

Where Life Begins at Risk !

Neonatal Morbidity and Mortality Patterns in Conflict Affected Setting Al-Salam Hospital, Khamer, Amran-Yemen, 2023

A Retrospective Descriptive Study

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BACKGROUND

- In 2022, Yemen's neonatal mortality rate (NMR) was 22 per 1,000 live births, exceeding the global rate of 17
- Since 2015, war and siege have strained healthcare access and infrastructure, harming neonatal and maternal health.
- Al Salam MSF Hospital (2018 – 2023)**
607 neonatal deaths (15%) out of 4,058 neonatal admissions

OBJECTIVES

- Primary Objective:** describe the neonatal mortality and morbidity at Al-slam hospital neonatal inpatient department (NIPD)
- Secondary Objectives:**
 - Identify leading factors of in hospital mortality and their prevalence among study cohort (inborn & outborn)
 - Examine mother factors to neonatal outcomes among inborn neonates

METHODS

- Study design:** Retrospective hospital-based analysis
- Study Population:** All neonates admitted to Al-Salam Hospital NIPD, Amran governorate, Yemen in 2023 (n= 906)
- Data Collection:** Extracted from patient files, anonymized and recorded in REDCap
- Data Analysis:** Descriptive statistics and univariate/bivariate analysis analyzed using R studio

RESULTS

Demographic & Baseline Characteristics

Table 1. Neonatal characteristics by admission source 2023

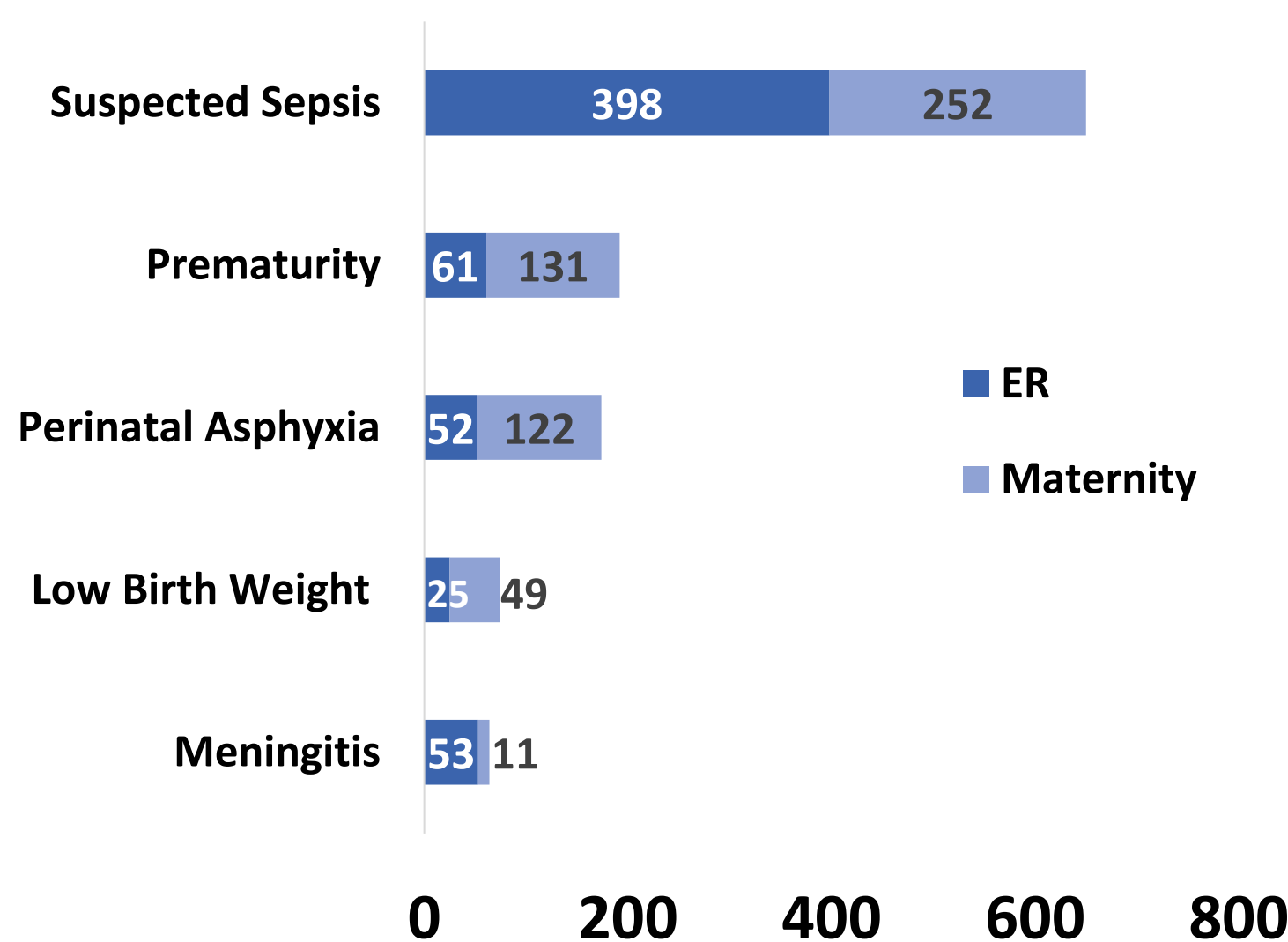
Characteristic	ER (outborn) n = 486	Maternity (Inborn) n = 420	Overall N = 906	p-value
Sex, n (%)				0.2
Female	204 (42)	194 (46)	398 (44)	
Male	282 (58)	226 (54)	508 (56)	
Age at admission (days)				<0.001
Median (IQR)	5 (2, 15)	0 (0, 0)	1 (0, 6)	
Weight at admission (KG)				0.003
Median (IQR)	2.6 (2, 3)	2.4 (1.7, 2.9)	2.5 (1.8, 3)	
Gestational Age (weeks), n(%)				<0.001
Pre-term (≤37 weeks)	122 (27)	176 (42)	298 (34)	

ER = Emergency room; IQR = Interquartile range

Most common diagnoses by admission source

- 55% of neonates (n = 499) had a single diagnosis; 45% (n = 407) had multiple
- Sepsis was most common, 61% (398/650) of sepsis admitted via ER
- About 70 % (131/ 192) of premature admitted from maternity
- 70% (n = 122/174) of perinatal asphyxia cases were admitted from maternity

Fig 1. Most common diagnoses

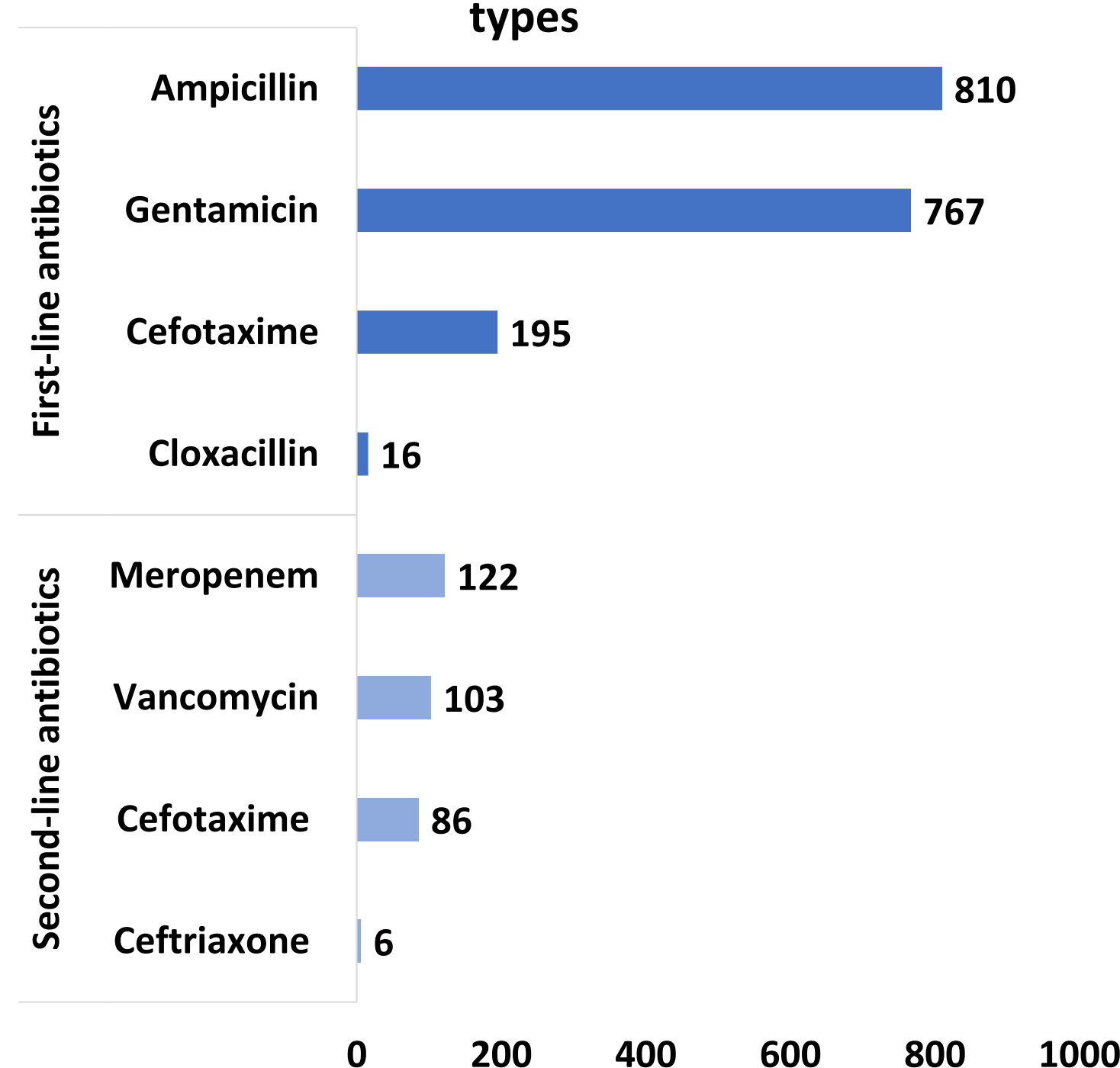


Treatment: Antibiotic & Oxygen Therapy

Prescription of antibiotics and antibiotic types

- During hospitalization, 96% (n = 873) of neonates received antibiotic
- Ampicillin (89%) and Gentamicin (85%) were the most common first-line antibiotics
- Meropenem (39%) and Vancomycin (32%) were the leading second-line choices

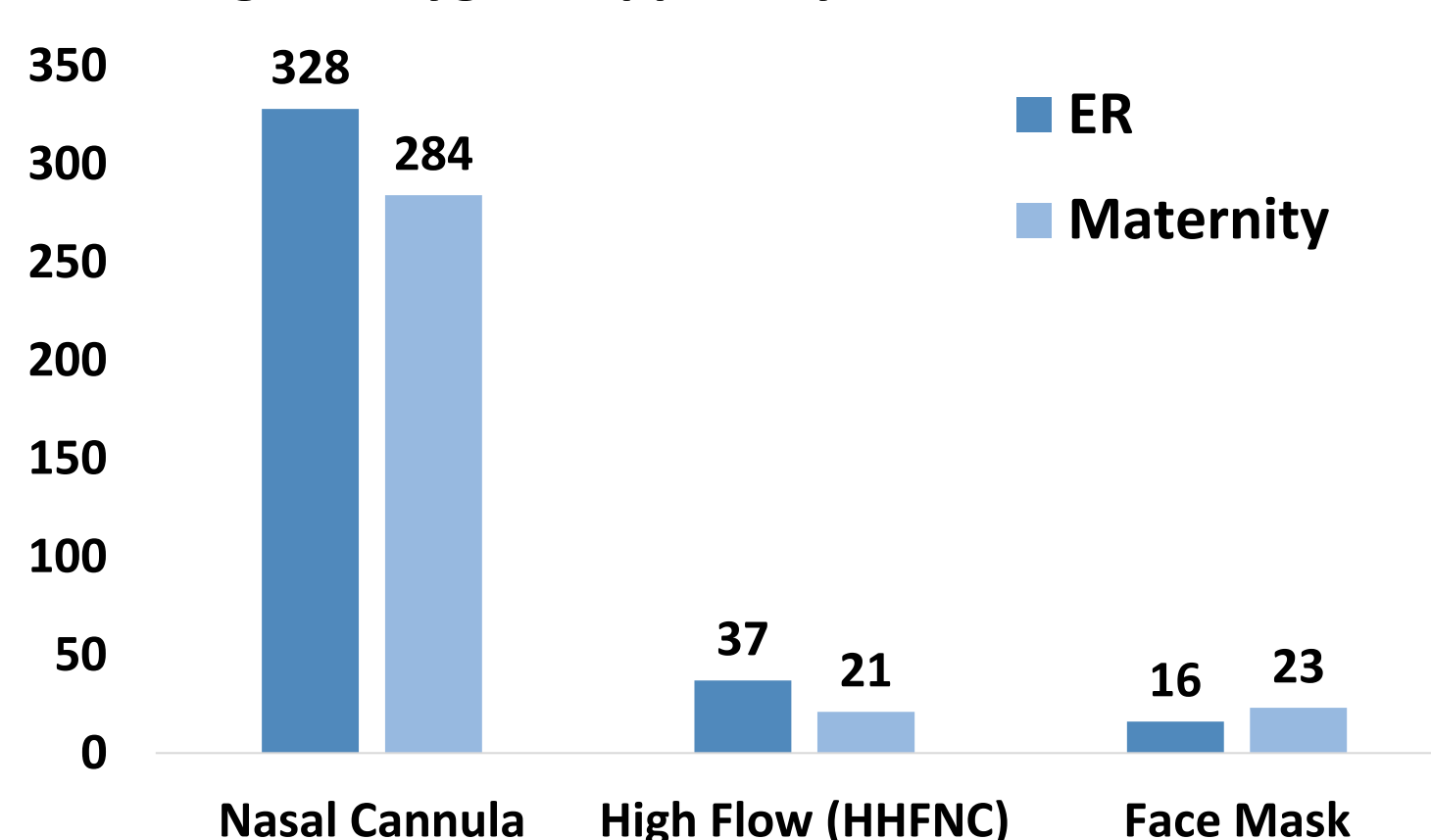
Fig 2 . Distribution of neonates by of antibiotics types



Oxygen Support

- Among 906 cases 72.9% (606) received oxygen
- Nasal cannula was the primary method used
- HHFNC(Humified High Flue Nasal Cannula) was primarily utilized for ER/ outborn neonates

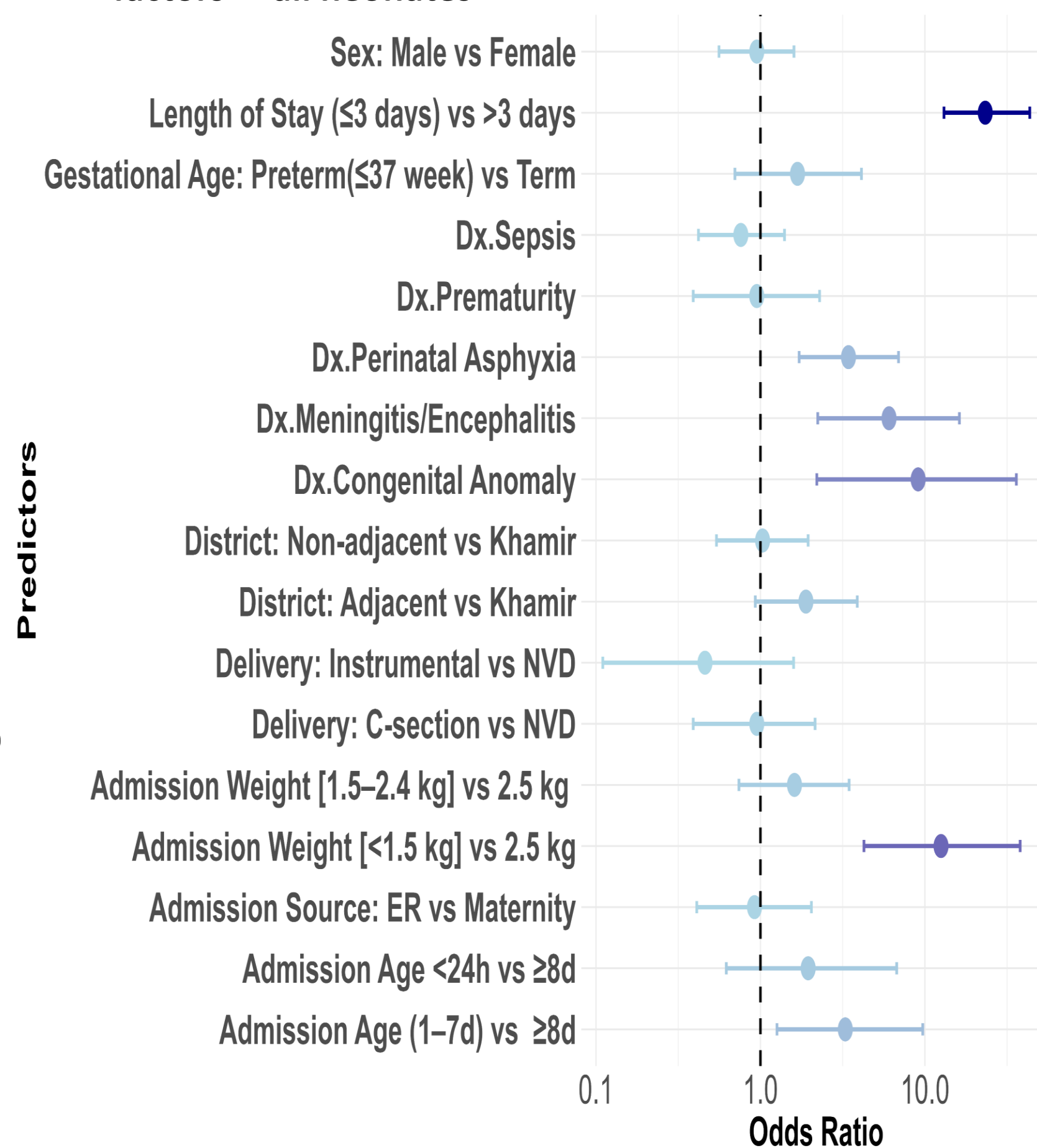
Fig 3 . Oxygen support by admission source



In-hospital Neonatal Mortality Risk Factors – all Neonates (Inborn & Outborn)

- In-hospital NMR was 15 per 100 live births (135/906; 95% CI: 13–17)**
- Increased mortality risk among:
 - Short length of stay (≤3 days)
 - Very low birth weight (<1500 g)
 - Perinatal asphyxia
 - Meningitis/Encephalitis
 - Congenital anomalies
 - Admission age (1–7 days)

Fig 4. Forest plot of in-hospital neonatal mortality risk factors – all neonates



Maternal-related Risk Factors for in-Hospital Neonatal Mortality among Inborn Neonate

Table 2. Maternal Risk Factors Associated with in-hospital Neonatal Mortality

Variable	Adj. OR (95% CI)	p-value
Maternal age 35-39 vs 20-34	0.25 (0.06–0.86)	0.041
Abortions ≥3 vs 0	9.29 (2.03–45.2)	0.004
1st stage labor (Cx 4-10) vs 2nd (Cx=10)	0.32 (0.11–0.86)	0.029

CONCLUSIONS

In 2023, MSF-supported Al-Salam Hospital in Amran governorate experienced high neonatal admissions and mortality rates, reflecting critical challenges in neonatal care.

Recommendations

- Allocate additional resources** to enhance neonatal care infrastructure, staffing, and training
- Prioritize improved respiratory support**, particularly for preterm neonates and those with perinatal asphyxia
- Implement rational and evidence-based **antibiotic regimens** to combat sepsis while mitigating antibiotic resistance
- Regularly evaluate neonatal outcomes** to identify gaps and improve care protocols