

Outcome of Low Birth Weight Babies admitted to Special Care Nursery-PMGH



**PROSPECTIVE DESCRIPTIVE STUDY
(2017-2018)**

MMED 2- Maylin Kariko-Siko


Introduction

- 2.9 million newborns die annually from prematurity, birth asphyxia, serious bacterial infection and congenital malformations. (K. M. Milner et al, 2015)
- 15.1 million neonates survive these problems every year, and are at increased risk of adverse neurodevelopmental outcome (K. M. Milner et al, 2015)



- Improving outcomes beyond survival for high-risk newborns in resource-limited settings is an emerging challenge globally recognized.
- Global estimates demonstrate the scale of this challenge and significant gaps in morbidity outcome data in high mortality contexts



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- At PMGH we manage a substantial number of preterm neonates
 - Annual report 2017 (Jan-Dec) - PMGH admitted 1813
 - 212 Premature babies: 11.7% of newborns (3rd leading cause of admissions to SCN)
 - Information on long-term outcomes for high-risk neonates is scarce.
 - Data needed to improve systems of care and early intervention for these high-risk neonates.

Aims

- To document the early follow-up outcome of LBW babies admitted to the SCN
 1. Nutritional status
 2. Developmental milestones
 3. Head circumference
 4. Anaemia
 5. Vaccination status
 6. Morbidities

Methodology

- **Type** – prospective descriptive observational cohort study
- **Timeline** – January 2017 to July 2018
- **Site** – Special Care Nursery and Neonatal Consultation Clinics, PMGH
- **Population Definition** – Babies born with birth weights of less than 2kg
- **Follow Up Age** – At ≥ 6 months of chronological age (contact numbers taken from mothers)
- **Method of Data Collection** – two separate forms for admission and follow up

Study population

- Inclusion


1. Birth Weight <2kg (ELBW/VLBW/LBW)
2. Any gestation at birth
3. Delivered at PMGH or referred in

- Exclusion

1. No chart or Lost to follow up

Definition of Terms

- Low Birth Weight – in this study $< 2\text{kg}$
- Birth weight categories
 1. LBW – 1.5 to 2kg
 2. VLBW – 1.0 to 1.49kg
 3. ELBW - $< 1\text{kg}$
- Gestational age (GA) categories (Dubowitz)
 1. Term – ≥ 38 wks
 2. Near term – 36 to 37 wks
 3. Pre-term - < 36 wks




Primary Outcomes (outcome from nursery)


- Death
- Survival

Follow-up outcomes (after discharge from nursery)

- Survived to follow up
- Likely survived but lost to follow up
- Known to have died after discharge from hospital

- Nutrition:
 - Z-scores weight for length and weight for age at ≥ 6 months.
- Developmental Milestones:
 - the proportion of children at ≥ 6 months with up to date or delayed milestones (Denver Developmental Screening Tool)
- Anaemia:
 - the proportion of infants at ≥ 6 months with Hb less than 10g/dL (WHO standardized definition)

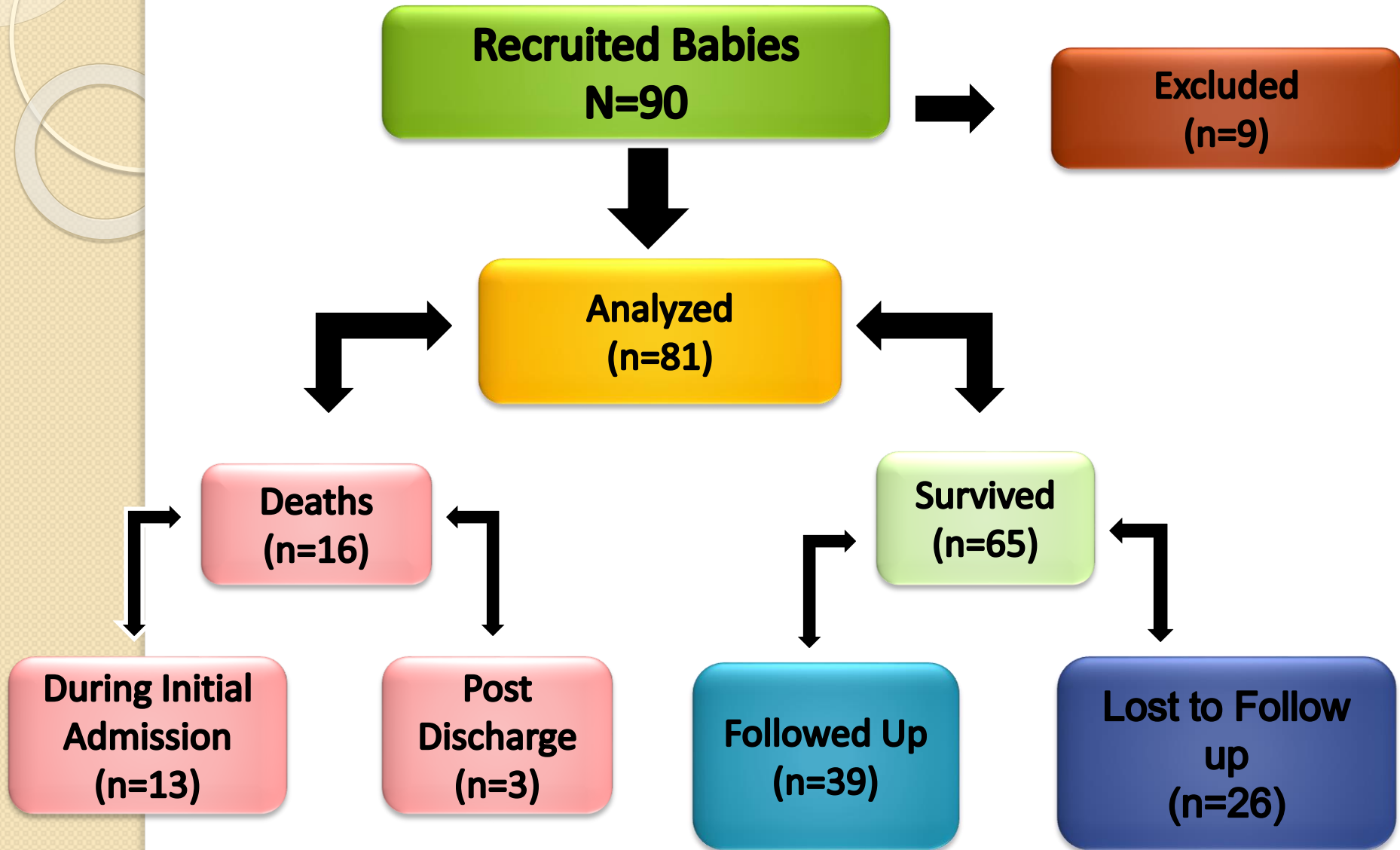
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- **Head Circumference Assessment:**
 - WHO head circumference percentiles according to growth standards
 - **Vaccination status**
 - Fully vaccinated/partially
 - **Infectious disease morbidity:**
 - the number of hospital admissions from infections in the first 6 months or more, after initial hospital discharge

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- Data were entered into spreadsheet and analysed using Stata Version 14 and Microsoft Excel
 - Ethical clearance

RESULTS



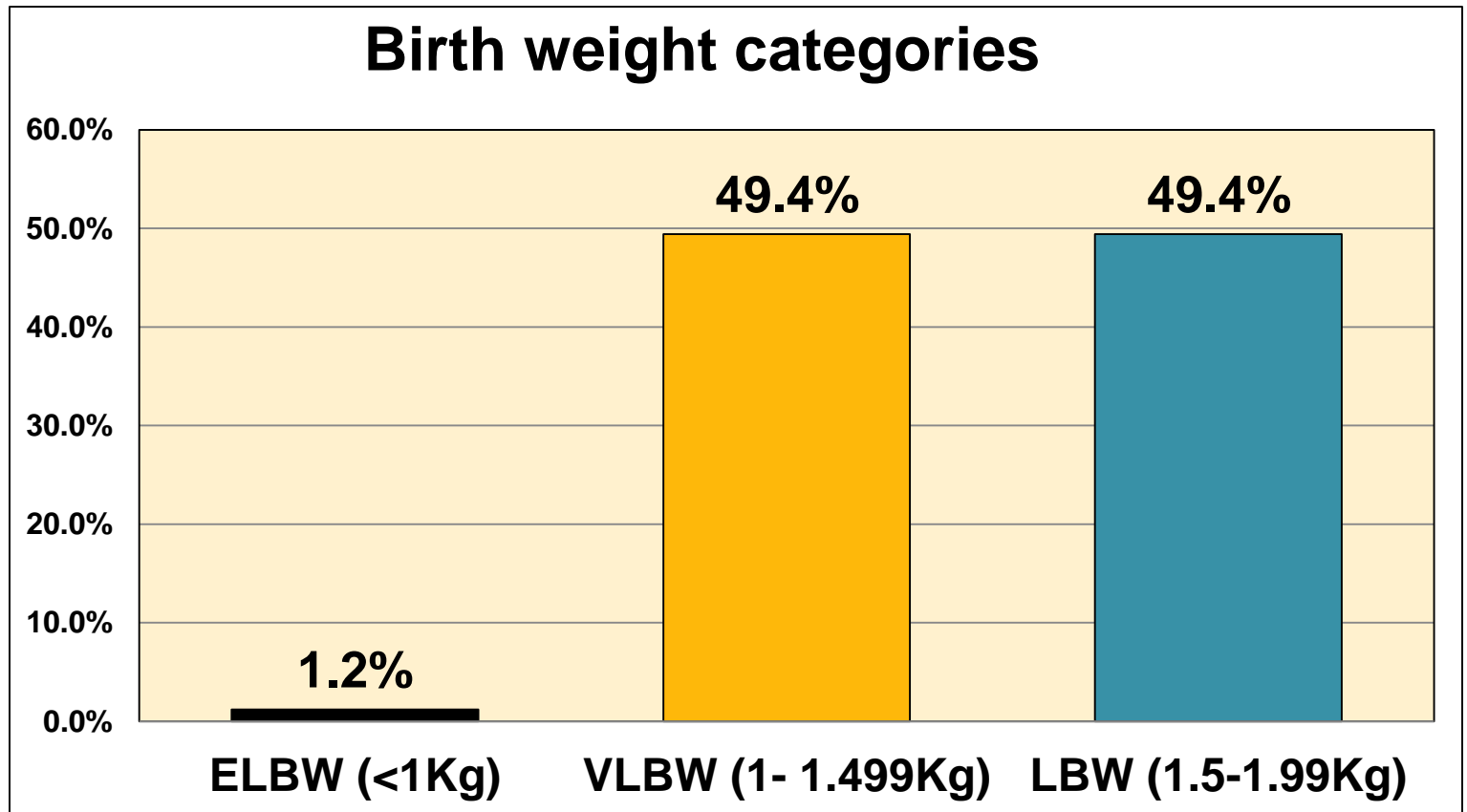
Flow of Patients-outcomes



- 81 babies
 - Male 48 (59%)
 - Female 33 (41%)
- Method of delivery
 - 9 (12%) caesarean section
 - 71 (88%) Normal vaginal delivery
- Head circumference: median 29 cm (IQR 27.5- 31cm)

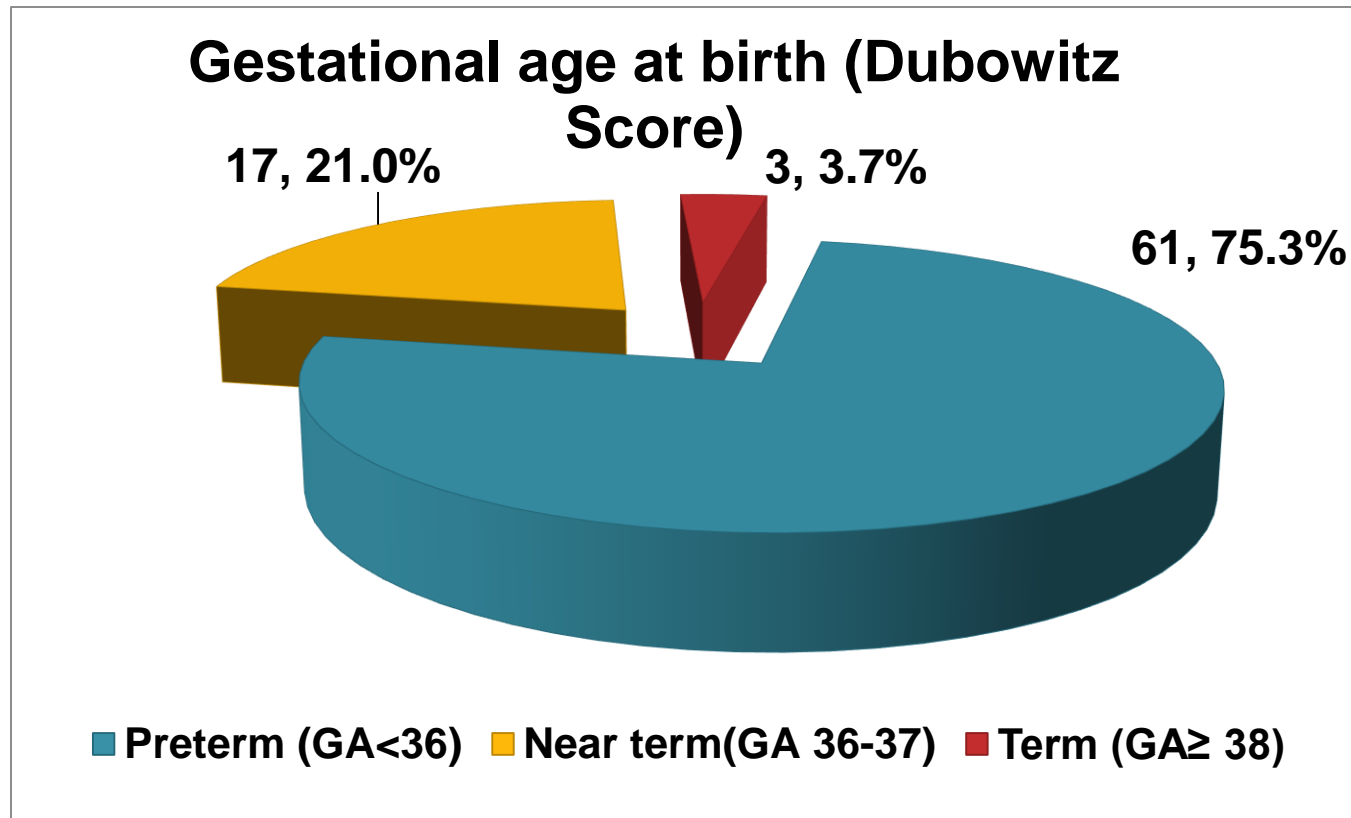
Birth weight


- Median birth weight: 1.495 kg (IQR 1.3 to 1.715 kg).



Gestational age (by Dubowitz)


- Median gestational age: 34 weeks
- IQR 32 - 35.5 weeks
- Range 29 - 38 weeks



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- Median length of hospital stay: 19 days (IQR 10-39 days).
 - Longest: 112 days
 - Median weight at discharge was 1.54kg (IQR 1.48 to 1.68 kg)

Follow-up

- 39 of 81 (48%) babies followed up to 6 months or more
- 26 lost to follow up (32%) but believed to be alive
- Deaths: 16 known deaths (20%)
 - 13 while in hospital
 - 3 after discharge to home.

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- Median chronological age at follow up was 9 months (IQR 8-11 months).
 - Median corrected age at follow up was 7.5 months (IQR 6-10.5 months).
 - Median weight at follow up was 7.8kg (6.3-8.5 kg), and height 66.5 cm (IQR 63-72 cm).
 - Majority who were followed up were well-nourished:
 - Mean weight-for-height z-score: -0.3 (standard deviation 1.2)
 - Median WFH z-score was 0 (IQR -1 to 0)
 - Median WFA z-score was 0

- Head circumference
 - Mean head circumference: 43.4 (SD 2.19).
 - According to WHO centiles for HC, the median HC was at the 41st centile (IQR 3-75)
 - 75% of children had HC in the normal range
 - 25% had some degree of microcephaly (<3rd centile)

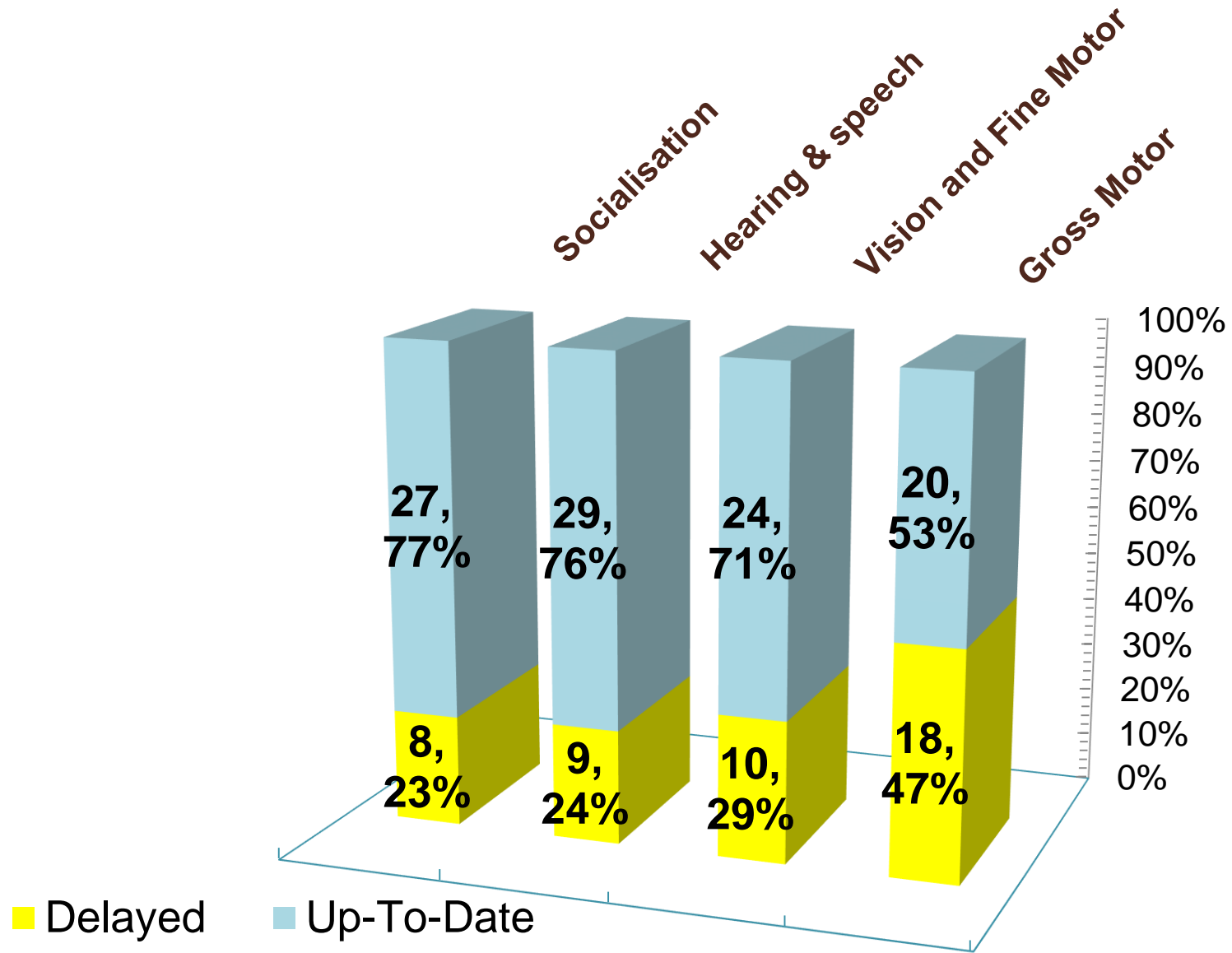
Nutrition-type of feed

- 20 (51%) were still breast fed by their mothers
- 18 had been weaned from breast milk, artificial milk introduced
- For those weaned off breast milk: median age of weaning (from breast milk) was 2 months (IQR 1-5 months).

Follow up-cont


- 5 children developed anaemia after discharge
- 33 of 39, (85%) children seen at follow-up were fully vaccinated, and 6 (15%) partially vaccinated.
- 15 (38%) had admissions to children's ward


Developmental Milestones




Discussion

- This project was carried out to determine the outcome of the high risk babies at PMGH
- first study in our resource limited setting, the focus group were all LBW <2kg, of varying gestational ages.
- Given this situation, the out comes were still similar to other studies done in terms of their developmental outcomes.

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- despite some babies having some deficiency in the four domains of developmental milestones, overall most were up to date only gross motor being the most commonly delayed domain.
 - Denver Developmental Screening Test is not the ideal test
 - Head circumference: According to WHO centiles for head circumference, majority (75%) had HC in the normal range

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- Nutritionally- majority well nourished. Those followed up thrived well despite being born small. 20 still breastfed, others were weaned early and introduced artificial milk at median age of 2 months (IQR 1-5).
 - Observed –result of long hospital stay and lack of lactation from mothers
 - 5 children developed anaemia after discharge,- low detection
 - 15 (38%) admissions to the children's ward, mostly for respiratory and gastrointestinal infections: increased vulnerability to community acquired infections
 - High vaccination coverage- regular check and administration

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- Follow ups were done at the hospital consultation clinics and those that were not followed up had reasons- not captured
 - Deaths – 20 % during initial admission. ?Few deaths post discharge
 - Deaths portrays reality of challenges faced
 - Do we send babies home when they are still too small (1.54kg median weight)?

Limitations

- Lack of awareness at start of project
- Assessment of milestones done using Denver tool.
- Difficult to follow up
- Study structure was complex and needed more than one researcher to carry out series of follow up

Conclusion

- Care and follow up of LBW babies are vital for survival
- Lost to follow up group of babies in the community require special attention
- Outcomes here were achieved with supported therapeutic practices (CPAP, oxygen therapy, phototherapy & KMC) and regular follow up at a central location.-room for improvement
- Guideline not yet available but needed

Recommendations

- Maximise on our current available resources to improve outcomes of survival and beyond
- Set up proper metric systems of follow up, user friendly to our setting
- Decentralise the follow up of low birth babies
- Need for bigger well organized study needed to properly document outcomes- to change practices of care where necessary
- ? Consider weight at discharge

Acknowledgements

- My Heavenly Father- wisdom/knowledge
- Professor Trevor Duke
- Dr Gamini Vali
- Husband and son
- Family
- Committed Mothers and their babies
- Fellow colleagues/friends
- Nurses and staff of the consultation clinics
- Nigel Uaiz
- MBBS V student Jethro Huafofo

References

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Thank you