

**CHILD MALNUTRITION MORTALITY AT
ST BARNABAS HOSPITAL IS HIGH –
IS IT DUE TO PRACTICES AND ATTITUDES OF
STAFF?**

- A STUDY IN A RURAL DISTRICT HOSPITAL

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ABSTRACT

CHILD MALNUTRITION MORTALITY AT ST BARNABAS HOSPITAL IS HIGH – IS IT DUE TO PRACTICES AND ATTITUDES OF STAFF? - A STUDY IN A RURAL DISTRICT HOSPITAL

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The case fatality rate for malnutrition at St Barnabas Hospital over the past years has been around 38%. The rates in other district hospitals in the Eastern Cape province were found to be in excess of 30%. In June 2000, the Eastern Cape Department of Health introduced a protocol (based on World Health Organisation ‘Ten Steps’) for in-patient management of children with severe malnutrition, with the aim of reducing case fatality rate below 10%.

St Barnabas Hospital introduced the ‘Eastern Cape protocol’ in August 2003. An evaluation was done in November 2003 to assess the protocol’s impact on the case fatality rate. The rate remained high, at 37.5%.

The mini-thesis describes the current practices and attitudes of the nurses at St Barnabas Hospital paediatric ward, in the management of severely malnourished

children. A quantitative and qualitative cross-sectional study was undertaken in the paediatric ward.

The sister in charge of the malnutrition unit was interviewed as the key informant to obtain information about current knowledge and practices. Observation of ward activities was done on 4 children who had been admitted to the ward during the study period. Audit of resources was done to assess the availability and adequacy of equipment and supplies needed for management of severely malnourished children. A focus group discussion was held with all 7 nurses involved in the management of severely malnourished children, to explore their attitudes towards malnutrition and its management.



Data collected was compared to the Eastern Cape protocol. Percentages were calculated to assess activities in respect of the Eastern Cape protocol requirements.

The key informant interview yielded 56%. Although the protocol was available in the ward, the key informant did not know some important activities in certain steps. The structured observation of ward procedures yielded 57%. The study showed that the material resources needed to implement the Eastern Cape protocol rated as 78%. The focus group discussion revealed that the nurses perceived ignorance, poverty and lack of care at homes as factors in the causation of malnutrition.

During the discussions it transpired that the lack of human and material resources in terms of quality and quantity affected the quality of care, resulting in high case fatality rates.

The nurses felt that the protocol was introduced and implemented hastily without appropriate and adequate preparation. The constraints in human and material resources were not addressed. The organisational support, commitment and supervision at managerial level, were all perceived to be, and found to be poor, yet expectations were high. This led to pessimistic attitudes and faulty practices, contributing to high case fatality rates.

The study had limitations, due to a statistically insignificant number of cases studied (n=4), over a short period of 48 hours. The period of practice of the Eastern Cape protocol, from the time of introduction to evaluation, was also too short (3 months) to make a significant impact on case fatality rates.



However, this study highlights the importance of proper planning and preparation of resources before introduction and implementation of a new programme.

The findings and recommendations will be communicated to the appropriate health managers and decision makers for consideration and action. The implementation of the action plan is expected to reduce the malnutrition case fatality rate at St Barnabas Hospital to below 10%.

November 2004

DECLARATION

I declare that *Child Malnutrition Mortality in St Barnabas Hospital is High – is it due to Practices and Attitudes of Staff? - A Study in a Rural District Hospital* is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Paramalingam Kandasamy Navaratnarajah

November 2004



Signed:.....

DEFINITIONS AND CLASSIFICATION

- *Malnutrition:* poor nutrition resulting in under or over weight for age.
- *Case Fatality Rate:*

$$\frac{\text{Number of children dying of severe malnutrition during specified period}}{\text{Number of children admitted with severe malnutrition in the same period}} \times 100$$

- *Wellcome Classification:*

| WEIGHT (PERCENTAGE OF STANDARD *) | OEDEMA | |
|-----------------------------------|----------------------|-------------|
| | PRESENT | ABSENT |
| 80-60 | Kwashiorkor | Underweight |
| <60 | Marasmic-Kwashiorkor | Marasmus |

*Standard = 50th centile Boston value (H.C. Stuart & Stevenson, 1959).

- *Classification of Malnutrition and Criteria for Admission:*

| | CLASSIFICATION | |
|--------------------|---|---|
| | MODERATE MALNUTRITION | SEVERE MALNUTRITION ^a |
| Symmetrical oedema | No | Yes (oedematous malnutrition) ^b |
| Weight-for-height | -3 < SD-score < -2 ^c (70-79%) | SD-score < -3 (<70%) (severe wasting) ^d |
| Height-for-age | -3 < SD-score < -2 (85-89%) | SD-score < -3 (85%) (severe stunting) |

^a The diagnoses are not mutually exclusive.

^b This includes kwashiorkor and marasmic kwashiorkor in older classifications. However, to avoid confusion with the clinical syndrome of kwashiorkor, which includes other features, the term 'oedematous malnutrition' is preferred.

^c Below the median NCHS/WHO reference; the SD-score is defined as the deviation of the value for an individual from the median value of the reference population, divided by the standard deviation of the reference population.

$$\text{SD-score} = \frac{(\text{observed value}) - (\text{median reference value})}{\text{standard deviation of reference population}}$$

^d This corresponds to marasmus (without oedema) in the Wellcome clinical classification. However, to avoid confusion, the term 'severe wasting' is preferred.

(World Health Organisation. (1999). *Management of severe malnutrition: a manual for physicians and other senior health workers*. Geneva: WHO.)

ABBREVIATIONS

| | |
|------|--|
| AIDS | Acquired Immune Deficiency Syndrome |
| CFR | Case Fatality Rate |
| CMH | Cecilia Makiwane Hospital |
| CPD | Continuing Professional Development |
| DHIS | District Health Information System |
| EC | Eastern Cape |
| FGD | Focus Group Discussion |
| GMP | Growth Monitoring and Promotion |
| HIV | Human Immunodeficiency Virus |
| HRM | Human Resource Management |
| IM | Intramuscular |
| IMCI | Integrated Management of Childhood Illnesses |
| INP | Integrated Nutrition Programme |
| IV | Intravenous |
| KCl | Potassium Chloride |
| KI | Key Informant |
| KII | Key Informant Interview |
| NDNT | Nyandeni District Nutrition Team |
| OPD | Out Patients Department |
| ORS | Oral Rehydration Solution |
| PEM | Protein Energy Malnutrition |

| | |
|--------|--|
| PHC | Primary Health Care |
| PMTCT | Prevention of Mother to Child Transmission |
| PO | Per Os (orally) |
| RCL | Resource Checklist |
| SAVACG | South African Vitamin A Consultative Group |
| SBH | St Barnabas Hospital |
| SO | Structured Observation |
| TB | Tuberculosis |
| UCF | UNICEF Conceptual Framework |
| UNICEF | United Nations Children's Fund |
| WHO | World Health Organisation |



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- My wife and daughters



CHAPTER 1

INTRODUCTION

1.1 Burden of Malnutrition

Nutrition, according to a former Director-General of the World Health Organisation (WHO), Brundtland (2002), “is a cornerstone that affects and defines the health of all people, rich and poor.” Conversely, she adds, malnutrition makes people susceptible to diseases, leading to premature death. Due to their fast growth rate, children are the most visible victims of malnutrition.

Globally, 98% of child deaths below the age of 6 years occur annually in developing countries (Chopra, et al., 2000). Eighty percent of these deaths occur either as a direct result of malnutrition, or as a consequence of the interaction between malnutrition and infection. In a WHO article, it is said that malnutrition is a “silent emergency” (WHO, 2002).

In South Africa, malnutrition has been identified as an underlying cause of more than a third of childhood deaths (Chopra, 1999). In 1994, the South African Vitamin A Consultative Group (SAVACG) found that about 11.4% of children aged 6 to 71 months in the Eastern Cape (EC) were underweight.

The South African statistics compared to global figures may be an underestimation from reality due to factors such as unrecorded deaths related to malnutrition within communities, poor statistics recording and collection in health facilities, and fragmented health services due to inequalities in the health systems.

Child malnutrition remains one of the leading causes of morbidity and mortality in many developing countries including South Africa. Malnutrition is also the largest contributor to the global burden of diseases through its association with infectious diseases.

1.2 Manifestations and Consequences of Malnutrition

Malnutrition manifests in various forms, including stunting, underweight, wasting, blindness (due to vitamin A deficiency), anaemia (secondary to iron deficiency), reduced cognitive development (as a result of iodine deficiency), etc. Undernourished children become smaller in stature, with lower levels of cognitive development, lower educational achievements as well as reduced productivity and earning opportunities in adulthood (WHO, 2002). Malnutrition not only affects a child's ability to grow physically and intellectually, but it also reduces their resistance to infection.

Kwashiorkor, marasmus and marasmic kwashiorkor, based on weight for age in addition to swelling of the body, are the end stages and the most lethal forms of Protein Energy Malnutrition (PEM).

1.3 Hospital Admission and Outcomes

Malnutrition is the major cause of deaths among paediatric patients in hospitals in developing countries. The management of severe malnutrition in hospitals is largely

influenced by human resource capacity and availability of supplies of drugs, equipment etc.

Schofield, et al. (1996) reviewed case management worldwide and found a median case fatality rate (CFR) of about 25% with rates in some hospitals as high as 50%.

Puoane, et al. (2004) found a similar situation in South Africa, where CFRs as high as 40% to 50% have been reported. The above two authors agree that many of these deaths are avoidable and are attributed to outdated procedures, protocols and unfamiliarity with modern management practices.

Schofield and Ashworth (1996) claim that despite advances in knowledge, technology and resources over the past 5 decades, the median CFR of malnourished children admitted in hospital in the 1990s remained high (23.5%), when compared with the statistics of the 1950s (20%).

According to the above authors, malnutrition related deaths are mainly due to the following 5 conditions and occur during the first few days of admission:

- Hypoglycaemia
- Hypothermia
- Mismanagement of dehydration
- Missed infection
- Hypokalaemia

Schofield and Ashworth (1996) found that in 41% of reports from doctors, there was a failure to recognise the need for special treatment initiation during the stabilisation period.

In a study undertaken by Puoane, et al. (2001) in 2 rural hospitals similar to St Barnabas Hospital (SBH), reported high CFRs of 28% in one hospital and 50% in the other. The high CFRs were attributed to faulty and outdated practices, such as use of diuretics to treat oedema due to malnutrition and administration of iron during the initial phase of treatment. Non-recognition and poor management of hypothermia, hypoglycaemia, infection and poor feeding practices were found to be the common causes of morbidity and mortality. The authors also found that the staff lacked knowledge of physiological changes, which occurred due to severe malnutrition.

Schofield and Ashworth (1997) suggested that in an effort to reduce unnecessary deaths, practical and prescriptive guidelines should be used in the treatment of severely malnourished children. They further suggest that reviewing and gathering information on current practices, can help to identify specific training needs to improve knowledge which medical and nursing practitioners have.

Puoane, et al. (2001) recommended a process of rapid situational assessment in South African hospitals in order to identify training needs. This was the motivation for this study at SBH.

1.4 World Health Organisation (WHO) Response

The WHO guidelines for the management of malnutrition consist of the ‘Ten Steps’. Ann Ashworth and a team of international nutrition experts developed the ‘Ten Steps’, which have been hailed as simple, practical and prescriptive. Importantly, they are proven to be implementable even in resource-constrained rural district hospitals, with successful outcomes of mortality rates of less than 10%. Wilkinson’s study proved this by producing a mortality rate of 6% in a rural set-up similar to SBH (Wilkinson, et al., 1996).



1.5 South Africa’s Response to Malnutrition

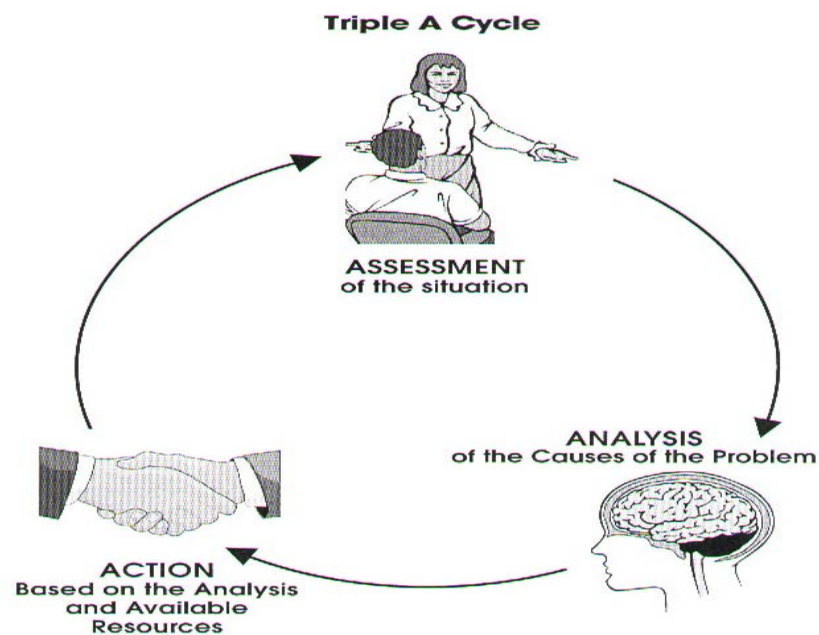
South Africa’s reaction to the malnutrition problem, led to the introduction of the ‘Integrated Nutrition Programme’ (INP), with interventions through the following programmes:

1. Community-based nutrition programmes;
2. Health facility-based nutrition programmes;
3. Nutrition promotion, communication and advocacy (Chopra, et al., 2000).

According to Sanders (1999), success in these programmes involves the attainment of objectives related to process, outcome and sustainability. Sanders also claims that all of these are influenced by socio-political, technical and financial factors.

This mini-thesis aims to investigate interventions at health facility level by using the United Nations Children’s Fund’s (UNICEF) ‘Triple A Approach’ - to *assess* the causes of deaths of malnourished children during hospital admission, to *analyse* these causes and to plan and implement *actions* to solve the problems. The ‘Triple A Cycle’ of *Assessment*, *Analysis* and *Action* is a useful tool when used in conjunction with the UNICEF Conceptual Framework (UCF) to identify causes of malnutrition in a particular area and apply possible nutrition intervention programmes.

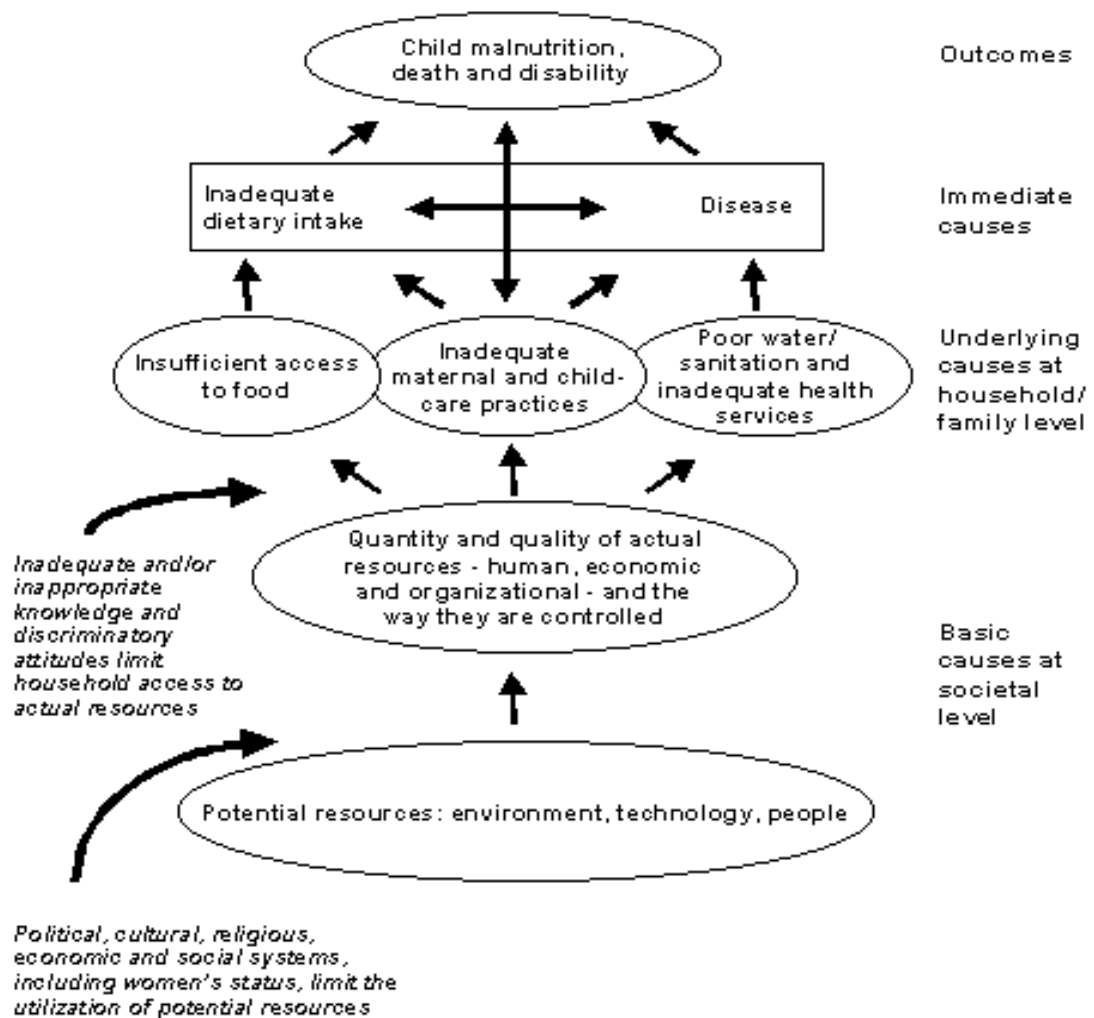
FIGURE 1: Triple A Cycle



There have been many attempts in South Africa to solve the malnutrition problem, but they were not successful as they were fragmented, not well defined and were only focusing on food provision, rather than looking into the deeper causes of malnutrition.

It is now realised that nothing short of a comprehensive strategy to cover community development, provision of employment, capacity building, involvement of departments such as agriculture, water and education, and closer cooperation is needed for success.

FIGURE 2: UNICEF Conceptual Framework



Source : The State of the World's Children 1998

Jonsson, et al. (1992) claim that “people initiating action, need information to understand the extent of the problem.” They argue that good information on the perception and knowledge surrounding the nutrition problem, such as high CFR must be available.

While addressing the nutrition problem comprehensively, by utilising the INP, the South African government adopted the WHO ‘Ten Steps’ for the management of severely malnourished children at health facility level. These steps are being widely work-shopped and implemented in different provinces, with the aim of reducing high CFRs at district hospitals.

1.6 Eastern Cape Situation



The Eastern Cape Department of Health responded to the generally high CFRs in the province, such as 28% in Sipetu Hospital and 50% in Mary Teresa Hospital, by piloting the WHO guidelines ‘Ten Steps’ in these 2 hospitals (Puoane, et al., 2001). These guidelines were modified to develop the EC protocol, based on the available resources and the capabilities of the staff in these hospitals. The protocol was then taken to the 11 district hospitals in Region E of the EC.

The implementation of the EC protocol, together with training and support from the University of the Western Cape School of Public Health, led to a remarkable reduction in the CFRs. In one of the hospitals, CFR of 45% in 1998 dropped to 14% in 2002, as illustrated in Table 1 and Figure 3.

TABLE 1: Case Fatality Rates Before and After Training on Implementation of WHO ‘Ten Steps’ in 11 District Hospitals

| HOSPITAL NAME | BAMBISANA ² | GREENVILLE ² | HOLY CROSS ² | MARY TERESA ¹ | MT. AYLIFF ³ | RIETVLEI ³ | ST. ELIZABETH ² | ST. MARGARET ³ | ST. PATRICK'S ² | SIPETU ¹ | TAYLOR BEQUEST ³ | TOTAL |
|---------------|------------------------|-------------------------|-------------------------|--------------------------|-------------------------|-----------------------|----------------------------|---------------------------|----------------------------|---------------------|-----------------------------|-------|
| 1998-1999 | 28% | 15% | 45% | 45% | 29.1% | 16.7% | 36% | 25% | 30% | 21% | 26.7% | 31% |
| 2000-2001 | 21% | 24% | 22% | 52% | 18% | 33.3% | 28.3% | 50% | 13% | 28% | 17% | 25% |
| 2002 | 16% | 38% | 14% | 38% | 22% | 26% | 26% | 29% | 13% | 22% | 21% | 22% |

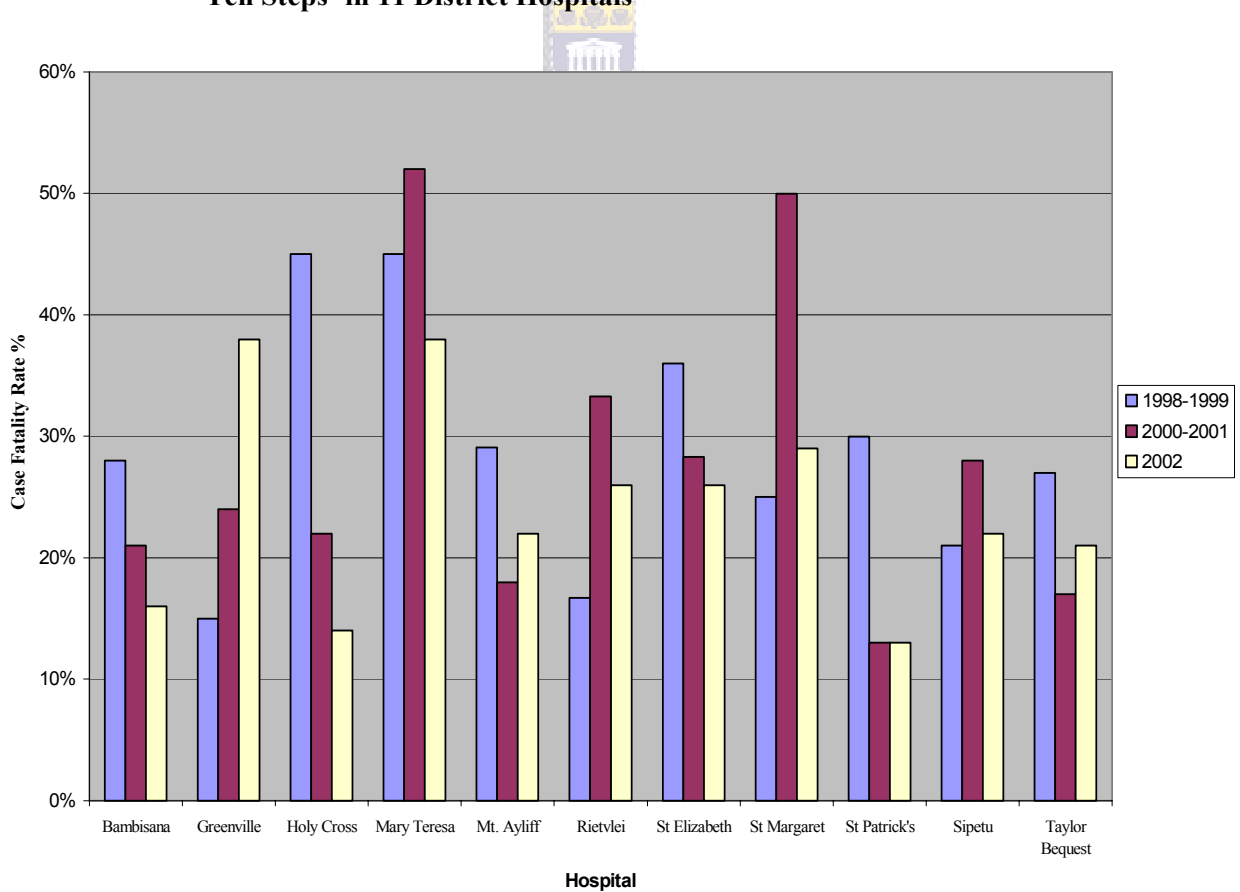
¹Training took place from August to October 1998.

²Training took place from November 1999.

³Training took place from March 2000.

Source: Puoane, et al., 2004

FIGURE 3: Case Fatality Rates Before and After Training on Implementation of WHO ‘Ten Steps’ in 11 District Hospitals



Source: Puoane, et al., 2004

The EC protocol is being work-shopped and used widely. It is very prescriptive, using locally available resources suited for implementation and sustainability. Strict implementation of the steps in this protocol for the in-patient management of children with severe malnutrition is expected to reduce the CFR in excess of 30% in EC hospitals to below 10% (Eastern Cape Department of Health, 2000).

This protocol is not yet integrated into the curriculum of the nursing or medical schools in the EC Province. The protocol for the management of malnutrition at Nelson Mandela Academic Hospital in Umtata, has elements based on the WHO ‘Ten Steps’, but is not introduced as the WHO ‘Ten Steps’, and it is not similar to the EC protocol. SBH Nursing School’s four-year course does not include the EC protocol in its curriculum either.



1.7 Malnutrition Problem at St Barnabas Hospital

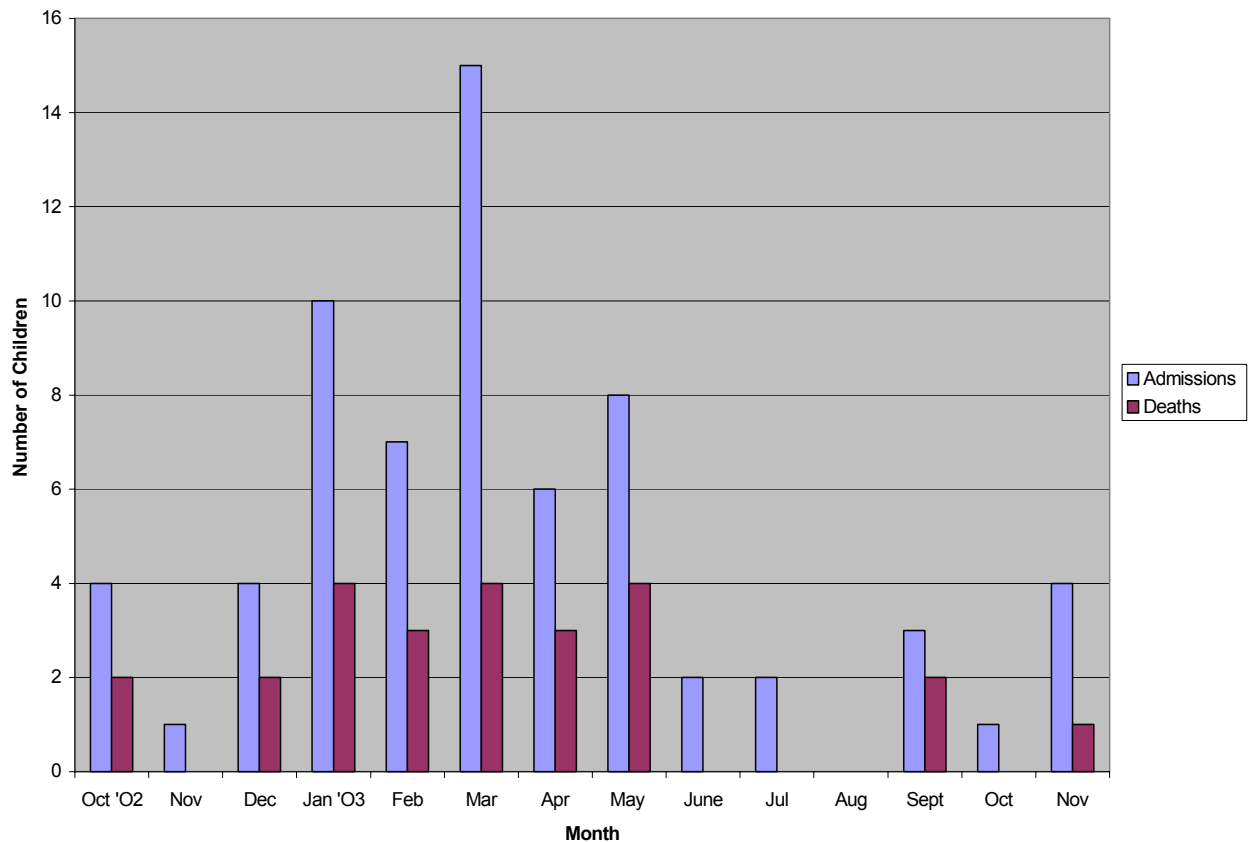
St Barnabas Hospital is the major district hospital serving the Nyandeni District. Nyandeni District has a population of 451,763 with 9% of the population less than 5 years of age (Meidany and Puchert, 1999). Recent statistics in the district showed that 8000 children were undernourished and 1000 were severely malnourished (Human, et al., 1999).

A study conducted by Puoane, et al. (2001) identified lack of knowledge and motivation amongst staff as important factors resulting in high mortality rates. The strict implementation of the EC protocol in neighbouring hospitals showed an overall drop in CFRs from 31% pre-training down to 22% post-training (Puoane, et al.,

2004). The authors demonstrated that even in remote, rural district hospitals, staff could be motivated to identify shortcomings in their practices through simple research and improved quality of care.

The Nyandeni District Nutrition Team (NDNT) observed from the statistics that SBH had a CFR of 38%, as shown in Figure 4.

FIGURE 4: Admissions and Case Fatality Rates due to Child Malnutrition at St Barnabas Hospital from October 2002 – November 2003



Encouraged by the above developments in neighbouring districts, the NDNT participated in one of their workshops on the EC protocol in Region E. Impressed by

the training methods and statistics obtained, the NDNT decided to implement the EC protocol (based on WHO ‘Ten Steps’) at SBH in August 2003.

There was no preparatory training of the paediatric staff at SBH, or analysis of other resources regarding the above implementation plan. The NDNT merely introduced the protocol to the ward staff. The intervention did not produce the desired results, as 3 out of 8 children admitted from August to November 2003 died, with a CFR of 37.5%.

However, a valid conclusion cannot be drawn from such a small number of subjects studied over a short period of time. It is also important to note that there were no admissions in August 2003.



1.8 Problems and Purpose

The CFR at SBH for severely malnourished children remains persistently high (37% from October 2002 to August 2003). To efficiently reduce this unacceptably high fatality rate, a quick and efficient implementation of the EC protocol needs to be achieved.

SBH is the biggest hospital in the Nyandeni Health District, in terms of infrastructure, financial, human and other resource availability. Despite these advantages, the CFR consistently remained high. This then motivated the NDNT to study the situation and analyse in detail the current in-patient management of severely malnourished children at SBH.

Puoane, et al. (2001) suggested that attitudes, as well as practices were important factors in fatality rate. Resources or attitude alone, cannot attain or sustain the desired CFR. The integration of resources, attitudes and practices is vital to achieve the target CFR of less than 10%.

The purpose of the research will be to answer the following question:

What is the current situation in respect of knowledge, practice, and attitude of nurses, as well as availability of resources in the in-patient management of severely malnourished children at SBH?

The baseline data obtained from the study will provide the necessary information to the programme managers to plan and implement the EC protocol, and evaluate its impact more efficiently in the future.



This study is part of the initiative by the district to use a comprehensive approach to improve the nutritional status of children of the Nyandeni Health District. The NDNT is already in the process of actively implementing the INP at all levels, comprehensively, in the district. The multisectoral and interdisciplinary approach is being pursued. Community-based gardens, community-based health promotion and poverty alleviation programmes through skills development are underway. Social grants and provision of water through foreign aid (Japan), along with erection of toilets are being undertaken to address underlying causes as identified by the UCF. SBH, due to its strategic position and relatively advanced infrastructure is ideally suited for training and as an implementation centre for the EC protocol. The experiences will be reported to other hospitals in the district after this piloting.

CHAPTER 2

LITERATURE REVIEW

This review covers literature on the following:

- Hospital management of severe malnutrition.
- The impact of WHO Ten Steps on CFRs.
- How knowledge, practice, attitude and training can influence outcomes of management of malnourished children.

2.1 Hospital Management of Malnutrition and Outcomes

Schofield and Ashworth (1998) report, “Case fatality rates as high as 50% of severe malnutrition still occur in hospitals, despite advances in general medical technology”.

Strasser, et al. (1999) claim that centres that follow WHO ‘Ten Steps’ have CFRs below 10%.

A rural district hospital in Hlabisa achieved a significant reduction in the in-hospital CFR for severe malnutrition from 20% to 6% following implementation of two updated interventions, namely, replacement of the previous antibiotic, Septran, with Ampicillin and Gentamicin, and close monitoring and treatment of hypoglycaemia (Wilkinson, et al., 1996).

Ashworth and Schofield (1997) emphasise that severely malnourished children can be saved, if the outmoded and faulty practices are addressed. Widespread inappropriate

management of severe malnutrition in Africa's hospitals needs to be addressed too (Chinnock, 1997).

2.2 WHO 'Ten Steps' for the Management of Malnutrition

The 'Ten Steps' has been adopted by the WHO as the best solution available to date, to bring down the severe malnutrition case fatalities.

Many studies and literature suggest that a team approach is important, and that closer co-operation and communication between staff can contribute to improvement in care, leading to significant reductions in mortality. Better training of health workers is necessary to improve knowledge and skills (Schofield and Ashworth, 1997).

Lack of knowledge regarding the malnourished child's frail physiological demands and ill-informed practices of diuretic use, over-hydration, diets rich in salt, unrecognised hypothermia and hypoglycaemia, early feeding with excessive protein, initial iron supplementation and delay in antibiotic therapy are factors which compound the condition, leading to death. The WHO 'Ten steps' contains activities to address the above problems effectively.

Because of their vulnerability to death, malnourished children's treatment in hospital should be well organised and given by specially trained staff (WHO, 2000).

Strasser, et al. (1999) suggest a process of team building, which includes doctors, nurses, hospital managers, dieticians and pharmacist within hospitals to improve in-patient management. A motivated team is vital to implement WHO 'Ten Steps'.

2.3 HIV/AIDS and Malnutrition

HIV/AIDS is perceived as one of the causes for increased prevalence of malnutrition leading to mortality, but this belief cannot be confirmed, by the fact that there is no parallel increase in CFRs with reported AIDS mortality (Schofield and Ashworth, 1997). Wasting is more common than oedema in malnutrition that is secondary to AIDS, however, mortality is common amongst children with oedematous PEM (Schofield and Ashworth, 1996). According to WHO (1999), in some countries, up to half of the children presenting with severe malnutrition have AIDS and treatment of malnutrition in both HIV positive and HIV negative children is the same. “Despite high prevalence rates of HIV/AIDS, successful recovery from malnutrition is possible” (WHO, 1999).



2.4 Different Outcomes

Two studies in South African rural areas – Hlabisa (Wilkinson, et al., 1996) and Mt. Frere (Puoane, et al., 2001) found that these hospitals had major differences in their capacities to manage severe malnutrition. Hlabisa Hospital in Kwazulu Natal was able to implement WHO ‘Ten Steps’ with reasonable capacity and success as early as 1993. Whereas, in Mary Teresa and Sipepetu, which are rural hospitals in the former Transkei, the WHO ‘Ten Steps’ were not comprehensively introduced or implemented as late as 1998.

By administration of intravenous (IV) antibiotics instead of oral antibiotics, and aggressively managing hypoglycaemia as per protocol, the CFR was markedly reduced in Hlabisa. In the Mt. Frere study, it was found that the staff was unfamiliar with modern guidelines and was using discredited practices. Inappropriate practices there included overuse of IV fluids for rehydration, inadequate feeding leading to hypoglycaemia and hypothermia, untreated infections, and failure to correct electrolyte and micronutrient deficiencies. It is no surprise that Hlabisa produced a CFR of 6% with correct implementation of the 'Ten Steps'. Puoane, et al. therefore recommended that similar problems of high CFRs in other hospitals should be studied to identify inappropriate practices, with a view to improve CFRs.



Evidently there was a big gap in health service delivery inter-provincially and intra-provincially. This may be attributable to the previous fragmented and discriminatory health service systems. Interestingly, literature based upon the Standard Treatment Guidelines and Essential Drug List for Paediatrics (1998), recommends admission to high care ward during the stabilisation phase.

Availability of a good plan alone cannot produce the desired outcome. Adequate and appropriate resources, both human and material, in good quantity and quality, are equally important to implement the plan successfully. Brewster and Manary (1995) suggest that increasing impoverishment of hospitals in developing countries, results in failure to provide essential supplies and clinical services.

2.5 Attitude

‘Attitude’ is a word very commonly used in our day-to-day life. Ajzen (1974) defines attitude as a “learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given attitudinal object.”

According to Katz and Stotland (1958) and Rajecki (1982), attitudes have three components:

1. Cognitive (thought) - refers to previous system of beliefs about the object.
2. Affective (feeling) - refers to emotion experienced towards the object.
3. Behavioural (action) - entails predisposition to act in a certain manner towards the attitudinal object.

From the above definitions, a person holding a particular attitude towards an attitudinal object, seems to be influenced by the direct and indirect stimuli received by the person over a long period.

It follows that health workers’ attitudes are likely to be decided by their life experiences, work experiences, peer attitudes and their knowledge, etc. If malnutrition is thought to be irreversible, associated with high CFR, and mostly due to HIV/AIDS, it can condition a health worker to take a negative attitude, and a sense of hopelessness towards the condition.

Feldman (1985) says measuring attitudes is a challenging problem. There are various techniques, as the attitudes themselves are hypothetical constructs, and abstract

concepts that cannot be observed. The Likert scale, which is based on rating an attitude in a scoring system of 1 (bad) to 5 (excellent), is widely used (Likert, 1932). To measure the attitude of a group of people, a ‘focus group discussion’, correctly done, can reasonably express the perception of the group regarding an attitudinal object. This method is widely used in Health Systems Research as a qualitative method of data collection.

2.6 Impact of Training on Practices and Attitudes

Implementation of the same protocol in similar situations, with diverse outcomes, points to problems with the process. Adoption and implementation of the WHO ‘Ten Steps’ in South Africa, is very recent.



Strachan and Clarke (2000) believe that the changing philosophy of PHC and District Health System (DHS) based health care, should be accompanied by concomitant changes in the training of health practitioners.

A practicing nurse confesses in an interview that, “Everything in health now is about PHC and my training did not equip me at all for this” (Strachan, 2000). After a period of training in appropriate areas, she says that she now knows why it is important to breastfeed. “Before I knew what to say, but I did not understand the reasoning behind it,” she says.

The above dilemma not only affects nurses, but all health care workers, as the changes in knowledge and technology are very dynamic. The above situation is

further exemplified by the fact that some doctors and nurses are required to manage HIV/AIDS patients and issues about which they did not hear or learn during their undergraduate days.

Strachan and Clarke (2000) further argue that the nursing (and even medical) education is so entrenched in urban, hospital-based care and even the tutors are not ready for the change, leaving big gaps in theory and practice.

They stand firm that changing the curriculum alone does not produce the desired competencies of knowledge, skills and attitude. The authors conclude that the teaching environment must be transformed and that the educators themselves be re-trained, re-orientated and re-deployed to meet the needs of the changes (Strachan and Clarke, 2000).



Strasser (2000) argues that the nurses are providing advanced services without additional training. In the absence of basic training on key areas of importance, post-basic training (formal and informal) is very vital for the changing needs of transforming health services. Lack of knowledge and skill in an area of work can affect attitude negatively.

Mufamadi (2000) states that post-basic training is important to keep up to date with development in a nurse's field. Her study further found that training in itself, however optimal, does not guarantee positive outcomes that are sustained.

At Mt. Frere, a study by Chopra, et al. (2000) found that the clinic nurses perceived heavy workload and excessive numbers of tasks, especially clerical work, as the main

reason for poor growth monitoring and promotion (GMP). Only a minority mentioned a lack of training or supervision as a cause of poor performance. They also found that in most cases poor performance was linked to low morale and lack of motivation.

The need for supportive supervision was demonstrated by the Mt. Frere study, which found that “after attending workshops, people are motivated, but with absence of evaluation, supervision and support constantly, the feeling is that no-one cares” (Mufamadi, 2000).

Literature is scanty on issues of morale, motivation and attitude of health workers. Wilkinson (1996) argues that “many deaths from malnutrition are preventable but the dissemination and application of latest knowledge with *careful* management is the challenge.” Zollner (1991) concludes in his study on nutrition intervention that success will stand or fall with the *motivation* of everyone in the team. Successful outcome of few cases can form a motivating factor for further and future good attitudes and care by nurses.

Schofield and Ashworth (1996) recommend that faulty practices can be avoided through appropriate training. They further recommend that medical and paramedical workers’ performance can be improved through short-term training courses. Training centres must have these courses in their curricula. Schofield & Ashworth (1996) advise that centres providing care with high CFRs, should review their clinical management procedures and performance, with a view to improve their practices.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Aim of the Research

The aim of the research was to assess the in-patient management of severely malnourished children at St Barnabas Hospital.

3.2 Objectives of the Research

1. To assess the current knowledge and practice of the paediatric staff in the management of severely malnourished children.
2. To assess the attitudes of nurses towards the management of severely malnourished children.
3. To assess the availability of resources and supplies necessary to care for the children with severe malnutrition.

3.3 Research Design

A cross-sectional study was undertaken to achieve the above aim and objectives.

3.4 Research Setting

The research was undertaken at St Barnabas Hospital, which is located in the eastern part of the EC Province (the former Transkei). It is situated 45km East of Umtata.

SBH is a level one district hospital that serves about 200,000 poor rural people. The hospital has a total of 250 beds, with 25 beds in the paediatric ward. There are 7 beds in the malnutrition unit of the paediatric ward. Seven nurses work in the paediatric ward and were directly involved in the management of malnutrition. All 7 of them participated in the study.

The gateway clinic is a separate PHC clinic, with its own baby clinic within the SBH premises. The baby clinic was used to pilot both the questionnaire and the Focus Group Discussion (FGD).

3.5 Sampling Procedure and Sample Size

Since there were only 7 nurses working in the paediatric ward at SBH, all 7 of them were included in the study. Only 1 nurse was on night duty during the study and the remaining 6 nurses were on the day shift. All 7 nurses participated in the FGDs. Observation of nurses' activities was done on all 4 children who had been admitted to the ward during the study period.

Diagnosis of the children admitted were as follows:

- Child A: Marasmic with lethargy and moderate dehydration (due to gastroenteritis).
- Child B: Marasmic with lethargy and respiratory distress.
- Child C: Marasmic kwashiorkor.
- Child D: Kwashiorkor with weeping skin lesions.

The sister in charge of the malnutrition unit was the key informant (KI) selected for the structured interview.

3.6 Ethical Consideration

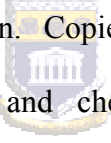
Permission to do the research was obtained from the Nyandeni District Management, hospital management and ward matron. Staff and respondents were informed of the nature and purpose of the study, and were assured that there was no harmful procedure involved. Informed consent regarding participation in the study was also obtained. Participation was free and voluntary. Participants were told about their right to withdraw from the study at any time. They were also told that confidentiality would be maintained at all times. Their names were not written anywhere and only code numbers were used, which were only known to the researcher and research assistants.

3.7 Training of Research Assistants

The researcher, being the clinical and administrative head of the institution, recruited research assistants in order to avoid any bias on the part of the researcher and the respondents. A total of 4 research assistants were chosen.

- Research assistant A: was the programme manager for mother, child, women's health and malnutrition in the district office. She was selected as a research assistant, due to her familiarity with the causation and management of malnutrition.

- Research assistant B: was a sixth year medical student from the University of Transkei, and was selected as he had been exposed to an EC protocol workshop in a neighbouring hospital.
- Research assistant C: was a clerk who was experienced in minutes taking, and was fluent in both English and Xhosa.
- Research assistant D: was a British volunteer, who was a scribe and assisted with compilation of data.

All research assistants were briefed and given a copy of the research protocol. They were all given a sound knowledge of the EC protocol during a workshop, which took place a week before the data collection.  Copies of the EC protocol, data collection procedure handouts, questionnaires and checklists were provided during the workshop. Clarity on ambiguous issues was attended to during the week preceding the data collection. Research assistant B, who was recruited to perform the structured observation, was briefed on observation techniques and provided with relevant handouts. It was emphasised that he was to observe action in the ward, and not influence actions in any way.

Research assistant A carried out the structured Key Informant Interview (KII), as she possessed a sound knowledge of the EC protocol. She was made aware of interview techniques and was briefed on the use of appropriate language to probe issues, such as the use of open-ended questions. Body language was also highlighted as

important. The interviewer was briefed on using open body gestures and sustaining eye contact with participants.

3.8 Assessment

Data was collected from 18 to 20 November 2003. Data collection was done using 4 methods:

a. Key Informant Interview (KII) with the sister in charge of the malnutrition unit:

A structured questionnaire was developed and used to compare the current ward practices in relation to the EC protocol. The sister in charge of the malnutrition unit was interviewed by research assistant A in the nurses' rest room for approximately 70 minutes. The questions were designed to extract information from the KII regarding knowledge and important activities in each step of the EC protocol. The questions were non-leading, so as to allow the KII to express her views about important activities and priorities.

b. Structured Observation (SO):

A checklist was developed and used to collect data on the nurses' activities in the management of malnourished children. The aim was to have a true picture of what was actually practised in the malnutrition unit. This information was also used to validate the information given during the KII. The observer was research assistant B, who had been trained on how to be a participant observer. The observer spent 48 hours continuously in the unit, spending the first 24 hours familiarising himself with

the surroundings, ward activities and staff. During the second 24 hours he completed the observations.

c. Audit of Resources:

A resource checklist (RCL) was used to assess the availability of resources in the paediatric ward. The checklist consisted of the essential resources (equipments and supplies) required to implement the EC protocol effectively. Research assistant B completed the checklist over a period of 90 minutes with the help of a ward sister, who was familiar with the knowledge and location of items.

d. Focus Group Discussion (FGD):

A FGD was conducted to explore the attitudes of the nurses towards malnourished children and their management. All 7 nurses involved in the management of malnourished children participated in the discussion. The FGD was held in the nurses' rest room, and took 2 hours. Research assistant A facilitated the discussion. It was conducted in both English and Xhosa.

Research assistant A and one of the transcribers (research assistant C) were bilingual, whilst research assistant D was a native English speaker and acted as an observer and recorder.

3.9 Data Analysis

The data collected was analysed to give information on current practices and attitudes in the management of malnourished children at SBH.

Quantitative data from the KII and the SO were compared to the EC protocol, and every activity practiced correctly in each step of the EC protocol was allocated 1 point. The sum of the points scored was then calculated into percentages.

The precise performance of every activity of the ‘Ten Steps’ is critical for the successful management of malnutrition.

During the analysis, special attention will be given to the management of hypoglycaemia, hypothermia, dehydration, infection and hypokalaemia. Similarly, the RCL was used to assess if lack of resources affected practices in the ward.

3.10 Reliability and Validity



a. Key Informant Interview:

To ensure validity of the KII questionnaire, it was piloted before data collection. Changes were made to eliminate any ambiguous questions. Reliability of the questionnaire was improved by the fact that the research assistant was fluent in both English and Xhosa. This ensured that any language problems that occurred were rectified during the interview itself.

b. Structured Observation:

SOs can often induce evaluation apprehension and change of behaviour in those observed. To overcome this potential problem, the research assistant was briefed as to the importance of being a ‘participant observer’. He was seen as part of the team and was given 24 hours to familiarise with the staff and ward procedures. The

importance of the ‘blending in’ was emphasised. This meant that both validity and reliability were improved.

c. Audit of Resources:

To ascertain validity of the audit of resources, the RCL was not simply given to a nurse to complete, but the research assistant asked for evidence of every resource that was claimed to be present and in working order.

d. Focus Group Discussion:

A trained and experienced research assistant A conducted the FGD. The FGD was also piloted to ensure that the questions asked received relevant responses. The research assistant used the correct posture, gestures, body language and eye contact to make sure all participants felt at ease in the discussion.

The participants were encouraged to speak in the language of their preference (Xhosa or English). The 3 trained research assistants did data coding and analysis. This was done to eliminate any subjectivity. Researcher bias was reduced by the fact that the 3 research assistants read, coded and categorised the transcribed information independently and later came together to collate their categorisation.

e. Triangulation:

By using more than one method, the validity of data collected was strengthened. For example, RCL was checked during SO in respect of availability and working conditions.

CHAPTER 4

RESULTS

Results presented in this chapter include:

- Key Informant Interview (KII) using a Structured Questionnaire.
- Structured Observation (SO) of ward activities.
- Resource Checklist (RCL).
- Emerging themes from Focus Group Discussion (FGD).

4.1 Key Informant Interview



Data collected during interviews were summarised according to the EC protocol.

The protocols for all the steps mentioned below were available in the ward according to the KI.

a. *Steps 1 and 2 - Treat/prevent Hypoglycaemia and Hypothermia (low blood sugar and low body temperature):*

The KI mentioned that the protocols for treatment of hypoglycaemia and hypothermia were available in the ward.

She stated that under-arm temperature was used to diagnose hypothermia, and dextrostix was used to diagnose hypoglycaemia, and were done within 10 minutes of admission to the ward. She however mentioned that sometimes these diagnostic procedures were not done due to staff shortages.

She also cited that frequent staff rotation hinders the sustainability of quality of care in the paediatric ward, and that it is not possible to train new staff continuously. As a result, not all staff members knew the signs of hypoglycaemia.

The only immediate treatment for hypoglycaemia mentioned by the KI, was feeding with start-up formula. Measures to prevent hypoglycaemia included 3 hourly feeds and recording intake and output.

Signs of hypothermia mentioned were low temperature and shivering. Immediate treatment of hypothermia included use of heaters to keep the ward warm, adding extra blankets and feeding. She indicated that measures to prevent hypothermia included frequent changing of soiled or wet linen, temperature charting, and maintaining heat inside the room.



The KI also mentioned that children were weighed daily.

*b. Step 3 – Treat/prevent **Dehydration** (loss of body fluids):*

The KI stated that not every staff member knew the warning signs of dehydration. She said that the immediate treatment for dehydration in the ward (of a child not in shock) was to start feeding, give Oral Rehydration Solution (ORS) every 30 minutes and set up intravenous (IV) fluids. Preventative steps in the ward included IV therapy, intake and output recording and “give fluids and antibiotics as per doctor’s orders.”

c. Step 4 – Correct **Electrolyte Imbalance**:

The KI cited immediate action regarding electrolyte imbalances, such as giving electrolytes in the form of half Darrows-Dextrose solution. She mentioned “charting of strict intake and output” and giving fluids according to weight as the steps taken to prevent electrolyte imbalance. She did not mention anything about potassium chloride (KCl) solution or EC electrolyte/mineral mixture.

d. Step 5 – Prevent/treat **Infection**:

The KI said that not every staff member knew the signs of infection. She stated that signs of infection were raised temperature, coughing, chest infection and diarrhoea. She also said that all severely malnourished children were treated with antibiotics, because symptoms of infection were *always* absent. Treatment for infection was started within half an hour of admission to the ward and stat doses were started in Out Patients Department (OPD). She mentioned that the following antibiotics were used in the ward - Gentamicin, Ampicillin, Metronidazole, and Co-trimoxazole. As preventative steps in the ward, the environment was kept clean, floors were cleaned with biocide, equipment was dusted, hands were washed between handling of each child and feeding utensils were kept clean.

e. Step 6 – Correct **Micronutrient Deficiencies**:

The KI mentioned that the Vitamin A protocol is used for the management of micronutrient deficiencies.

f. Step 7 and 8 – Feeding (cautious feeding then rebuild wasted tissues – “catch up growth”):

The KI said that the children were fed 3 hourly. Start-up formula was used for the first 3 days or till stabilised, followed by catch up formula. She also mentioned that feeding programmes varied according to the needs of the patient, for example oedematous patients received less food than non-oedematous ones, with a 10ml increase for those with appetite. She said that breastfeeding was actively encouraged, and when possible, breastfeeding was re-established. The KI pointed out that feeding records in the patients’ chart included time, amount and frequency of feeds.

g. Step 9 – Provide Stimulation, Play and Loving Care:

The KI stated that mothers were encouraged to comfort, bathe, feed and play with their children. She responded positively when asked about availability of a play-time programme in the ward, but she stated that the “shortage of staff hinders the implementation of this programme.”

h. Step 10 – Prepare for Discharge and Follow-up:

The KI mentioned that growing vegetables and poultry farming were part of the instructions and training given to mothers or caregivers on discharge regarding things to do in order to meet their child’s nutritional requirements. She stated that discharge notes were written on client cards and the mother is reminded about the review date.

The above information from the KII is quantified in the Table 2.

TABLE 2: Results of Key Informant Interview

✓ = correct response, ✗ = not mentioned/incorrect, ◇ =ambiguous answer

| ACTIVITY | KEY INFORMANT INTERVIEW |
|--|---|
| <i>STEP 1 - HYPOGLYCAEMIA</i> | |
| Random Blood Sugar -Dextrostix (on arrival). | ✓ Done within 10 minutes of admission, but staff shortage sometimes hinders this. |
| If hypoglycaemic (blood glucose <3mmol/l), give 10% glucose (50ml) or sugar solution. Do dextrostix again after 30 minutes. | ✗ Not mentioned. |
| Feed start-up formula immediately after admission. | ✓ Feed 3 hourly, recording intake and output. |
| If unconscious, give glucose IV. | ✗ Not mentioned. |
| Encouragement of mothers to stay with very ill children to watch for deterioration, help feed and keep warm. | ✗ Not mentioned. |
| <i>STEP 2 - HYPOTHERMIA</i> | |
| Under-arm temperature (on arrival). | ✓ Temperature should be taken within 10 minutes of admission. |
| Feed straightaway, and then every 3 hours day and night. Record intake and output. | ✓ Children are fed straightaway and 3 hourly. |
| Keep warm, cover with a blanket, share bed with mother in order to have mother to child skin-to-skin contact (kangaroo care). | ✓ Cover with blankets to keep warm. |
| Keep the ward warm by using a heater. | ✓ Maintain heat inside the room. |
| Make sure there are no draughts. | ✗ Not mentioned. |
| Keep the child dry. | ✓ Frequent change of soiled or wet bedding. |
| Avoid exposure during examination and after bathing. | ✗ Not mentioned. |
| <i>STEP 3 – DEHYDRATION</i> | |
| If a child has watery diarrhoea - give ORS between feeds and stool losses. Continue feeding, including breastfeeding. | ✗ Intravenous therapy, record intake and output, give antibiotics as per orders. |
| If dehydrated, give ORS 5ml/kg every 30 minutes for 2 hours (orally or nasogastric tube), then 10ml/kg every hour for the next 4-10 hours. | ✓ Give ORS every 30 minutes. |
| Do not give IV fluids except when in shock. | ✗ Set up IV fluids. |

| | |
|--|---|
| Monitor for signs of over-hydration during rehydration. | ✗ Not mentioned. |
| <i>STEP 4 - ELECTROLYTE IMBALANCE</i> | |
| Give extra potassium and magnesium daily. | ✗ Give electrolytes – e.g. ½ Darrows Dextrose. Did not mention KCl or EC electrolyte/mineral mixture. |
| Limit the amount of salt in the diet. | ✗ Strict intake and output, give fluids according to weight. Did not mention salt free diet. |
| <i>STEP 5 - INFECTIONS</i> | |
| Starting on the first day, give broad-spectrum antibiotics to all children. | ✓ Started within half an hour in the ward, stat doses given in OPD. |
| Are malnourished children with complications treated with IV broad-spectrum antibiotics? | ✓ Ampicillin, Gentamicin and Metronidazole is given on the ward. |
| Reduce overcrowding as far as possible. | ✗ Not mentioned. |
| Washing of hands after dealing with each child and before examining the next. | ✓ Clean environment, floor cleaned, dusting of equipment, hand washing between child handling, clean feeding utensils. |
| For parasitic infestations, give Mebendazole 100mg orally twice a day for 3 days. | ✗ Not mentioned. |
| Give child all age-appropriate immunisations. | ✗ Not mentioned. |
| <i>STEP 6 – MICRONUTRIENT DEFICIENCIES</i> | |
| Are issues with micronutrient deficiencies dealt with in the ward, according to the EC protocol? | ✗ Only mentioned Vitamin A protocol, but did not mention about folic acid, multivitamin syrup, EC electrolyte/mineral mixture and iron. |
| <i>STEP 7- CAUTIOUS FEEDING</i> | |
| 3 hourly feeds (8 feeds every 24 hours). | ✓ Feed 3 hourly. |
| Encourage mothers to continue breastfeeding after start-up formula. | ✓ Actively encouraged. |
| If the child has gross oedema, reduce volume to 100ml/kg/day. | ✓ Oedematous patients received less food than non-oedematous ones, with a 10ml increase for those with appetite. |
| Weigh malnourished children frequently. | ✓ Weigh and plot daily. |
| <i>STEP 8- CATCH UP GROWTH</i> | |
| Change to catch-up formula. | ✓ Give catch up formula. |
| Increase feed by 10ml each day until some feed remains uneaten. | ✓ Increase feed by 10ml for those with appetite. |
| Actively encourage child to eat as much as possible. Always offer more. | ✗ Not mentioned. |
| Stabilisation phase – Start-up formula. | ✓ Start-up formula used for the first 3 days, or till stabilised. |

| | |
|--|--|
| Rehabilitation phase – Catch-up formula How and where is the feeding recorded? | ✓ Catch-up formula used after stabilisation. Time, amount and frequency of feeds kept in patient records. |
| <i>STEP 9 - STIMULATION, PLAY AND LOVING CARE</i> | |
| Provide tender loving care. | ✓ Provide tender loving care. |
| Are the mothers encouraged to play, bathe and feed their children? | ✓ Help mothers to comfort, bathe, feed and play with child. |
| What steps, if any, are in place to give the children structured play therapy when they are well enough? | ◇ Play-time programme is available in the ward, but shortage of staff hinders this programme. |
| <i>STEP 10 - PREPARATION FOR FOLLOW-UP AFTER DISCHARGE</i> | |
| Obtain information on family background and socio-economic status. | ✗ Not mentioned. |
| Instruct and train mothers about how to feed their child properly. | ✓ Yes – growing vegetables and poultry farming. |
| Send referral letters to the clinic. | ✗ Not mentioned. |
| Establish a link with community health workers for home follow-up. | ✗ Not mentioned. |
| Write a clinical summary in patient-held card. | ✓ Written in client cards. |
| TOTAL OF CORRECT RESPONSES AS PER KII (PERCENTAGE) | 23/41 (56%) |

Out of a total of 45 activities considered, one was found to be ambiguous (◇) and was therefore disregarded from the calculation.

4.2 Structured Observation

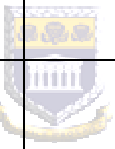
TABLE 3: Characteristics of Children Studied (n=4)

| | <i>SEX</i> | <i>AGE</i> | <i>WEIGHT (on admission)</i> | <i>DIAGNOSIS & DURATION OFSTAY SINCE ADMISSION</i> |
|----------------|------------|------------|----------------------------------|---|
| CHILD A | Female | 8 months | 4.7 kg | Marasmus with lethargy and moderate dehydration – Day 1. |
| CHILD B | Female | 6 months | 3.8 kg | Marasmus with lethargy and respiratory distress – Day 2. |
| CHILD C | Male | 2 years | 6.9 kg | Marasmic Kwashiorkor – Day 9. |
| CHILD D | Female | 10 months | 7.2 kg | Kwashiorkor with weeping skin lesions – Day 7. |

TABLE 4: Results of Structured Observation of Ward Activities (n=4 children)

✓ = done, ✗ = not done, N/A = not applicable, ◇ = ambiguous answers

| ACTIVITY | DONE | NOT DONE | COMMENTS |
|---|--|----------------------|--|
| STEP 1 - HYPOGLYCAEMIA | | | |
| Random Blood Sugar - Dextrostix (on arrival). | | ✗ | Done on day 2 in 2 children and on day 4 in 2 children. |
| If hypoglycaemic (blood glucose <3mmol/l), give 10% glucose (50ml) or sugar solution. Do dextrostix again after 30 minutes. | | ✗ | Dextrostix were not done immediately, as there was uncertainty whether a child was hypoglycaemic or not. |
| Feed start-up formula immediately after admission. | ✓ | | The patients observed were fed start-up formula within 30 minutes of diagnosis and admission. |
| If unconscious, give glucose IV. | | N/A | None of the children were unconscious. |
| Encouragement of mothers to stay with very ill children to watch for deterioration, help feed and keep warm. | ✓ | | The mothers stayed with their children 24 hours a day and helped with monitoring and feeding. |
| STEP 2 - HYPOTHERMIA | | | |
| Under-arm temperature (on arrival). | ✓ | | Under-arm temperature is measured. |
| Feed straightaway, and then every 3 hours day and night. Record intake and output. | ✓ | | Mothers assisted with feeding. Intake and output recorded. |
| Keep warm, cover with a blanket, share bed with mother in order to have mother to child skin-to-skin contact (kangaroo care). | All 4 children slept on their own bed with blankets. | But without mothers. | ◇ The children were kept warm in blankets. |
| Keep the ward warm by using a heater. | | ✗ | There was a heater in the ward, although on this day it was not working due to a problem with electricity. |
| Make sure there are no draughts. | ✓ | | The windows and doors were closed. |
| Keep the child dry. | ✓ | | Bed linen was changed when children were wet. |
| Avoid exposure during examination and after bathing. | | ✗ | During the night 2 children were left exposed (not covered). 2 children were exposed while being examined. |

| | | | |
|--|--|--|--|
| STEP 3 – DEHYDRATION | | | |
| If a child has watery diarrhoea - give ORS between feeds and stool losses. Continue feeding, including breastfeeding. | | x | No ORS was given in the ward and mothers were not encouraged to breastfeed. One child had watery stools and was not given ORS, breastfeeding not encouraged. |
| If dehydrated, give ORS 5ml/kg every 30 minutes for 2 hours (orally or nasogastric tube), then 10ml/kg every hour for the next 4-10 hours. | | x | ORS was not given. |
| Do not give IV fluids, except when in shock. | | N/A | None of the children were in shock. |
| Monitor for signs of over-hydration during rehydration. | | x | Not done by nurses. Only done by doctor during ward rounds. |
| STEP 4 - ELECTROLYTE IMBALANCE | | | |
| Give extra potassium and magnesium daily. | | x | Only given potassium orally in the form of Slow K. No electrolyte/mineral mixture available. |
| Limit the amount of salt in the diet. | ✓ |  | The nurses did not include salt in the preparation of start-up and catch-up formula. |
| STEP 5 - INFECTIONS | | | |
| Starting on the first day, give broad-spectrum antibiotics to all children. | ✓ | | Oral antibiotics prescribed on admission to all children. |
| Are malnourished children with complications treated with IV broad-spectrum antibiotics? | | x | Only oral antibiotics were given. |
| Reduce overcrowding as far as possible. | ✓ | | Each child had his/her own bed. |
| Washing of hands after dealing with each child and before examining the next. | The nurses washed their hands after dealing with each child and before examining the next. | This was not constant during the night. | ◇ The nurses used gloves when examining patients. The mothers' personal hygiene was encouraged. |
| For parasitic infestations, give Mebendazole 100mg orally twice a day for 3 days. | ✓ | | Mebendazole prescribed according to the protocol. |

| | | | |
|--|---|-----|---|
| Give child all age-appropriate immunisations. | | N/A | All children were pre-immunised at clinics. |
| <i>STEP 6 – MICRONUTRIENT DEFICIENCIES</i> | | | |
| Are issues with micronutrient deficiencies dealt with in the ward, according to the EC protocol? | ✓ | | Children are given vitamin A, folic acid and multivitamin syrup. Ferrous sulphate was given during the rehabilitation phase. |
| <i>STEP 7- CAUTIOUS FEEDING</i> | | | |
| 3 hourly feeds (8 feeds every 24 hours). | | | ⚠ This was attempted. However there was no clock in the ward and feeds were mistimed. |
| Encourage mothers to continue breastfeeding after start-up formula. | | ✗ | Breastfeeding was not actively encouraged for any of the 4 children. |
| If the child has gross oedema, reduce volume to 100ml/kg/day. | | ✗ | Not done by nurses. Only done by doctor during ward rounds. |
| Weigh malnourished children frequently. | ✓ | | Children were weighed every morning at 06H00. |
| <i>STEP 8- CATCH UP GROWTH</i> | | | |
| Change to catch-up formula. | ✓ | | This was done for all 4 children. |
| Increase feed by 10ml each day until some feed remains uneaten. | ✓ | | |
| Actively encourage child to eat as much as possible. Always offer more. | ✓ | | Those that have a good appetite were also given slices of bread with an egg or butter. |
| Stabilisation phase – Start-up formula. | | | ⚠ Children were fed 3 hourly, although feeding was delayed for ± 30 minutes due to morning ward rounds. The ward rounds conflicted with the 09H00 feed, so children were not fed between 06H00 and 09H30. |
| Rehabilitation phase – Catch-up formula How and where is the feeding recorded? | ✓ | | The nurses recorded the amount of feeds, frequency and time of feeding. They also calculated daily intake by measuring leftovers and then comparing it to food given. It was recorded on a feeding chart. |
| <i>STEP 9 - STIMULATION, PLAY AND LOVING CARE</i> | | | |
| Provide tender loving care. | | ✗ | Mothers were not seen to be providing tender loving care. |

| | | | |
|--|------------------------|------------------------|---|
| Are the mothers encouraged to play, bathe and feed their children? | | x | The mother interviewed said that they were educated on general hygiene, how to feed and bathe their children. They were not taught how to play with children. |
| What steps, if any, are in place to give the children structured play therapy when they are well enough? | | x | There were no toys in the ward. The ward was a bit dull for children i.e. green paint throughout. |
| STEP 10 - PREPARATION FOR FOLLOW-UP AFTER DISCHARGE | | | |
| Obtain information on family background and socio-economic status. | ✓ | | Their sources of income and food security information were collected. |
| Instruct and train mothers about how to feed their child properly. | ✓ | | Instruction was only verbal, nothing was recorded on the patients' chart. |
| Send referral letters to the clinic. | ✓ | | The letter informs the clinic of date of admission, date of discharge, diagnosis, treatment needed and review date. |
| Establish a link with community health workers for home follow-up. | | x | Only for 1 child, who needed follow up for Tuberculosis (TB) medication. |
| Write a clinical summary in patient-held card. | ✓ | | The summary was composed of date of admission, date of discharge, diagnosis, treatment needed and review date. |
| TOTAL (PERCENTAGE) | 20/35 (57%) | 15/35 (43%) | |

Out of a total of 42 activities observed, 3 were *not applicable* (N/A), as these activities did not warrant intervention. Four of the activities observed were categorised as *ambiguous* (◇), as the observations reported were vague. These ambiguous findings were excluded from the tally, as they may mask the results. Therefore, the remaining 35 activities were considered to calculate the results.

4.3 Resource Checklist

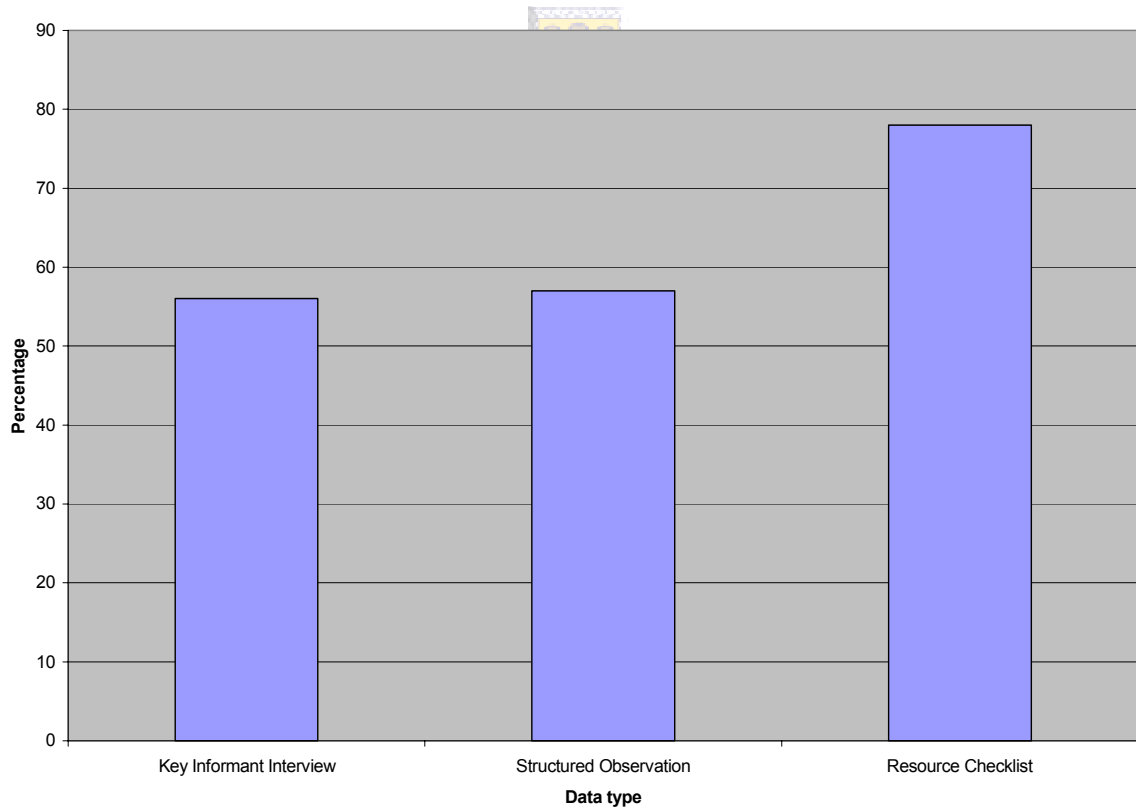
The table below shows the checklist used to audit the availability of resources needed to implement the EC protocol.

TABLE 5: Resource Checklist

| EQUIPMENT REQUIRED | AVAILABLE | IN WORKING CONDITION | POINT FOR EACH RESOURCE AVAILABLE & WORKING |
|--|------------------|-----------------------------|--|
| 1. Glucostix/Dextrostix or glucometers | Yes | Yes | 1 |
| 2. Child weighing scales (note if x10g, x25g, x50g, x100g) | Yes | Yes | 1 |
| 3. Pan-type scale/sling to weigh very ill children | Yes | Yes | 1 |
| 4. Graph paper for weight charts | Yes | Yes | 1 |
| 5. Fluid intake/output charts | Yes | Yes | 1 |
| 6. Paediatric nasogastric tubes | Yes | Yes | 1 |
| 7. Paediatric giving set | Yes | Yes | 1 |
| 8. Eastern Cape Protocol | Yes | Yes | 1 |
| 9. Working fridge | No | | |
| 10. Electric food blender | No | | |
| 11. Washing facilities for mothers | Yes | Yes | 1 |
| 12. Mattresses for mothers | Yes | Yes | 1 |
| 13. Blankets for mothers | Yes | Yes | 1 |
| 14. Is malnutrition ward warm? | Yes | Yes | 1 |
| 15. Ward Heater | Yes | Yes | 1 |
| TOTAL (In working condition) | | 13/15 | |
| Supplies | | | |
| Glucose/Dextrose (10% oral) | No | N/A | |
| Sterile Glucose/Dextrose (10% or 50%) | Yes | N/A | 1 |
| 0.5 strength Darrows with 5% dextrose; | Yes | N/A | 1 |
| Ringer's lactate with 5% dextrose | No | N/A | |
| Half-normal saline with 5% dextrose | No | N/A | |
| Ringers lactate | Yes | N/A | 1 |
| Oral rehydration solution (ORSOL) | Yes | N/A | 1 |
| Oxygen | Yes | N/A | 1 |
| Multivitamins | Yes | N/A | 1 |

| | | | |
|--|--------------------|-----|---|
| Eastern Cape KCl solution for malnutrition | No | N/A | |
| Eastern Cape mineral mix (Mg/Zn/Cu) | No | N/A | |
| Ferrous sulphate (or other iron preparation) | Yes | N/A | 1 |
| Folic acid | Yes | N/A | 1 |
| Vitamin A | Yes | N/A | 1 |
| Metronidazole | Yes | N/A | 1 |
| Co-trimoxazole (Bactrim) | Yes | N/A | 1 |
| Ampicillin | Yes | N/A | 1 |
| Gentamicin | Yes | N/A | 1 |
| Chloramphenicol | Yes | N/A | 1 |
| Mebendazole | Yes | N/A | 1 |
| Reliable electricity supply | No | N/A | 1 |
| Total (available) | 28/36 (78%) | | |

FIGURE 5: Comparison of Scores from KII, SO and RCL



4.4 Focus Group Discussion

The analysis of the FGD was guided by the objective of the study, which was ‘to explore attitudes of nurses towards malnourished children’. FGDs were transcribed and analysed by the researcher and 2 research assistants. Data was coded, categorised and summarised into the following themes:

a. Perceived Causes of Malnutrition:

The nurses felt that the lack of knowledge and skills on how to prepare food properly on the part of the mother, was responsible for child malnutrition. “Some mothers have the food, but children are still malnourished.” They claimed, “children are re-admitted as they are discharged to the same environment and conditions they initially came from, where there is hunger.” Some nurses thought that factors beyond the mothers’ control, such as poverty, were responsible for malnutrition.

Nurses felt that mothers did not care about their children and that they starve them on purpose. “Young girls do not breastfeed for cosmetic reasons.” “Some mothers leave their children with grandparents, whilst they run off to work and once they are away, they forget the kids back home.”

Many nurses associated malnutrition with HIV/AIDS as children are orphaned. “Once you hear that the mother is dead, you conclude that child is HIV positive.”

b. Problems experienced in the hospital management of malnourished children:

Nurses felt that they cannot give proper care to malnourished children due to staff shortages. “You find that there are only 2 nurses during the day shift, yet there is a

lot to be done for all patients and we end up not doing some of the tasks.” They also complained that, “because of shortage of other staff, we end up doing non-nursing duties!” “We need a dietician to help us with the feeds, as we do not trust the kitchen staff. We do not know whether they use proper ingredients for start-up and catch-up formulas.” The nurses believed that the care of malnourished children seemed to be the problem of the paediatric staff alone, and that the management does not give enough support. “Some do not even know what is happening in the ward. We need more support and supervision, especially during the night.” Nurses also felt that the lack of supplies was responsible for the high CFRs. “We do not have a pharmacist, that is why we do not have the required electrolyte/mineral mixture and hospitals that have electrolyte/mineral mixture have low CFRs.”



c. Lack of Resources:

The nurses cited unavailability of material resources as a problem in the management of severely malnourished children. The lack of food blenders and a big refrigerator was seen as a problem, as the refrigerator currently in the ward was borrowed from OPD. “We do not have the food blenders, but we have already ordered them and they are on the way.” They complained that, “we need a big fridge, because it is summer now and we also want some kitchen utensils.”

Nurses felt that there was insufficient food available in the kitchen to enable them to manage severe malnutrition effectively. “We start solid high protein diet, but sometimes the right food is not in the kitchen. Today for example, there are no eggs.”

The nurses felt that they needed more supervision. They identified night feeds as important. "...children die between 22H00 and 06H00, so we need more supervision."

As a theme, lack of material resources emerged strongly.

d. Proposed actions to help reduce deaths due to malnutrition:

The nurses identified the need for EC electrolyte/mineral mixture as an important requirement. They said, "The hospital must get the dispensary to organise electrolyte/mineral mixture." A multisectoral approach was brought up by the nurses, as was the need for co-operation from Home Affairs. They mentioned that, "social welfare can assist with child-care, foster-care and disability grants, and the social workers must help as well."



The nurses indicated the need for EC protocol training with help from the district. "The district must help with the training of the EC protocol and the management of malnourished children."

They also talked about the need for a community effort. "Yes, we must all get together in the community, the hospital, the churches and the traditional leaders...we can come together and fight together."

e. Perceived nurses' responsibilities:

The nurses saw the need for health care education of mothers. This was also a strong emerging theme. "Whenever a child is admitted, health education should be done about malnutrition."

They also seemed to understand their responsibilities in implementing the EC protocol correctly. Daily weighing, feeding, keeping the child warm and providing love were seen as important.



CHAPTER 5

DISCUSSION

5.1 Overview of Quantitative Data Analysis

The overall analysis of the data collected clearly shows that the paediatric ward nurses lacked adequate information about the EC protocol, which was introduced in August 2003. This was evidenced by the KII, which was rated as 56%. The data also indicated that the practices observed scored 57%. The above two findings suggest that the nurses were practising the EC protocol without sound theoretical knowledge and understanding of the reasons behind each activity.



Although the audit of resources was 78%, which can be considered as satisfactory, the practices did not reflect the optimal utilisation of these resources. The available resources such as IV antibiotics, ORS and mattresses for example, were not used to the benefit of the children.

A valid conclusion cannot be drawn however, due to the following limitations in the study:

- the study was done on a statistically insignificant number of cases (n=4);
- the entire study (KII, FGD, SO and RCL) was over a short period of 3 days;
- the period between introduction of the EC protocol and evaluation of the nurses was only 3 months. This period was too short to draw a credible conclusion as to the effectiveness of the EC protocol on the CFR.

Despite the limitations, the results suggest that the provision of a protocol and resources alone, without adequate and appropriate preparation, in the form of training as well as skills development, cannot produce the desired outcomes.

5.2 Comparison of the Current Practices at SBH with the EC Protocol

The discussion will be based on the results obtained from KII, SO and RCL and these results will be compared to the EC protocol.

EC PROTOCOL STEPS 1 & 7: Prevent and Treat Hypoglycaemia and Initiate

‘Start-up’ Feeding

A common cause of mortality and morbidity is hypoglycaemia, which can be prevented with frequent (3 hourly) regular feeding both night and day (never missing a feed) and prevention of hypothermia plus aggressive treatment of infection.

- *Initiate feeding immediately with start-up formula. Feed using a cup or spoon, NOT by bottle:*
 - Volume: 130ml/kg divided into:
 - 3 hourly feeds 8 times a day
 - 2 hourly feeds 12 times a day where hypothermia and/or hypoglycaemia are a problem.
 - check appendix for feed volumes by child weight.
 - Type of feed:
 - start-up formula (recipes provided in appendix), provide 75Kcal and 0.9g protein/100ml.
 - if unavailable, use infant formula modified to give a comparable energy and protein content.
- If a child refuses, give the feed by nasogastric tube. If a child is not finishing feeds and the 24-hour intake is less than the amount prescribed, insert a nasogastric tube and give the unfinished amount by this route.
- In the rare event that enteral feeding is impossible, ensure careful IV fluid infusion:
 - use neonatal maintenance fluid (if not available ½ Darrows 5% Dextrose) at 80ml/kg/day (rate well controlled).
- Test blood glucose on arrival.
- Treat hypoglycaemia:
 - treat asymptomatic hypoglycaemia (blood glucose under 3mmol/l or, where a blood glucose machine is unavailable, under 4mmol/l by visual reading) with a feed of start-up formula or 10% glucose (50ml) or sucrose solution (1 rounded teaspoon of sugar in 3½ tablespoons of water), whichever is available most quickly. Recheck the blood sugar in 30 minutes; repeat as above if desired blood glucose level not reached.
 - treat symptomatic hypoglycaemia (fits/decreased level of consciousness), severe hypoglycaemia (<1.5mmol/l) by 5ml/kg IV of 10% dextrose solution. If only 50% dextrose is available, dilute 1 part of this solution with 4 parts of sterile water.
- Test blood glucose 3 hourly in severely ill children.

Despite the availability of the EC protocol, equipments and supplies to diagnose and treat low blood sugar levels in the first 10 minutes of admission, this was not done for up to 72 hours. Blood sugar testing is not a labour intensive task

Staff shortage was cited as a reason for not doing the test (nurse: patient ratio 1:2). This suggests lack of understanding and appreciation that the lethal effects of hypoglycaemia occur within 48 hours of admission (Schofield and Ashworth, 1996). The fact that hypoglycaemia is a sign of infection and occurs together with hypothermia, is an added reason for correction of this condition.

The KII revealed that not all nurses understood and appreciated the warning signs or immediate treatment of hypoglycaemia. The SO confirmed the information from the KII, and this suggests that training regarding all aspects of hypoglycaemia is needed. The practice of feeding the child straightaway as recommended in the protocol, was both observed and claimed by the KII. However, it can be seen that this was done as part of routine feeding (steps 7 and 8). Therefore, understanding and appreciation of hypoglycaemia was still lacking.

The potential for reducing the CFR by recognising hypoglycaemia and managing this step efficiently, is well documented. Correction of hypoglycaemia and aggressive management of infection has shown dramatic reduction in CFRs from 20% to 6% (Wilkinson, et al., 1996).

Although this step was not implemented comprehensively, the most important action of feeding immediately after admission was carried out.

EC PROTOCOL STEP 2: Prevent and Treat Hypothermia

Hypothermia is present when the under-arm temperature is below 36°C, and indicates the need to immediately warm up and feed the child.

- *Prevent hypothermia:*
 - Measure under-arm temperature 3 hourly.
 - Keep the child covered at all times, especially at night, and including the head.
 - Avoid draughts in the ward.
 - Keep the child dry.
 - Avoid exposure (such as bathing).
 - Use mother-child skin-to-skin contact (Kangaroo care) to keep children warm.
- *Treat hypothermia:*
 - Immediately place the child in skin-to-skin contact (Kangaroo care) with the mother's chest and/or abdomen and wrap both with blankets.
 - If the mother is absent, clothe and wrap the child (including the head) with a warmed blanket.
 - Place a heater nearby.
 - Monitor temperature during rewarming to avoid hypothermia or uncorrected hypothermia. Check the temperature 2 hourly until it rises to over 36.5°C.

The non-practice of kangaroo mother care and the fact that the KI did not mention it, shows that the appreciation and understanding of hypothermia was poor. The need for the kangaroo mother care was further necessitated, as the heater was not working. Mattresses were available in the ward, but they were not made available to the mothers.

Hypothermia is usually associated with hypoglycaemia. The mothers' presence in the ward is advantageous because breastfeeding can help prevent hypoglycaemia and kangaroo mother care can help prevent hypothermia. Puoane, et al. (2004) regard the mother staying in as a critical intervention in the case of staff shortages. When the child is discharged, the most freely available source of heat is the mother. Education and encouragement of kangaroo mother care in the ward is vital. Feeding regularly every 3 hours is an important step in avoiding both hypoglycaemia and hypothermia.

The KI claimed that feeding was done 3 hourly, but that alone does not alleviate hypoglycaemia and hypothermia.

The RCL did not assess whether there was a thermometer in the ward. However, during observations it was found that nurses were using under-arm thermometers.

This step was therefore not practiced fully despite the availability of reasonable resources (except heater due to electrical problems).

EC PROTOCOL STEP 3: Prevent and treat Dehydration

Many children with severe malnutrition also suffer from diarrhoea, and may therefore become dehydrated.

- *To prevent dehydration in the child with diarrhoea:*
 - Replace approximate volumes of stool losses with Oral Rehydration Solution (ORS) after each stool is passed.
 - after each stool give: ♦ < 2 years old 50-100ml of ORS
 - ♦ > 2 years old 100-200ml of ORS
 - give in small frequent sips using a cup and spoon.
 - Encourage continued breastfeeding if breastfed.
 - If not breastfeeding start feeding with start-up formula immediately.
- *Treat diarrhoea with dehydration with ORS:*
 - Give 5ml/kg over every 30 minutes for 2 hours (orally or if refused, by nasogastric tube).
 - Thereafter give 10 ml/kg every hour for the next 4-10 hours until dehydration is corrected.
 - Restart feeds after 4 hours, sooner if the child is rehydrated before this.
 - Monitor for signs of overload at least every hour and stop if necessary.
 - Monitor for signs of ongoing dehydration and consider the need for more aggressive treatment if dehydration fails to resolve.
 - Monitor for shock.
 - shock is present if child has cold hands and feet, delayed capillary refilling time, and peripheral pulses that are difficult to feel.

- *Emergency treatment for shock:*
 - Use IV Ringers Lactate to treat shock when present.
 - Do so with care to avoid circulatory overload and heart failure.
 - Use a paediatric giving set (60 drops per millilitre)
 - Monitor for signs of fluid overload every 10- 15 minutes.
 - If unable to start a reliable IV line in a few minutes, use intraosseous route.
 - Shock from both dehydration and sepsis may coexist in severely malnourished children. They are difficult to differentiate on clinical grounds alone.
 - Children with dehydration shock will respond to IV fluids. Those with septic shock often will not respond.
- *To start treatment of shock:*
 - Give oxygen by mask or head box during the treatment of shock.
 - Mark the lower edge of the liver, to enable detection of enlargement if fluid overload should occur.
 - Give IV Ringers Lactate 15ml/kg over 10 minutes using a syringe while watching carefully for signs of shock or fluid overload.
 - Measure and record pulse, respirations, capillary filling time, gallop and liver edge every 5-10 minutes.
- *Then:*
 1. If the child deteriorates with administration of IV Ringers Lactate and develops gallop rhythm and enlarged liver, the child probably has septic/cardiogenic shock and needs very special care. Do not give further fluid for shock. Seek consultation or referral immediately.
 2. If there are no signs of improvement the child may have septic shock or have inadequate treatment of hypovolaemic shock. Repeat an aliquot of 10 ml/kg of Ringers lactate and watch response:
 - If there is no response or the child deteriorates, treat as in point (1) above.
 - If response occurs, manage as referred to in point (3) below.
 3. If there are signs of improvement this indicates that the child was in hypovolaemic shock:
 - If the child still has signs of shock, administer a further 10ml/kg over 10 minutes using syringe. This may be repeated if the signs of shock still remain, provided no signs of overload have developed (total infusion 35ml/kg over 30-40 minutes).
 - When the child no longer has signs of shock give a further 10 ml/kg slowly over 1 hour and then switch to oral or nasogastric rehydration with ORS 10ml/kg/hour for up to 10 hours. (Leave IV line in place running very slowly in case it is required again).
 - Begin feeding with start-up feed as soon as child is rehydrated.

The KI revealed that not all staff members knew the warning signs of dehydration. SO found that wrong methods of rehydration were used i.e. IV infusion in mild dehydration. According to the EC protocol, IV hydration should only be given if the patient is in shock, otherwise rehydration should be done orally with ORS. The available ORS was only given on discharge.

Out-moded practices include faulty treatment of dehydration. Strasser, et al. (1999) claim that dehydration in a child is expected to be managed as per standard WHO case treatment of diarrhoea, but in cases of severe malnutrition, rehydration should be done more slowly, because of the risk of fluid overload and death.

Breastfeeding as a form of hydration and a micronutrient supplier is underestimated and unrecognised by nurses, as breastfeeding was not actively encouraged. Schofield and Ashworth (1997) report that hydration in the form of breastfeeding not only meets the demand of a sick child, but also makes the mother feel included and makes her continuously see her role in the management of her child as crucial.

Once again there appears to be a gap between theory (KII) and practice (SO). Although it was claimed that breastfeeding and ORS were used, this was not observed.

The results indicated that the nurses depended on the doctor to assess hydration status. This suggests that the nurses took a passive role. Rehydration was thus very poorly understood and managed.

EC PROTOCOL STEPS 4 & 6: Correct Electrolyte Imbalance and Micronutrient

- All severely malnourished children have electrolyte imbalances.
 - Prepare food without added salt.
- Treat and prevent electrolyte imbalances.
 - *Give Eastern Cape electrolyte/mineral mixture daily orally:*
 - Zinc Sulphate 36 mg/ml
 - Copper Sulphate 0.1 mg/ml
 - Magnesium Sulphate 280 mg/ml
 - *Give Potassium Chloride Oral Solution:*
 - 250 mg 3 times a day orally up to 10kg
 - 500 mg 3 times a day orally if >10kg

- 2.5ml if <10kg
- 5ml if >10kg

- Treat and prevent vitamin deficiency.
 - *Give Vitamin A:*
 - 50,000 units stat orally if <6 months
 - if 6-12 months 100,000 units stat and
 - if >12 months up to 5 years 200,000 units stat
 - *Give Folic Acid: 2.5mg daily.*
 - *Multivitamin Syrup: 5ml daily.*
- Treat and prevent iron deficiency only after the child has started to gain weight.
 - Iron supplementation is not given until the child starts to gain weight, even if anaemic.
 - *Once gaining weight and oedema is lost give:*
 - 0.5ml/kg/day of Ferrous Gluconate Syrup divided into 2 doses daily
(3mg/kg/day elemental iron) – Ferrous Gluconate Syrup has 30mg elemental iron/5ml

The KII indicated that the KI misunderstood the concepts of rehydration and electrolyte deficiencies. However, the unavailability of electrolyte/mineral mixture was compensated for reasonably, by reduction of salt in the food and with the potassium supplement, slow K. Although there was gross misunderstanding of electrolyte imbalance by the KI, the practice was as good as possible, considering that electrolyte/mineral mixture was unavailable.

Literature suggests that as the efficiency of the sodium pump activity is reduced, treatment with large doses of potassium and magnesium is beneficial (WHO, 2000). This early intervention reduces the oedema and improves appetite. This encourages nurses and mothers positively. Despite the absence of electrolyte/mineral mixture, the observation showed that the nurses were trying to improvise.

The results confirmed that this step was practiced reasonably well without a clear understanding of the theory behind it.

The KI only spoke about a Vitamin A protocol as part of step 6. The SO did not look for details on Zinc and Copper. It appears that these supplements were not given to the children. The SO showed that folic acid, multivitamin syrup and ferrous sulphate

were given. The RCL also confirmed that all the micronutrients i.e. folic acid, multivitamin syrup, ferrous sulphate and vitamin A were available. However, the electrolyte/mineral mixture containing magnesium, zinc and copper as well as potassium chloride, were not available.

The fact that ferrous sulphate was not given during the stabilisation phase was good, even if the child was anaemic, as it encourages growth of Gram-negative bacteria (Strasser, et al., 1999).

The importance of micronutrient deficiencies in the causation of anaemia, blindness, susceptibility to infection and poor cognitive development, calls for very close and strict adherence and attention to this step.

This step was practiced near-comprehensively despite the absence of electrolyte/mineral mixture and poor theoretical knowledge.

EC PROTOCOL STEP 5: Treat Infection

- Infection is common but signs of infection, such as fever are often absent. Therefore, all patients with severe malnutrition should be automatically treated with antibiotics.
- Treat all admissions routinely as infected:
 - *Bacterial Infection:*
 - Uncomplicated child (no danger sign present). Must receive antibiotics below:
 - Co-trimoxazole 5ml suspension twice a day for 5 days (2.5ml if <4kg), *OR*
 - Amoxycillin 15mg/kg 8 hourly orally for 5 days.
 - Complicated child. Must receive antibiotics below:
 - Gentamicin 7.5mg/kg IM/IV 24 hourly for 7 days, *AND*
 - Ampicillin 50mg/kg IM/IV 6 hourly for 2 days, *THEN*
 - Amoxycillin 15mg/kg 8hourly for 5 days.
- If child fails to improve in 48 hours:
 - Confirm all above steps are being carried out.
 - Confirm correct feeding
 - Investigate aggressively for occult infection (chest/urine/blood/csf)
 - Where investigation or referral is not possible add:
 - Chloramphenicol 25 mg/kg IM/IV/PO every 6 hours or 5 days.

- Treat all admissions for gastrointestinal infection:
 - Oral Metronidazole 7.5 mg/kg three times a day for 5 days.
- Once child gains weight and oedema is lost give:
 - Mebendazole 100mg twice daily for 3 days.

Managing infection with IV broad-spectrum antibiotics (Gentamicin and Ampicillin) in complicated cases is vital. This is because the signs of infection are usually absent or go unrecognised. Although the KII mentioned that IV antibiotics were given, the practice observed was different from the EC protocol. Child A, Child B and Child D had danger signs and complications that warranted the use of IV antibiotics, however from the SO, only oral antibiotics had been prescribed. The practice of using Amoxyl as per doctors' prescription questions the doctors' knowledge of the EC protocol as well.



The RCL confirmed the availability of Gentamicin and Ampicillin, but the SO revealed that they were not used.

It was emphasised in the Hlabisa study that the *increased attention* given by the nurses in treating unrecognised infection with IV antibiotics and adequate management of hypoglycaemia accounted for the significant fall in CFR (Wilkinson, et al., 1996).

The above factor is critical, as the antibiotic regime should be strictly and comprehensively adhered to, in order to achieve positive outcomes. There was no method of checking records in the research, to see whether antibiotics were given as prescribed. This step revealed that despite the availability of the correct antibiotics, they were not utilised. This shows that both nurses and doctors lacked knowledge of

the EC protocol, suggesting the need for shared knowledge and understanding by all members of the team through training.

EC PROTOCOL STEP 8: Rebuild Wasted Tissues

- Once the child's appetite returns to normal (usually within a week):
 - The energy and protein content of feeds need to be increased:
 - Use catch-up formula containing 100 kCal and 3g protein/100ml.
 - If the child is older than 6 months, introduce a balanced soft mixed diet.
- For the first 2 days:
 - Replace start-up feeds with an equal amount of the catch-up formula. Then increase each feed by 10ml until some feed remains unfinished (usually when intakes reach about 200ml/kg/day).
 - Give 7 feeds daily. If the child is used to eating family meals, give 4 feeds of catch-up formula and 3 specially modified family meals of high energy and protein.

The data analysis of both the KII and the SO revealed that this step was followed vigorously and feeding was done every 3 hours.



The SO found that every child's need was met and that changes were made according to the child's weight and number of days since admission.

Strasser, et al. (1999) say that specially prepared milk rich in protein and high in energy is important, as it meets the child's needs.

There was no detailed probing regarding the formulas of feeds and their local availability, in order to ensure continuity after discharge. The RCL did not show anything about ease or effectiveness of food preparation, as availability of ward kitchen or stores supplies were not included in the list.

There was no fridge or blender, which are important for effective storage and preparation of foods. These are essential resources for effective feeding.

The findings show that nurses perceived feeding to be a very important step to be adhered to most strictly. Lack of encouragement of breastfeeding was observed, in contradiction to the KI, who claimed that it was done. This step seemed to be practised reasonably well, except that breastfeeding was not actively encouraged.

EC PROTOCOL STEP 9: Provide Stimulation, Play and Loving Care

Stimulation, play and loving care will markedly improve the child's response to treatment and decrease the period of hospitalisation.

- From admission, provide tender loving care.
- Structure play and activity in a cheerful stimulating environment encouraging mothers to involvement as far as possible.
- Some suggestions:
 - Hang colourful objects from cot rails.
 - Pick child up at least hourly for love, play and contact.
 - Sing or have music playing.
 - Use a kind, soothing voice.



Results of the study found that mothers were not actively involved in the process of mental and physical stimulation. The observer did not find any toys and the environment was observed to be 'dull'. The RCL did not probe for the availability of toys, wall posters or play room. The data available was insufficient to conclude that this step was followed strictly. Severe malnutrition delays intellectual and behavioural development of a child (Ashworth, et al., 1996), and a child needs mental stimulation. The KI cited the shortage of staff as a hindrance. This shows that nurses do not consider mothers as active participants. The unavailability of toys and a non-stimulating environment, with mothers not actively participating in any stimulation, indicates that this step was not implemented comprehensively.

EC PROTOCOL STEP 10: Prepare for Discharge and Follow-up

- The ability of the family to provide adequate nutrition and care at home must be assured.
- While still in the ward:
 - Involve the parents/caregivers in feeding and caring for the child as soon as possible, as they will care for the child over the long term.
 - Discharge the child when the child and home environment are ready (usually about 4 weeks after admission). Signs of readiness for discharge include:
 - Persistent and good weight gain.
 - Good appetite.
 - A smiling and playful child.
 - Check that the child has received all appropriate immunisations before discharge.
 - On discharge:
 - The child should leave with a supply of appropriate milk supplement/enriched porridge.
 - The mother/caregiver should have a discharge summary of the child's stay in hospital.
 - The family should be counselled, and taught to:
 - prevent and manage diarrhoea
 - provide energy and nutrient dense foods at least 5 times a day
 - increase the energy content in the normal diet by adding vegetable oil or sugar
 - add protein and micronutrients to the diet by using beans, vegetables, peanut butter and meat/fish/egg
 - have a separate plate for the child in the home and carry out 'active feeding' (i.e. the feeder must actively promote and actually feed the child)
 - play with the child to improve his/her mental development
 - Arrange for follow-up post-discharge:
 - Make a written referral and review date with the nearest PHC facility (clinic) and community health worker (if available) for home support and encouragement.
 - The social care system should provide social grants whenever applicable and the application process should begin before discharge:
 - Child Support Grant (for children <7 years of age whose primary caregiver receives no remuneration and where the family income is below the means test)
 - Foster Care Grant (for children formally in foster care and below the means test)
 - Care Dependency Grant (for children between 1 and 18 years with severe or profound mental or physical disability and whose caregivers are below the means test)
 - Severe Malnutrition is expected to become notifiable in the Eastern Cape: Notification should be carried out in the normal reporting manner.

The KII and the SO agreed on reasonable preparation of mothers for discharge. The SO found that referral letters were written to clinics with a clinical summary. The RCL did not provide for availability of any referral material. Community health workers were utilised only if there was a need for medication e.g. if there was a need for TB follow up.

The preparation for discharge is considered vital. This process should be started from the day of admission and continued until the day of discharge.

The preparation for discharge should be structured from the time of admission. Understanding of the family's background and environment, both economical and physical, is vital and will assist in this step. A clinical summary in the patient held card is a good practice for the follow up.

5.3 Theory and Practice

Jonsson, et al. (1992) claim that, "theory in social science is useful in practice, and practice without theory is blind." They suggest that an interaction between concept and operation is most important. This is proven by observing a nurse who confessed that training made her realise why it is important to breastfeed. Prior to training, she used to educate mothers to breastfeed without understanding its importance herself (Strachan, 2000).



Strasser (2000) describes competence as possession of knowledge, skills, abilities and attitudes, which are adequate for the purpose. The findings of the data suggest that the paediatric ward nurses lacked the above elements of competence. Lack of competence can impact negatively on attitude. Strasser (2000) further says that it is clear that nurses provide advanced services, often without additional training. Lande (2002) suggests that attention should be paid to meeting the needs of service providers and other staff members. Lande also claims that performance improvement is valuable in resource-poor settings, because it focuses attention on often-neglected causes of performance problems, such as unclear expectations or infrequent feedback.

Lande's report concludes by suggesting that performance improvement should be inclusive and requires staff members, supervisors, patients and community members to work together to assess needs and find solutions.

5.4 Attitude of Nurses

a. Causes of Malnutrition:


During the FGD, it transpired frequently and strongly that the nurses blamed the mother or caregiver for child malnutrition. They however, could not clearly explain as to how mothers could prevent malnutrition by giving certain foods at different stages of growth and development of a child.

Mclachlan and Kuzwayo (2002) stated that malnourished children are found in households with food security, but families with food insecurity can nevertheless protect children from malnutrition. They argue that food security issues should not divert attention from care and health, which can prove to be more important keys to preventing malnutrition in children. Though poverty, ignorance and home-life have emerged as the overriding themes, the main blame was apportioned to the mother.

The attitude of the nurses, as portrayed in the FGD, suggests a sense of hopelessness to the extent that they expect children to be re-admitted, since they are sent back to the same environment after discharge. The Acting Head of the EC Department of Health claimed that more babies die in the EC Province than anywhere else in the country (Health-e, 2004). The paediatric wards of district hospitals are full of malnourished children who slowly recover in the shelter of the hospital, but on

discharge go back home where food is in short supply (Health-e, 2004). He also adds that the EC has an infant mortality rate of 61.2, as opposed to the national average of 45.4.

Although Rakku's story cannot be generalised, it is usually evident that a mother does not forsake her child easily (Werner, et al., 1997). A mother's deep love for her baby and maternal instinct gives a clear perception of her baby's basic needs.

The moral of the story is that it is crucial for nurses and health workers to first understand the circumstances leading to a child's illness, rather than humiliating and blaming the mothers at the outset. The aim of a nurse's health message in solving a problem should be behavioural and educational. A systematic analysis of multi-causality of malnutrition as in the UCF  is essential for all people involved in the management of malnutrition.

The socio-economic environment, cultural demands and traditional values still impact the caregiver's behaviour. Traditionally, the mother is expected to collect water and firewood. She is also expected to leave home to visit her husband. Often, the mother has to attend school, leaving the child with the grandmother. All these factors put stress on the mother's lives and reduce the quality time they get to spend with their children.

The nurses and health workers must take the opportunity of educating the mothers and caregivers about these unfavourable practices whilst they are in hospital. Feldman (1975) says people by their vicarious (experiential) learning can change their own attitude towards some attitudinal object (i.e. breastfeeding, herbal

poisoning, HIV/AIDS), and by conditioning and reinforcement can change the attitudes of caregivers and mothers.

Behaviour of a health worker depends on the worker's thinking and feeling towards a situation. This thinking and feeling is stimulated by education and training. In the hierarchical evolution of malnutrition, education has been identified as a factor in the causation of underlying causes. Education and empowerment controls access to resources such as care, environment, health and food. Jonsson, et al. (1992) claim that the potential for fulfilling three of the above (food, care, health and environment) is determined by the availability and control of resources (human, economic and organisational).



Nurses are often only aware of the immediate causes of disease, due to an understanding of the pathophysiology, but they are oblivious to the underlying causes, which take place at the household and family level (Scott, et al., 2002).

A recent study by Puoane, et al. (2004) in neighbouring district hospitals conclusively proved that training and provision of resources reversed the CFRs. In addition to training and provision of resources, attitude is also important to produce positive results.

Attitude can be a motivation for one's action. Strasser, et al. (1999) found low morale and poor motivation, and not lack of resources, as perceived by nurses, can account for poor performance. However, the authors have not elaborated on reasons behind low morale and motivation. Even in this study, the data available describes

the attitude of the nurses surrounding issues of malnutrition. This study did not probe into other aspects influencing the attitudes of the nurses. Human resource management issues hugely impact on a health worker's performance. Basic salaries, promotions, training opportunities, over-work and under-payment, unrecognised achievements, working and living conditions, favouritism, nepotism, poor supervision and support, etc. are but a few issues needing further research to holistically understand the attitude of nurses and other health workers.

Radebe (2000) claims that nurses need the skills to apply sociological knowledge with the understanding of patient's family and community background. This is important, as the nurse can tailor, advice and practice, according to the needs of her clients and ensure sustainability.



There was no mention in the FGD about PHC, which is fundamental and thought to be inadequate in Antenatal Care, Family Planning, Integrated Management of Childhood Illnesses (IMCI), Mother, Child and Women Health, HIV/AIDS, etc. The role of nurses at different levels was not well understood and appreciated.

b. Shortage of Staff:

Incompetence can be further aggravated by shortage of staff as indicated by the nurses during the FGD. About 90 nurses left Cecilia Makiwane Hospital (CMH) in East London last year (Health-e, 2004). This captures the situation in the EC Province. There is a shortage of porters and cleaners, therefore nurses are compelled to do jobs that are not part of their profession.

Chopra, et al. (2000) found that nurses complained that administrative work was taking their time away from patients. There was no data in the SO to verify the availability of an administrative clerk, or the time spent by the nurse doing non-nursing work, especially at nights.

Sixty percent of the EC population inhabits the rural areas, and these are the areas that have the lowest ratio of health care personnel in the country (Tetyana and Carlisle, 2004). Additional programmes that are highly skilled and human resource intense (EC modified 'Ten Steps', Prevention of Mother to Child Transmission (PMTCT) of HIV/AIDS, anti-retroviral therapy, termination of pregnancy, etc.) are being introduced, stretching the already over-burdened health personnel.

The shortage in human resources, with lack of a multi-skilled team was found to be hampering implementation of the EC protocol at SBH. The KII revealed that two of the protocol steps (Steps 1 and 9) were not comprehensively implemented due to shortage of staff. The average in-patients per day for the paediatric ward for the year 2003 was found to be 15. The average number of nurses for the ward for 2003 was 7. Thus the nurse to patient ratio at the time of the research at SBH paediatric ward was 1:2.

TABLE 6: Number of Posts Available and Vacant in November 2003 at SBH

| Details of Posts | Number of Posts Available | Number of Posts Filled | Number of Posts Vacant |
|-------------------------|----------------------------------|-------------------------------|-------------------------------|
| Dietician | 1 | 0 | 1 |
| Social Worker | 1 | 0 | 1 |
| Medical Practitioners | 9 | 3 | 6 |
| Occupational Therapy | 1 | 0 | 1 |
| Pharmacist | 2 | 0 | 2 |
| Physiotherapist | 1 | 0 | 1 |
| Speech Therapy | 1 | 0 | 1 |
| Professional nurses | 69 | 55 | 14 |
| Nursing Assistants | 80 | 20 | 65 |
| Staff Nurses | 48 | 31 | 17 |

Table 6 shows that only 54% of the available posts for nurses were filled.

A recent report (Health-e, 2004), described the health services in the EC to have reached a stage of crisis. Huge staff shortages with weak PHC were attributed to be the two most pressing problems in the province. The above argument is vindicated by the fact that the treasury figures for February 2003 (Health-e, 2004), showed that the province has the greatest shortage of nurses and doctors.

There was one doctor for 8,825 people whilst the national average was 3,928 and 1 professional nurse per 1,278 people (national average 916). It was noted in the same report that there were only 6 nurses to run the forty-bed medical ward at CMH both day and night, yet 14 were needed. The nurses at CMH complained of over-work and this is epitomised by the statement, “almost everyday somebody will be absent, we are tired and burnt out. You work hard all night and then you do not want to think about it starting all over again.”

CMH is a level two hospital managing a ward with less than 50% of the establishment filled, and this was further compounded by absenteeism. It was also reported that a patient in a clinic in Mdantsane in East London complained, “nurses sometimes have an hour for tea. Then they can close again at 12 mid-day and open at 3 pm while we must sit outside like dogs, rain or shine” (Health-e, 2004).

There was no tool used to find out about the reasons for absenteeism and also to probe into time taken for tea and other forms of absenteeism, like study leave, workshops, meetings, etc.

The nurses’ over-work and burnouts can lead to frustration and absenteeism. In the malnutrition unit, the availability of mothers was not strategically utilised to reduce the burden of over-work. The mothers were not taught how to play with their children and provide kangaroo mother care. Staff turnover was claimed to have a negative effect on service delivery. The NDNT ambitiously introduced a completely new programme without any orientation, training or adequate and appropriate resources in quantity and quality.

c. Poor Organisation and Supervision:

The nurses were frustrated that the orientated nurses were changed to other wards, needing to train and orientate all over again. The statement that “people think the care of malnourished children seems to be the problem of the paediatric staff alone, and the management does not give enough support”, captures their attitude. Continuity of trained and orientated nurses in a ward is very important for sustainable services.

Data analysis strongly suggests lack of supervision by the ward doctor, ward matron and the hospital management as a whole.

Mufamadi (2000) reported that one clinic nurse stated, “there is no doubt that after the workshops people are motivated, but if there is no *support or constant supervision* thereafter, the feeling is that nobody cares.” In a resource-constrained environment, supervision, in addition to appropriate and adequate knowledge and skills through proper training and teamwork, are vital. This will ensure maximum utilisation of human and material resources, with favourable outcomes of CFR.

There was only one nurse on night duty during the observation. During the FGD the nurses said that many malnourished children died during the night. The nurses claimed that there was poor supervision and irrational allocation of available nurses for day and night shifts, as validated by the SO.

There was no methodology to look for misdistribution of nurses in quantity and quality within the hospital and paediatric ward. This has a massive potential to negatively impact on the hospital’s capacity to deliver good health care.

d. Unavailability of Resources:

The unavailability of important resources emerged during the FGD. Refrigerators, food blenders, kitchen utensils and electrolyte/mineral mix are very vital resources, as stringent feeding during the stabilisation phase is critical. Despite the absence of the above resources, the nurses seemed to practice steps 7 and 8 reasonably well. The

unavailability of electrolyte/mineral mixture can be attributed to the pharmacist posts that were vacant (see Table 6).

e. Training and Teamwork:

The nurses seem to have an insight into their lack of knowledge and skills, because they mentioned training in the EC protocol as a need. They also emphasised the need for multisectoral approach, such as entitlement to child support grants, foster care grants and disability grants. They did not articulate the problems fully, as they seem not to understand how the basic and underlying causes lead to immediate problems.

Puoane, et al. (2001) found that long-term sustainable improvement required a team involving paediatric staff, dieticians, pharmacists, kitchen staff and administration and identification of shortcomings.



They emphasise that, where appropriate, the team should undergo training to improve their skills and knowledge.

Strasser (2000) states that the basic competencies (knowledge, attitudes and skills) are needed to meet the challenges. Also new skills are lacking in nurses and the nursing programmes do not seem to respond to this challenge.

Radebe (2000) claims that the nurses are trained in urban areas and are not trained to work in rural areas and PHC clinics. A study on GMP in Mt. Frere (Chopra, et al., 2000) found that the main problem of poor GMP was not one of knowledge, but of behaviour. The authors conclude: “The perception of heavy workload and a lack of

resources seriously hampered the quality of GMP. In most cases this is linked to the low morale and motivation of clinic nurses.”

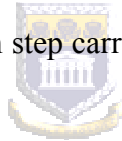
5.5 Limitations

a. Number of children studied:

The number of children studied (n=4) does not give credibility, as it was too small to draw a valid conclusion.

b. Period of Structured Observation:

The total of 48 hours spent for the structured observation by one observer was too short to observe every activity of each step carried out by all 7 nurses involved in the management of severe malnutrition.



c. Research Assistants:

The research assistant who conducted the KII, FGD and RCL was the programme manager for mother, child, women’s health and malnutrition in the district office. Despite assurances made to the nurses that the study was to assess the current situation and not the staff, due to the research assistant’s position in the district office, there would have been evaluation apprehension installed in the staff. This limitation may have resulted in under- or over-statement of the actual situation.

The research assistant who carried out the SO was a sixth year medical student who was exposed to the EC protocol workshop at Bambisana Hospital (Nyandeni District). He was trained on observational skills during orientation. His inexperience

in SO was demonstrated by not giving sufficient information regarding ward space, play space, cleanliness, physical structure and environment, as well as workload of the only nurse at night, etc.

d. Data Collection Tools:

Data on other attitudinal objects such as salary, monetary and non-monetary incentives, training opportunities and absenteeism, etc. were not explored in the FGD. This could have a major influence on attitudes and behaviour in the day-to-day work of nurses.

Record review regarding authorised and unauthorised absenteeism could have shed more light on the availability of nurses in order to validate the claim of shortage of staff. A record review of the profile of individual nurses, such as their Curriculum Vitae, could have given an opportunity to analyse effectiveness of basic and post-basic training, in addition to the need for future training.

CHAPTER 6

CONCLUSION

The study identified shortcomings in the implementation of the EC protocol at SBH paediatrics ward. This was probably due to a lack of understanding of the reasons behind the implementation of some of the activities. Even steps that nurses had knowledge of, were not put into practice as required.

Resources needed were reasonably good, but were not maximally utilised due to lack of knowledge. The attitudes of nurses, though enthusiastic in management, were affected by the perception of neglect by mothers, HIV/AIDS, and hopeless prognosis, leading to malnourished children being treated as less precious and given lower care. The caregivers were also treated with disdain as evidenced by non-provision of available mattresses and blankets.

The EC protocol was introduced without preparations in terms of training and availability of human and material resources. Lack of support of supervisors and management in providing training, continuity of team members, procurement of resources and motivation, seem to impact negatively on knowledge, practice, resources and attitudes.

Although the study showed the above findings, a valid conclusion cannot be drawn due to the following limitations of statistically insignificant cases (n=4) studied over a short time period (72 hours) after a short period of implementation of the EC protocol (3months).

CHAPTER 7

RECOMMENDATIONS

- Workshops for all stakeholders and team members on theoretical background, reasoning and appreciation for every activity of each step of the EC protocol.
- Measures to introduce the EC protocol to nurses and doctors at undergraduate level, with continued in-service training.
- Communication, motivation and commitment from hospital management in terms of continuous support, human and resource procurement and allocation.
- Proper evaluation to assess the impact of the EC protocol on the CFR should be done using a statistically significant number of children, studied over a longer period, after at least one year of well-organised practice of the EC protocol.
- Based on the assessment and analysis of the study, strategic planning should be carried out to include all the recommendations mentioned above, in addition to the activities illustrated in the operational plan (Table 7).

TABLE 7: OPERATIONAL PLAN FOR IN-PATIENT MANAGEMENT OF MALNOURISHED CHILDREN AT

ST BARNABAS HOSPITAL

GOAL: IMPLEMENT EASTERN CAPE DEPARTMENT OF HEALTH PROTOCOL

OBJECTIVE:

- Ensure Comprehensive Implementation of Eastern Cape Department of Health Protocol by December 2004.
- Reduce Case Fatality Rate to less than 10% by April 2005.


| STRATEGY | ACTIVITY | INPUT | OUTPUT | RESPONSIBLE | TIMELINE (weeks per month) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|---|----------------------------|---|---|---|------|---|---|---|------|---|---|---|-----|---|---|---|------|---|---|---|-----|---|---|---|-----|---|---|---|
| | | | | | May | | | | June | | | | July | | | | Aug | | | | Sept | | | | Oct | | | | Nov | | | |
| | | | | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Introduce and discuss SBH Study Report on Management of Malnutrition with NDNT and relevant stakeholders. | <ul style="list-style-type: none"> • Elect task team • Situation and need analysis • Draw action plan | <ul style="list-style-type: none"> ▪ Study report ▪ EC protocol ▪ Resource list ▪ Statistics (paediatric ward) | <ul style="list-style-type: none"> ♦ Task Team ♦ Operational Plan ♦ Policy guidelines | <ul style="list-style-type: none"> ➤ NDNT ➤ Paediatric Ward Matron | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ensure availability of Human Resources | <ul style="list-style-type: none"> • Situation analysis • Need analysis • Negotiate with hospital management, District Office and Provincial Health Authority | <ul style="list-style-type: none"> ▪ Staff establishment ▪ Statistics ▪ Vacancies ▪ Budget | <ul style="list-style-type: none"> ♦ Motivation to recruit staff ♦ Advertise and recruit staff | <ul style="list-style-type: none"> ➤ Human Resource Section (SBH) ➤ Hospital Management ➤ NDNT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| STRATEGY | ACTIVITY | INPUT | OUTPUT | RESPONSIBLE | TIMELINE (weeks per month) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|---|--|----------------------------|---|---|---|------|---|---|---|------|---|---|---|-----|---|---|---|------|---|---|---|-----|---|---|---|-----|---|---|---|
| | | | | | May | | | | June | | | | July | | | | Aug | | | | Sept | | | | Oct | | | | Nov | | | |
| | | | | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Provide all material resources | <ul style="list-style-type: none"> • Situation and need analysis • Approach procurement section • Identify funds | <ul style="list-style-type: none"> ▪ Resource list ▪ EC protocol ▪ Trainers | <ul style="list-style-type: none"> ♦ Report on all materials needed ♦ Motivation letter for procurement and resources in place | <ul style="list-style-type: none"> ➤ Ward Matron ➤ Procurement Section ➤ Works/ Maintenance Foreman | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Train nurses, doctors, dieticians, pharmacists and others on EC protocol | <ul style="list-style-type: none"> • Identify training needs, trainers and venue | <ul style="list-style-type: none"> • Provincial Health Authority • Skills Development Fund | <ul style="list-style-type: none"> ♦ Report on Situation and need analysis ♦ Motivation letter for training ♦ Trained staff | <ul style="list-style-type: none"> ➤ Ward Matron ➤ Ward Doctor ➤ NDNT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop Information/Monitoring System. Disseminate report to inter-sectoral departments and training centres | <ul style="list-style-type: none"> • Create formats for statistics collection • Develop daily tick lists for resources and staff available • Develop spot check list • Start mortality meetings | <ul style="list-style-type: none"> ▪ District Health Information System (DHIS) ▪ Computer programmes ▪ Trainers | <ul style="list-style-type: none"> ♦ Report on Information/Monitoring System ♦ Formats for statistics collection ♦ Mortality meeting reports | <ul style="list-style-type: none"> ➤ NDNT ➤ DHIS ➤ Ward Matron ➤ Hospital Management | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

CHAPTER 8

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APPENDICES

Dr P.K. Navaratnarajah
St Barnabas Hospital
P.O. Box 15
Libode 5160
Eastern Cape Province
01 November 2003

Hospital Management Board
St Barnabas Hospital
P.O. Box 15
LIBODE
5160

Dear Sir/Madam

**REQUEST FOR PERMISSION TO CONDUCT STUDY FROM
18/11/2003 – 20/11/2003**

I, Dr P.K. Navaratnarajah, request permission to conduct a study at your institution, for my Masters in Public Health at The University of the Western Cape.

The title of my research is “*Child malnutrition mortality at St Barnabas Hospital is high – is it due to practices and attitudes of staff?*”

Thank you.

Yours truly

DR P.K. NAVARATNARAJAH

Cc: Nyandeni District Management
Ward Matron – Paediatric Ward, St Barnabas Hospital

Consent for Management of Malnutrition Study

I _____ give consent/do not give consent (circle choice) for my child and myself to be included in the above study. I understand that all information will be kept confidential and there will be no harmful procedure involved.

Signed: _____

Date: _____

We are currently conducting a study into 'The current practices and attitudes of nurses working on the malnutrition unit in St. Barnabas Paediatric ward'. The practices of the nurses working in the malnutrition unit, your children and yourself will be observed.



Imvumelwawo Ngenkqubo Yezifundo Zonkungondleki Komtwana Mna

Mna _____ ndinika invume / andiniki mvume yam nomntwana wam yokuba idityaniswe kule mfundo ingentla ndiyacinga ukuba yonke le nkukacha ingentla iyawu hlala iyimfihlelo noncedo.

Isayiniwe: _____

Umhla: _____



Njengokuba siqhuba izifundo “okuqhubekayo eNtlaza kwicandelo labantwana”.
Iindlela zokuse benza kwabongikazi kwicandelo labantwana abangondlekanga zoqwalaselwa.

8. How frequently are malnourished children weighed?
Comments -

Questions regarding 'Step 3':

9. Does every staff member understand the warning signs of dehydration and what are they?
Yes No
Comments -

10. If a child is dehydrated, what immediate action is taken (if child is not in shock)?
Comments -

11. If a child has watery diarrhea, what steps are taken to prevent dehydration?
Comments -

Questions regarding 'Step 4':

12. If electrolyte imbalance is diagnosed, what immediate action is taken?
Comments -

13. What steps do you take to prevent electrolyte imbalance?
Comments -

Questions regarding 'Step 5':

14. Does every staff member understand the warning signs of an infection and what are they?
Yes No
Comments -

15. Is it known that all severely malnourished children should be treated with antibiotics because: a) symptoms are often absent and b) hypothermia and hypoglycaemia are themselves symptoms of severe infection?
Yes No
Comments -

16. How soon after admission is treatment for infection given?
Comments -

17. What treatment is given to malnourished children regarding infection?
Comments -

18. What steps are taken in the ward to prevent infections?
Comments -

Questions regarding 'Step 6':

19. What is the management of micronutrient deficiencies?
Comments -

Questions regarding 'Step 7 & Step 8':

20. How often are children fed?

Comments -

21. What formulas/feeds are used?

Comments -

22. Does the feeding programme vary for the individualistic needs of the patient, i.e. number of days since admission, gross oedema, and patient's appetite? If Yes, how?

Yes No

Comments -

23. Is re-establishment of breastfeeding actively encouraged?

Yes No

Comments -

24. How and where is the feeding record kept? (Time, amount, frequency of feeds and where is this information kept?)

Comments -

Questions regarding 'Step 9':

25. Are mothers encouraged to comfort, bathe, feed and play with their children?

Yes No

Comments -



26. Are children given structured play therapy when they are well enough?

Yes No

Comments -

Questions regarding 'Step 10':

27. Do mothers receive instructions/training about their child's nutritional requirements?

Yes No


Comments -

28. What follow up notes, cards, letters and instructions are given to mothers after discharge?

Comments -

Structured Observation – Check list

| ACTIVITY | DONE | NOT DONE | COMMENTS |
|---|-------------|-----------------|-----------------|
| <i>STEP 1 - HYPOGLYCAEMIA</i> | | | |
| Random Blood Sugar -Dextrostix (on arrival). | | | |
| If hypoglycaemic (blood glucose <3mmol/l), give 10% glucose (50ml) or sugar solution. Do dextrostix again after 30 minutes. | | | |
| Feed start-up formula every 3 hours. Start straightaway. | | | |
| If unconscious, give glucose IV. | | | |
| Encouragement of mothers to stay with very ill children to watch for deterioration, help feed and keep warm. | | | |
| <i>STEP 2 - HYPOTHERMIA</i> | | | |
| Under-arm temperature (on arrival). | | | |
| Feed straightaway, and then every 3 hours day and night. Record intake and output. | | | |
| Keep warm, cover with a blanket, share bed with mother in order to have mother to child skin-to-skin contact (kangaroo care). | | | |
| Keep the ward warm by using a heater. | | | |
| Make sure there are no draughts. | | | |
| Keep the child dry. | | | |
| Avoid exposure during examination and after bathing. | | | |
| <i>STEP 3 – DEHYDRATION</i> | | | |
| If a child has watery diarrhoea - give ORS between feeds and stool losses. Continue feeding, including breastfeeding. | | | |

| | | | |
|--|--|--|--|
| If dehydrated, give ORS 5ml/kg every 30 minutes for 2 hours (orally or nasogastric tube), then 10ml/kg every hour for the next 4-10 hours. | | | |
| Do not give IV fluids except when in shock. | | | |
| Monitor for signs of over-hydration during rehydration. | | | |
| <i>STEP 4 - ELECTROLYTE IMBALANCE</i> | | | |
| Give extra potassium and magnesium daily. | | | |
| Limit the amount of salt in the diet. | | | |
| <i>STEP 5 - INFECTIONS</i> | | | |
| Starting on the first day, give broad-spectrum antibiotics to all children. | | | |
| Are malnourished children with complications treated with IV broad-spectrum antibiotics? | | | |
| Reduce overcrowding as far as possible. | | | |
| Washing of hands after dealing with each child and before examining the next. |  | | |
| For parasitic infestations, give Mebendazole 100mg orally twice a day for 3 days. | | | |
| Give child all age-appropriate immunisations. | | | |
| <i>STEP 6 – MICRONUTRIENT DEFICIENCIES</i> | | | |
| Are issues with micronutrient deficiencies dealt with in the ward, according to the EC protocol? | | | |
| <i>STEP 7- CAUTIOUS FEEDING</i> | | | |
| 3 hourly feeds (8 feeds every 24 hours). | | | |
| Encourage mothers to continue breastfeeding after start-up formula. | | | |
| If the child has gross oedema, reduce volume to 100ml/kg/day. | | | |
| Weigh malnourished children frequently. | | | |

| | | | |
|--|--|--|--|
| <i>STEP 8- CATCH UP GROWTH</i> | | | |
| Change to catch-up formula. | | | |
| Increase feed by 10ml each day until some feed remains uneaten. | | | |
| Actively encourage child to eat as much as possible. Always offer more. | | | |
| Stabilisation phase – Start-up formula. | | | |
| Rehabilitation phase – Catch-up formula How and where is the feeding recorded? | | | |
| <i>STEP 9 - STIMULATION, PLAY AND LOVING CARE</i> | | | |
| Provide tender loving care. | | | |
| Are the mothers encouraged to play, bathe and feed their children? | | | |
| What steps, if any, are in place to give the children structured play therapy when they are well enough? | | | |
| <i>STEP 10 - PREPARATION FOR FOLLOW-UP AFTER DISCHARGE</i> | | | |
| Obtain information on family background and socio-economic status. | | | |
| Instruct and train mothers about how to feed their child properly. | | | |
| Send referral letters to the clinic. | | | |
| Establish a link with community health workers for home follow-up. | | | |
| Write a clinical summary in patient-held card. | | | |
| TOTAL (PERCENTAGE) | | | |

St Barnabas Hospital – Paediatric Ward

Focus Group Discussion

Date.....

AIM: To explore attitudes of nurses towards malnourished children.

1. What do you think are the causes of child malnutrition?
2. What comes to your mind when you see a mother/caregiver bringing in a malnourished child for admission?
3. What is your opinion about the care given to the children by the mother/primary caregiver?
4. Are individual behaviour(s) and practises of the mothers responsible for malnutrition e.g. breastfeeding, leaving children with grandmother. Is it acceptable and general?
5. Do you think the caregiver(s) behave responsibly and are they responsible for the child's malnutrition?
6. How far and what are the nurses' responsibilities?
7. What do you think is the prognosis i.e. chance of recurrence and relapse?
8. Do you think we can improve the situation together and reduce malnutrition and mortality?
9. How is your motivation in terms of:
 - ◆ Supervision
 - ◆ Management support
 - ◆ Human resource management
 - ◆ Material, resource and training support.