following the initial swab collection, the surfaces were disinfected with hydrogen peroxide wipes and disinfectant cleaner sprayed through an electrostatic system. The same surfaces were then swabbed after disinfection. Colony-forming units (CFUs) were quantified using standard microbiological techniques by a third-party laboratory. Statistical analysis was performed on the resulting bacterial counts using Minitab version 18.1 software. **Results:** We detected statistically significant decreases in total bacteria, yeast, and mold counts following implementation of this disinfection protocol. The predisinfection mean of bacteria, yeast, and mold counts for all surfaces combined was reduced 96% after disinfection (from 254,637 CFU to 9,392 CFU). **Conclusions:** Cleaning and disinfection of surfaces in PCFR emergency vehicles and fire station common areas with the agents described above effectively reduced contamination with bacteria, yeast, and mold spores. The PCFR has implemented this disinfection protocol as a tool in eliminating EMS vehicles and the station environment as reservoirs of infection for patients, visitors, and firefighters. Future efforts will include assessing the impact of regular cleaning and disinfection on baseline levels of bacteria, yeast, and mold spores.

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Impact of Antimicrobial Stewardship Programs in Latin American Adult Intensive Care Units: PROA-LATAM Project

Rodolfo Quirós, Clínica Ángel Foianini; Patricia Angeleri, Dirección de Epidemiología-Ministerio de Salud de la Nación, Argentina; Jeannete Zurita, Hospital Vozandes, Quito-Ecuador; Washington Aleman, Hospital Alcívar, Guayaquil-Ecuador; Marcelo Carneiro, UNISC – HSC; Silvia Guerra, FEPREMI-COCEMI; Julio Medina, Federación de Prestadores Médicos del Interior (FEPREMI)-Uruguay; Ximena Castañeda Luquerna, Los Cobos Medical Center , Bogotá-Colombia; Alexander Guerra, Clínica Rey David, Cali-Colombia; Silvio Vega, Complejo Hospitalario Metropolitano; Luis Cuéllar, Instituto Nacional de Enfermedades Neoplásicas; Jose Munita, University of Texas at Houston; Gina Maki, Henry Ford Health System; Tyler Prentiss, Henry Ford Health System, Detroit-USA; Elvio Escobar, Clínica Ángel Foianini, Santa Cruz de la Sierra-Bolivia; Marcus Zervos, Henry Ford Hospital; Ana Bardossy, Henry Ford Health System

Background: Antimicrobial stewardship programs (ASPs) are useful in improving clinical outcomes in a cost-effective way and in reducing antimicrobial resistance. **Objective:** We sought to determine the impact of ASP in adult medical-surgical intensive care units (MS-ICUs). **Methods:** A multicenter study, in 77 MS-ICUs of 9 Latin-American countries, was conducted along 12 months (July 2018–June 2019). A self-assessment survey using a tool based on CDC recommendations (0–100 scale) was performed at the beginning, after 6 months, and at the end of the study. The impact of ASP was evaluated monthly using the following indicators: antimicrobial consumption (defined daily doses [DDD] per 100 patient days), appropriateness of antimicrobial prescriptions (percentage of total prescriptions), crude mortality rate (events per 100 discharges), and hospital-acquired multidrug-resistant microorganisms (MDRs) and *Clostridioides difficile* infections (CDI events per 1,000 patient days). These indicators were compared between MS-ICUs that reached the 75th percentile and those that maintained the 25th percentile at the final self-assessment. **Results:** Of all indicators evaluated, only surgical prophylaxis ≤24 hours, vancomycin therapeutic monitoring, and aminoglycosides (1 dose per day) did not show significant differences between MS-ICUs at the 75th percentile and the 25th percentile. CDI events were significantly higher at the 75th percentile MS-ICUs, probably related to better detection of *C. difficile* (Table 1). **Conclusions:** This study confirmed that MS-ICUs with more comprehensive ASPs had significantly better indicators.

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Influence of Antibiotic Susceptibility Testing on Antibiotic Choice in Hospital-Acquired and Ventilator-Associated Pneumonia

Taissa Zappernick, VA Northeast Ohio Healthcare System; Robbie Christian, Louis Stokes Cleveland VA Medical Center; Sharanie

Table. Indicators comparison between MS-ICUs based on the final level of self-assessment

Indicators	ASP final level			Comparison ≥75p vs ≤25p		
	≤25p (n=20)	<75p->25p (n=37)	≥75p (n=20)	Diff.	CI95%	*p*
Self-assessment; mean±SD	28.0±7.3	52.1±8.6	76.1±7.5	48.1	43.4 to 52.8	<0.0001
DDDs*	159.4	156.5	143.4	-16.0	-17.2 to -14.7	<0.0001
MDR infections†	10.96	13.53	9.45	-1.52	-2.56 to -0.48	0.004
CD infections	0.19	0.25	0.57	0.37	0.19 to 0.56	<0.0001
Crude mortality	17.7%	16.0%	15.9%	-1.8%	-2.8% to -0.8%	<0.0001
Validation of prescription by pharmacists	58.0%	58.6%	72.0%	14.0%	11.4% to 16.6%	<0.0001
Registration of prescription in the medical record	94.7%	97.2%	97.6%	2.9%	1.8% to 4.0%	<0.0001
Adherence to clinical guidelines	59.3%	72.2%	92.5%	33.2%	30.9% to 35.5%	<0.0001
Prospective audit with feedback	76.2%	87.9%	86.1%	9.9%	7.7% to 12.1%	<0.0001
Acceptance of infectious diseases physician recommendation	72.3%	89.6%	94.8%	22.5%	19.7% to 25.2%	<0.0001
Targeted treatments	27.6%	35.9%	39.5%	12.0%	9.2% to 14.7%	<0.0001
Redundant anti-anaerobial therapy	0.96%	0.80%	0.26%	-0.70%	-0.22% to -1.18%	0.003

*J01-J02 ATC categories
†MDR: Methicillin-resistant *S. aureus*; Vancomycin-resistant Enterococcus; ESBL-Enterobacteriaceae; Carbapenem-resistant: Enterobacteriaceae, *P. aeruginosa*, *Acinetobacter* spp

Fig. 1

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Sims, Louis Stokes Cleveland VA Medical Center; Brigid Wilson, Northeast Ohio VA Healthcare System; Federico Perez; Robert Bonomo; Robin Jump, Louis Stokes Cleveland Veterans' Affairs Medical Center

Background: The survival of patients with hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP) is largely determined by the timely administration of effective antibiotic therapy. Guidelines for the treatment HAP and VAP recommend empiric treatment with broad-spectrum antibiotics and tailoring of antibiotic therapy once results of microbiological testing are available. **Objective:** We examined the influence of bacterial identification and antibiotic susceptibility testing on antibiotic therapy for patients with HAP or VAP. **Methods:** We used the US Veterans' Health Administration (VHA) database to identify a retrospective cohort of patients diagnosed with HAP or VAP between fiscal year 2015 and 2018. We further analyzed patients who were started on empiric antibiotic therapy, for whom microbiological test results from a respiratory sample were available within 7 days and who were alive within 48 hours of sample collection. We used the antibiotic spectrum index (ASI) to compare antibiotics prescribed the day before and the day after availability of bacterial identification and antibiotic susceptibility testing results. **Results**: We identified 4,669 cases of HAP and VAP in 4,555 VHA patients. The median time from respiratory sample receipt in the laboratory to final result of bacterial identification and antibiotic susceptibility testing was 2.22 days (IQR, 1.31–3.38 days). The most common pathogen was *Staphylococcus aureus* (n = 994), with methicillin resistance in 58% of those isolates tested. The next most common pathogen was *Pseudomonas* spp (n = 946 isolates). The susceptibility of antipseudomonal antibiotics, when tested, was as follows: 64% to carbapenems, 74% to cephalosporins, 75% to β-lactam/β-lactamase inhibitors, 69% to fluoroquinolones, and 95% to amikacin. Lactose-fermenting gram-negative bacteria (296 *Escherichia coli* and 360 *Klebsiella pneumoniae*) were also common. Among the 3,094 cases who received empiric antibiotic therapy, 607 (20%) had antibiotics stopped the day after antibiotic susceptibility results became available, 920 (30%) had a decrease in ASI, 1,075 (35%) had no change in ASI, and 492 (16%) had an increase in ASI (Fig. 1). Among the 1,098 patients who were not started on empiric antibiotic therapy, only 154 (14%) were started on antibiotic therapy the day after antibiotic susceptibility results became available. **Conclusions:** Changes in antibiotic therapy occurred in at least two-thirds of cases the day after bacterial identification and antibiotic susceptibility results became available. These results highlight how respiratory cultures can inform the treatment and improve antibiotic stewardship for patients with HAP/VAP.

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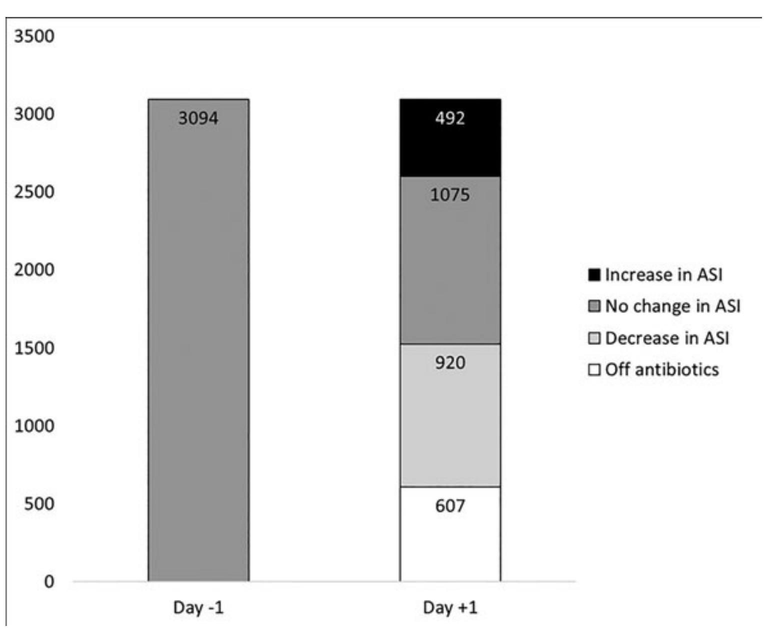

Fig. 1

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Patient-Specific Predictive Antibiogram in Decision Support for Empiric Antibiotic Treatment

Debarka Sengupta, Assistant Professor; Vaibhav Singh, Circle of Life Healthcare Pvt. Ltd.; Seema Singh, Circle of Life Healthcare Pvt. Ltd.; Dinesh Tewari, Circle of Life Healthcare Pvt. Ltd.; Mudit Kapoor, Circle of Life Healthcare Pvt. Ltd.; Debabrata Ghosh, Circle of Life Healthcare Pvt. Ltd.; Shivam Sharma, Circle of Life Healthcare Pvt. Ltd.

Background: The rising trend of antibiotic resistance imposes a heavy burden on healthcare both clinically and economically (US$55 billion), with 23,000 estimated annual deaths in the United States as well as increased length of stay and morbidity. Machine-learning–based methods have, of late, been used for leveraging patient's clinical history and demographic information to predict antimicrobial resistance. We developed a machine-learning model ensemble that maximizes the accuracy of such a drug-sensitivity versus resistivity classification system compared to the existing best-practice methods. **Methods:** We first performed a comprehensive analysis of the association between infecting bacterial species and patient factors, including patient demographics, comorbidities, and certain healthcare-specific features. We