6 (27%) vs. 12 (35%), P = 0.57; 30-day mortality, 0 (0%) vs. 2 (6%), P = 0.51; neutropenia 3 (12%) vs. 1 (3%), P = 0.29; *Clostridioides difficile* infection 0 (0%) vs. 1 (3%), P = >0.99; or acute kidney injury 2 (9%) vs. 5 (15%), P = 0.69.

Table 1. Baseline characteristics for ceftaroline and vancomycin treated patients

Characteristic	Ceftaroline (n = 22)	Vancomycin (n = 34)	P value
Age, years, mean +/-SD	26 ± 6	25 ± 5	0.64
Gender			
Male	11 (50)	15 (44)	0.79
BMI (kg/m2)			0.51
<18.5	4 (18)	4 (12)	
18.5-24.9	15 (68)	25 (74)	
25-29.9	2 (9)	5 (15)	
>30	1 (5)	0 (0)	
Genotype			0.56
Homozygous	16 (73)	21 (62)	
Heterozygous	6 (27)	13 (38)	
Baseline %FEV1, mean +/-SD	50 ± 20	56 ± 20	0.17
Admission %FEV1, mean +/-SD	37 ± 17	40 ± 16	0.25
Concomitant medications			
CFTR modulators[1]	8 (36)	12 (35)	>0.99
Nephrotoxic agents[2]	19 (86)	28 (82)	>0.99
Bone marrow suppressing agents[3]	2 (9)	2 (6)	0.64
Agents effecting %FEV1[4]	22 (100)	34 (100)	>0.99
Other antimicrobials[5]	22 (100)	34 (100)	>0.99

[1]Lumacaftor/ivacaftor, tezacaftor/ivacaftor; [2]Piperacillin/tazobactam, aminoglycoside, furosemide, contrast dye, lisinopril, NSAIDs, colistin, phenylephrine; [3]Methimazole, sulfasalazine, trimethoprim/sulfamethoxazole; [4]Albuterol, hypertonic saline, dornase alpha, azithromycin, ibuprofen, inhaled aminoglycoside, inhaled colistin, corticosteroid; [5]Azithromycin, aminoglycoside, fluroquinolone, cephalosporin, carbapenem, piperacillin/tazobactam. Data represents n (%) unless noted. CFTR=cystic fibrosis transmembrane conductance regulator.

1Lumacaftor/ivacaftor, tezacaftor/ivacaftor; 2Piperacillin/tazobactam, aminoglycoside, furosemide, contrast dye, lisinopril, NSAIDs, colistin, phenylephrine; 3Methimazole, sulfasalazine, trimethoprim/sulfamethoxazole; 4Albuterol, hypertonic saline, dornase alpha, azithromycin, ibuprofen, inhaled aminoglycoside, inhaled colistin, corticosteroid; 5Azithromycin, aminoglycoside, fluroquinolone, cephalosporin, carbapenem, piperacillin/tazobactam. Data represents n (%) unless noted. CFTR=cystic fibrosis transmembrane conductance regulator.

Figure 1. %FEV1 trend from baseline to discharge in patients treated with ceftaroline or vancomycin