

Changes in Rate of Methicillin-Resistant Staphylococcus Infection in a Community Neonatal Intensive Care Unit Before and During the COVID-19 Pandemic.

Abby Blumenfeld, B.S., Michelle Hagans, B.S.N., Christina Chan, M.D.

Background:

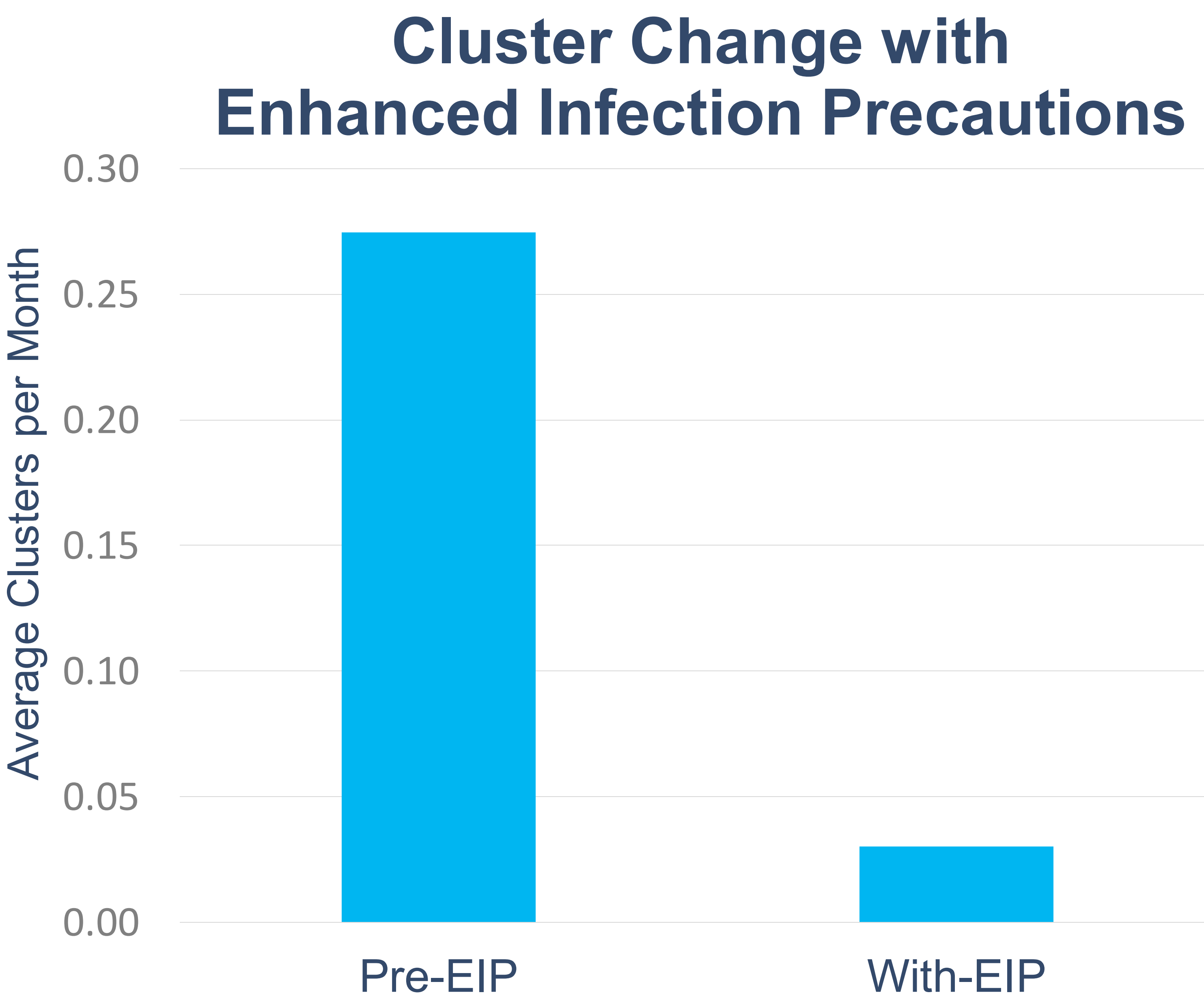
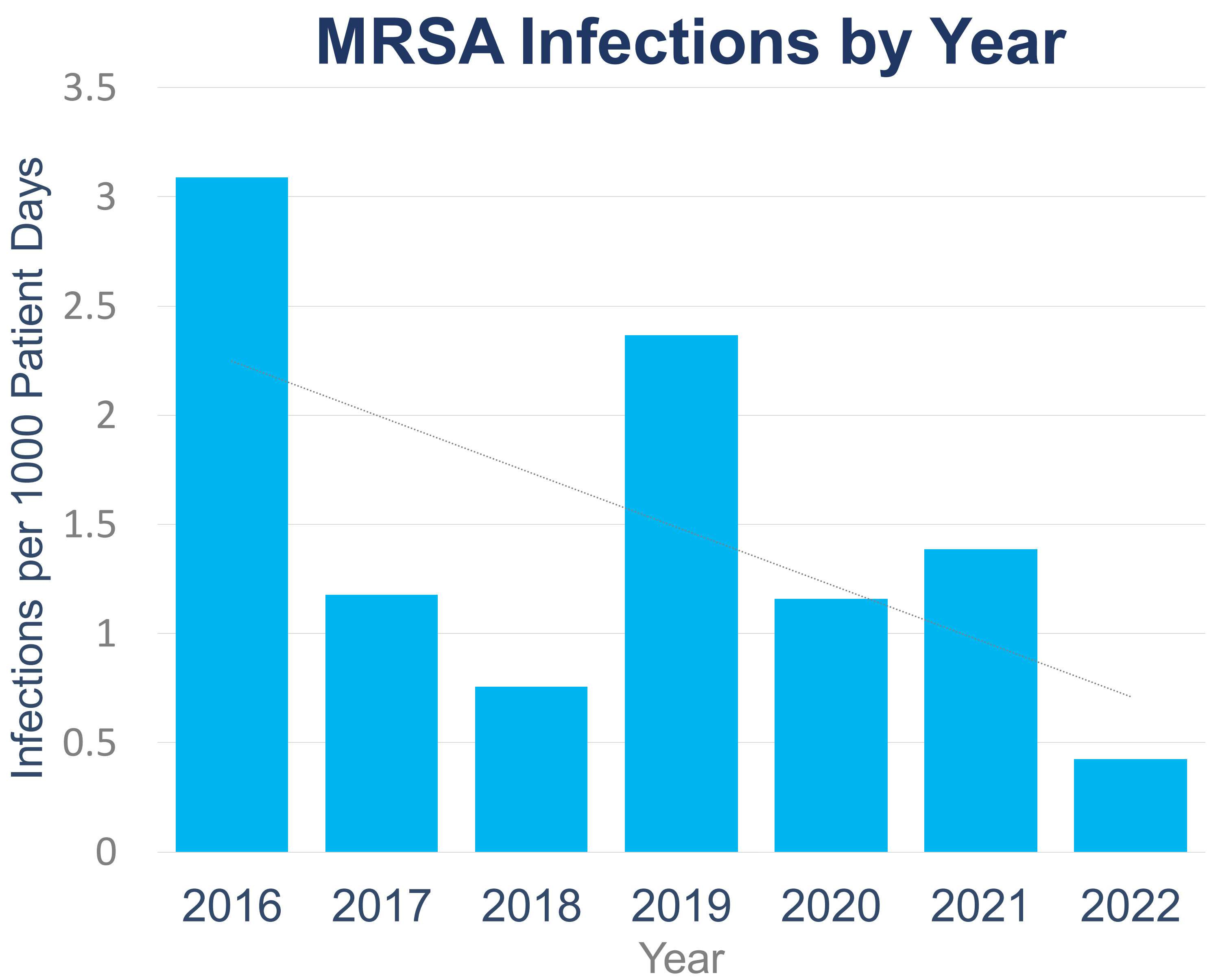
- Neonatal Intensive Care Unit (NICU) infants are particularly susceptible to infection and are at a higher morbidity and mortality risk.
- ~2% of NICU infants are colonized with Methicillin-Resistant Staphylococcus aureus (MRSA), with 25% developing infection.
- Incidence of MRSA infections has remained stable at 10 per 10,000 hospitalized infants over the last two decades.
- The impact of enhanced infection precautions during COVID-19 on rates of MRSA has not been well studied.

Objective:

To compare rates of NICU MRSA infection before and after **enhanced infection precautions (EIP)** were implemented for the COVID-19 Pandemic.

Methods:

- MRSA cases were collected using laboratory and electronic medical record review.
 - 56 MRSA+ neonates in the **Pre-EIP** period, January 2016 - March 2020.
 - 18 MRSA+ neonates in the **With-EIP** period, April 2020 - December 2022.
- Cases were reported as infections per 1,000 patient days (**IP-1000**).
- Statistical analysis by two-sample t-tests assuming unequal variance and chi squared tests for independence.



Results:

- Significant decrease in **MRSA IP-1000** from 1.90 Pre-EIP to 0.93 With-EIP ($p < 0.01$).
- Significant decrease in **MRSA clusters** (3 infections within a 30-day period) from 0.27 Pre-EIP to 0.03 With-EIP ($p < 0.01$).

Characteristic	Pre-EIP N = 56	With-EIP N = 18	p-value
Maternal age (years)	29.6	31.8	0.1
GA at birth (weeks)	30.2	33.8	<0.01*
Birthweight (grams)	1580	2120	0.01*
Inborn (%)	87.5%	100%	0.1
VLBW (%)	58.9%	27.8%	0.02*
Acuity Score	730	675	0.1
Average Daily Census	19.6	19.8	0.4
DOL MRSA+ (days)	25.1	10.3	<0.01*
Total LOS (days)	62.8	26.4	<0.01*

Conclusion:

- Significant reduction** in MRSA infection rate by IP-1000 and MRSA clusters from the Pre-EIP period to the With-EIP period.
- EIP may have contributed to the reduction in MRSA infections and clusters.
- Further study is needed to determine correlation vs causation.
- Limitations: differences in cohort risk factors, small study population, variabilities in infection precautions, and retrospective cohort bias.