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Organism	Number of isolates*	% based on 545 SSIs*
Escherichia coli	187	34%
Enterococcus spp	135	25%
No pathogen identified	105	19%
Klebsiella spp	57	10%
Bacteroides spp	47	9%
Candida spp	38	7%
Streptococcus spp	28	5%
Staphylococcus aureus	27	5%
Pseudomonas spp	22	4%
Proteus spp	18	3%
Enterobacter spp	16	3%
Citrobacter spp	16	3%
Clostridium spp	11	2%
Coagulase-negative staphylococci	9	2%
Polymicrobial infection	378	69%

* The sum of the numbers and percentages is more than 545 and 100%, respectively, because polymicrobial infections were counted for multiple pathogens.

Table 3: Colon surgery complex surgical site infection rates, stratified by emergent, elective, open, and laparoscopic procedures and hospital colon surgery volume

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Category	Total Surgeries (N)	Complex SSI (N)	SSI Rate/100 procedures	Rate Ratio	95% CI	p value	Test of Homogeneity
High volume laparoscopic (ref)	11119	201	1.81	1			0.41
High volume open	13567	271	2.00	1.11	0.92,1.32	0.28	
Low volume laparoscopic	1251	25	2.00	1.11	0.73,1.67	0.93	
Low volume open	2705	48	1.77	0.98	0.72,1.34	0.91	0.31
High volume elective (ref)	22611	431	1.91	1			
High volume emergent	2075	41	1.98	1.04	0.75,1.42	0.82	
Low Volume elective	3221	55	1.71	0.90	0.68,1.18	0.44	
Low volume emergent	735	18	2.45	1.28	0.81,2.05	0.29	

Conclusion. In our cohort, we found that one-fourth of colon surgery SSIs were categorized as PATOS, which are no longer publicly reported to the Centers for Medicare & Medicaid Services. While most SSI literature describes higher volume hospitals having lower SSI rates, high colon surgery volume was associated with increased SSI rates in our community hospital cohort.

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906. Surgical Site Infections in Children with Beta-Lactam Allergy: A Matched Cohort Study

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Session: P-42. HAI: Surgical Site Infections

Background. Surgical site infections (SSIs) are a significant cause of morbidity and mortality. The administration of appropriate pre-operative antimicrobial prophylaxis (AMP) reduces SSI risk and beta-lactam antibiotics are considered the most effective agents. Studies in adult patients found increased SSI risk in patients with documented beta-lactam allergy (BLA) due to use of second line AMP agents. The SSI risk in BLA pediatric patients is not well-described.

Methods. We conducted a retrospective matched cohort study of patients (1-19 years-old) who underwent a surgical procedure at a quaternary pediatric hospital during 2010-2017. Patients with documented BLA at the time of surgery were matched 1:1 to patients with no BLA by age at surgery, National Surgical Quality Improvement Program (NSQIP) category, surgical calendar year, and presence of complex chronic conditions (CCC). AMP by BLA status was considered appropriate if recommended by the 2013 American Society of Health-System Pharmacists (ASHP) guidelines, antibiotic class appropriate, or recommended by an infectious disease physician. McNemar's test was used to assess differences in SSI rates and antibiotic regimen appropriate for BLA status between BLA and no BLA groups.

Results. Of the 11878 surgical procedures among 9781 patients during the study period, 1021 (9%) of patients had a reported BLA and we matched 972. SSI was rare in both groups and there was no significant difference in rates (18 (1.9%) in no BLA, 17 (1.8%) in BLA, p=1.0). BLA were more likely to receive an antibiotic regimen considered inappropriate for BLA status (22%) compared to no BLA (3%) with 89% receiving a beta-lactam-containing AMP regimen (p<0.01).

Conclusion. BLA was not associated with increased SSI risk in the pediatric patients studied. Interestingly, a significant proportion of children with a documented allergy received a beta-lactam for AMP. This suggests some providers recognize that

allergy labels are inaccurate and may be comfortable administering beta-lactam AMP regardless of allergy status.

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907. Technology and Medicine: Prediction of Surgical Site Infection in Clean Surgeries using Artificial Neural Networks

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Session: P-42. HAI: Surgical Site Infections

Background. In Belo Horizonte, a city with 3,000,000 inhabitants, a survey was performed in six hospitals, between July 2016 and June 2018, about surgical site infection (SSI) in patients undergoing clean surgery procedures. The main objective is to statistically evaluate such incidences and enable an analysis of the SSI predictive power, through MLP (Multilayer Perceptron) pattern recognition algorithms.

Methods. Through the Hospital Infection Control Committees (CCIH) of the hospitals, a data collection on SSI was carried out through the software SACH - Automated System for Hospital Infection Control. So, three procedures were performed: a treatment of the collected database for use of intact samples; a statistical analysis on the profile of the collected hospitals; an evaluation of the predictive power of five types of MLPs (Backpropagation Standard, Momentum, Resilient Propagation, Weight Decay and Quick Propagation) for SSI prediction. The MLPs were tested with 3, 5, 7 and 10 neurons in the hidden layer and with a division of the database for the resampling process (65% or 75% for testing, 35% or 25% for validation). They were compared by measuring the AUC (Area Under the Curve - ranging from 0 to 1) presented for each of the configurations.

Results. From 45,990 records, 12,811 were able for analysis. The statistical analysis results were: the average age is 49 years old (predominantly between 30 and 50); the surgeries had an average time of 134.13 minutes; the average hospital stay is 4 days (from 0 to 200 days), the death rate reached 1% and the SSI 1.49%. A maximum prediction power of 0.742 was found.

Conclusion. There was a loss of 60% of the database samples due to the presence of noise. However, it was possible to have a relevant sample to assess the profile of these six hospitals. The predictive process, presented some configurations with results that reached 0.742, what promises the use of the structure for the monitoring of automated SSI for patients submitted to surgeries considered clean. To optimize data collection, enable other hospitals to use the prediction tool and minimize noise from the database, two mobile application were developed: one for monitoring the patient in the hospital and other for monitoring after hospital discharge. The SSI prediction analysis tool is available at www.nois.org.br.

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908. Evaluation of Blood Culture Submission Rates in Japan

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Session: P-43. HAI: Surveillance

Background. Blood culture tests are useful for accurate diagnosis of bacteremia and selection of antimicrobial treatment, and they are essential for instituting antimicrobial resistance (AMR) countermeasures. This study investigated blood culture submission rates in Japan and their association with the incidence of bloodstream infections.

Methods. Blood culture data recorded in the Japan Surveillance for Infection Prevention and Healthcare Epidemiology (J-SIPHE) database from January to December 2019 and data submitted for consecutive 12 months from acute care hospitals (hospitals with a mean length of patient stay of ≤19 days) were included for analysis. Samples comprised 1 set of blood culture samples (aerobic and anaerobic bottles) defined as one submission. The annual blood culture submission rate was calculated as