Hypoxic Ischemic Encephalopathy (HIE) in Neonates Admitted to the Aga Khan Medical Center – Gilgit

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Background:

- AKMC-G's Neonatal Unit serves as one of the few units that manages critically-ill newborns from across remote northern Pakistan.
- The current burden of critical neonatal illness including HIE in this region is not clear.
- There is currently *one* Neonatal Intensive Care Unit (NICU) in northern Pakistan that is *intermittently* able to offer invasive ventilation to premature neonates that require respiratory support.



Pakistan.

Methods:

- A retrospective chart review was performed of neonates admitted to AKMC-G between March - June 2023.
- Inclusion criteria comprised neonates of all gestational ages and medical conditions.
- Variables of interest included demographics, clinical characteristics, interventions, treatments, length of stay, and outcomes.

Results:

- Sixty-nine neonates met the inclusion criteria, 23 female and 46 male.
 - Only 9 patients had documented birth APGARs. • Twelve patients were transferred for higher
 - level of care.
 - Two patients died due to prematurity and absence of ICU level capabilities.
- Seven neonates required admission for HIE with other comorbid diagnoses (Table 1).

A comprehensive evaluation for NICU needs, rather than a disease-focused assessment, should be performed in regions with high burdens of neonatal morbidity and mortality.







Figure 3. Admission diagnoses for neonates admitted to AKMC-G

Table 1. Key Characteristics of Patients with HIE	
	Number of Infants (n=7)
Male	4 (57%)
Female	3 (43%)
Sarnat Scoring Scale	
- Mild HIE	5 (71%)
- Moderate HIE	2 (29%)
Comorbid Condition(s)	
- Rule-out Sepsis	5 (71%)
 Respiratory Distress Syndrome (RDS) 	2 (29%)
 Congenital Heart Disease (CHD) 	1 (14%)
 Transient Tachypnea of the Newborn (TTN) 	1 (14%)
Gestational Age	
- Late, Preterm	1 (14%)
- Full-term	2 (29%)
- Not documented	4 (57%)







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Interventions:

- In response to these findings, a comprehensive neonatal needs assessment is being performed with simultaneous advancements within areas of key interest:
- 1. Infrastructure
 - Size of Neonatal Unit increased from 4 -> 9
- Resource/Technology 2. advancement
 - Bubble CPAP implemented
 - Ventilators to be introduced
- 3. Human resource development
 - Physicians trained on intubation and surfactant administration
 - STABLE and NRP training provided to nursing staff

Conclusions:

- Chart review demonstrated a high burden of patients with critical illness including HIE in this region who were referred to AKMC-G.
- There is a notable need for improved documentation, as standardization of documentation is a prerequisite for optimal data collection, QI, and resource allocation.
- Though there is a high burden of HIE within the region, there is need for advancement in multiple domains of basic neonatal intensive care.
- As interventions are implemented, repeat assessments should be completed to assess efficacy and need for further advancement.

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