

**BACTERIOLOGICAL PROFILE OF NEONATAL  
SEPTICAEMIA**

**A  
DISSERTATION  
SUBMITTED TO THE CENTRAL DEPARTMENT OF MICROBIOLOGY  
TRIBHUVAN UNIVERSITY**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF  
THE DEGREE OF MASTER OF SCIENCE IN MICROBIOLOGY  
(MEDICAL)**

**BY  
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This is to certify that **Mr. DINESH SUBEDI** has completed this dissertation work entitled “**BACTERIOLOGICAL PROFILE OF NEONATAL SEPTICAEMIA**” as a partial fulfillment of Master of Science Degree in Microbiology under our supervision. To our knowledge, this work has not been submitted for any other degree.

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## ABSTRACT

Neonatal septicaemia is a life threatening emergency and is one of the commonest causes of early neonatal mortality and morbidity. This study was conducted in Paropakar Maternity and Women's Hospital, Kathmandu from 15<sup>th</sup> June to 15<sup>th</sup> December 2009, to determine the profile of bacteria responsible for neonatal septicaemia, their relation between gestation age, sex, mode of delivery, CRP level, weight, and sign and symptoms of neonates. The susceptibility to common antibiotics was also determined.

The study included 690 NICU admitted neonates. Of which, 194 blood samples showed culture positive results indicating total prevalence of 28.1% (194/690). Of which 67.0% organism from Gram negative bacteria and 33.0% organisms from Gram positive bacteria were isolated. In Gram negative, the most predominant was *E. coli* (51.0% 99/194) followed by *Klebsiella pneumoniae* (12.4% 24/194), *Enterobacter cloacae* (0.5% 6/194) and *Pseudomonas aeruginosa* (0.5% 1/194) from Gram positive most prevalent was Coagulase Negative Staphylococcus (26.3% 51/194) followed by *Staphylococcus aureus* (4.6% 9/194) and *Streptococcus* spp. (2.1% 4/194).

The incidence of septicaemia was found to be high in preterm infants 34.8% ( $p = 0.024$ ). Neonates with low birth weight had higher culture positive result ( $p = 0.022$ ). Fever, Poor cry, low birth weight, and chorioalantosis are major clinical sign and symptoms associated with bacterial sepsis ( $p = 0.004$ ). But the study did not found any significant association between sex of the neonates, CRP level, and mode of delivery with growth of the organisms in culture. The most efficient antibiotic in *E. coli* was found chloramphenicol (94.9%). In *K. pneumoniae* again chloramphenicol (87.5%) was found most susceptible, in coagulase negative staphylococcus and *Streptococcus* spp. maximal efficient antibiotic was found amikacin (90.2%) and tobramycin (77.7%) respectively. *K. pneumoniae*, *E. coli*, *E. cloacae*, and *P. aeruginosa* showed a low sensitivity to ampicillin, tobramycin, and gentamycin.

Neonatal septicaemia in this hospital mainly caused by gram negative organisms which are resistance to commonly used drugs. Surveillance is required on regular basis.

**Keywords:** Neonatal septicaemia, Bacterial isolates, sensitivity patterns

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## LIST OF ABBREVIATIONS

µg	:	Microgram
A/A	:	Acid/ Acid
Alk/A	:	Alkali/ Acid
ANS	:	Absolute Neutrophil count
ARI	:	Antibiotics Resistance Index
BA	:	Blood Agar
CDC	:	Centre for Disease Control
CoNS	:	Coagulase Negative Staphylococci
CRP	:	C- reactive protein
EOS	:	Early-onset Type
GBS	:	Group B Streptococcus
Gm	:	Gram
H <sub>2</sub> S	:	Hydrogen Sulphide
Hrs	:	Hours
LBW	:	Low birth weight
LF	:	Lactose fermenting
LOS	:	Late-onset Type
MA	:	MacConkey agar
MHA	:	Mueller Hinton Agar
MIC	:	Minimum Inhibitory Concentration
Min	:	Minutes
ml	:	Milliliter
MR	:	Methyl Red
NA	:	Nutrient agar
NCCLS	:	National Committee for Clinical Laboratory Standards
NICU	:	Neonatal intensive care unit
NLF	:	Non-lactose fermenting
PBU	:	Premature baby care
PCOD	:	Polycystic ovary syndrome
RBC	:	Red Blood Cells
SIM	:	Sulphide Indole Motility

TSI	:	Triple Sugar Iron
UTI	:	Urinary Tract Infection
VLBW	:	Very low birth weight
VP	:	Voges Proskauer
VRE	:	Vancomycin-resistant Enterococcus
WBC	:	White Blood Cells
WHO	:	World Health Organization