Implementation of an AMS TOC protocol reduced antimicrobial days, optimized therapy selection, and reduced duration. This intervention was associated with improved safety without compromise of clinical effectiveness. To increase patient safety, AMS programs should target antimicrobial optimization during TOC.

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Poster Presentation

Improving Surveillance of Pneumonia in Nursing Homes

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Background: Pneumonia (PNA) is an important cause of morbidity and mortality among nursing home residents. The McGeer surveillance definitions were revised in 2012 to help NHs better monitor infections for quality improvement purposes. However, the concordance between surveillance definitions and clinically diagnosed PNA has not been well studied. Our objectives were to identify nursing home residents who met the revised McGeer PNA definition, to compare them with residents with clinician documented PNA, and determine whether modifications to the surveillance criteria could increase concordance. **Methods**: We analyzed respiratory tract infection (RTI) data from 161 nursing homes in 10 states that participated in a 1-day healthcare-associated infection point-prevalence survey in 2017. Trained surveillance officers from the CDC Emerging Infections Program collected data on residents with clinician documentation, signs, symptoms, and diagnostic testing potentially indicating an RTI. Clinician-documented pneumonia was defined as any resident with a diagnosis of pneumonia identified in the medical chart. We identified the proportion of residents with clinician documented PNA who met the revised McGeer PNA definition. We evaluated the criteria reported to develop 3 modified PNA surveillance definitions (Box), and we compared them to residents with clinician documented PNA.

Results: Among the 15,296 NH residents surveyed, 353 (2%) had ≥1 signs and/or symptoms potentially indicating RTI. Among the 353 residents, the average age was 76 years, 105 (30%) were admitted to postacute care or rehabilitation, and 108 (31%) had clinician-documented PNA. Among those with PNA, 28 (26%) met the Revised McGeer definition. Among 81 residents who did not meet the definition, 39 (48%) were missing the chest x-ray requirement, and among the remaining 42, only 3 (7%) met the constitutional criteria requirement (Fig. 1). Modification of the constitutional criteria requirement increased the detection of clinically documented PNA from 28 (26%) to 36 (33%) using modified definition 1; to 51 (47%) for modified definition 2; and to 55 (51%) for modified definition 3. **Conclusions:** Tracking PNA among nursing home residents using a standard definition is essential to improving detection and, therefore, informing prevention efforts. Modifying the PNA criteria increased the identification of clinically diagnosed PNA. Better concordance with clinically diagnosed PNA may improve provider acceptance and adoption of the surveillance definition, but additional research is needed to test its validity.

Box: Modified Pneumonia Surveillance Definitions for Nursing Home Residents

Definitions	Criteria
Revised McGeer Surveillance Definition	• Chest X-ray with findings suggestive of pneumonia • ≥ 1 respiratory signs or symptoms * • ≥ 1 constitutional criteria sign or symptoms **
Modified Surveillance Definition 1	• Chest X-ray with findings suggestive of pneumonia • ≥ 1 respiratory signs or symptoms * • ≥ 1 constitutional criteria sign or symptoms with probable delirium definition***
Modified Surveillance Definition 2	• Chest X-ray with findings suggestive of pneumonia • ≥ 2 respiratory signs or symptoms* **and/or** constitutional criteria sign or symptoms**
Modified Surveillance Definition 3	• Chest X-ray with findings suggestive of pneumonia • ≥ 2 respiratory signs or symptoms **and/or** constitutional criteria sign or symptoms with probable delirium definition***

*a. new or increased cough b. new or increased sputum production c. O2 saturation <94% on room air or a reduction in O2 saturation of >3% from baseline d. new or changed lung examination abnormalities e. pleuritic chest pain f. respiratory rate of >24 breaths/min

**a. fever (single oral temperature > 37.8°C (>100°F) or repeated oral temperatures >37.2°C (99°F) or single temperature >1.1°C (2°F) over baseline from any site) b. leukocytosis (neutrophilia (>14,000 leukocytes/mm^3) or left shift >6% bands or ≥ 1,5000 bands/mm^3) c. delirium defined as acute change in mental status from baseline including 1) acute onset 2) fluctuating course 3) inattention AND 4) either disorganized thinking or altered level of consciousness d. acute functional decline defined as a new 3-point increase in total activities of daily living (ADL) score (range, 0-28) from baseline, based on the following 7 ADL items, each scored from 0 to 4 (a. bed motility, b. transfer, c. locomotion within LTCF, d. dressing, e. toilet use, f. personal hygiene, g. eating)

***probable delirium definition includes residents with any 1 of the following signs/symptoms (a. disorganized thinking, b. altered consciousness, c. fluctuating behavior and/or d. inattention)

Fig. 1.

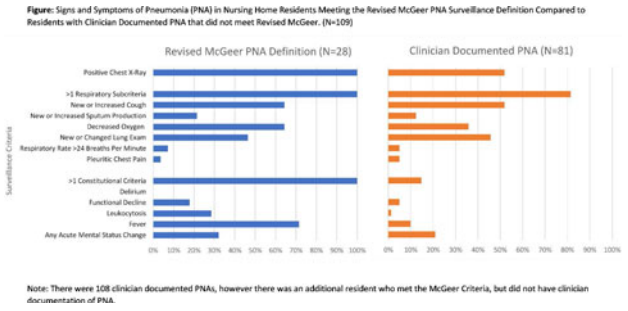

Fig. 2.

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Imunocromatografic Tests Improving Point-of-Care Management of Respiratory Virus Infection in Children

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Background: Respiratory syncytial virus (RSV) and influenza virus (flu) contribute substantially to the overall burden of severe respiratory tract infection in children. However, the molecular etiological diagnostic methods of viral infection are still insufficiently accessible in public hospitals. Rapid immunochromatographic tests can add important information at the point of care, including antiviral or antibiotic indication, viral , and effective precaution measures to prevent outbreaks. The aim of this study was to evaluate this impact for pediatric patients under 5 years of age in our hospital. **Methods:** We conducted a retrospective, observational study of clinical outcomes of children under 5 years requiring hospitalization from 2013 to 2018 for viral respiratory disease, and who had positive RSV and/or flu immunochromatographic rapid test results. **Results:** In total, we identified 221 cases: RSV, 193; flu, 6; codetections, 19. (Table 1). The mortality rate was 1.8% (2 cases), and 88% of our patients were <1 year of age. Variables significantly associated with orotracheal intubation, the most intensive intervention, were younger age in months, comorbidities, RSV and flu codetection, and bacterial pneumonia diagnosis during hospitalization. **Conclusions:** In the multivariate analysis, RSV and flu codetection was associated with the least favorable clinical prognoses. Rapid test diagnosis may provide important information at the point of care, and molecular panels are not yet widely accessible in public hospitals. Hence, we believe that immunochromatographic rapid tests represent a valuable and feasible diagnostic alternative facilitating timely evaluation and treatment implementation.

Table 1. Factors associated with orotracheal intubation (OTI) in children <5 years hospitalized for respiratory viral infection, obtained in a univariate and multiple logistic model, PUC-Campinas Hospital, Brazil 2013-2018

Variable	With OTI N (%)	OR gross (95% CI)	OR aj (95% CI)
Age in months		0.94 (0.88-0.99)	0.89 0.82-0.98
RT+ * Only RSV	64 (34.7)	0.12 (0.42- 0.32)	-
RT+ * Only Influenza A	6 (66.7)	3.05 (0.74-12.5)	-
RT+ * Flu+RSV	17 (89.)	15.0 (3.4- 66.9)	14.3 3.0-68.2
Comorbidity**	17 (58.6)	1.9 (0.9-4.5)	2.7 1.02-7.11
Prematurity (< 37 weeks)	16 (55.2)	1.3 (0.5-2.9)	-
Associated bacterial pneumonia	25 (75.8)	5.9 (2.5 -13.8)	4.78 (1.83-12.55)

*RT – Rapid Test,
**Comorbidity: congenital heart disease, Down syndrome, other GIT congenital malformations, renal failure, bronchopulmonary dysplasia

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In Vitro Activity of Cefiderocol Against Multidrug-Resistant Gram-Negative Clinical Isolates

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Background: New antimicrobials are being developed as a response to the global threat of multidrug-resistant and panresistant bacterial pathogens. Cefiderocol (FDC; Shionogi & Co) is a novel parenteral siderophore cephalosporin with activity against gram-negative rods. Here, we report on the *in vitro* activity of FDC against multidrug-resistant gram-negative isolates collected by the CDC, including isolates available through the CDC and FDA Antibiotic Resistance Isolate Bank (AR Isolate Bank). **Methods:** The challenge set of gram-negative isolates (n = 339), most of which were obtained from the AR isolate bank (n = 258), comprised 188 Enterobacteriaceae (ENT), 72 *Pseudomonas aeruginosa* (PSA), and 79 *Acinetobacter baumannii* (ACB). Minimum inhibitory concentrations (MICs) for FDC in iron-depleted cation-adjusted Mueller-Hinton broth were determined using frozen reference broth microdilution panels (IHMA, Schaumburg, IL) according to CLSI guidelines. Isolates displaying nonsusceptibility to FDC (MIC >4 μg/mL) underwent additional testing with β-lactamase inhibitors (FDC with 4 μg/mL avibactam, FDC with 100 μg/ml dipicolinic acid (DPA), and FDC with both 100 μg/mL dipicolinic acid (DPA) and 4 μg/mL avibactam). **Results:** Cefiderocol MICs ranged from ≤0.03 to >64 μg/mL, and 313 (92.3%) isolates displayed susceptibility to FDC (MIC ≤4 μg/mL). The proportions of susceptible ENT, PSA, and ACB were 93.1%, 94.4%, and 88.6%, respectively. Among isolates harboring Ambler class A, class B, or class D carbapenemases, the proportions of susceptible isolates were 96.5%, 79.5%, and 94.0%, respectively. Overall, 26 (7.7%) isolates were categorized as FDC nonsusceptible (MIC ≥ 8 μg/mL); 65% of these were NDM producers. We selected 23 isolates for testing with β-lactamase inhibitors. The combination FDC-avibactam reduced the MIC to susceptible for all isolates harboring an Ambler class A or D carbapenemase, except for 1 OXA-71–producing ACB and 1 KPC-producing *Citrobacter farmeri*. The combination FDC-DPA reduced the MIC to susceptible for 9 of 13 (69.2%)