



PREDICTORS OF MORTALITY IN PATIENTS WITH NEONATAL SEPSIS BORN AND ADMITTED AT NEONATAL INTENSIVE CARE UNIT OF A TERTIARY GOVERNMENT HOSPITAL

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BACKGROUND

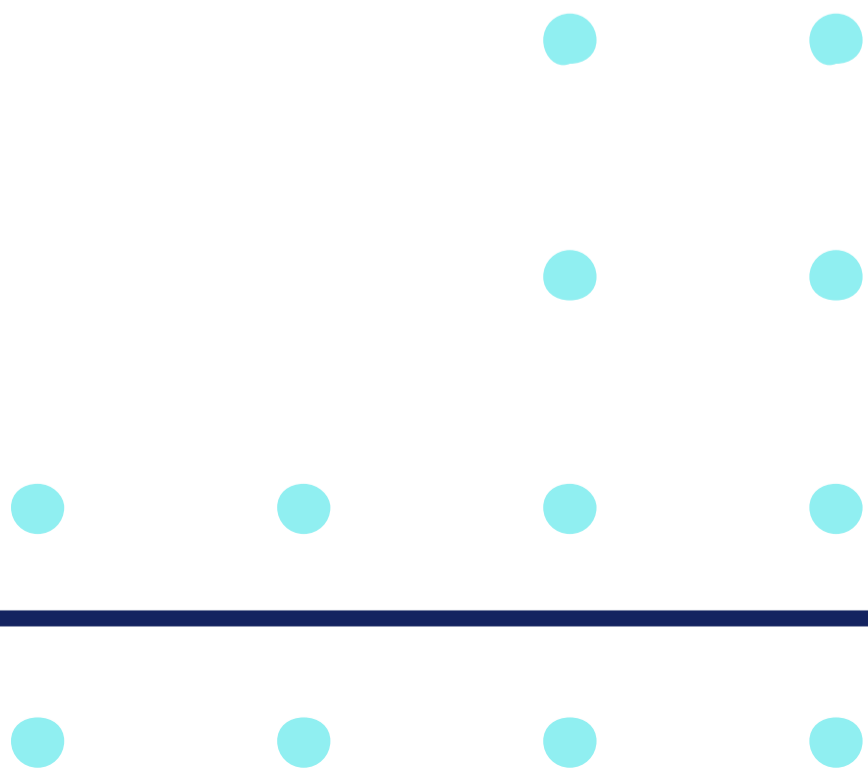
Neonatal sepsis has been a huge public health burden not in the Philippines but globally in terms of morbidity and mortality. Hence it is imperative to be continuously vigilant in investigating its incidence and risk factors for mortality in order to better improve health outcomes of patients. This study was conducted to evaluate the predictors of mortality of patients with neonatal sepsis born and admitted at NICU of a tertiary government hospital from January to December 2021.





OBJECTIVES

General Objective: To evaluate the predictors of mortality of patients with neonatal sepsis born and admitted at NICU of a tertiary government hospital from January to December 2021.

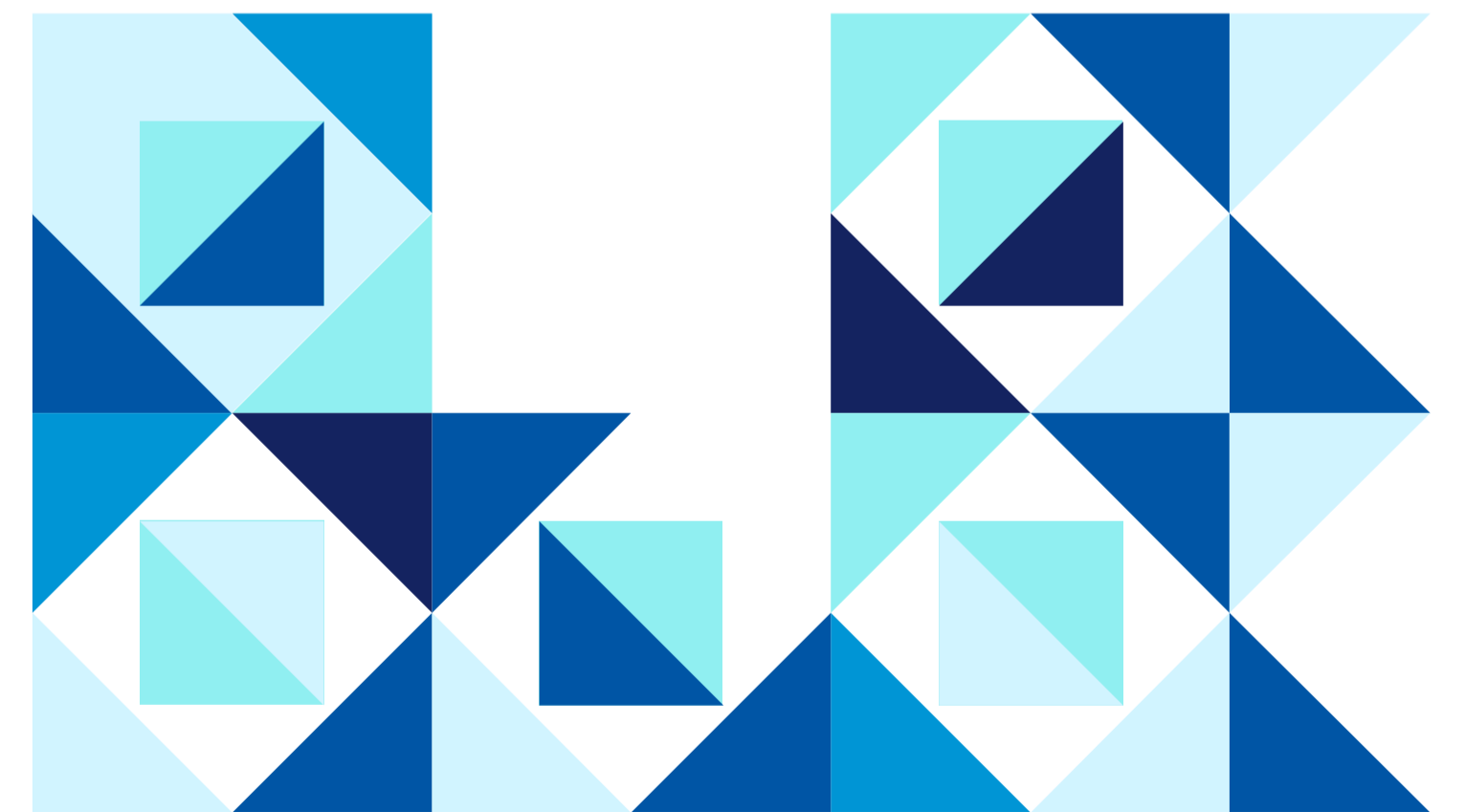
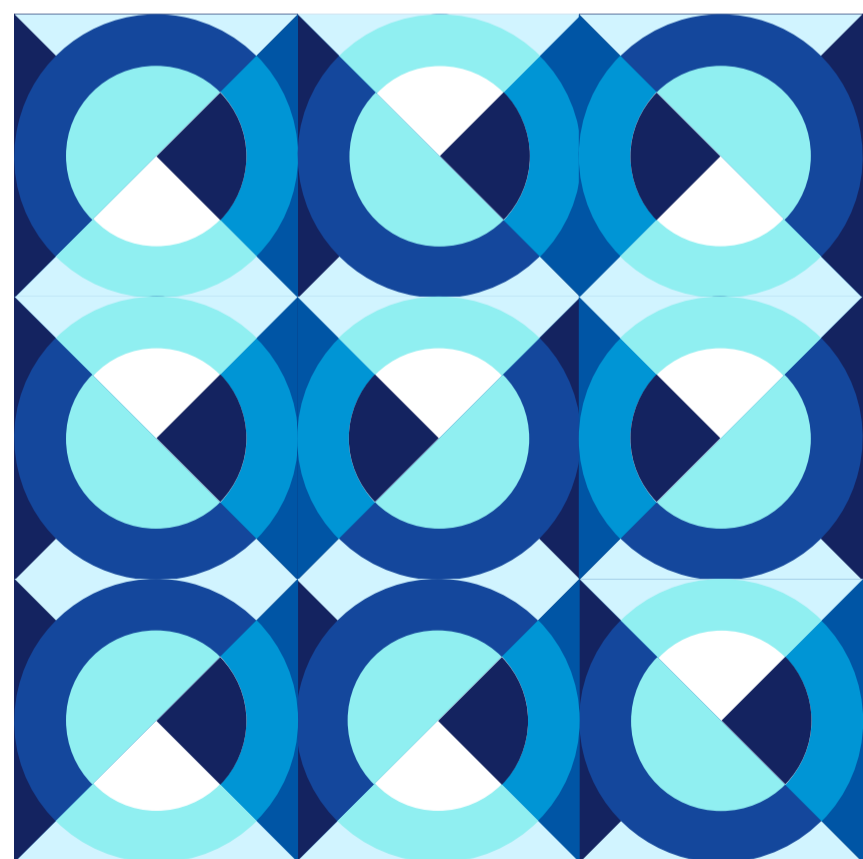


METHODOLOGY

<i>Study Design</i>	Prospective, cross sectional study.
<i>Setting</i>	The study was conducted in Pamantasan ng Lungsod ng Maynila- Ospital ng Maynila Medical Center (PLM-OMMC), Manila, Philippines.
<i>Study Population</i>	The study population were patients with Neonatal Sepsis admitted at NICU.
<i>Sampling design</i>	The study made use of purposive sampling where only those who satisfied the inclusion criteria will form part of the research.
<i>Inclusion Criteria</i>	All patients admitted at NICU with Neonatal Sepsis as defined by 2001 International Pediatric Sepsis Consensus Conference ¹⁷ were included in the study. Patients were grouped into Clinical sepsis those who fulfilled the definition of neonatal sepsis but no growth on blood culture and Culture-positive sepsis those who have clinical sepsis with isolated organism on blood culture.
<i>Exclusion Criteria</i>	All patients admitted as a case Neonatal Sepsis but blood culture was not done and whose mothers did not consent to participate in the study.
<i>Data Collection</i>	Prior to data collection, protocol of the study was submitted for review and approval by the Ethics Committee Board. All data were collected at the time of admission through interviewing all mother whose neonates were admitted as a case of Neonatal Sepsis at the NICU. Consent was signed prior to the conduct of the study. Clinico-demographic data and monitoring of patient's course in the ICU were obtained by daily chart review by the author. All investigations and procedures were performed as per the standard routine practices in the NICU, and no additional interventions were advised as part of the study.

RESULTS

A total of 58 neonates with sepsis were included in the study. A significantly higher proportion of neonates with culture proven sepsis was noted among those with an APGAR score of <6 than those with clinical sepsis with 60% and 17% respectively ($p=0.05$). Non-survival increases with decreasing birthweight <1000 grams (80%), APGAR score of <6 at 1 minute ($p=0.02$) and at 5 minutes ($p=0.01$), on mechanical ventilation ($p<0.0001$), with co-morbidities of Respiratory Distress Syndrome ($p=0.03$) and Congenital anomalies ($p=0.02$), with clinical features with p-value of <0.0001 were decreased perfusion (92.3%), bleeding (73.7%) , and sclerema (90.9%), thrombocytopenia ($p=0.001$), and those with a positive blood culture result ($p=0.01$).



RESULTS

	n= 58	Survivors	Non-Survivors	p-value*
		(n = 42)	(n = 16)	
		Frequency (%)		
Clinical Features				
Lethargy	2	1 (50.0%)	1 (50.0%)	0.96 ‡
Seizure	1	0	1 (100%)	0.55 ‡
Hypothermia/Hyperthermia	4	1 (25.0%)	3 (75.0%)	0.11 ‡
Feeding intolerance	9	6 (66.7%)	3 (33.3%)	0.95 ‡
Respiratory Distress/Apnea	42	28 (66.7%)	14 (33.3%)	0.19 ‡
Jaundice	19	13 (68.4%)	6 (31.6%)	0.64 †
Prolonged Capillary Refill Time > 2 seconds (Decreased Perfusion)	13	1 (7.7%)	12 (92.3%)	<0.0001 ‡
Bleeding	19	5 (26.3%)	14 (73.7%)	<0.0001 †
Edema	7	4 (57.1%)	3 (42.9%)	0.38 ‡
Sclerema	11	1 (9.1%)	10 (90.9%)	<0.0001 †
Laboratory Investigation				
Complete Blood Count				
White blood cell count (leukopenia <5 x 10 ³ /uL)	30	19 (65.5%)	10 (34.5%)	0.24 ‡
Platelet count (thrombocytopenia <150 x 10 ⁹ /uL)	27	14 (51.9%)	13 (48.1%)	0.001 ‡
Blood Culture				
Positive	12	5 (41.7%)	7 (58.3%)	0.01 ‡
Negative	46	37 (80.4%)	9 (19.6%)	

Table 3. Clinical and Laboratory Profile of Patients with Clinical and Confirmed Sepsis who are Survivors and Non-Survivors admitted at NICU of PLM-OMMC from January to December 2021

* $p > 0.05$ - Not significant; $p \leq 0.05$ -Significant

† Chi-square test; ‡ Fisher Exact test



RESULTS

Variable	OR	95% CI	P value
Birthweight (<1000 grams)	7.02	0.002 – 19736.23	0.63 (NS)
APGAR Score at 1 minute (<6)	2.21	0.06 – 77.53	0.66 (NS)
Mechanical Ventilation	1.55	0.07 – 33.18	0.78 (NS)
Respiratory Distress Syndrome	1.41	0.02 – 100.71	0.87 (NS)
Decreased Perfusion	75.63	1.73 – 3311.75	0.02 (S)
Bleeding	15.10	1.32 – 343.62	0.03 (S)
Sclerema	7.54	0.08 – 737.27	0.39 (NS)
Blood Culture (+)	19.09	0.83 – 438.31	0.06 (NS)

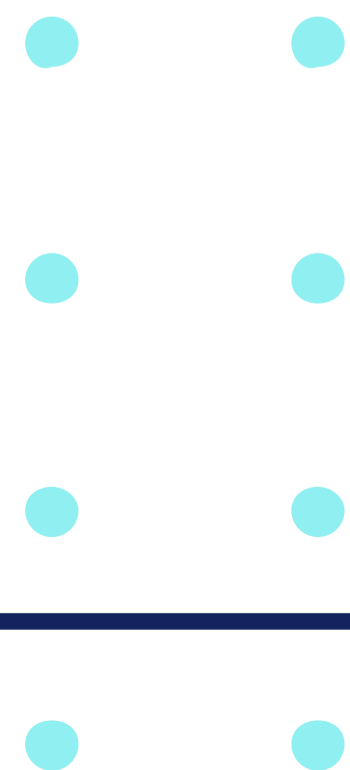
Logistic Regression Analysis

Table 5. Predictors of Mortality in Patients with Neonatal Sepsis admitted at NICU of PLM-OMMC from January to December 2021



CONCLUSION

Decreased perfusion and bleeding were found to be significant risk factors for mortality among neonatal sepsis. The risk of neonates with decreased perfusion for mortality or being a non-survivor was almost 76x higher and the risk of neonates with bleeding was 15x higher than those without these clinical signs.





RECOMMENDATION

- ❑ At the community level, health awareness must be strengthened regarding prevention of risk factors for neonatal sepsis.
- ❑ Timely reporting and implementation of infection control measures are important interventions in preventing any outbreak caused by isolated organisms.
- ❑ The hospital administration must create an Antibiotic Stewardship Guideline with frequent monitoring of the most common isolated organisms in the institution in order to minimize multiple antibiotic resistance in patients.

