Improving quality of care for severe malnutrition in children at Port Moresby General Hospital

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Introduction

- Malnutrition
  - Under nutrition or over nutrition
  - Commonly used to refer to under nutrition
- Malnutrition (under nutrition)
  - Moderate or Severe malnutrition
  - Acute or chronic malnutrition
- Moderate malnutrition
  - WFAz < - 2 SD
  - WFHz < - 2SD
- Severe malnutrition
  - WFAz score < - 3 SD
  - WFHz score < - 3 SD
  - MUAC < 115 mm (< 11.5 cm) – age > 1 yr.
  - Presence of nutritional oedema regardless of WFHz score

Introduction

- Under nutrition
  - Significant cause of mortality – triggers > 50% of deaths in < 5 yrs. (Younas 2012)
- Global figures: (UNICEF-WHO 2012)
  - 162 million children (< 5 yrs.) – stunted
  - 51 million – wasted
  - 17 million – severely wasted
  - Over 90% of these cases – living in Asia and Africa
- PNG
  - Severe malnutrition – most important form affecting both adults and children (Passingan 2001)
  - 2012
    - 12.6% of all admissions to all hospitals nationwide due to malnutrition
    - Malnutrition associated with 36% of all deaths
    - CFR of 23.3%
  - 2011
    - CFR = 21%
  - 2010
    - CFR = 18.8%

Aim

- To assess the quality of care provided to children with severe malnutrition.

- To evaluate the effectiveness of a multifaceted intervention to improve the care for paediatric inpatients at PMGH using the PNG and WHO recommended management guidelines for severe malnutrition.

Multifaceted intervention

- Teaching
  - Formal sessions – 10 steps & feedback on baseline survey results: March – July
  - Ongoing informal teachings:
  - Teaching on new formulas (F75, F100, RUTF) – June to August
- Equipment/Supplies
  - Ensuring adequate supplies of milk
  - Ensuring availability of necessary equipment
  - F75, F100 and RUTF introduced – feed preparation much easier (June)
  - Diagnostic and monitoring equipment donated (July)
  - Feeding timing modified
- Staffing
  - Made use of students (medical and nursing) to assist with feeding, taking weights, heights and doing BSL and temperature monitoring
  - Recommend for more nursing staff for the nutrition unit

MANAGEMENT OF SEVERE MALNUTRION

For details, refer to Chapter 7 p197-223

Checklist

- Check for hypoglycaemia
- Prevent hypothermia
- Treat dehydration if present
- Electrolytes - zinc, potassium, magnesium
- Infection
  - Start antibiotics + albendazole
  - Exclude HIV and TB
- Micronutrients - vitamin A, folate
- **Start milk feeding immediately**
  - At least 6 feeds per day, every 3 hours
  - 130ml/kg/day
  - An 8kg child should receive 8 x 130 = 1070 ml per day / 6 = 170ml per feed
  - Continue breast feeding
- Catch-up growth
  - Give Milk Oil Formula (or F-100) increase volume per feed as tolerated
  - Start RUTF
  - Continued breast-feeding
- Sensory stimulation & play
- Monitoring
  - Weigh every 2nd day
  - Good weight gain = 10g/kg/day
- Supportive care - check Hb, start iron*
- Discharge planning
  - Good weight gain consistently for 1-2 weeks, weight >3 Z-scores
  - Good appetite
  - Parents able to feed child
- Follow-up weekly

* start iron in 2nd week of treatment

Prepared by The Paediatric Society of PNG, for more information contact your local paediatrician


nutriset
F-75
destiné à la phase initiale du traitement de la malnutrition aiguë sévère
designed for the initial phase of treatment of severe acute malnutrition
NEW
1 sachet / 500 ml
NEW
102.5 g
500 ml
F-75 therapeutic milk
lait thérapeutique F-75
nutriset
F-100
destiné à la réhabilitation nutritionnelle de la malnutrition aiguë sévère
designed for nutritional rehabilitation of severe acute malnutrition
diseñada para la rehabilitación nutricional
NEW
1 sachet / 500 ml
NEW
114 g
500 ml
100 ml
F-100 therapeutic milk
lait thérapeutique F-100
compact
eeZeePaste
NUT
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Methodology

- Point prevalence surveys
- Timeline:
  - Baseline survey: February 15-16
  - Intervention: March-July
  - 1st follow-up survey: August 8-9
  - 2nd follow up survey: planned October

Methodology

- The point-prevalence surveys:
  - Survey of all paediatric inpatients
  - Identified all children with severe malnutrition (primary or secondary, acute or chronic)
  - Key outcome measures
    - Compliance with guidelines
    - Initiation of feeding
    - Volume and frequency of feeding
    - Weight gain (g/kg/day): poor / moderate / good
- Permission and ethical approval
  - Permission was given by the hospital management through the office of the DMS, PMGH

Methodology

- DATA ANALYSIS
  - SPSS Version 20 and Open Epi version 2.3 used for analysis.
  - Quantitative data stated using
    - Mean and 95% CI – normal distribution
    - Median IQR – skewed distribution (Mann-Whitney U Test)
  - Categorical data analyzed using
    - Chi square test(Fishers exact test for data with small numbers)

Results: Demographics

Variable		Baseline survey	First follow up survey
Total analyzed		43 (34.4)	38 (31.7)
Gender	Males	27 (62.8)	26 (68.4)
	Females	16 (37.2)	12 (31.6)
Length of stay (days): Median		16 (IQR: 7 – 32)	8.5 (IQR: 5 – 23)
Admission weight (Kg) : Average		7.9 (7 – 8.7)	7.2 (6.4 – 7.9)
Current weight (Kg): Average		8.1 (7.3 – 8.9)	7.6 (6.9 – 8.3)

Results

Comorbidities	Baseline survey (N = 43) N (%)	First follow up survey (N = 38) N (%)
Extra pulmonary TB	14 (32.6)	6 (15.8)
Diarrhoeal disease	10 (23.3)	5 (13.2)
Pulmonary TB	9 (20.9)	8 (21.1)
ALRTI	4 (9.3)	3 (7.9)
Others	3 (7)	8 (21.1)
Primary malnutrition	2 (4.7)	4(10.5)
HIV/AIDS	1 (2.3)	4 (10.5)

Results – Processes

Variable	Baseline survey N=43 N (%)	First follow up survey N=38 N (%)	p-value
Treatment of confirmed / suspected hypoglycaemia	10 (25.3)	27 (71.1)	p = 0.00
Instruction to keep warm	2 (4.7)	14 (36.8)	p = 0.000
Supplemental potassium prescribed	9 (20.9)	37 (94.4)	p = <0.000
Albendazole treatment	30 (69.8)	24 (63.2)	p = 0.35
Zinc	27 (62.8)	38 (100)	p = 0.000
Multivitamins	31 (72.1)	38 (100)	p = 0.000

Results

Outcome Variable	Baseline survey	First follow up survey	P value
Initiation of feeding: (Average day)	4 (2.7 – 5.3)	3.1 (1.9 – 4.3)	P = 0.193
Feeding volume given in 24 hours (ml): Median	356ml (IQR: 178 – 450)	820ml (IQR: 600 – 1110)	P < 0.001
	31% (21 – 48%) of required calories	98% (67 – 100%) of required calories	
Median weight gain (g/kg/day)	1.55 (IQR: -4.3 – 6.0)	5.56 (IQR: -3.7 – 12)	P = 0.10

Discussion

- 34.4% vs. 31.7% of all inpatients were severely malnourished for the two respective surveys.

- Baseline survey
  - Generally poor compliance with treatment guidelines
  - Delay in initiation of feeding
  - Outcome areas – poor (e.g. Weight gain)

- First follow-up survey
  - Significant improvement – processes/compliance with guide lines
  - Modest improvement – out come areas

Persisting problems

- No control in some areas of intervention
  - Nursing manpower
  - Milk supplies
- Faulty equipment/Lack of equipment
- Standardized methods of taking measurements

Conclusion

- A significant proportion of inpatients in both surveys were severely malnourished.
- Improving quality care requires ongoing implementation of multifaceted intervention (holistic approach)
- Attempt to diagnose severe malnutrition as a comorbidity should be an additional indicator.
- Acute malnutrition needs to be differentiated from chronic malnutrition
- No need to prescribe individual multivitamins and electrolytes if F75, F100 or RUTF being instituted

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