Results. AIC were systematically implemented over a 7-month period. The institution’s CLABSI SIR decreased from 0.80 to 0.59 during this timeframe. There were no NHSH defined CLABSI in patients with an AIC during the intervention. Obstacles included shortage of catheters due to supply chain disruption, adjustment of technique for line insertion and cracked/broken lines. Infections and complications were reviewed by the multidisciplinary team and compared to historical rates with non-impregnated lines.

CLAIR Standardized Infection Ratio (SIR)

This figure shows the institution’s rolling 12-month SIR during the intervention period.

Conclusion. CLABSI SIR decreased at our institution during the intervention period. While many efforts likely led to this reduction (optimizing maintenance bundle, unit based CLABSI initiatives), we believe the use of AIC contributed to this improvement. There were no pediatric-specific safety events identified during implementation.

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778. Prediction of Bloodstream Infection Events and Infections of the Lower Respiratory Tract in ICU Patients: Expected and Unexpected Infections

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Background. Bloodstream infection (BSI) – Central and Non-Central Line Associated - and infections of the lower respiratory tract (RESP) - pneumonia and non-pneumonia lower respiratory infections - are some of the main causes of unexpected death in Intensive Care Units (ICUs). Although the leading causes of these infections are already known, risk prediction models can be used to identify unexpected cases. This study aims to investigate whether or not it is possible to build multivariable models to predict BSI and RESP events.

Methods. Univariate and multivariate analysis using multiple logistic regression models were built to predict BSI and RESP events. ROC curve analysis was used to evaluate each model. Independent variables: 29 quantitative parameters and 131 categorical variables. BSI and RESP were identified using Brazilian Health Regulatory Agency protocols with data collected between January and November 2020 from a medical-surgical ICU in a Brazilian Hospital. Definitions: if an infection occurs, it will be classified as “unexpected”, or else, if an infection is 10% or less likely to occur according to the model used and it eventually occurs, it will be classified as “probably unexpected”. Otherwise, infections will be classified as “expected”. Patients with a 30% or more risk for BSI or RESP will be classified as “high risk”.

Results. A total of 1,171 patients were accessed: 70 patients with BSI (95% confidence interval [CI], 3.1%-5%), 66 patients with RESP (95% CI, 2.9%-4.7%), 235 deaths (95% CI, 11.8%-14.9%). Of the 160 potential risk factors evaluated, logistic models for BSI and RESP identified respectively five and seven predictors (Tables 1 and 2, and Figure 1). Patients admitted to the ICU with Covid-19 had a three fold BSI risk and five times more RESP risk than patients without this diagnosis.

Table 1. Independent predictors of Infections of the Lower Respiratory Tract in ICU: results of multivariate analysis performed using a logistic regression model.

| Variable                        | Logistic coefficient | S.E. | Odds Ratio | p-value |
|---------------------------------|----------------------|------|------------|---------|
| Comorbidity: Hypothyroidism     | 1.03                 | 0.31 | 2.8        | 0.0002  |
| Comorbidity: Autologous bone marrow transplantation | 3.09 | 0.17 | 21.89 | 0.0008 |
| Length of hospital stay before admission to the ICU (days) | 0.03 | 0.01 | 1.03 | 0.9941 |
| COVID-19 infection             | 1.63                 | 0.31 | 5.11       | 0.0097  |
| Number of secondary diagnosis at ICU | 0.27 | 0.03 | 1.31 | <0.001 |
| Constant                        | -5.16                |      |            |         |

Table 2. Independent predictors of Bloodstream Infection Events in ICU (Central Line-Associated BSI + Non-central Line Associated BSI): results of multivariable analysis performed using a logistic regression model.

| Variable                        | Logistic coefficient | S.E. | Odds Ratio | p-value |
|---------------------------------|----------------------|------|------------|---------|
| Blood transfusion at ICU        | 1.22                 | 0.30 | 3.38       | 0.0002  |
| Comorbidity: Morbid obesity     | 1.10                 | 0.40 | 3.02       | 0.0051  |
| Seizures at ICU admission       | 1.36                 | 0.57 | 3.88       | 0.0163  |
| Comorbidity: Immunosuppression  | 0.93                 | 0.28 | 2.54       | 0.0022  |
| COVID-19 infection              | 1.20                 | 0.35 | 3.30       | 0.0026  |
| Comorbidity: diabetes with complications | 0.89 | 0.35 | 2.42 | 0.0139 |
| Number of secondary diagnosis at ICU | 0.19 | 0.03 | 1.21 | <0.001 |
| Constant                        | -5.04                |      |            |         |

Conclusion. The built models make possible the identification of the expected infections and the unexpected ones. Three main course of actions can be taken using these models and associated data: (1) Before the occurrence of BSI and RESP: to place high risk patients under more rigorous infection surveillance. (2) After the occurrence of BSI or RESP: to investigate “unexpected” infections. (3) At discharge: to identify high risk patients with no infections for further studies.

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779. COVID-19 Pandemic and Catheter-associated Urinary Tract Infection Trends

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