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

**Methods.** For each hospitalization, we predicted the probability of anti-MRSA and anti-PAE use by fitting machine learning models from 75 patient variables. We estimated the predicted risk of anti-MRSA/anti-PAE 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) prov-
iders 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% reported empiric anti-MRSA and 29% reported empiric anti-
PAE antibiotics. Hospitalizations at upper-decile facilities had a 50% and 45%
adjusted probability of receiving anti-MRSA and anti-PAE antibiotics, compared to
15% and 20% in the lower-decile facilities. Facility features most predictive of
anti-MRSA or anti-PAE use after adjusting for patient characteristics were com-
plexity level (33% and 30% in high versus 15% and 20% in low complexity facilities).
Variation in empiric anti-MRSA and anti-PAE 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-pre-
scribing facilities.

**Conclusion.** Variation in empiric use of anti-MRSA and anti-PAE antibiotics in pneumonia clustered nearly completely at the facility level. ED providers report so-
cial 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-deaths 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
- A44.0; A41.2; A49.2; meningitis - G00.2; G03.9; and other - M00.1, J86.7, J90.39,J95.3).
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),
144% a reduction was seen in both invasive disease and pneumonia compared to
pre-childhood vaccination period, mainly in infants (from 2.2 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 100,000 people, respectively (Fig 1).

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

### 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 sensi-
tivity 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
2×10^5 copies/mL whereas all 18 targets detected at 10^4 copies/mL were culture-neg-
ative. Among resistance gene targets, the panel detected 12 MRSA specimens, of which
MRSA grew in 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. Quantification 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 in-
ability 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 imple-
mented and interpreted carefully with consideration of antimicrobial stewardship.

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### 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

### 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 differ-
ences 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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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 2,973 hospital episodes were included. The 12-month pre-index mean Charlson Comorbidity Index (CCI) score was 4.0±3.1 (mean±SD), CCI score ≥4 comprised 44.0%. Most HAP episodes (77.6%) occurred ≥25 days after hospitalization. During the 12-month pre-index period including outpatients, 64.9% 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±5.3 days), and piperacillin/tazobactam (22.0%, 8.8±4.4 days) were frequently prescribed as the first antibiotic prescription. Ceftaxime (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 the 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 (113 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.

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**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 varied among important outcomes and quality, such as re-admission at 30 days, remains unclear. Moreover, differing types of NP may have varying impacts on re-admissions.

**Results.** Among 17,819 patients with NP, 14,123 (79.3%) survived to discharge, of which 2,151 (15.2%) required an acute readmission within 30 days of 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 to have hypertension, diabetes, and chronic obstructive pulmonary disease (COPD), and more likely to require acute care during hospitalization (48.6% vs. 44.3%, p = 0.01). Of these 106, 93 (87.7%) were RaP and 13 (12.3%) were RaO. At 30 days follow-up, 76 (71.7%) of RaP patients were discharged alive, and 29 (26.9%) died. The rate of rehospitalization at 30 days following the index discharge 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 (113 days for HAP period), with 12.4% ICU use and 17.6% ventilator use. The median total cost during hospitalization was ¥1,924,842.18 ($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.