Background. Community-acquired pneumonia caused by *Klebsiella pneumoniae* is a rapidly progressive and severe form of pneumonia that generally leads to poor outcomes. However, the clinical features and outcomes of severe *K. pneumoniae* pneumonia (KPP) have not yet been prospectively validated using adequate control groups.

Methods. A prospective cohort study was conducted using adult patients diagnosed with KPP or *Streptococcus pneumoniae* pneumonia (SPP) who were admitted to a 28-bed medical intensive care unit (ICU) in a 2,700-bed tertiary care hospital between January 2010 and February 2016. The clinical manifestations, laboratory characteristics, radiographic findings, and outcomes were compared between the KPP and SPP groups.

Results. One hundred and eighty-five patients (91 severe KPP patients and 94 severe SPP patients) were included for analysis. Alcoholism was more common in the KPP group than in the SPP group (12.1% vs 3.2%, *P* = 0.02). Concomitant respiratory viral coinfections were significantly less frequent in the KPP group than in the SPP group (17.6% vs 41.5%, *P* = 0.001). The presence of septic shock (72.5% vs 67.0%, *P* = 0.42) and the mean APACHE II score (25.1 vs 25.8, *P* = 0.10) did not significantly differ between the groups. Although the 28-day mortality rate (25.3% vs 22.3%, *P* = 0.64) was similar between the groups, the 60-day mortality rate (42.9% vs 28.8%, *P* = 0.045) and the 90-day mortality rate (46.2% vs 29.8%, *P* = 0.02) were significantly higher in the KPP group than in the SPP group (*P* = 0.037 by a log-rank test; Figure 1).

Conclusion. The overall epidemiological and clinical characteristics of severe KPP patients who were admitted to ICU were comparable with those of severe SPP patients. However, severe KPP patients exhibited poorer clinical outcomes than severe SPP patients.

Figure 1. Kaplan-Meier Curves for mortality up to 90 days after ICU admission

 disclosed.

Background. The burden of adult pneumonia is significant but not described uniformly. Most prior studies of pneumonia rates have used administrative claims data, with annual estimates of 1200–2000 hospitalizations per 100,000 persons age ≥65. These studies typically include only pneumonia coded as a primary diagnosis (i.e., first diagnosis position of the claim). This approach may underestimate the true burden of pneumonia hospitalizations. We describe nationally-representative, all-cause pneumonia hospitalization rates in US adults and compare incidence rates of pneumonia based on primary diagnosis only or any diagnosis (i.e., any claim position).

Methods. We used the National Inpatient Sample of the Healthcare Cost and Utilization Project, which is a population-weighted, 20% sample of all US community hospitals. We included all adult (age ≥18) discharges for pneumonia in 2014 and calculated age-stratified annual incidence rates per 100,000 population.

Results. In 2014, there were >2.4 million hospitalizations with any pneumonia diagnosis in US adults, 33% had pneumonia as the primary diagnosis. Incidence of pneumonia as a primary diagnosis increased with age, ranging from 67 to 2493 hospitalizations per 100,000 across age groups. Hospitalizations for pneumonia in any diagnosis position were 2–3 times higher and ranged from 202–6691 hospitalizations per 100,000 (Table). Despite older adults having higher rates of pneumonia hospitalization, 38% of all pneumonia hospitalizations occurred in adults ≤65.

Conclusion. Incidence rates of adult hospitalized pneumonia from administrative claims data depend largely on case definition. Rates based on a primary diagnosis of pneumonia only were considerably lower than rates where the case definition was expanded to any pneumonia diagnosis. Thus, the burden of pneumonia hospitalizations may be larger than previously estimated in claims database studies limited only to pneumonia as a primary diagnosis. Additionally, despite the lower incidence in adults <65 vs ≥65, 18–64-year-olds accounted for 38% of all pneumonia hospitalizations. Future work should attempt to define the full burden of pneumonia in younger adults, especially among those at increased risk.

Table 1. 2014 Acute Hospitalizations for Pneumonia in Adults in the United States

| Age group | Total Discharges | Total Incidence | % INC | Discharges | Incidence | Any Diagnosis | % INC |
|-----------|------------------|----------------|-------|------------|-----------|---------------|-------|
| 18–54 years | 233,075 | 67 | (60–69) | 334,020 | 202 | (337–207) |
| 55–64 years | 235,630 | 258 | (23–264) | 679,020 | 813 | (705–830) |
| 65–84 years | 236,750 | 866 | (80–887) | 1,061,220 | 2,649 | (2,594–2,704) |
| ≥85 years | 153,100 | 2,494 | (2,644–2,553) | 410,800 | 6,995 | (6,540–6,841) |
| Total | 745,105 | 2,724 | (2,644–2,553) | 1,926,040 | 33,824 | (31,620–34,841) |

Note. Incidence estimates are in hospitalizations per 100,000 population.

1977. Assessment of a Healthcare-Associated Pneumonia (HCAP) Risk Stratification and Empiric Treatment Guideline: A New Antimicrobial Stewardship Initiative

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Background. Risk stratification of HCAP patients is a possible Antimicrobial Stewardship (AST) intervention for the treatment of multidrug resistant (MDR) Gram-negative (GN) vs. community-acquired pneumonia (CAP) pathogens. This study assessed the impact of a risk stratification guideline for empiric antimicrobial selection relative to acceptance rates and clinical outcomes.

Methods. In 2017, a guideline for inpatients with HCAP was launched. High risk (HR) of MDR GN was defined as patients admitted to the intensive care unit (ICU), or with >1 risk factor including: receipt of any antimicrobial within 30 days or broad spectrum antimicrobials within 90 days, hemodialysis dependence, or immunocompromised HR patients were recommended to receive antimicrobials covering MDR GN and low-risk patients to narrower CAP regimens. Patients treated for HCAP post guideline implementation were compared with a historic 2014 cohort for guideline concordance, antimicrobial selection, and clinical outcomes. AST interventions were also assessed.

Results. Overall, 105 patients in the post-implementation period were compared with 309 historic patients. Guideline-concordant risk-stratified therapy increased 13% (95% CI 3%, 24%) overall. Clinical failure rates were similar with 11% vs 10% (P = 0.608) in the pre- and post-implementation periods, with an 84% AST acceptance rate (Figure 1). Treatment length decreased [4.1 to 6.6 days (P < 0.001)] and de-escalation increased [31% to 72% (P < 0.001)] as seen in Table 1.

Conclusion. Introduction of a risk stratified guideline through AST intervention changed practice by matching MDR risk with empiric HCAP therapy. Failure rates were comparable. Secondary benefits included: decreased treatment duration and hospital stay, increased de-escalation rates and decreased MDR GN antimicrobial use in low-risk patients.
Disclosures. All authors: No reported disclosures.

1978. Long-term Respiratory Complication in Patients with Middle East Respiratory Syndrome: 1-year Follow-up After the 2015 Outbreak in South Korea

Background. There are few data about long-term respiratory complications following Middle East Respiratory Syndrome coronavirus (MERS-CoV) infection. This study aimed to evaluate respiratory functions and radiologic sequelae according to the severity of infection one year after the patients experienced MERS-CoV infection.

Methods. A total of 73 patients undergoing MERS-CoV infection during the 2015 MERS outbreak in South Korea were enrolled in this prospective multicenter study. Pulmonary function tests and 6-minute walking tests were performed 1 year after infection. Radiologic sequelae was defined as fibrosis or atelectasis on chest computer tomography.

Results. At the time of MERS-CoV infection, 18 patients had no pneumonia, 35 experienced mild pneumonia, and 20 did severe pneumonia. The median age was not different between groups (P = 0.942). Forced vital capacity (FVC) was 102.6%, 94.9%, and 88.7% in the no, mild, and severe pneumonia group, respectively (P = 0.010) and forced expiratory volume in 1 second was 105.3%, 95.7%, and 91.7% (P = 0.057). Diffusing capacity (DLOCO) was significantly lower in the severe pneumonia group than in the no or mild pneumonia group (78.3% vs. 89.4% or 88.6%, P = 0.035). In multivariate analyses, FVC and DLOCO were significantly correlated with infection severity after adjustment with age, sex, underlying lung disease, and smoking. There was no difference in the walking distance of 6 minute tests between groups. Radiologic sequelae were shown in 18.8%, 65.6%, and 100% in the no, mild, and severe pneumonia group, respectively (P < 0.001).

Conclusion. The patients with more severe pneumonia by MERS-CoV had more impaired respiratory function in one year follow-up, which was compatible with radiologic sequelae.

Disclosures. All authors: No reported disclosures.

1979. Impact of Timing of Diagnosis of Respiratory Syncytial Virus (RSV) Disease on Hospital Length of Stay (LOS) in Adults: Final Analysis from a Retrospective Chart Review Study

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Background. Despite growing clinical awareness of RSV disease in at-risk adult subpopulations, significant gaps remain in knowledge, especially around diagnosis. This analysis aimed to understand the impact of timing of diagnosis on hospital LOS.

Methods. A retrospective review of patient charts was conducted. Data for adults ≥18 years with confirmed RSV (Oct 2014–Oct 2016; USA) were collected. Each physician (n = 132) submitted up to 3 randomly selected patient cases via an online survey.

Results. This study comprised 379 patients, collected in 4 groups (Table). >80% of patients received an RT-PCR test; rapid antigen tests were uncommon (<10%) with an RT-PCR test also performed in 45% of these. Early RSV diagnosis and less severe disease were associated with a shorter mean LOS (Figure 1and 2). Patients diagnosed >24h post-admission had a longer mean LOS (9.8 [8.6] days; P = 0.006), and patients diagnosed 12–24h post-admission (7.4 [4.2] days; P = 0.038) was higher (P = 0.005) in patients diagnosed in the intensive care unit (9.4 days) than the emergency room or hospital ward (both 6.8 days).

Conclusion. RSV disease in adults was typically diagnosed by PCR. Delayed diagnosis and greater RSV disease severity are associated with longer LOS, but results need to be confirmed by prospective trials. Introduction of diagnostic testing protocols may lead to earlier identification of patients in need of supportive care and reduce mean LOS.

Table: Patient demographics and method of diagnosis

| Subpopulation | Mean age (years) | Male, % | Race, % | Caucasian | Black or African American | Method of RSV diagnosis, % | RT-PCR (either RSV-specific or viral panel) | Rapid antigen assay | Others | Unknown |
|---------------|------------------|---------|---------|-----------|---------------------------|----------------------------|----------------------------------------|-------------------|--------|---------|
| Adults with underlying lung disease | 61.8 | 56 | 57 | 57 | 26 | 22 | 20 | 32 | 84 | 93 | 89 | 87 |
| (n = 119) | | | | | | | | | | | | | |
| Immuno-compromised | 55.3 | 60 | 60 | 53 | 22 | 20 | 20 | 32 | 84 | 93 | 89 | 87 |
| (n = 90) | | | | | | | | | | | | | |
| Other elderly (≥65 years) | 70.7 | 55 | 57 | 57 | 26 | 22 | 20 | 32 | 84 | 93 | 89 | 87 |
| (n = 110) | | | | | | | | | | | | | |
| Adults without identified risk factors | 41.6 | | | | | | | | | | | | |
| (n = 60) | | | | | | | | | | | | |