EPIDEMIOLOGY OF HEALTHCARE-ASSOCIATED INFECTION IN NEONATES IN A TERTIARY PEDIATRIC HOSPITAL

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OBJECTIVE

To determine the epidemiology of Healthcare associated infections (HAI) in neonates in a tertiary pediatric hospital.

METHODOLOGY

A retrospective cohort descriptive study of neonatal patients with HAIs at NCH from January 1, 2017 to December 31, 2019 was done. Review of the charts of eligible neonates was done. Determination of clinical profile of neonates, common isolated pathogen and their antimicrobial susceptibility and resistance profile were analyzed using frequency and percentage, 95% confidence interval was calculated according to clinical areas.

RESULTS

The number of HAIs in each year from 2017 to 2019 were at 17 (18.8 %), 29 (32.2%) and 44 (48.9%) respectively [Fig. 1]. The average length of stay of patients with HAI was 17.5 days across all types of HAIs. In terms of outcome, the outcome of each HAI type was mostly improved, in contrast a high percentage of cases with both Ventilator-associated infections and Bloodstream infections had died (60%) [Fig. 2]. Our study revealed predominance of gram-negative organisms. More than half of the pathogen associated with blood stream infection was *Burkholderia cepacia* [Fig. 3]. Report on the antimicrobial susceptibility showed that Ceftazidime had high susceptibility for *B. cepacia* and Amikacin had high susceptibility for *Klebsiella pneumonia* from 2017 to 2019 [Fig. 4, Fig. 5].

FIG. 1 ANNUAL NUMBER OF HAI

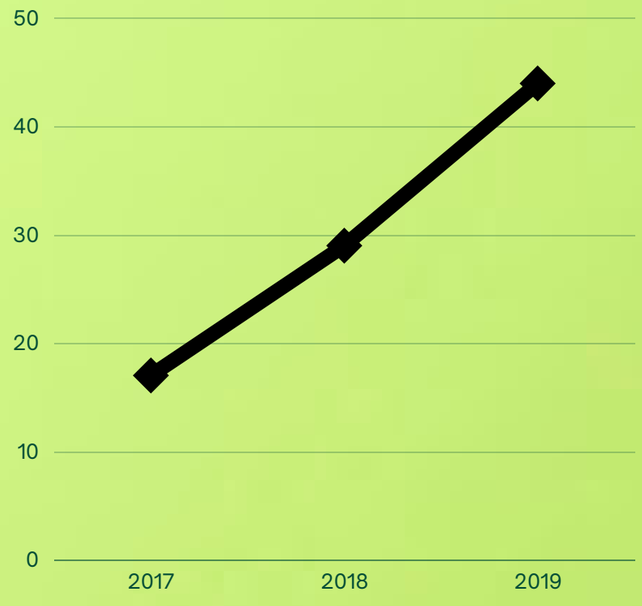


FIG. 2 OUTCOME OF PATIENTS BY TYPE OF HAI

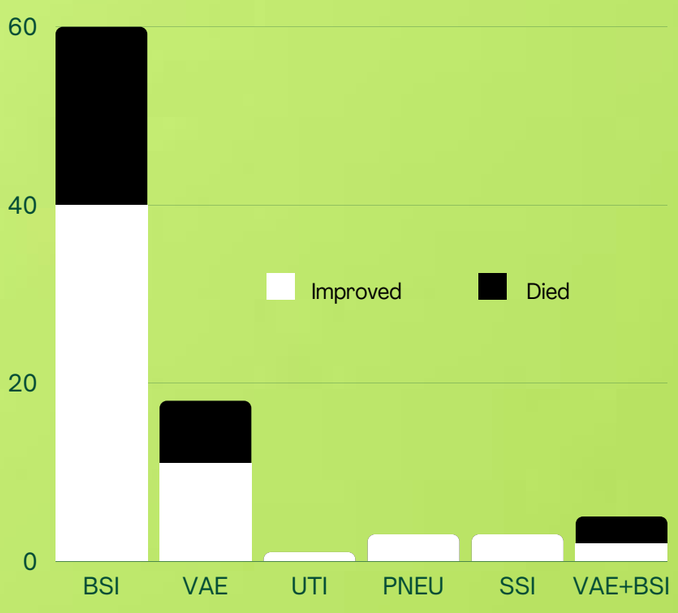


FIG 3. COMMON MICROBIAL PATHOGENS ISOLATED IN NEONATES FROM ALL TYPES OF HAI

Table 3A.1. Common microbial pathogens isolated in neonates from all types Healthcare associated infection listed by clinical areas, NCH, Jan. 2017 - Dec. 2019

	Clinical Areas							
	Neonatology		NICU		Surgery		TOTAL	
Organism	n	%	n	%	n	%	n	%
Burkholderia cepacia	27	49.1%	5	21.7%	0	0.0%	**32**	**35.6%**
Klebsiella pneumonia	10	18.2%	8	34.8%	4	33.3%	**22**	**24.4%**
Acinetobacter baumanii	1	1.8%	2	8.7%	0	0.0%	**3**	**3.3%**
Candida pelliculosa	2	3.6%	1	4.3%	0	0.0%	**3**	**3.3%**
Burkholderia cepacia+Candida	2	3.6%	0	0.0%	0	0.0%	**2**	**2.2%**
Pseudomonas aeruginosa Carbapanemase	2	3.6%	0	0.0%	4	33.3%	**6**	**6.7%**
Escherichia coli	1	1.8%	1	4.3%	0	0.0%	**2**	**2.2%**
Serratia Marcescens	2	3.6%	1	4.3%	0	0.0%	**3**	**3.3%**
Burkholderia cepacia+Proteus mirabilis	1	1.8%	0	0.0%	0	0.0%	**1**	**1.1%**
Pseudomonas stutzeri	0	0.0%	1	4.3%	0	0.0%	**1**	**1.1%**
Staphy haemolyticus	1	1.8%	0	0.0%	0	0.0%	**1**	**1.1%**
Pseudomonas aeruginosa +Klebsiella pneumonia	1	1.8%	0	0.0%	2	16.7%	**3**	**3.3%**
Candida Guilliermondii	1	1.8%	0	0.0%	0	0.0%	**1**	**1.1%**
Pseudomonas aeruginosa Carbapanemase+Burkhoderia cepacia	0	0.0%	0	0.0%	1	8.3%	**1**	**1.1%**
No Microorganism	4	7.3%	4	17.4%	1	8.3%	**9**	**10.0%**
Total	55	100.0%	23	100.0%	12	100.0%	**90**	**100.0%**

FIG 4. ANNUAL ANTIMICROBIAL SUSCEPTIBILITY *(Burkholdria cepacia)*

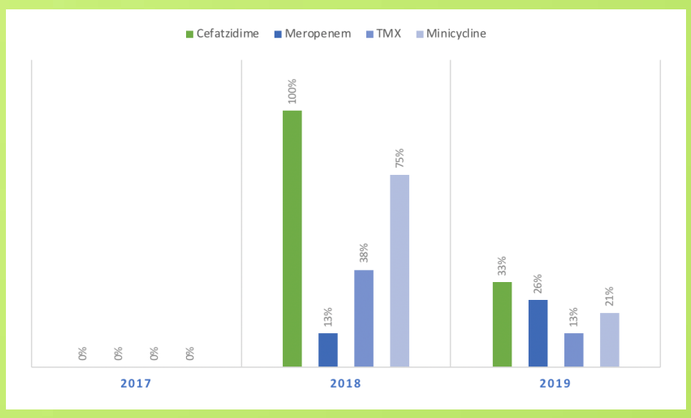
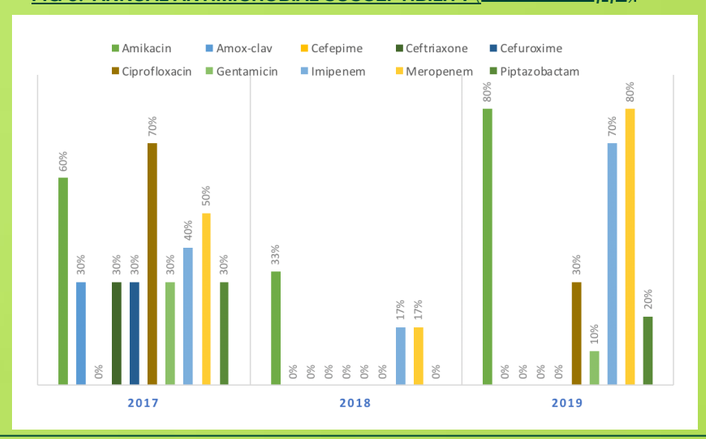


FIG 5. ANNUAL ANTIMICROBIAL SUSCEPTIBILITY *(Klebsiella spp.)*



CONCLUSION

HAIs had an increasing trend with a high percentage of mortality. Whereas antimicrobial susceptibility remained constant for the common pathogens isolated.

RECOMMENDATION

A surveillance for extensively drug-resistant pathogen is recommended. Further research focused on the risk factors leading to the increasing number of BSI is suggested to enhance control and decrease the prevalence of HAI. Studies involving the effectiveness of preventive measures and control programs are likewise recommended.

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