

Neonatal admissions to Kavieng Provincial Hospital 2020-2023

A retrospective descriptive study

Dr. E. Gugu (DCH)

5 September 2024

INTRODUCTION

- Globally: 4.9 million under 5 deaths in 2022, 47% (2.3 million) were neonatal deaths.
- PNG 2022, 34% of Pediatric admissions were neonatal in 17 hospitals in the country, and 50% of paediatric deaths.
- Neonatal conditions are among the leading causes of admissions and deaths, amongst the under 5 years old category.

UN IGME data for PNG	1990	2022	SD Goal 2030
Under 5 mortality rate (per 1000 live births)	85	41	25
Neonatal mortality rate (per 1000 live births)	33	21	12

INTRODUCTION

- Kavieng Provincial Hospital catchment = 35,184
- The under 5 population of Kavieng = 16% of catchment population
- Kavieng nursery receives referrals from
 - various aid posts
 - health centers and
 - Namatanai Rural Hospital,
 - majority of babies admitted via maternity wing

AIMS

- To obtain background data over 4 years (2020-2023), and use it to determine ways of improving neonatal care and **reducing preventable neonatal deaths** in New Ireland Province.

METHODOLOGY

- **Study Design:** Retrospective descriptive study
- **Study Population:** Neonates born in KPH labor ward, those born in outside centers and referred in and those that presented through COPD.
- **Source of Data:** Nursery Admission Record Book
- **Dates of data collected:** January 2020 to December 2023
- **Data excluded:** Newborns that died before admission or before arrival to the hospital.
- Data sheet tabulated in Microsoft Excel and analyzed using STATA Version 18.

METHODOLOGY

- Logistic regression analysis was used to assess risk factors for death.
- Variables such as **prematurity, very low birth weight (VLBW), birth asphyxia, unbooked mother and neonatal deaths from mothers residing in Namatanai district**, were analyzed.

METHODOLOGY

- Information Collected:
 - Sex
 - Age
 - Date of birth
 - Date of admission
 - Birth weight
 - Diagnosis
 - Residential area
 - Mother Booked/Unbooked
 - Referral center
 - Discharge date
 - Length of hospital stay
 - Outcome were all collected

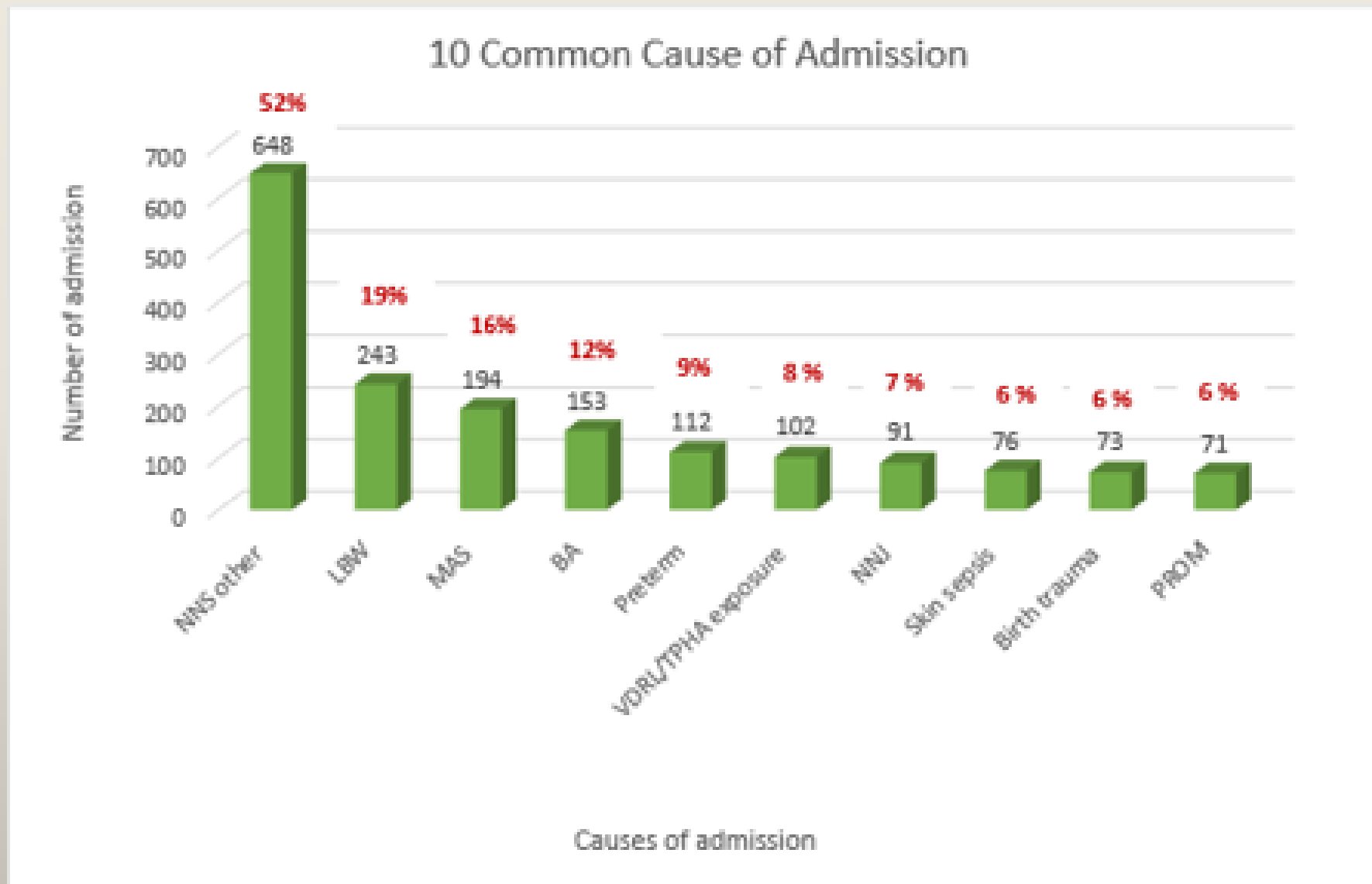
RESULTS

Table 1: Neonatal Admissions and Deaths per year and Case Fatality Rates (CFR)

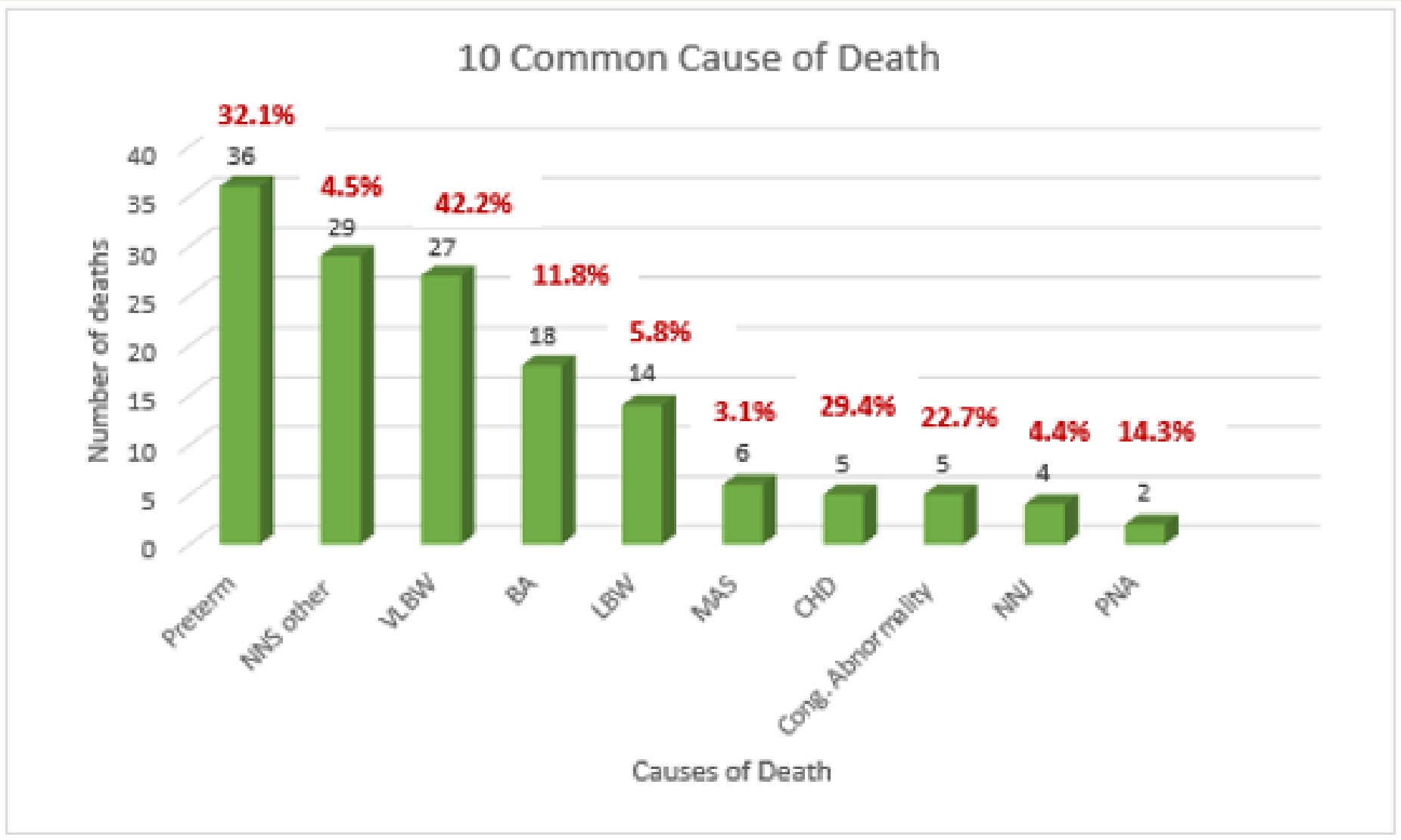
	2020	2021	2022	2023	Total
Admissions	260	305	320	365	1250
Deaths	16	11	18	22	67
CFR (%)	6.15	3.6	5.63	6.03	5.36

- Discharged: 91.7%
- LHAOR / Absconded: 2.5%
- Median birthweight = 2.9kg (IQR 1.5kg – 3.2kg).
- Median LOHS = 4 days (IQR 2days – 5 days).
- LOHS Neonatal Deaths : 2 days (IQR 1 – 6.5 days).

RESULTS



RESULTS



RESULTS

Table 3: Univariate Logistic Regression Analysis of Risk Factors for Neonatal Deaths

Variable	Number with variable who died	Number without variable who died	p value	OR (95% CI)
Prematurity	36/106 (34%)	31/1112 (2.8%)	p < 0.001	17.9 (10.5-30.7).
VLBW	27/59 (45%)	40/1159 (3.5%)	p<0.001	23.6 (12.9-43.1)
LBW	14/233 (1.1%)	53/985 (5.4%)	p=0.7	1.12 (0.6-2.1)
Birth asphyxia	18/148 (12.2%)	49/1070 (4.6)	p<0.001	2.9 (1.6-5.1)
Unbooked	18/99 (18.1%)	45/1007 (4.7%)	p<0.001	4.97 (2.70-8.98).
Residing in Namatanai District	31/391 (7.9%)	36/819 (4.4%)	p=0.012	1.87 (1.14-3.07)

DISCUSSION

- The findings highlight that the highest risk of neonatal mortality are in VLBW, prematurity and birth asphyxia – and alongside NNS, these four conditions make up almost half of neonatal deaths in PNG.
- Being unbooked is a very high risk factor.

The effect of introduction of minimal standards of neonatal care on in-hospital mortality

TREVOR DUKE¹, LENA WILLIE¹ AND JOYCE M. MGONE¹

Department of Paediatrics, Goroka Base Hospital, Papua New Guinea

- Though LBW babies were not a risk factor for in hospital mortality, a study done in Vanuatu (Garae *et al*, 2023) highlights it would have been ideal to follow them up post discharge to monitor their nutritional and developmental health.


DISCUSSION

- Prematurity remains the leading cause of deaths globally – making up 18% of deaths in Under 5 category (UNGME report 2023)
- WHO recommendation to improve outcome of preterm births:
 - Use of tocolytics and antenatal corticosteroids
 - Women at risk of preterm births from GA 24 weeks to 34 weeks
 - Guidelines to follow: Ensure GA can be accurately assessed and no signs of maternal infection

DISCUSSION

- In this study, it showed that being booked for antenatal clinic was a strong protective factor – results uniform with other studies done in PNG and internationally (Manape et al and Gortmaker)
- Seidu (2021), showed only 23% of women in PNG initiate ANC in their first trimester of pregnancy – it also highlights that women in the Islands region had a lower odds of early ANC attendance, compared to women in the southern region.

Factors associated with early antenatal care attendance among women in Papua New Guinea: a population-based cross-sectional study

Abdul-Aziz Seidu^{1,2} 

DISCUSSION

- Babies coming in from Namatanai district were almost 2 times more likely to die than babies coming in from Kavieng district.
- There could be some bias present i.e., the ones coming in from Namatanai are sicker, therefore at higher risk of dying.
- It could also suggest that mothers in Kavieng district receive better antenatal and neonatal care compared to Namatanai district.
- Efforts to reduce neonatal mortality must encompass improving health delivery in our rural hospital and health centers (Sa'avu *et al*, 2013).

LIMITATIONS

- Missing data to SCN admission book. Some information of birthweight, whether mother was booked or not and gender were not recorded. However, these omissions were few and the final data collected provided an adequate basis for drawing conclusions.
- In 2020-2021, some PROM babies were admitted as risk of sepsis, and these were counted under diagnosis NNS (and may be one explanation for lower mortality from “sepsis”).
- Babies whose mothers / parents left hospital at own risk or absconded were not included in the analysis of risk factors (as the final outcome is unknown), however the percentage was small so would not have affected final results.

CONCLUSIONS

- This study has identified that in New Ireland there is room for improving neonatal and antenatal services in Namatanai district.
- VLBW, premature babies and birth asphyxia are neonatal conditions with higher risks of dying. Reducing neonatal mortality would require targeting improving neonatal care in these conditions/ areas.
- The dangers of not being booked, and the strong protective effect from ANC need to be better known in communities, and efforts made to improve access to ANC - Outreach ANC clinics?

ACKNOWLEDGEMENTS

1. Supervisors – Dr M Kariko, Prof T Duke
2. PNG Pediatric Society
3. Kavieng Pediatric Team
4. My family

REFERENCES

1. United Nations Inter agency Group for Child Mortality Estimates. Levels and Trends in Child Mortality Report 2023.
2. Papua New Guinea Department of Health, Papua New Guinea Pediatric Society. Child Morbidity and Mortality Annual Report 2022. Port Moresby: National Department of Health, 2022.
3. Papua New Guinea National Health Information System. Kavieng, August 2024.
4. Duke, T., Willie, L., & Mgone, J. (2000). The effect of introduction of minimal standards of neonatal care on in hospital mortality. P N G Med J, 43(1-2).
5. Garae A., Vangana C., Orelly T., Leodoro B., Pulsan F., & Duke T. (2023). Low Birthweight newborns in Vanuatu: A longitudinal follow- up study. Journal of Paediatrics and Child Health, 59(5): 753-759.
<https://onlinelibrary.wiley.com/doi/abs/10.1111/jpc.16388>
6. Vogel, JP., Oladapo, OT., Manu, A., Gulmezoglu, AM & Balh R. (2015). New WHO recommendations to improve the outcomes of preterm birth. The Lancet Global Health, 3(10), 589-590. August, 2015. [https://doi.org/10.1016/S2214-109X\(15\)00183-7](https://doi.org/10.1016/S2214-109X(15)00183-7)
7. Seidu, AA. Factors associated with early antenatal care attendance among women in Papua New Guinea: a population-based cross-sectional study. Arch Public Health 79, 70 (2021). <https://doi.org/10.1186/s13690-021-00592-6>
8. Manape, M., Saleu, G., & Vallely, L. (2011). Outcome of infants born to unbooked mothers: a short report from Goroka General Hospital, Eastern Highlands province, Papua New Guinea. Papua New Guinea Medical Journal, 54(3/4), 185-188.
9. Gortmaker, S. L. (1979). The effects of prenatal care upon the health of the newborn. American Journal of Public Health, 69(7), 653-660.
10. Sa'avu, M., Duke, T., & Matai, S. (2013). Improving paediatric and neonatal care in rural district hospitals in the highlands of Papua New Guinea: a quality improvement approach. Paediatrics and International Child Health, 34(2), 75–83.
<https://doi.org/10.1179/2046905513Y.0000000081>

QUESTIONS and COMMENTS