development of animal models by describing the natural history of disease and therapeutic validation.

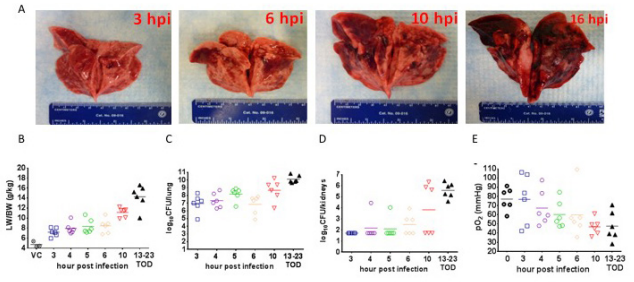

Fig. 1 – Natural history of *P. aeruginosa* acute pneumonia : lung morphology (A), lung/body weight ratio (B), lung (C) and kidney (D) bacterial loads, and hypoxemia (E)

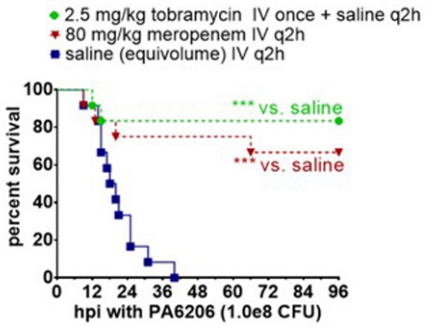

Fig. 2 – Therapeutic validation comparing mortality rate of rabbits treated by saline, tobramycin and meropenem

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

2203. Patient-Specific Risk Stratification to Identify Patients at High and Low Risk for *P. aeruginosa* in Community-Acquired Pneumonia

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Session: 244. Bacterial Respiratory Infections
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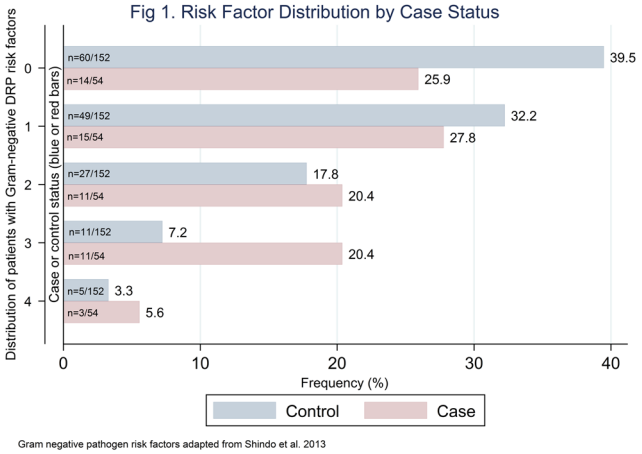
Background. *Pseudomonas aeruginosa* (PsA) is an infrequent pathogen associated with poor outcomes in community-acquired pneumonia (CAP). Identifying patients at high and low-risk for PsA in CAP is necessary to reduce inappropriate and overly broad-spectrum antibiotic use. We evaluated the distribution of risk-factors in hospitalized CAP patients with and without PsA infection.

Methods. Design: retrospective, single-center, case–control study. Inclusion: hospitalized CAP patients admitted to the general medicine wards between January 1, 2014 and May 29, 2018. Exclusion: cystic fibrosis, ≥ 3 admissions within 30 days, CAP requiring ICU admission, and death within 48 hours of admission. Case patients had PsA in respiratory or blood cultures during the index CAP admission. Controls were randomly selected targeting a 3:1 ratio. Comorbidities, pneumonia severity index, and m-APACHE II were assessed. Gram-negative risk factors defined by Shindo et al. 2013 (PMID: 23855620) and validated by Kobayashi et al. (2018; PMID: 30349327) were scored for each patient. Stepwise logistic regression was used to identify covariates that distinguished cases from controls at a $P < 0.2$; these were then used to generate propensity weights (i.e., inverse-probability conditioned on covariates). Unadjusted and adjusted odds ratios for case status were estimated using logistic regression according to: the total number of risk factors present and threshold values, respectively. All analyses were conducted using IC Stata (v.14.2).

Results. 54 cases and 152 controls were included. The distribution of the patient-specific sum of risk factors for PsA is shown in Figure 1. The univariate OR for case status was 4.29 (95% CI:1.55–11.9) at $n = 3$ risk factors, which was similar after propensity weight adjustment [aOR = 4.64 (95% CI: 1.32–16.3)]. The univariate OR of case status was 2.98 among patients with ≥ 3 risk factors (95% CI: 1.34–6.62), which was similar after propensity weight adjustment [aOR = 2.8 (95% CI: 1.02–7.72)], and correct classification was 73.8%.

Conclusion. At a threshold of ≥ 3 PsA risk factors, cases and controls were well classified, even after adjusting for propensity weights. The impact of patient-specific PsA risk-stratification on CAP outcomes and appropriate antibiotic use should be evaluated.



Gram negative pathogen risk factors adapted from Shindo et al. 2013

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

2204. Microbiology of Pneumonia Due to Co-Infection in the ICU: Impact of Host Immune Status

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Background. Pneumonia epidemiology is increasingly showing the presence of co-infection due to the utilization of emerging diagnostic testing modalities such as multiplex polymerase chain reaction (PCR) panels. However, the prevalence and clinical significance of co-infection with respect to host immune status remain unclear.

Methods. A single-center retrospective analysis of mechanically ventilated adult patients treated in critical care units from January to October 2018 was performed on those with positive microbiological analysis of a bronchoalveolar lavage (BAL) sample. Host immune status and microbiological analyses were obtained including PCR and culture testing. Categorical variables and co-infection or immunocompetent status were assessed using Chi-Square, Fisher exact tests, or t-tests. REDCap was utilized for data abstraction and SAS software version 9.4 was used to perform all analysis.

Results. Of the 139 BAL samples that met inclusion criteria, 107 and 32 were obtained from immunocompetent and immunocompromised hosts, respectively. There was no statistical difference found between the frequency of co-infection detected by BAL culture with respect to host immune status. Immunocompetent patients had a higher proportion of positive bacterial cultures compared with immunocompromised (76.7% vs. 43.8% respectively, $P = 0.0004$). There was no significant difference seen with frequency of fungal or acid fast bacilli cultures between the two groups. Analysis of the microbiologic data obtained (figures) revealed different pathogens according to host immune status.

Conclusion. Pneumonia due to co-infection in critically ill, mechanically ventilated immunocompromised hosts occurs at a similar frequency regardless of host immune status, however different microbiological patterns emerge. Interestingly, patients who were not immunocompromised had a higher proportion of positive bacterial cultures compared with those who were immunocompromised. Comparative analysis of the other pathogen types may also reveal differences in detection rates if sample size is increased. Clinically, this may help guide efficient use of microbiological testing among patients based on immune status.