

A STUDY OF THE PAEDIATRIC
REFERRAL SYSTEM BETWEEN
PRIMARY HEALTH CARE FACILITIES
(URBAN HEALTH CENTRES) AND THE
REFERRAL HOSPITAL, UNIVERSITY
TEACHING HOSPITAL, LUSAKA

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TABLE OF CONTENTS

Dedication		vi
Copyright		vii
Declaration		viii
Approval		ix
Acknowledgements	.....	x
Acronyms	.....	xi
Abstract	.....	xii
 CHAPTER ONE	.....	1
1.0 Introduction	.....	1
 CHAPTER TWO	.....	4
2.0 Literature Review	.....	4
2.1 The Referral System and its Importance to Health Services	.....	4
2.2 Operational Problems Arising in the Referral System	.....	6
 CHAPTER THREE	.....	9
3.0 Study Justification	.....	9
3.1 The Current Health Care and Referral System in Lusaka	.....	10
 CHAPTER FOUR	.....	12
4.0 Aims and Objectives	.....	12
4.1 General Objectives	.....	12
4.2 Operational aim	.....	12
4.2.1 Specific Objectives	.....	12
 CHAPTER FIVE	.....	13
5.0 Methodology	.....	13
5.1 Study Design	.....	13
5.2 Variables	.....	13
5.3 Sampling and Sample Size	.....	13
5.3.1 Study Area	.....	14
5.3.2 Study Population	.....	14
5.3.3 Inclusion Criteria	.....	15
5.3.4 Exclusion Criteria	.....	15
5.3.5 Sampling	.....	15
5.3.6 Sample Size	.....	15
5.4 Study Procedure	.....	15
5.4.1a Definition of an Effective Referral	.....	17
5.4.1b Definition of Appropriate Referral	.....	17
5.4.1c IMCI Referral Criteria	.....	17
5.4.2 Limitations of the Study	.....	18
5.5 Data Management	.....	19
5.6 Ethical Considerations	.....	19

CHAPTER SIX.....	20
6.0 Results.....	20
6.1 Response Rate	20
6.2 Demographic Characteristics of Patients.....	20
6.2.1 Sex Distribution	20
6.2.2 Age Distribution of Referred Patients	20
6.3 Referring Clinic	22
6.4 Mode of Transport used from Urban Clinic to UTH	23
6.5 Money spent on Transport	25
6.6 Referring Person.....	25
6.7 Reasons for referral	25
6.8 Time Taken to Arrive at Hospital from Clinic (Lag Time).....	26
6.9 Distribution of Occurrence of Top Ten Diseases being referred by Diagnosis – as at UTH.....	27
6.9.1 Mortality of Admitted Children (causes of Death as Diagnosed at UTH).....	29
6.9.2 Proportion of Children Dying of a Particular Disease within a Disease	30
6.9.3 Mortality of Referred Children according to Lag Time (between Urban Clinics and Hospital)	33
6.9.4 Mode of Transport used by patients who Died.....	34
6.10 Waiting Time for Patients who Died from time of arrival to time of being seen by Health Workers at UTH.....	35
6.10.1 Duration of Treatment in UTH before Death	36
6.10.2 Outcome of Referred Admitted Patients	37
6.11 Health Seekers Satisfaction with Treatment at Clinic.....	38
6.12 Effectiveness of the Referral System.....	39
6.12.1 Referral Appropriateness.....	39
6.12.2a The Referral Treatment for Children that died	41
6.12.2b Comparison of availability of IMCI trained staff by Clinic and Administration of Pre-referral Treatment according to children that died.....	42
6.12.3 Referral Effectiveness	44
6.13 Capacity of Clinics	46
6.13.1 Distribution of Staff by Clinic for Period 1996-1999.....	46
6.13.2 Distribution of Equipment by Clinic	48
6.13.3 Distribution of Ambulances by Clinic	48
6.13.4 Communication	49

CHAPTER SEVEN	50
7.0 Discussion.....	50
CHAPTER EIGHT	57
8.0 Conclusion.....	57
CHAPTER NINE	63
9.0 Recommendations.....	63
References	67
Appendix i Questionnaire A	
Appendix ii Questionnaire B	
Appendix iii Map of Lusaka showing the Clinics under LUDHMT	
Appendix iv Calculation of Sample size	
Appendix v IMCI Referral Criteria	

LIST OF TABLES

Table

1a	:	Age Distribution of Referred Patients.....	21
1b	:	Distribution of Age in Years	21
2	:	Referring Clinic.....	22
3	:	Mode of Transport used from Urban Clinic to UTH.....	24
4	:	Reasons for Referral.....	26
5	:	Lag Time Distribution between Clinic and Hospital.....	27
6	:	Distribution of occurrence of Top Ten Diseases being Referred by Diagnosis.....	28
7	:	Causes of Death as Diagnosed at UTH.....	30
8	:	Proportion of Children Dying of a Particular Disease within a Disease.....	31
9	:	Mortality of Referred*Children According to Lag Time.....	33
10	:	Mode of Transport used by Patients who Died.....	34
11	:	Waiting Time for Patients who Died at UTH.....	36
12	:	Duration of Treatment before Death.....	36
13	:	Outcome of Referred Admitted Patients.....	37
14	:	Health Seekers Satisfaction with Treatment.....	39
15	:	Referral appropriateness as according to IMCI.....	40
16a	:	Type of Pre-Referral Treatment for Children who died.....	41
16b	:	Comparison of Administration of Pre-referral Treatment by Clinic for children that died to Clinic staffing levels with IMCI trained staff as at 2000	43
17	:	Factors Rendering a Referral Ineffective.....	45
18	:	Staffing Levels: Matero Reference Centre.....	46
19	:	Staffing Levels: George Clinic.....	47
20	:	Staffing Levels: Chipata Clinic.....	47
21	:	Staffing Levels: Mtendere Clinic.....	48

DEDICATION

To my children Ndashe, Mutiti and Suwilanji for the support and understanding during the write up of this dissertation and to God Almighty Yahweh whose support underlies my every success.

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DECLARATION

I hereby declare that this dissertation represents my own work and has not been presented even in part to any forum or University other than University of Zambia.

Signed: _____



(Pauline Musukwa Sambo Bsc. (HB), MB.ChB)

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Signed: _____

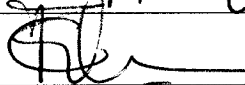
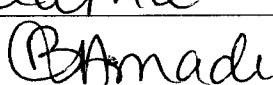


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APPROVAL

This dissertation of Pauline Mwaka Musukwa Sambo is approved as partial fulfilment of the requirements for the award of the Master of Medicine in Paediatrics and Child Health by the University of Zambia.

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ACRONYMS

LUDHMT	:	Lusaka Urban District health Management Team
UTH	:	University Teaching Hospital
OPD	:	Outpatient Department
FTT	:	Failure to thrive
ADD	:	Acute Diarrhoeal Disease
PEM	:	Protein Energy Malnutrition
IMCI	:	Integrated Management of Childhood Illnesses

ABSTRACT

The Paediatric referral system is an important aspect of Health care service to sick children and their parents/guardians. It is the link between the Lusaka Urban Health Centres and UTH. When functioning effectively it is of the utmost importance in the ultimate morbidity and mortality of the patients.

The referral system existed before but was strengthened in 1996 when it was noted to be working with a decrease in the number of patients at UTH and an increase at the Health Centres. However, effectiveness of the Paediatric referral system in Lusaka, Zambia has not been evaluated.

This study is a descriptive cross-sectional study carried out by use of two standardised structural questionnaires to assess the effectiveness of the referral system and the capacity of the clinics. It was carried out in the Department of Paediatrics and Child Health, UTH and 4 clinics of the 23 Urban Health Centres under LUDHMT.

Patients who had an appropriate referral, arrived within 2 hours of referral from the clinic, had 48 hours or more duration of treatment before death, and for the discharged patients who were either followed up at the UTH or referred back to the referring clinic were considered as having had an effective referral. Additionally, Parents or guardians of the referred patients should have had communication with the health workers both at the clinic and hospital concerning the disease condition and should have been satisfied with the medical care given both at the clinic and hospital.

272 (93%) of the patients arriving at the UTH Outpatients Department of Paediatrics were referred from the urban clinics. At the time of study, IMCI guidelines were in use

for referral. However, there was no consistent use of IMCI guidelines for referral nor did there appear to be consistent use of other smaller protocols for referral that had been in use before IMCI like Control for Diarrhoeal Diseases and Acute Respiratory Tract Infection protocols. There did not appear to be any prioritizing in the referrals probably because the IMCI guidelines were not used consistently. Each referring officer referred as he thought necessary and this was dictated by various factors in the different clinics e.g lack of bed space, lack of staff, sheer patient overload and possibly even lack of adequate knowledge to treat a disease condition. Of the 272 patients referred only 70 (25.7%) were found to be effective referrals whilst 202 (74.3%) were ineffective due to non fulfilment of one or several of the above factors.

The commonest causes of referral ineffectiveness were duration of treatment of less than 48 hours before death in the UTH – 13 of 29 patients that died (44.8%), and a time lag between clinic and hospital of greater than 2 hours – 135 (50.2%). Other causes of ineffectiveness were lack of a planned follow up of a patient or referral back to the urban clinic – 99 (39.6%), lack of communication between health worker and patients' parents or guardians-80 (30.5%) and dissatisfaction of the parent or guardian with the medical care given either at the clinic or hospital – 96 (35.3%).

On arrival at the UTH 175 (65.4%) of the patients were being seen within 30 minutes whilst 237 (87.1%) were being seen within 1 hour, thus delay at UTH was not a major contributory factor to ineffective referral at the time of the study.

Transportation of patients from the clinics to the hospital was disappointing with only 29 (10.7%) accessing ambulance service even with a severe disease condition. 181 (66.5%) of the referred patients used public transport (minibuses). Of the 29 critically ill

patients that died, 22 (75.9%) used public transport to get to the UTH whilst only 3(10.3%) used an ambulance. The lack of a reliable efficient and available transport system therefore contributed highly to the ineffectiveness of the referral system.

The most common disease conditions for which the patients were being referred were acute respiratory tract infection (ARI) –70 (25.7%), Malaria –66 (24.3%), PEM –29 (10.7%), ADD –25 (9.2%) and Septicaemia –22 (8.1%).

Mortality of admitted referred patients was 11.6% (29 of 250 admitted). PEM caused the highest mortality 9 (31%) followed by Pneumonia 6 (20.7%), Malaria 4 (13.7%) and Septicaemia 3 (10.3%). Proportion of children dying of a particular disease within a disease was highest amongst the children with PEM 9 of 29 (31%), FTT 1 of 4 (25%) Anaemia 1 of 7 (14.3%) and Septicaemia 3 of 22 (13.6%). It appeared children with relatively chronic illnesses presented late to hospital and had higher mortality within the first 24 to 48 hours. This too caused the referral system to be ineffective due to late referral because of delay either at home or the clinic.

The findings in this study indicate that the referral system is working. However most referrals fall short of the criteria of an effective referral thus rendering the referral system mostly ineffective.

CHAPTER ONE

1.0 INTRODUCTION

The referral System is an important mechanism in the provision of comprehensive medical care to a community.

It is based on the concept that the patients are to be treated as close to their home as possible in the smallest cheapest most simply equipped and staffed unit that will still look after them adequately ⁽⁵⁾.

Only when a particular unit cannot care for a patient adequately is the patient referred to a unit higher up the chain; health centre, district hospital, regional hospital and finally national hospital ⁽⁵⁾.

In 1978, the Alma Ata declaration: “To achieve health for all by 2000”⁽¹⁰⁾, was made. Countries all over the world strive to achieve this. For Zambia, achieving “health for all”, happens against a background of rapid increasing population, decline in the economy with serious poverty, heavy disease burden and increase in both the infant and under five child mortality rates ^(1,2,3). Under-five child mortality rates increased from 152 deaths per 1000 live births in 1977 – 1981 to 197 deaths per 1000 births in 1996 ^(2,3). The infant mortality rate increased from 90 deaths per 1000 in 1990 to 109 in 1996 ^(2,3).

The existing health system depended heavily on hospital care. Being few, these were not easily accessible to the majority of the population, due to long distance from most

of the residential sites. They were also more costly to maintain in terms of rendering medical treatment for the same disease condition as compared to a health centre ^(3,4).

The few health centres which were more easily accessible to the majority of the population, were poorly equipped with chronic shortages of staff and medical supplies thus causing individuals to by-pass them for the less cost-effective but better equipped hospitals ⁽⁴⁾.

The Government of Zambia realised the inaccessibility and ineffectiveness of the then existing system both in terms of cost and delivery of health services to the majority of the Zambian population. It then committed itself to providing Zambians with equity of access to cost effective health care as close to the family as possible by establishing and upgrading numerous primary health care facilities ⁽³⁾. These would refer only selected appropriate cases to hospital – thus the referral system and this in turn would enable the majority of the population to access reasonable medical care. In paediatric practice, the introduction of IMCI guidelines further enhanced the streamlining of referrals. IMCI guidelines not only ensured appropriate referral, but also enabled the effective management of un-referred cases at the clinic ⁽²²⁾.

The referral system in Lusaka was strengthened in August 1996⁷⁾ when UTH filter clinics were closed to the non-referred cases. Before this strengthening or closure of filter clinic service at the UTH the Paediatric outpatient attendance was on average 260 patients per day as shown by a study conducted at the Paediatric outpatient department in 1987 ⁽⁸⁾. In 1997, a follow-up study done at the Paediatric Outpatient

department in UTH showed a significant drop in the number of outpatients to an average of 97 per day ⁽⁹⁾.

This indicated that the referral system was working though its effectiveness was largely unknown.

CHAPTER TWO

2.0. LITERATURE REVIEW

2.1 THE REFERRAL SYSTEM AND ITS IMPORTANCE TO HEALTH SERVICES

The referral system is based on the idea that patients are to be treated as close to their home as possible in the smallest, cheapest most simply equipped and staffed unit that will still look after them adequately ⁽⁵⁾. This unit, which is the Primary Health care service has been defined as a level of care which is the first one to be contacted by the population, must therefore be accessible, relevant to the population needs, be cost effective and promote inter-sector cooperation. It must be equitable and encourage self-responsibility for health in people. It must therefore be able to give basic treatment for common health problems, maternity care, vaccination, prevention and control of endemic diseases, water and basic sanitation, nutrition and health education ⁽¹¹⁾.

The unit of Primary Health Care allows a greater proportion of the population to access medical care at a more affordable cost to the community ⁽⁴⁾. This in turn enables the declaration of the 1978 world conference at Alma Ata in USSR “Health for all by the year 2000” attain greater momentum towards its achievement ⁽¹⁰⁾.

Primary Health care constitutes the foundation in a wider health system and the role of hospital is to support it as a referral and support mechanism ⁽¹⁰⁾. Health Centres

working together with a referral hospital for backup have been shown to provide relatively comprehensive and effective care to the communities they serve ⁽¹¹⁾.

In Paediatric Care, Integrated Management of Childhood Illnesses (IMCI) has been introduced at the Primary Health Care level in order to have a more integrated approach to managing sick children to achieve better outcome. IMCI guidelines enables the rational and effective immediate management of common paediatric conditions at the clinic and gives consistent guidance for appropriate referral to hospital. Thus the introduction of IMCI guidelines is an important step towards the achievement of a better and more effective referral system ⁽²²⁾.

In Egypt, the patient referral system is considered to be an important element in achieving the objectives of the primary Health care services. Patients attending Primary Health Care facilities expect to receive basic medical care and appropriate follow-up services. Patients requiring further evaluation and treatment are referred to a secondary health care facility ⁽¹²⁾.

In South Africa, the government has committed itself to the philosophy that it is only through primary health care that an affordable health service can be rendered to all inhabitants of South Africa. This is being done through partnership between the state, community and the private sector ⁽¹³⁾. Zambia is no exception and adopted the Alma Alta in 1989 and has since moved to strengthen health for all through dynamic health sector reform, promising “quality health care as close to the family as possible”.

2.2 OPERATIONAL PROBLEMS ARISING IN THE REFERRAL SYSTEM

As countries worldwide strive to fulfill the Alma Ata declaration by using Primary health care and the referral system to attain health for all by the year 2000, several operational problems arise.

As King declared: "Does the referral system work? Only in part! It often fails peripherally because few hospitals have health centres close enough to them to screen their general outpatients so that the hospitals deal only with referral cases". Transport difficulties also greatly impede efficiency of the system and regional hospitals have to act as district ones ⁽⁵⁾. But he goes on to say "Even so, the referral system is very important, particularly at its lowest in which health centres refer cases to the district hospital" ⁽⁵⁾

Several studies have been done worldwide to evaluate the effectiveness of the referral system.

A survey done in Uganda showed a preference for hospital care to primary health care with a bed occupancy rate of 0.2-42% at the primary health care centre compared to 54-153% at the hospital.

Reasons for this preference included lack of trained medical personnel, sporadic supply of drugs and a breakdown in the transfer of patients in the referral system ⁽¹⁴⁾.

A study done in Meru District in Kenya "Exploring the Interface between First and Second Level of Care: Referrals in Rural Africa" found low levels of formal clinic to hospital referrals of 20%. Reasons included poor access to transport, patient inability

to pay user fees, transport costs and lack of feedback information from hospital to clinic ⁽⁶⁾.

A qualitative assessment of the referral system at district level done in Zimbabwe highlighted several problems; the community did not know the functional differences between a hospital and clinic making the whole referral system ineffective. The community was also not happy with the high hospital charges and high transport charges to the hospital. The study also indicated there was no effective communication between the service and users ⁽¹⁵⁾. Another study done in Zimbabwe indicated that poor access to Primary Health care centres providing good first level care results in congestion in the hospital outpatients. This can result in inadequate care for referred patients who actually need the hospital's technology and expertise ⁽¹⁶⁾.

In Tanzania, an assessment of the structural quality of Tanzanian Primary Health services indicated serious weakness in the available physical infrastructure as well as supervision and other support. This meant that the quality of care provided at the primary level would be of reduced efficacy ⁽¹⁷⁾.

In Zambia, a study was undertaken in the Northern Province to evaluate the impact of a referral system baseline on obstetric patients. The study indicated high maternal mortality rates and additional risks due to poor accessibility to medical care ⁽¹⁸⁾.

A prospective cross-sectional observational study on 1,056 patients in Taiwan showed that many inter-hospital transfer involving critically ill patients were poorly planned and put the patients at risk. There was a medical and legal non-compliance rate of the

Taiwan medical law concerning the handling of patients during inter-hospital transfer of over 53%. This was unacceptably high⁽¹⁹⁾.

Operational problems in the efficient delivery of health services and the referral systems are not only peculiar to the underdeveloped world. These problems are also apparent in the developed world.

A study done in Finland however found that the referring general practitioner rarely received discharge letters from secondary care providers. Discharge letters were received for only 33% of all referrals. This indicated poor feedback communication to the primary centre from referral centre⁽²¹⁾

Lack of communication between Primary Health Care providers and hospital physicians meant loss of continuity in the medical care given to patients.

In order to address this problem, a successful model of liaison between the primary care physicians and secondary care physicians was made in Norway. This was made possible by the cooperation between the primary care physicians and the hospital doctors who took the responsibility upon themselves to make the model of liaison successful. These medical practitioners had to take responsibility for cooperation upon themselves⁽²⁰⁾ in order to ensure continuity in the care of their patients.

The two groups of medical practitioners cooperated between themselves and ensured effective communication from primary care physician to secondary care physicians and back in order to ensure continuity in the care of their patients.

CHAPTER THREE

3.0 STUDY JUSTIFICATION

Preliminary studies of the referral system indicated decongestion at UTH outpatients department after decentralisation.

A study done 1995-1997 showed a sharp drop in the number of patients attended to, at the children's outpatient department in UTH. Whereas in 1995, 62,265 children were seen in UTH Paediatrics OPD, this figure dropped to 37,996 in 1997. * During the same period, there was an increase in attendance in the peripheral clinics from 58,381 in 1995 to 1,191,498 in 1997. This indicated a two-fold increase over a two-year period.

However, although this system allowed greater accessibility by a higher proportion of the population to health care facilities, there were problems that arose: or say these are:

1. Poor Doctor/Nurse staffing levels.
2. Lack of capacity in terms of providing care for the increased patient load.
3. Weak referral systems vis-à-vis handling of patients and availability of transport.
4. Lack of prioritising of referrals. This is due to inadequate awareness by staff of disease conditions, as to who should be referred and why.
5. Poor communication channels between the primary care providers and referral centre health care providers.

6. Poor communication between the health providers and the patients.
7. Delays in management.

This study therefore hopes to find out how effectively the Paediatric referral system is working, highlight the arising problems and suggest means and ways of addressing them.

3.1 THE CURRENT HEALTH CARE AND REFERRAL SYSTEM IN LUSAKA

The Health Care system in Lusaka consists of 23 Urban clinics located all over Lusaka District Health Management Team, two Hospital Boards under the Ministry of Health, Chainama Hospital and the University Teaching Hospital, Maina Soko – a hospital run by the defence forces and numerous private clinics and few private hospitals.

Patients are referred from all these centres to the University Teaching Hospital, which not only acts as a primary and secondary centre, but also as a tertiary centre. The main referral system however exists between the University Teaching Hospital and the 23 urban clinics.

The 23 Urban Health Clinics are administratively divided into 4 sub-districts and further divided into 8 zones. Of these, 8 clinics have functioning inpatient facilities.

The LUDHMT has a supporting ambulance service for the referral system.

Currently 4 ambulances are working, out of a fleet of 9. The ambulance service is managed by a Nursing Officer who dispatches an ambulance to any clinic requesting for it depending on availability at the time and the condition of the patient. There is a radio communication system between the clinics, the ambulance centre and the ambulances. 2 of the 4 ambulances are reserved for maternity patients leaving only 2 for Paediatric, Medical and Surgical cases in the Lusaka District with a catchment of 2 million people.

CHAPTER FOUR

4.0 AIMS AND OBJECTIVES

4.1 GENERAL OBJECTIVES

To evaluate the effectiveness of the Paediatric patient referral system between Health Centres and the University Teaching Hospital, Lusaka.

4.2 OPERATIONAL AIM

To analyse the information obtained and make recommendations to health care givers at the University Teaching Hospital and Lusaka Urban District Health Management Team, Central Board of Health and Ministry of Health.

4.2.1 SPECIFIC OBJECTIVES

- a) To determine the proportions and characteristics of patients referred in terms of age and sex.
- b) To determine common diagnosis of patients referred.
- c) To determine reasons for referral.
- d) To determine mode of transport being used to get to UTH.
- e) To determine proportion of parents or guardians informed on their patients' illnesses by health workers.
- f) To establish out-come of referrals in terms of management at UTH, and follow-up or referral back to the Health Centre.
- g) To determine time lag between time of attendance at the clinic and time of attendance at UTH.
- h) To evaluate capacity of clinics in terms of staffing availability of ambulances, x-ray equipment and laboratory facilities.

CHAPTER FIVE

5.0 METHODOLOGY

5.1 STUDY DESIGN

This study was under taken by doing a descriptive cross-sectional survey. It involved the urban clinics as Primary Health Care Centres and the Department of Paediatrics and Child Health at the University Teaching Hospital as the referral Centre.

The study had 2 components: a health Centre Appraisal and a survey of referred patients to the Paediatric Department of UTH.

The study was conducted using a standardised questionnaire, (Appendix I) to parent or guardian of the patient and to Clinicians or Administrators in-charge of the 4 selected clinics.

5.2 VARIABLES

<u>DEPENDANT</u>		<u>INDICATORS</u>
1. Effective Referral	-	Referral appropriate.
	-	Patient not delayed for more than 2 hours between the clinic and UTH.
	-	Patient treated as a referral patient at UTH.
	-	Communication between health care givers and health seekers

- Patient referred back to urban clinics on discharge with referral note or followed up at UTH.

INDEPENDENT VARIABLES

1. Age
2. Sex
3. Diagnosis
4. Reasons for referral
5. Mode of transport
6. Communication between primary health giver and health seeker
7. Communication between hospital practitioner and health seeker
8. Time
9. Medical staff

5.3 SAMPLING AND SAMPLE SIZE

5.3.1 STUDY AREA

This study was done in Lusaka the capital city of Zambia with a population of 1,183,616 according to the 1992 census, though it is now believed to be well over 2 million. (See Appendix III) (Map of study area).

The study was undertaken at 4 clinics of the 23 urban clinics under the District Health Management Team and the Paediatrics Department of the University Teaching Hospital.

5.3.2 STUDY POPULATION

The study population comprised of all children referred to the Paediatrics outpatient and their parents or guardians and the medical staff at the 4 Urban Health Centres under the LUDHMT.

5.3.3 INCLUSION CRITERIA

The study population consisted of all children 14 years and below referred to the Paediatric Outpatients Department from LUDHMT clinics and medical staff in 4 Urban health centres in Lusaka under the LUDHMT.

5.3.4 EXCLUSION CRITERIA

1. Referred patients above 14 years of age.
2. Children referred from non-participating clinics or Hospital outside the jurisdiction of Lusaka District Health Management Team.

5.3.5 SAMPLING

Sampling of the Paediatric patients referred to UTH was done by randomised systematic sampling whilst sampling of the Urban Health Centres was done by convenient sampling.

5.3.6 SAMPLE SIZE

In this study, with the proportion of children being referred calculated at 25–35% and 95% confidence interval, the sample size was calculated to be 336.

(Appendix iv).

5.4 STUDY PROCEDURE

The study was done by the researcher with the help of two trained Research Assistants who were 6th year Medical Students. A verbal consent was obtained from the guardians or parents to the children who met criteria for admission into the study. The parents/guardians were interviewed and the questionnaires filled in by the researcher or the research assistant.

Similarly, staff at the clinics were interviewed and the questionnaires filled in by the researcher or assistants.

5.4.1a DEFINITION OF AN EFFECTIVE REFERRAL

An effective referral as defined by “Paine” in a WHO monograph ⁽¹¹⁾ has the following elements:

- (i) An appropriate referral.
- (ii) Patient not unnecessarily delayed between the primary and referral center.
- (iii) Patient should be treated as a referral patient at referral center
- (iv) Communication between health workers and health seekers concerning disease condition
- (v) Communication concerning patient between health workers from the primary health centre to the referral center and back.

5.4.1b DEFINITION OF APPROPRIATE REFERRAL

In this study, a referral was rendered appropriate as judged by the researcher if:

- (i) The disease condition was severe.
- (ii) The disease condition warranted admission
- (iii) The disease condition required specialized investigation.
- (iv) The disease condition required the attention of a specialist for example, Paediatrician; Neurologist; Surgeon etc.

The appropriateness of a referral was however very relative and subjective because some centers referred cases that were not severe enough to warrant the attention of a highly qualified medical officer. However due to overload at the clinic, and either inadequate or a lack of admission facilities these patients were referred.

5.4.1c IMCI REFERRAL CRITERIA

IMCI was coined in order to move child health programmes beyond addressing single diseases to addressing overall health and well being of the child.

The principles of integrated care in IMCI guidelines are based on the following principle:

- All sick children must be examined for 'general danger signs' which indicate the need for immediate referral or admission to a hospital.
- All sick children must be routinely assessed for major symptoms (for children aged 2 months up to 5 years) for cough or difficult breathing, diarrhoea, fever, ear problems and for young infants aged 1 week up to 2 months: bacterial

infection and diarrhoea. They must also be routinely assessed for nutritional and immunization status, feeding problems and other potential problems.

- The IMCI guidelines address most, but not all of the major reasons a sick child is brought for to a clinic.

Thus careful and systematic assessment of common symptoms and well selected specific clinical signs provide sufficient information to guide rational and effective immediate action at the clinic as well as guidance for appropriate referral to hospital. According to IMCI guidelines , the following classifications warrant referral to hospital for a child 2months to 5 years ; Severe pneumonia or very severe disease, Severe dehydration, Severe persistent diarrhoea, Very severe febrile disease, Severe complicated measles, Mastoiditis and Severe Malnutrition or severe anaemia. For the sick young infant age 1 week up to 2 months, the following classifications are indicated for referral; Possible serious bacterial infection, Severe dehydration, Severe Persistent diarrhoea, Blood in stool, and Not able to feed. These classifications are made after careful and systematic assessment of a patient and checking for particular key signs ²².

(See appendix V for detailed criteria for urgent referral and pre-referral treatment).

5.4.2 LIMITATIONS OF THE STUDY

During the period of the study, most of the Doctors were not working due to labour unrest. Thus the proportion of children booked for review in the Children's Clinic was much lower than would have been expected. Also, referral appropriateness was relative and subjective because most of the clinics did not have the capacity to handle patients effectively both in terms of human resource and facilities.

Thus when referral appropriateness was compared to IMCI referral criteria, most referrals were rendered inappropriate.

Data on levels of IMCI trained staff in the clinics was incomplete as the Universal Child Immunization unit was still attempting to compile the data.

Furthermore, this study did not deliberately attempt to obtain information concerning the patients and parents health seeking behaviour before presentation to the clinic.

5.5 DATA MANAGEMENT

The data processing and analysis was done using EPI-INFO, a World Health Organisation word processing database and statistics program for Public Health. Frequency cross tabulation tables are used to describe the variables.

5.6 ETHICAL CONSIDERATIONS

The research proposal was presented to and approved by the University of Zambia Research Ethics Committee and written permission was obtained from Lusaka District Health Management team to carry out the study.

CHAPTER SIX

6.0 RESULTS

6.1 RESPONSE RATE

Altogether, 342 questionnaires were filled in against a target of 336. However, only 292 patients were recruited successfully. Of these 20 were excluded as they were from clinics outside the jurisdiction of LUDHMT, thereby leaving 272 for analysis.

6.2 DEMOGRAPHIC CHARACTERISTICS OF PATIENTS

6.2.1 SEX DISTRIBUTION

There were 139 (51.1%) males and 133 (48.9%) females.

6.2.2 AGE DISTRIBUTION OF REFERRED PATIENTS

Of the 272 children referred, 238 (87.5%) were below the age of 5 years. Almost half of the referrals 126 (46.3%) were below the age of 1 year whilst over one-third 79 (29.1%) were below the age of 6 months. Only 35 (12.9%) referred patients were 5 years and above. The age distribution of referred patients is illustrated in 'Table 1a and 1b' below.

TABLE 1a: AGE DISTRIBUTION OF REFERRED PATIENTS

AGE	Nº	PERCENTAGE
< 6 Months	79	29.1
6 – 11 Months	47	17.3
12 – 23 Months	62	22.8
24 – 35 Months	26	9.6
36 – 47 Months	14	5.1
48 – 59 Months	9	3.3
5 – 7 Years	15	5.5
8 – 14 Years	20	7.4
TOTAL	272	100.0

TABLE 1b: DISTRIBUTION OF AGE IN YEARS

AGE IN YEARS	Nº.	PERCENTAGE
<1	126	46.3
1 – 4	111	40.8
5 – 14	35	12.9
TOTALS	272	100.0

6.3 REFERRING CLINIC

Kanyama clinic referred the most patients 49 (18%) followed by Chawama 38 (14%).

The mean was 11.8 patients per clinic. Distribution of the number of patients by referring clinic is illustrated in Table 2.

TABLE 2: REFERRING CLINIC

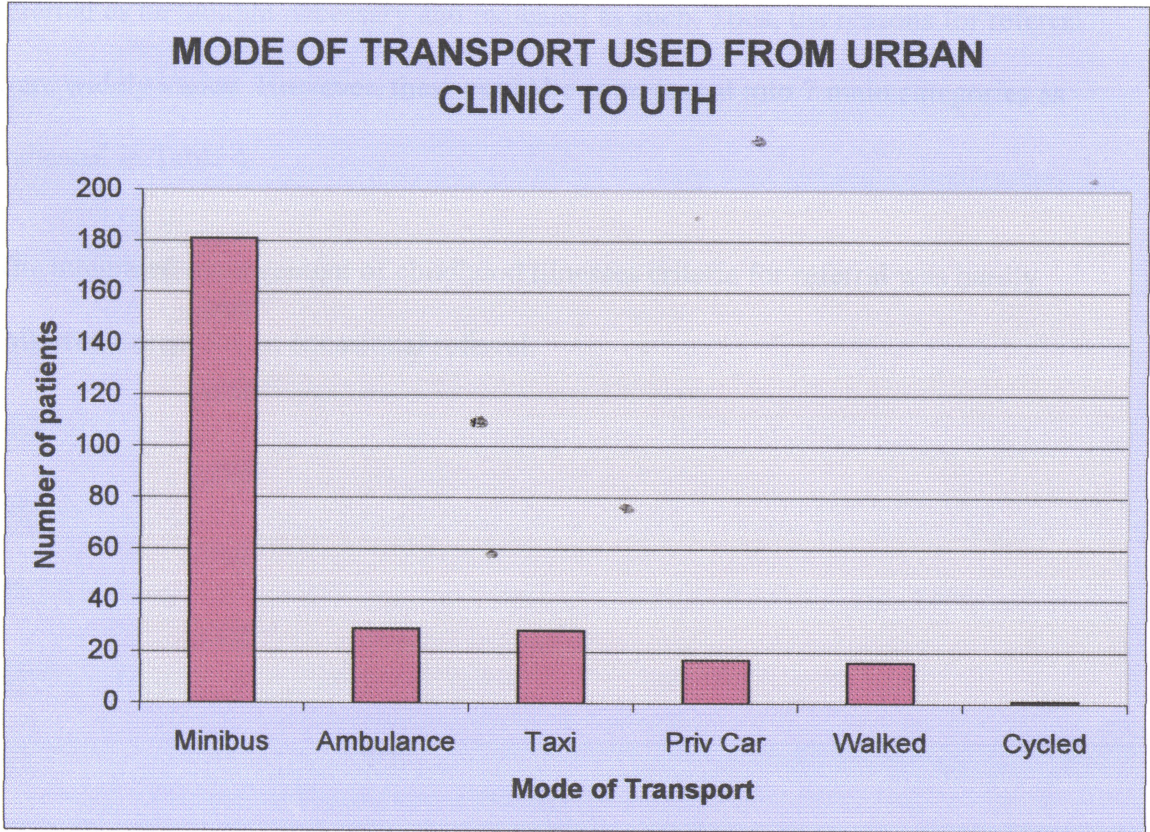
	REFERRING CLINIC	Nº.	PERCENTAGE
1.	Mandevu	8	2.9
2.	Chawama	38	14
3.	Chelston	17	6.3
4.	Kanyama	49	18
5.	George	20	7.4
6	Chipata	23	8.5
7.	Matero Main	10	3.7
8.	Kamwala	18	6.6
9.	Bauleni	3	1.1
10.	Railway	13	4.8
11.	Mtendere	13	4.8
12.	Civic Centre	1	0.4
13.	Chilenje	2	0.7
14.	Matero Ref	19	7.0
15.	Ng'ombe	5	1.8
16.	Kabwata	11	4.0
17.	Chainda	3	1.1
18.	Kaunda Square	1	0.4
19.	State Lodge	4	1.5
20.	Makeni	6	2.2
21.	Lilayi	0	0.0
22.	Prisons	1	0.4
23.	Kalingalinga	7	1.6
		272	100

6.4 MODE OF TRANSPORT USED FROM URBAN CLINIC TO UTH

Most patients 181 (66.5%) used minibus for transport to get to the hospital. Only 29 (10.7%) used an ambulance to get to the hospital. The rest 28 (10.3%) used taxi, 17 (6.2%) used a private car whilst 16 (5.9%) walked to the hospital. Of the patients that “walked”, one walked from Chawama clinic which is approximately 6-8 kilometres away from hospital. This patient took 3 hours 25 minutes to arrive at the hospital. Five (5) patients “walked” from Kamwala clinic approximately 4 kilometers from hospital and took an average 2 hours 15 minutes to arrive at hospital. 9 patients walked from Kabwata clinic, which is about a kilometer away from the paediatric wing of UTH and took 2 hours 49 minutes to arrive. One patient “walked” from Kabwata and took 37 hours to arrive at UTH. Thus the walking from the clinic was arbitrary. The patient’s guardian/parent could have either started off immediately or only decided to go to the hospital at his convenience or due to a worsening in the child’s condition. (Table 3)

**TABLE 3: MODE OF TRANSPORT USED FROM URBAN CLINIC
TO UTH**

MODE	Nº	PERCENTAGE
Minibus	181	66.5
Ambulance	29	10.7
Taxi	28	10.3
Private car	17	6.2
Walked	16	5.9
Cycled	1	0.4
TOTAL	272	100



6.5 MONEY SPENT ON TRANSPORT

222 (81.6%) health care givers spent money on transport. The mean cost was K2480.74. Only 50 (18.4%) did not spend money on transport.

6.6 REFERRING PERSON

Most patients -161 (59.3%)were referred by Clinical Officers. Nurses referred 63 (23.18%), whilst doctors only referred 30 (11.0%). Other medical personnel referred 18 (6.6%)

6.7 REASONS FOR REFFERRAL

There was no protocol consistently followed for referral. Each referring officer referred as he thought necessary and indicated as such. Thus, the reasons for referral were widely varied. However, these could be compressed into 7 main categories as indicated in Table 4.

The integrated management of childhood illnesses criteria for referral was hardly followed except for an occasional referral.

TABLE 4: REASONS FOR REFERRAL

REASONS FOR REFERRAL	Nº.	PERCENTAGE
Further Management	177	65.1
Treatment	76	27.9
Specialist Attention	1	0.4
Investigations	7	2.6
Reasons not Indicated	10	3.7
Surgery	1	0.4
TOTALS	272	100

More than half of the patients 177 (65.1%) were referred for further management. 76 (27.9%) were referred for treatment whilst 7 (2.6%) were referred specifically for investigations. Only 1 patient (0.4) was indicated as referred for specialist attention. 10 patients (3.7%) had no reasons indicated for their referral.

6.8. TIME TAKEN TO ARRIVE AT HOSPITAL FROM CLINIC (LAG TIME)

52 (19.3%) patients arrived at the hospital within 1 hour of referral from the clinic whilst 83 (30.9%) arrived 1 hour after referral but within 2 hours of referral. Therefore about half 50.2% of the referrals arrived at the hospital within 2 hours of referral from the clinic. The rest 49.8% arrived after 2 hours, of whom 13% arrived after 12 hours. 3 patients did not have time of referral indicated at the clinic.

TABLE 5: LAG TIME DISTRIBUTION BETWEEN CLINIC AND HOSPITAL

LAG TIME (HRS)	NO.	%
< 1 hour	52	19.3
1-2	83	30.9
3-5	65	24.2
6-12	34	12.6
13-24	25	9.3
> 24 Hours	10	3.7
TOTAL	269	100.0

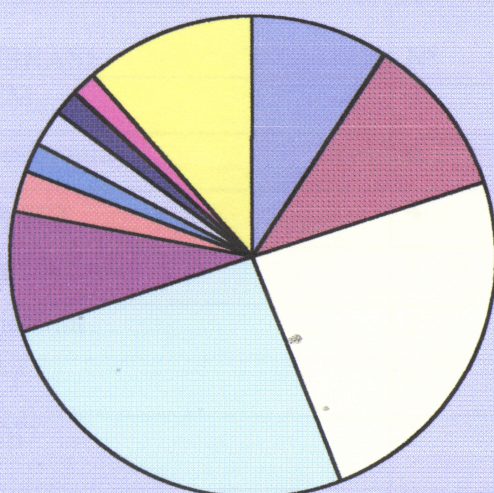
**6.9 DISTRIBUTION OF OCCURRENCE OF TOP TEN DISEASES
BEING REFERRED BY DIAGNOSIS (AS AT UTH)**

Of the various diseases, the commonest disease with which a patient was referred was respiratory tract infection 70 (25.8%). This was followed by Malaria 66 (24%), PEM 29 (10.7%) and ADD 25 (9.2%). The other diseases for which patients were referred included Nephritis, Meningitis, congenital syphilis, Anaemia and viral exanthemas including Measles. (Table 6)

**TABLE 6: DISTRIBUTION OF OCCURRENCE OF TOP TEN DISEASES
BEING REFERRED BY DIAGNOSIS**

DIAGNOSIS	Nº	PERCENTAGE
ADD	25	9.2
PEM	29	10.7
Malaria	66	24.3
Respiratory tract infection	70	25.7
Septicaemia	22	8.1
Pulmonary tuberculosis	8	2.9
Skin diseases	5	1.8
Anaemia	7	2.6
Failure to thrive	4	1.5
Poisoning	5	1.8
Others	31	11.4
TOTAL	272	100

DISTRIBUTION OF OCCURRENCE OF TOP TEN DISEASES BEING REFERRED BY DIAGNOSIS



6.9.1 MORTALITY OF ADMITTED CHILDREN (CAUSES OF DEATH AS DIAGNOSED AT UTH)

Of the 250 patients that were admitted at UTH, 29 (11.6%) of the patients died before completion of treatment or discharge from the hospital. PEM caused the highest mortality 9 (31.0%). This was followed by Pneumonia 6 (20.7%), Malaria 4 (13.7%), Septicaemia mostly in neonates 3 (10.3%) and severe Anaemia 2 (6.9%). The other causes of death were FTT with opportunistic infection, ADD, Systemic Candidiasis, Cervical abscess and an undiagnosed case. The patient who died of cervical abscess was referred to surgery and finally died there, after 57 days of staying in hospital. 1 patient died on arrival in the emergency room at UTH. He was a 17 month-old baby referred from Kamwala for a respiratory tract infection. He travelled to hospital by

public minibus, spent one hour on the way and died on arrival at the hospital. (Table 7)

TABLE 7: CAUSES OF DEATH AS DIAGNOSED AT UTH

DISEASE	Nº	PERCENT
PEM	9	31.0
Pneumonia	6	20.7
Malaria	4	13.7
Septicaemia	3	10.3
Anaemia	2	6.9
FTT	1	3.5
ADD	1	3.5
Systemic Candidiasis	1	3.5
Cervical Abscess	1	3.5
Undiagnosed	1	3.5
TOTALS	29	100.0

6.9.2 PROPORTION OF CHILDREN DYING OF A PARTICULAR DISEASE WITHIN A DISEASE

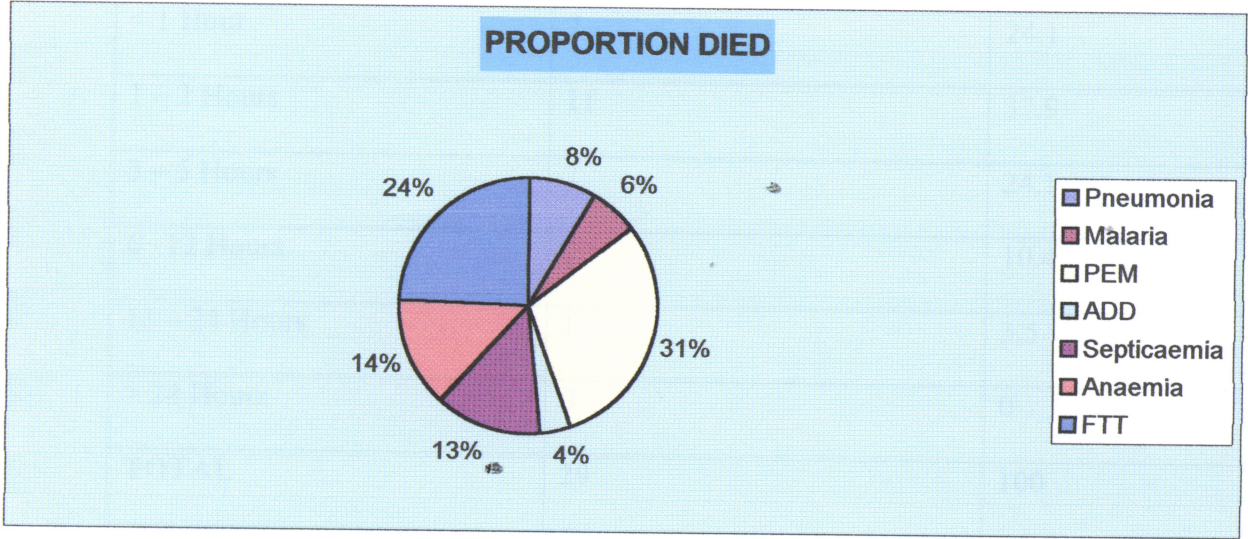
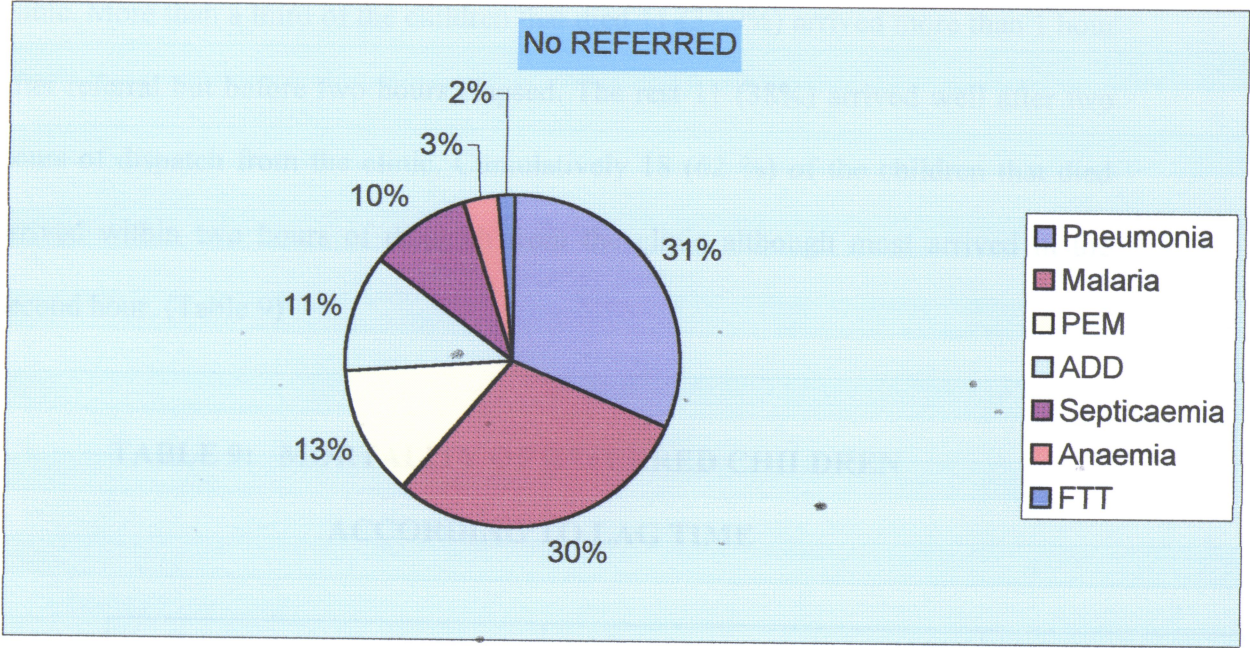
Although the largest number of patients being referred had Pneumonia 70, only 6 (8.6%) of them died. Of the 66 Malaria patients that were referred only 4 (6.1%) died. On the other hand 29 patients were referred with PEM. Of these almost one-third, 9 (31%) died. PEM not only caused the largest number of deaths amongst the referred patients but also the highest proportion of patients dying of the disease within the disease. Of the 4 FTT patients referred, one died resulting in mortality of 25%. Seven patients with Anaemia were referred and one (14.3%) died whilst 22 were referred

with Septicaemia but 3 (13.6%) died. ADD had the least proportion dying within the disease with 25 referred of whom only 1 (4%) died. (Table 8).

TABLE 8: PROPORTION OF CHILDREN DYING OF A PARTICULAR DISEASE WITHIN A DISEASE

DISEASE	N° REFERRED	N°. DIED	PROPORTION
Pneumonia	70	6	8.6
Malaria	66	4	6.1
PEM	29	9	31
ADD	25	1	4
Septicaemia	22	3	13.6
Anaemia	7	1	14.3
FTT	4	1	25

BELOW ARE GRAPHS SHOWING NUMBER OF CHILDREN REFERRED
AND PROPORTION DYING OF A PARTICULAR DISEASE WITHIN A
DISEASE



6.9.3 MORTALITY OF REFERRED CHILDREN ACCORDING TO LAG TIME (BETWEEN URBAN CLINICS AND HOSPITAL)

Of the patients that died, only 7 (24.1%) arrived within 1 hour of referral from the clinic. More than a third of the children that died 11 (37.9%) arrived more than 1 hour after referral but before two hours elapsed. The rest 11 (38%) arrived well after two hours of dispatch from the clinic. Cumulatively 18 (62 %) of the children that died arrived within two hours of dispatch from the clinic although most arrived in the second hour. (Table 9)

**TABLE 9: MORTALITY OF REFERRED CHILDREN
ACCORDING TO LAG TIME**

TIME LAG	No. DIED	PERCENTAGE
< 1 Hour	7	24.1
1 – 2 Hours	11	37.9
3 – 5 Hours	7	24.1
6 –12 Hours	3	10.4
13 – 24 Hours	1	3.5
> 24 Hours	0	0
TOTAL	29	100

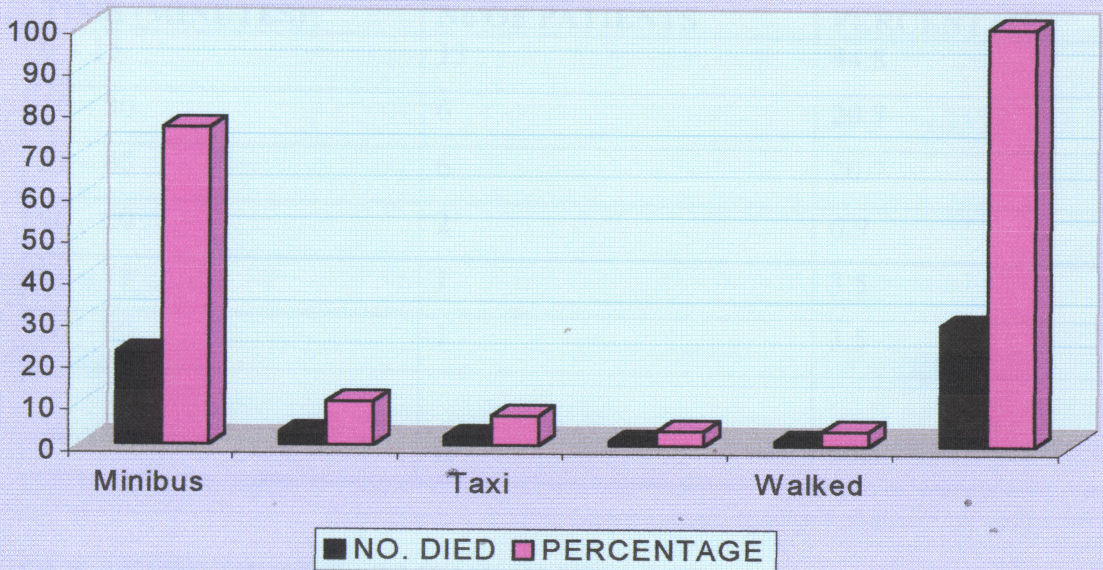
6.9.4 MODE OF TRANSPORT USED BY PATIENTS WHO DIED

Three quarters of the patients who died actually got to hospital by public minibus 22 (75.9%). Only 3 (10.3%) of the patients that died managed to get an ambulance service. Even then only one of them arrived within 1 hour. The other two arrived well after 2 hours. (Table 10).

TABLE 10: MODE OF TRANSPORT USED BY PATIENTS WHO DIED

MODE OF TRNSPORT	No. DIED	PERCENTAGE
Minibus	22	75.9
Ambulance	3	10.3
Taxi	2	6.9
Private Car	1	3.5
Walked	1	3.5
TOTAL	29	100.0

MODE OF TRANSPORT USED



6.10 WAITING TIME FOR PATIENTS WHO DIED FROM TIME OF ARRIVAL TO TIME BEING SEEN BY HEALTH WORKERS AT UTH

Of these very critically ill children who eventually died 13 (44.8%) were being seen within 15 minutes of arrival at UTH. 19 (65.5%) were being seen within 30 minutes.

Cumulatively 27 (93.1%) were being seen within 1 hour of arrival. Unfortunately 2 (7.5%) were being seen more than 1 hour after arrival at UTH. (Table 11)

TABLE 11: WAITING TIME FOR PATIENTS WHO DIED AT UTH

TIME (MINUTES)	No OF PATIENTS	PERCENTAGE
0 - 15	13	44.8
16 – 30	6	20.7
31 – 45	6	20.7
46 – 60	2	6.9
61 – 75	1	3.5
76 – 90	1	3.5
TOTAL	29	100

6.10.1 DURATION OF TREATMENT IN UTH BEFORE DEATH

More than one-third of the patients -11 (37.9%) died within 24 hours of arrival. These patients therefore received treatment for less than 24 hours. Close to half -13 (43.8%) of the total number of patients died within 48 hours. However, almost a quarter 7 (24.1%) died after 168 hours over a week’s stay in hospital. (Table 12)

TABLE 12: DURATION OF TREATMENT BEFORE DEATH

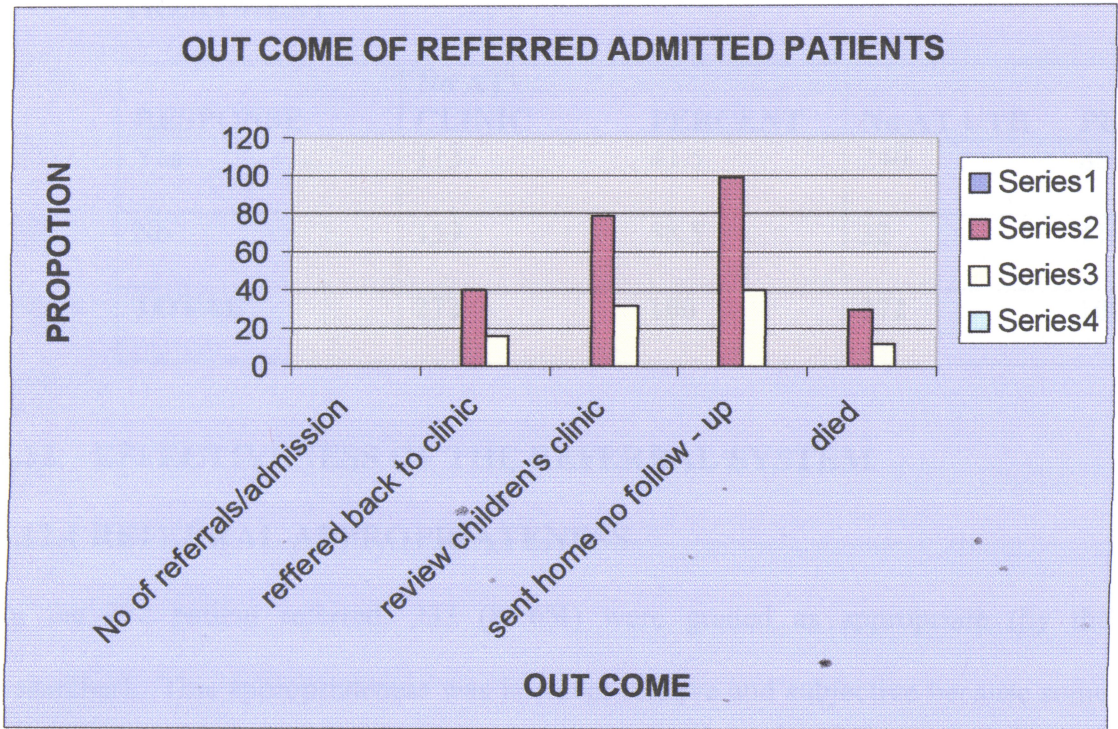
TIME IN HOURS	No.	PERCENTAGE
24	11	37.9
48	2	6.9
72	3	10.4
96	2	6.9
120	1	3.5
144	3	10.4
>168	7	24.1
TOTAL	29	100

6.10.2 OUTCOME OF REFERRED ADMITTED PATIENTS

Upon discharge from UTH less than half 119 (47.6%) of the patients were discharged with a planned review or follow-up of their disease condition. 79 (31.6%) were designated for review by senior doctors in the children’s clinic in UTH. However, only 40 (16%) were discharged with a discharge slip indicating diagnosis treatment and further follow-up at the urban clinic. 99 (39.6%) of the patients were sent home with no review or follow-up indicated despite the disease condition. Unfortunately 29 (11.6%) of the admitted patients died of various disease condition before discharge from the hospital. (Table 13)

TABLE 13 : OUTCOME OF REFERRED ADMITTED PATIENTS

OUTCOME OF REFERRALS/ADMISSIONS	NUMBER	PERCENTAGE
Referred back to clinic	40	16.0
Review children’s clinic	79	31.6
Sent home no follow-up	99	39.6
Died	29	11.6
Others	3	1.2
TOTAL	250	100



6.11 HEALTH SEEKERS SATISFACTION WITH TREATMENT AT CLINIC AND UTH

Only 41.7 % of health seekers were satisfied with the treatment received at the clinic whilst 89.5% expressed satisfaction with treatment received at UTH. Reasons cited for lack of satisfaction included no treatment given, no improvement in child's condition, poor staff attitude, lack of drugs etc. Reasons cited for health seekers satisfaction particularly with UTH included quick attendance by staff, good staff attitude, improvement of child's condition, medicines given etc. (Table 14)

TABLE 14: HEALTH SEEKERS SATISFACTION WITH TREATMENT

RESPONSE	No AT CLINIC	PERCENT	No AT UTH	PERCENT
Yes	113	41.5	240	88.2
No	159	58.5	32	11.8
TOTAL	272	100	272	100

6.12 EFFECTIVENESS OF THE REFERRAL SYSTEM

6.12.1 REFERRAL APPROPRIATENESS

Of the 272 patient referred, 233 (85.6%) were graded as appropriate (by the researcher). This appropriateness was however relative and subjective because some centres referred cases that were not severe enough to warrant expertise attention. However, due to overload at the clinic, and either inadequate or lack of admission facilities, these were referred. The researcher took these factors into consideration when judging the referrals.

However, if the IMCI criteria for referral were to be used, most of the referrals would be judged inappropriate.

Below is a table showing reasons for referral and pre-referral treatment given in comparison to IMCI guidelines. This table also shows referral appropriateness according to IMCI criteria.

**REASONS FOR REFERRAL AND PRE-REFERRAL TREATMENT GIVEN
IN COMPARISON TO IMCI GUIDELINES**

TABLE 15: REFERRAL APPROPRIATENESS AS ACCORDING TO IMCI

	YES	NO	N/A	TOT
	No (%)	No (%)	No (%)	
Reasons for referral given	249 (91.6%)	23 (8.4%)	-	272
Reasons for referral appropriate according to IMCI criteria	97 (35.5%)	160 (58.9%)	15 (5.6%)	272
Pre-referral treatment given at clinic	151 (55.6%)	121 (44.4%)	-	272
IMCI protocol for pre-referral treatment followed	57 (21.0%)	200 (73.4%)	15 (5.6%)	272

Whereas reasons for referral were given in majority of the cases 249 (91.6%), only about 1/3, 97 (35.5%) were referred according to IMCI guidelines. Thus only 97 (35.5%) referrals were deemed appropriate according to IMCI guidelines. The rest 160 (58.9%) were deemed inappropriate as according to IMCI guidelines.

At the clinic, pre-referral treatment was given to over half of the referrals 151 (55.6%). However, only 57 (21.0%) were given treatment according to IMCI protocol for pre-referral treatment. The rest 200 (73.4%) patient’s pre-referral treatment was not according to IMCI protocol. 14 (5.6%) of the referrals did not fit into IMCI disease classification and were therefore beyond the auspices of IMCI guidelines.

6.12.2a PRE-REFERRAL TREATMENT FOR CHILDREN THAT DIED (CRITICALLY ILL CHILDREN)

Most clinics gave some kind of pre-referral treatment to the children that eventually died. Of 29 children that died in UTH, 18 (62.0%) received pre-referral treatment at the clinic while 11 (38.0%) did not receive any pre-referral treatment. However, only 1/3, 10 (34.5%) received pre-referral treatment according to IMCI guidelines whilst 18 (62.0%) did not receive treatment according to IMCI guidelines.

TABLE 16a: TABLE SHOWING TYPE OF PRE-REFERRAL TREATMENT FOR CHILDREN WHO DIED

	PRE-REFERRAL TREATMENT* GIVEN		PRE-REFERRAL ACCORDING TO IMCI PROTOCOL	
	NO	(%)	NO	(%)
Yes	18	(62.0%)	10	(34.5%)
No	11	(38.0%)	18	(62.0%)
N/A	-		1	(3.5%)
TOTAL	29	(100.0%)	29	(100.0%)

6.2.2b: COMPARISON OF AVAILABILITY OF IMCI TRAINED STAFF BY CLINIC AND ADMINISTRATION OF PRE-REFERRAL TREATMENT ACCORDING TO IMCI TO CHILDREN THAT DIED.

Although availability of staff trained in IMCI appeared to have a positive impact on the mortality of referred children, this was not absolute. Availability of staff trained in IMCI did not guarantee that all the children seen in that particular clinic would be given pre-referral treatment according to IMCI. Nor did it seem to guarantee an absolute reduction in mortality.

Chilenje, a clinic fairly close to UTH had the highest number of staff trained in IMCI (6). None of their referred patients died. Chelstone Clinic which is some 8 kilometers away from UTH had the second highest number of IMCI trained staff - 5. Of the 17 referred patients, 4 died. 2(50%) of them were given IMCI pre-referral treatment, 1(25%) was not given treatment according to IMCI, whilst 1(25%) had a disease condition to which IMCI guidelines did not apply.

On the other hand, Chawama and Kanyama had 3-4 members of staff trained in IMCI. However 60-75% of their referred patients that died did not receive pre-referral treatment according to IMCI guidelines.

Most clinics that had only one or no staff trained in IMCI like Kamwala, Matero main, Kalingalinga, and Central Prison did not give pre-referral treatment according to IMCI to any of the children that died. All their referred children that died received no pre-referral treatment according to IMCI guidelines..

TABLE 16b: COMPARISON OF ADMINISTRATION OF PRE-REFERRAL TREATMENT BY CLINIC FOR CHILDREN THAT DIED (ACCORDING TO IMCI GUIDELINES) AND CLINIC STAFFING LEVELS WITH IMCI TRAINED STAFF AS AT 2000

CLINIC	PRE-REFERRAL TREATMENT GIVEN ACCORDING TO IMCI GUIDELINE (FOR DECEASED CHILDREN)			NUMBER OF STAFF WITH IMCI
	Given	Not Given	N/A	
	No (%)	No (%)	No (%)	
Chawama	1 (25%)	3 (75%)	-	4
Kanyama	2 (40%)	3 (60%)	-	3
Chipata	1 (50%)	1 (50%)	-	2
Chilenje	—	—	-	6
Chelstone	2 (50%)	1 (25%)	1 (25%)	5
George	3 (60%)	2 (40%)	-	2
Kabwata	—	—	—	1
Kamwala	0 (0%)	3 (100%)	-	1
Mandevu	—	—	—	1
Mtendere	—	—	—	1
Matero Main	0 (0%)	3 (100%)	-	1
Matero	1 (100%)	0 (0%)	-	2
Reference				
Kalingalinga	0 (0%)	1 (100%)	-	0
Central Prison	0 (0%)	1 (100%)	-	0

6.12.3 REFERRAL EFFECTIVENESS

Although 233 (85.6%) of the referrals appeared appropriate, 202 (74.3%) of referrals were classified as ineffective [Paine's classification ⁽¹¹⁾.] This was taking into consideration time lag between clinic and UTH, duration of treatment before death, follow-up and referral back to the clinic communication with health workers and satisfaction of the patient's guardian or parents with treatment. The commonest cause of an ineffective referral was time lag of greater than 2 hours between clinic and hospital 50.2% and death within 48 hours of arrival in hospital 43.8%. The rest were rendered ineffective by a combination of the above factors as well as lack of follow-up (39,6%) or referral back to the clinic, lack of communication between the health workers and guardians (30.5%) and lack of satisfaction (35.3%) with treatment. (Table17).

TABLE 17: FACTORS RENDERING A REFERRAL INEFFECTIVE

FACTOR	TOTAL No. of PATIENTS	No OF PATIENTS IN DEFICIT	PERCENTAGE
<48 hours of treatment in hospital before death	29	13	44.8
Lag time greater than 2 hours between clinic and hospital	269	135	50.2
No follow-up or referral back to clinic	250	99	39.6
Lack of Communication between health workers and health seekers	272	80	30.5
Lack of satisfaction with medical care given either at clinic or hospital	272	96	35.3

Any one of these factors appearing rendered a referral ineffective.

6.13 CAPACITY OF CLINICS

6.13.1: DISTRIBUTION OF STAFF BY CLINIC FOR PERIOD 1996-1999

The number of staff in the clinics had either reduced in the last 4 years or remained static despite an increase in the number of patients. The number of Doctors had gone down in Matero (Table 15) and George (Table 16) Reference Health Centres but had remained the same in Chipata (Table 17) and Mtendere (Table 18) against an increased patient-load.

TABLE 18: STAFFING LEVELS - MATERO REFERENCE CENTRE

STAFF CATEGORY	1996	1997	1998	1999
Doctors	0	3	2	1
Clinical Officers	?	5	5	4
Nurses	-	-	-	49
Pharmacists	0	0	0	0
Laboratory Staff	1	1	2	2
*Total	1	9	9	56

***Totals based on available data.**

TABLE 19: STAFFING LEVELS GEORGE CLINIC

STAFF CATEGORY	1996	1997	1998	1999
Doctors	1	2	1	1
Clinical Officers	5	5	5	5
Nurses	?	30	34	34
Pharmacists	0	0	0	0
Laboratory Staff	1	2	2	2
*Total	?	39	42	42

***Totals on the basis of available information**

TABLE 20: STAFFING LEVELS CHIPATA CLINIC

STAFF CATEGORY	1996	1997	1998	1999
Doctors	2	2	2	2
Clinical Officers	6	5	5	4
Nurses	-	-	34	-
Pharmacists	2	2	2	2
Laboratory Staff	-	-	-	-
*Total	10	9	43	8

***Totals on the basis of available information**

TABLE 21: STAFFING LEVELS MTENDERE CLINIC

STAFF CATEGORY	1996	1997	1998	1999
Doctors	1	1	1	1
Clinical Officers	6	6	6	6
Nurses	21	21	17	14
Pharmacists	-	-	-	-
Laboratory Staff	1	1	-	2
*Total	29	29	25	23

***Totals on the basis of available information**

6.13.2 DISTRIBUTION OF EQUIPMENT BY CLINIC

X-Ray equipment was available only in one clinic (Matero reference centre) which had been upgraded to a first referral hospital. All health centers visited had facilities to do examination for Malaria parasite, Urinalysis, Urine microscopy, haematocrit and examination for Acid Fast Bacilli

6.13.3 DISTRIBUTION OF AMBULANCES BY CLINIC

There is an ambulance support service which caters for all the 23 clinics under LUDHMT. Only 4 of the 9 ambulances available were working at the time of interview. Of the 4 working ambulances, 2 were strictly reserved for maternity emergencies, leaving 2 for the rest of the cases whether Paediatric, Medicine or Surgery. This entailed a heavy demand for the grossly inadequate ambulances.

The Sister in-Charge manning the ambulance service expressed concern over the performance of the service that it was inadequate for the number of patients needing the service. Mtendere Clinic rated the ambulance availability to the clinic as rare, Chipata rated it as often, Matero Health Referral Centre as often whilst George rated it as occasional.

Due to the inadequate number of ambulances and the patient high demand for its use, none of the clinics rated it as always available.

6.13.4 COMMUNICATION

All the 4 clinics had a good radio system linked to the ambulance service and LUDHMT Headquarters. Telephone communication was available in only Chipata and Matero Reference Clinics. George and Mtendere did not have a telephone communication service. There was good radio communication between the clinics, ambulances and LUDHMT. However there was no deliberate communication in any of the clinics with UTH medical practitioners.

CHAPTER SEVEN

7.0 DISCUSSION

This study confirmed that the referral system works. Most patients, 93%, arrive at UTH having been referred from health centers. There is therefore good utilization of the primary health care facilities. However, although the referral system appears to be functional, it was found to be mostly ineffective in 74.3% of the cases for various reasons. Only 25.7% of the patients demonstrated effective referral criteria such as;

- a) Arriving in hospital UTH within 2 hours of referral from the clinic;
- b) Being treated for at least 48 hours in UTH before death;
- c) Justifiable referral for management at UTH;
- d) Communication to parents and guardians by health workers and;
- e) Satisfaction with treatment as expressed by parents or guardians.
- f) Feedback from UTH to the clinic and continuum of care.

The commonest causes of ineffective referral were unnecessary delay in the movement of the patient from the clinic to hospital, resulting in a time lag of greater than 2 hours (50.2%). This delay resulted in inadequate duration of treatment before death (44.8%). This is in keeping with King's declaration⁽⁵⁾ who notes that the referral system often fails because transport difficulties greatly impede the efficiency of the referral system.

Several factors in this study contributed to patients delay to get to UTH after referral from the clinic. Firstly the ambulance service was available to only 10.7% of the referred Paediatric patients. The majority 66.5% used a public minibus to get to

hospital regardless of the severity of the disease condition. Sixty-two percent of the very critically ill children that eventually died arrived at the hospital within 2 hours. However, of the 29 patients that eventually died, 37.9% arrived in the second hour after referral from the clinic whilst only 24.1% arrived in the first hour. Unfortunately, the remaining third of these very ill children arrived well after 2 hours of referral from the clinic. Of the patients that died 75.9% used public minibus transport to get to UTH. Only 10.3% (3) accessed an ambulance. Of the 3 that accessed an ambulance, only 1 arrived in the hospital within 1 hour. The other 2 arrived more than 2 hours after referral from the clinic. The ambulance service was therefore hardly available either for the stable sick child or for the very critically ill child.

Most of the children that died arrived an hour after referral but before 2 hours elapsed. It appears there was an attempt by parents to bring these patients in to UTH as quickly as possible, but having to use public transport probably delayed them since probably some had to change buses once or twice. This therefore suggests that for the critically ill children a lag time of more than 1 hour could be fatal and has a negative impact on the effectiveness of the referral system. This also suggests that public minibus transport is not recommended for a critically ill child. Other faster, more efficient means of transport must be sought for the critically ill child. Additionally, the very ill child must arrive in hospital within 30 minutes of referral from the clinic.

One patient was referred from Kamwala with Respiratory Tract infection. The patient was transported to hospital on a public minibus, spent 1 hour on the way and was pronounced dead on arrival at the hospital in the emergency room. This child needed

to be transported within 15 minutes preferably in an ambulance with oxygen facilities. A chronic disease condition was a factor contributing to late arrival at the hospital. A good number of patients with chronic disease conditions arrived 3 hours after referral from the clinic. These chronic disease conditions included FTT and PEM.

Unfortunately these patients had a relatively high mortality, particularly PEM. The Socio- economic status of the parents or guardians to the patients was an additional factor contributing to late presentation at UTH. Once informed by the health workers at the clinic that the patient needed to go to UTH the parents or guardians had to source for money for transport and other expenses at the hospital. Since the money would not be readily available, this could take up to 3 days before the parents or guardians finally arrived with the child at UTH. Furthermore, given a chance to go home in preparation for the trip to hospital, the parents or guardians would then on their own reconsider as to whether this referral was really necessary or not and would only start off for hospital when the patients condition appeared to turn for the worst.

Whereas 157 (55.6%) of referred patients were given some form of pre-referral treatment at the clinic, only 57 (21.0%) received pre-referral treatment according to IMCI guidelines. Availability of staff trained in IMCI did not seem to guarantee administration of pre-referral treatment according to IMCI guidelines nor did it seem to absolutely reduce mortality. This was probably due to lack of consistence in use of the guidelines. However, the clinics which had no staff trained in IMCI appeared to have the highest proportion of mortality amongst their patients. Thus, availability of IMCI staff appeared to help in reducing mortality of the referred children. However, inability to consistently apply IMCI guidelines to pre-referral treatment impacted

negatively on mortality of the referred children, probably also due to inadequate numbers of IMCI trained staff for the number of patients in the clinics.

On arrival at UTH, 65.4% of the patients were being seen within 30 minutes whilst a cumulative total of 87.1% were being seen within 1 hour. Of the very critically ill patients that eventually died (29) 44.8% were being seen within 15 minutes, 65.5% were being seen within 30 minutes and a cumulative total of 93.1% were being seen within 1 hour. This indicated that the very critically ill children were seen slightly earlier than the less ill patients. Delay at UTH was thus not a major contributory factor to ineffective referral at the time of study.

Inadequate treatment time before death in UTH was a factor rendering referral ineffective. Of the 29 patients 37.9% (11) died within 24 hours of arrival in UTH. A total of 43.8% died within 48 hours of arrival. These patients did not have adequate treatment time for their disease conditions. They either presented late to UTH or had severe irreversible disease conditions at presentation. Their referrals were ineffective due to late presentations and inadequate treatment time or advanced irreversible disease conditions at presentation

Lack of a planned follow-up of a discharged patient was an additional factor rendering referral ineffective. Whilst 16% (40) of the 250 admitted referred patients were referred back to the clinic with a small referral note on discharge and 31.6% (79) were indicated for follow-up in the children's clinic at UTH, 39.6% (99) were sent home with no planned review despite the disease condition. Several patients suspected of tuberculosis were sent home on Septrin with no planned follow-up. It is possible that the on-going strike of the medical doctors at the time of study may have had an effect

on this state of affairs.

These findings are similar to the results of a study done in Finland where discharge letters from the hospital to the referring General Practitioner were found to be written for only 33% of the patients ⁽²¹⁾. Thus there was a loss of continuity in the medical care of these un-followed up children, which in turn could result in increased morbidity and mortality at home without the knowledge of the health care workers.

Lack of communication between the health care worker and the health seekers was a factor contributing to the ineffectiveness of the referral system. Whereas 69.5% of health seekers were communicated with by health workers concerning the disease condition of their patient, 30.5% were not communicated with. In a study done in Zimbabwe ⁽¹⁵⁾ of the referral system at district level, lack of effective communication between the service and users was found to render the referral system ineffective.

The majority of children referred to UTH were 5 years of age and below (87.1%). Of these almost half (46.3%) were below the age of 1 year and over a quarter (29.1%) were below the age of 6 months. Therefore stratified by months and years, children under the age of 1 year suffer the highest morbidity with a peak at the age of 6 months and below. There was an almost equal male to female ratio.

Reasons for referral were very varied, diverse and often non-specific. Referring officers referred as they thought appropriate often giving no diagnosis or concrete reason for referral. The IMCI criteria for referral were hardly followed with criteria

being followed in only 58.9% of cases. Thus although 85.6% of the referrals were deemed appropriate (as judged by the researcher), this appropriateness was relative. A good number of the patients could have been treated at the health center like uncomplicated malaria.. However, due to factors like lack of or inadequate in-patient facilities, lack of oxygen, inadequate medical staff, lack of equipment, these patients were referred to hospital. These findings are similar to a study done in Uganda ⁽¹⁴⁾ where most patients would travel to hospital due to lack of medical trained personnel, sporadic supply of drugs at the health centers, etc. If the IMCI criteria for referral were to be used to decide referral appropriateness, 58.9% of the referrals would have been rendered inappropriate and only 35.5% would have been appropriate.

The commonest diseases for which the patients were referred were Respiratory Tract Infection 25.7% (70) followed by Malaria 24.3% (66) and PEM 10.7% (29) and ADD 9.2 (25%). This was comparable to other studies done at UTH.

PEM was noted to be the commonest cause of death 31% followed by Pneumonia 20.7%, Malaria 13.7% followed by Septicaemia 10.3%. Proportion of children dying of a particular disease within a disease was highest amongst the children with more chronic illnesses; PEM 31%, FTT 25% followed by severe Anaemia 14.3% and Septicaemia 13.6%. Sadly PEM caused the highest mortality in both categories. Most referrals were treated as referrals with the majority 91.9% being admitted. However, some of the admitted patients were referred with problems that could have been treated at the clinic had they had adequate in-patient facilities, appropriately trained medical staff, equipment and drugs. An attempt was made to find out the total number

of referrals from the clinics previously. Unfortunately, the data was not available, either from the clinic or from UTH as data entry and storage was poor.

The capacity of the clinics to handle the greatly increased flow of patients left much to be desired. There was a noted critical shortage of all cadres of staff; doctors, nurses, clinical officers etc. There was no pharmacy technician in any of the clinics. Almost all the clinics had 1 at the most 2 medical doctors at any one particular time in the previous 4 years. It was also noted that there was a high turnover of medical practitioners with most of them staying for only a year and then moving on to other employers offering better conditions of service. The number of nurses had also gone down. Unfortunately actual records of nursing levels were difficult to obtain in most of the clinics due to a high turnover and poor data storage.

Of the health seekers whose children received medical treatment, 58.5% (159) expressed dissatisfaction with medical care received at the clinic, whilst only 11.8% (32) expressed dissatisfaction with medical care received at the hospital. Reasons given for dissatisfaction included no treatment given to the patient at the clinic, lack of proper diagnosis, attitude of staff, etc. This could be reflective of the lack of capacity in the clinics to actually handle the increased patient load. However, 86.7% of health care seekers expressed satisfaction with treatment received at UTH and said the children were getting better and the medical workers were hardworking.

CHAPTER EIGHT

8.0 CONCLUSION

Although the referral system is functional, 74.3% of the referrals were found to be mostly ineffective. 93% of the patients arriving at the UTH Paediatric Outpatient Department were referred from the urban clinics under LUDHMT. However, although there was an IMCI protocol in place to guide which patients to refer there was no consistency in its use. Patients were inadvertently referred for various reasons and factors. This in itself defeated the existence of the referral system and resulted in the expensive tertiary facilities being used to treat primary cases that could have been treated at the local clinic at less cost. It also resulted in an overload of the tertiary facilities with time, medical supplies, medical drugs and highly qualified human resource being used to treat the less ill, simple primary medical cases instead of the critically, ill and complicated medical cases. A good number of patients were referred with uncomplicated malaria. It was in a way an inappropriate use of resources. Factors rendering the referrals ineffective were:

- a) A lag time of greater than 2 hours between time of referral and time of arrival at UTH 50.2%.
- b) Less than 48 hours of treatment before death of child in UTH 43.8%.
- c) Lack of planned follow-up or referral back to clinic 39.6%.
- d) Lack of communication between health care seekers and health workers 30.5%.
- e) Dissatisfaction with medical care given either at clinic or hospital 35.3%.

The lack of an efficient, reliable, adequate and readily available transport system contributed highly to the ineffectiveness of the referral system. It took too long for most referred patients to get to the hospital. The ambulance service was not available enough for the very critically ill child whose every minute lost to arrival at hospital counted. The existing ambulance fleet was grossly inadequate for the increased load of patients that needed to be transported to hospital. The study showed that for a very ill child a lag time of 2 hours was too long. This critically ill child needed to get to hospital within the shortest time period, if possible, 15 minutes if the referral was to be effective.

The public minibus service, which is commonly used by the majority of patients as a means of transport, was of great help. But for the critically ill child, the delay caused by possibly, first sourcing for transport money and then using the public minibus which moved at its own pace, resulted in increased mortality. Thus the lack of readily available efficient transport system had a negative impact on the referral system causing it to be ineffective.

Late presentation to hospital contributed to referral system ineffectiveness. 43.8% of patients died before they had adequate duration of treatment. These patients presented to hospital with already advanced irreversible disease conditions. This made the whole exercise of referral futile and ineffective.

Poor socio-economic status contributed to late presentation. The lack of readily available funds for transport to hospital and hospital expenses contributed to delayed departure from home in order for the health seeker to source for money. As a result

these patients presented late to hospital. A lack of understanding of the disease condition by the parents or guardians also contributed to late presentation at the hospital and ineffective referral.

After discharge from hospital, follow-up of patients to ensure continuity in their medical care was inadequate. In this study 39.6% had no planned follow-up.. This could result in continued morbidity and increased mortality at home without the knowledge of health workers rendering the referral ineffective despite all the preliminary health care given. There are of course a few disease conditions that may not require follow-up. However, most disease conditions require at least one follow-up to ensure completion of treatment and that patient fully recovers and is in good health!

Most of the cases that were not followed up were malaria cases. However, there were a few cases of suspected tuberculosis, asthma, severe malaria with severe anaemia, protein energy malnutrition that had no planned follow up after discharge from hospital.

This study showed that there was inadequate communication between the health workers and the health seekers. 30.5% of the health seekers received no communication about the disease from the health workers. Due to lack of communication, the health seekers were ignorant and often perplexed about the disease condition of the patient. They did not know what was expected of them and what was being done to the patient. Upon discharge, these parents or guardians did not know what to do with their patients to ensure continuity of treatment and recovery. This was bound to have a negative impact on the medical care of the patient

with a possible increase in morbidity and mortality. Thus, lack of communication between the health workers and health seekers rendered referral ineffective.

An average of 35.3% of health seekers were not satisfied with the care received at both the clinic and hospital. 58.5% of patients were dissatisfied with care received at clinic whilst only 11.8% were dissatisfied with care received at the hospital. It is unlikely that these health seekers would continue to have confidence in the medical treatment prescribed. It is also unlikely that these displeased health seekers would ensure a follow-up and continued care of their patients due to a lack of confidence in the prescribed treatment, staff and facilities. This lack of satisfaction with the medical service would inevitably result in inadequate medical care of a patient and thereby giving rise to ineffective referral. The greater lack of satisfaction with medical care received at the clinic could be reflective of the inadequate capacity of the clinics to handle increased patient load.

The majority of the patients referred 87.1% were below the age of 5 years, suggesting high morbidity in this age group. The highest morbidity was in the age group below 1 year of age 46.3% with a quarter of the total referrals being below 6 months of age 29.1%. This suggests a need for enhanced preventive and curative care for these age groups. The most common disease conditions for which the patients were being referred were Respiratory Tract Infection 70 (25.7%), Malaria 66 (24.3%), PEM 29 (10.7%), ADD 25 (9.2%) and Septicaemia 22 (8.1%). Therefore these disease conditions caused the highest morbidity amongst the referred children. PEM caused the largest number of deaths 31%. Often these patients presented late, very advanced in their disease conditions and died within 24 to 48 hours of arrival. Their referral was

ineffective. Most of the deaths due to PEM, Pneumonia, Malaria Septicaemia, etc were preventable if the patients had presented early enough. Inability to apply IMCI guidelines in terms of pre-referral treatment also impacted negatively on mortality with a higher proportion of children from clinics devoid of staff trained in IMCI dying than from clinics with high levels of staff trained in IMCI. There is a need to improve application of IMCI guidelines in the management of patients at the clinic amongst the staff and need to educate the community on the importance of early recognition of disease and early health seeking behavior. There is also a need to improve capacity of the primary health care workers to recognize conditions that need immediate referral to the hospital and those that can be treated at the clinic adequately.

Thus there is a vital need for all health workers to undergo IMCI training as this would have a positive impact and make the referral system more effective. This would have to go hand in hand with improving capacity at the clinics both in levels of staffing, skills and admission facilities. Currently, capacity of the clinics to handle the greatly increased patient load is inadequate. Therefore, although there is good utilization of the primary health care facilities, the patients are not effectively managed and referred. This is a contributory factor in rendering the referral system ineffective.

The Paediatric referral system between the urban clinic and the referral center UTH is vital to the effective medical care of the Paediatric patient. This study shows that indeed the referral system is working. However it is not working effectively enough. There is a need to address the highlighted issues from the study in order to ensure a

more effective Paediatric referral system and thereby a better medical care for the Paediatric patient and a reduction in the mortality of children.

CHAPTER NINE

9.0 RECOMMENDATIONS

- a) Improve transportation of patients to hospital
 - i) Improve ambulance fleet with higher allocation to Paediatric patients. LUDHMT, Central Board of Health, Ministry of Health and cooperating partners to collaborate.
 - ii) In the absence of an ambulance, health workers and LUDHMT to put in place other efficient means of getting a critically ill child to hospital, e.g. a taxi or use IMCI guidelines on “when referral is not possible”.
 - iii) Sensitise and educate the public minibuss sector that they play an important role in transportation of the ailing public to hospital
 - iv) Health workers at the clinic should see to it that the critically ill child gets to the hospital in the shortest time period..
- b) Encourage early presentation to hospital and early health seeking behaviour.
 - i) Health education to parents and guardians on how to recognize early disease symptoms and thereby early health seeking behavior from medical workers.
 - ii) IMCI training for all medical staff to improve early recognition of serious disease conditions early appropriate treatment and referral to hospital when this is required.

- c) Improve capacity at the clinics
 - i) Better training in skills, knowledge and in service training e.g. IMCI
 - ii) Regular supervision of staff to ensure usage of IMCI guidelines.
 - iii) Improve in-patient facilities, medical supplies and equipment in the clinics.
 - iv) Retain medical workers by giving better working conditions.
- d) Improve follow-up of patients to ensure continued medical care until complete recovery
 - i) All health workers must be sensitized on the need to follow-up. IMCI training would help improve follow-up skills.
 - ii) Communication between urban clinics and UTH must be improved. Telephones must be installed in all clinics and a functioning telephone in the Department of Paediatrics, and Child Health UTH for collaborated patient care.
 - iii) A Radio system, communication between clinics and UTH should be installed and a computer network between clinics, LUDHMT. There is also a need for improvement in data collection and storage both at the clinics and UTH.
- e) Improve communication between health care workers and health seekers.
 - i) Medical personnel need to be sensitized on the need to communicate with health seekers.

- ii) Train more staff in IMCI to improve counseling and communication skills.
- f) Improve medical service (to reduce on dissatisfaction of the health seekers)
 - i) There is a need for motivation of staff. A demotivated staff will not have a spirit of imparting a quality service. Conditions of service need to be drastically improved to retain qualified personnel and improve capacity.
 - ii) Improve facilities in terms of infrastructure, equipment and medical supplies, including drugs.
- g) Address the causes of high mortality
 - i) Improve under-five care both preventive and curative.
 - ii) PEM prevention; PEM associated with a low socio-economic status and poor feeding practices. The Government of Zambia needs to take a leading role in poverty reduction. Health workers through the Ministry of Health, Central Board of Health and LUDHMT must have:
 - a. Improved capacity to recognize and treat PEM early.
 - b. Be equipped with improved capacity to recognize growth faltering early.
 - c. Skills to give health education to the public concerning growth faltering and PEM.

iii) Improve administering of pre-referral treatment as according to IMCI guidelines as this takes into consideration most of the life threatening critical conditions in paediatrics.

iv) Improve essential newborn care and care of the small infant. Skills and knowledge need to be imparted to health workers on safer practices for the care of the young infant and also to mothers and the public.

v) Ministry of Health, Central Board of Health, LUDHMT through health workers to take a leading role. There is need for policy on the care of the new born and young infant.

h) Sustain and improve existing referral system.

Health workers need to be sensitized on the importance of referral system to the effective management of a child or patient's medical condition. There is a need for health workers and other stakeholders to be oriented on the issues making referral ineffective and to encourage them to take it upon themselves to improve the referral system.

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APPENDIX i

THE STUDY OF THE PAEDIATRIC REFERRAL SYSTEM BETWEEN PRIMARY HEALTH CARE FACILITIES (URBAN HEALTH CENTRE) AND THE REFERRAL HOSPITAL – UTH LUSAKA.

QUESTIONNAIRE A : CLINIC

1. Name of Clinic
 - 1 George
 - 2 Mtendere
 - 3 Matero Health Referral Centre
 - 4 Chipata
2. Medical Officer Available?
 1. Yes
 2. No

If Yes, How many? _____
3. Clinical Officer Available?
 1. Yes
 2. No
4. Nurses Available?
 1. Yes
 2. No
5. Category of Nurses and Number
 1. State Registered Nurse []
 2. Registered Midwife []
 3. Zambia Enrolled Nurse []
 4. Zambia Enrolled Midwife []
 5. Other (Specify) _____ []
6. Laboratory Staff Available?
 1. Yes
 2. No

Study Number: _____

If Yes, Categorise

3. Lab Technicians
4. Lab Assistants
5. Others (specify) _____

For questions 7 to 10 please enter information on form 1 provided at the end of the questionnaire

7. Average Daily Outpatient Attendance

		<5 years	>5 years	Total
(a)	1996	_____	_____	_____
(b)	1997	_____	_____	_____
(c)	1998	_____	_____	_____
(d)	1999	_____	_____	_____

8. Average daily patient referral to Hospital -----

		<5 years	>5 years	Total
(a)	1996	_____	_____	_____
(b)	1997	_____	_____	_____
(c)	1998	_____	_____	_____
(d)	1999	_____	_____	_____

9. Average daily Paediatric Outpatient attendance-----

		<5 years	>5 years	Total
(a)	1996	_____	_____	_____
(b)	1997	_____	_____	_____
(c)	1998	_____	_____	_____
(d)	1999	_____	_____	_____

10. Average daily Paediatric Referral to Hospital

Study Number: _____

		<5 years	>5 years	Total
(a)	1996	_____	_____	_____
(b)	1997	_____	_____	_____
(c)	1998	_____	_____	_____
(d)	1999	_____	_____	_____

11. Type of investigation Facilities Available

1.	MP Slide	1.	Yes	2.	No
2.	Urine Microscopy	1.	Yes	2.	No
3.	HCT	1.	Yes	2.	No
4.	FBC	1.	Yes	2.	No
5.	AAFB	1.	Yes	2.	No
6.	Routine Urinalysis	1.	Yes	2.	No

12. Pharmacy Staff Available?

1. Yes
2. No

If Yes, Categorise

1. Pharmacist
2. Pharmacy Technicians
3. Pharmacy Assistants
4. Other/Unqualified Staff

13. Ambulance Service Availability

1. Yes
2. No

14. How available?

1. All the time
2. Often
3. Occasional
4. Rare
5. Never

15. Radio Communication Service Available

1. Yes
2. No

Study Number: _____

16. Telephone Services Available

1. Yes
2. No

17. Drugs Availability

1. Occasional
2. Regular
3. Always

18. Drugs Sufficiency

1. Adequate
2. Inadequate

19. X-Ray Availability

1. Yes
2. No

20. Available staff attended in-service training on treatment protocols

1. Yes
2. No

If yes, training attended and number of staff trained :

1. IMCI _____
2. CDD _____
3. RTI _____
4. Malaria _____
5. Others (specify) _____

21. Trend of number of staff after referral system was effected (August, 1996)

Staff	1996	1997	1998	1999
Doctors				
Clinical Officers				
Nurses				
Pharmacists				
Laboratory				
Total Staff				

Study Number: _____

Form 1: For Data Collection For Questions 7 - 10

A: OUTPATIENT ATTENDANCE

MONTH	1996		1997		1998		1999	
	<5	>5	<5	>5	<5	>5	<5	>5
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
Average								

Form 1: For Data Collection For Questions 7 - 10

B: REFERRAL TO HOSPITAL

MONTH	1996		1997		1998		1999	
	<5	>5	<5	>5	<5	>5	<5	>5
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
Average								

APPENDIX ii

QUESTIONNAIRE B-TO PATIENT AT UTH

Study

No: _____

Card

No: _____

1. Name: _____ 2. Date of Birth: _____

3. Age: Year: _____ Month: _____ 4 Informant: _____

5. Address of Patient: _____

6. Mode of referral: []

a = Self b = Health Centre c = Private Clinic

d = Others

7. Referring Clinic []

8. Referring Person []

a=Medical Officer b=Clinical Officer c=Nurse

d=Others

9. Reasons for Referral []

a=Admission b=Unknown c= Treatment d=no drugs

d=Further Investigations

if Investigation, What Investigation _____

10. Clinical Diagnosis: _____
11. Clinic Treatment given
1=Yes 2=No
if Yes, What treatment _____
12. Mode of transport
a=Ambulance b=Taxi c=Private Car []
d=Minibus e=Walked
13. Money spent on transport []
1=Yes 2=No
if yes, How much?
14. Parent/Guardian informed as to why referred []
1=Yes 2=No
15. Parent/Guardian informed as to why admitted to UTH []
1=Yes 2=No
16. Parent/Guardian informed of diagnosis []
1=Yes 2=No
17. Time seen at clinic _____
18. Time seen at UTH by Clinical Officer _____
19. Lag Time _____
20. Time seen at UTH by Medical Officer

21. Lag Time _____

22. UTH Diagnosis _____

23. Management at UTH OPD []

a = Admitted

b = Referred back to clinic

c = Treated with no review d = Treated with review in OPD

e = Treated with review in Clinic 2

24. Treatment given at UTH - list medications:

25. Date of Discharge _____

26. Outcome of Discharge:

a = Referral back to clinic with referral note

b = Review clinic 2 c = Home, no review d = Died

e = Discharge slip with missing Mx only to be complete
treatment.

27. Guardian satisfied with treatment at Clinic []

1=Yes

2=No

if Yes, Why _____ if No, Why _____

28. Guardian satisfied with treatment at Hospital []

1 =Yes 2 =No

if Yes, why _____

if No, why _____

APPENDIX IV

Calculation of Sample Size

Population sample:

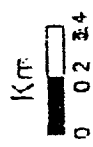
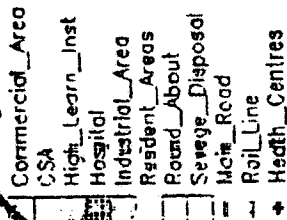
$$n = \frac{P(100-P)}{e^2} \quad \text{Sample proportions formulae}$$

(Health Systems Research, Corheis M, Varkerisser, Canada
1991)

Where P=Proportion of Children being referred.

$$p=30\%$$

$$\frac{n=30(100-30)}{2 \cdot 5^2} = 336$$



APPENDIX V

(A) IMCI GUIDELINES FOR REFERRAL

The identification below are indicated for referral to hospital Age 2 months up to 5 years

	ASSESSMENT	SIGN	CLASSIFICATION	TREATMENT
1	Cough or General Danger Sign - Not able to drink or breastfeed - Vomiting everything - Has the child had convulsions? - Is the child convulsing now? - Lethargic or unconscious?	• Any general danger sign • Chest indrawing or • Stridor in calm child	Severe pneumonia or very severe disease	- 1st dose appropriate antibiotic - If wheezing give subcutaneous epinephrine - Refer urgently to hospital
2.	Diarrhoea Ask: for how long is there blood in stool? ----- If diarrhoea for 14 days or more classify	Two of the following signs: • Lethargic or unconscious • Sunken eyes • Not able to drink or drinking poorly • Skin pinch goes back very slowly ----- Dehydration present	Severe dehydration ----- Severe persistent diarrhoea	- If child has no other severe classification, give fluid for severe dehydration (plan c) or, - If child also has another severe classification - Refer urgently to hospital with mother giving frequent supplement of ORS on way - Continue to breastfeed ----- - Treat dehydration before referral when the child has another severe classification - Refer to hospital

	ASSESSMENT	SIGNS	CLASSIFICATION	TREATMENT
3.	(a) Look or feel for stiff neck ----- (b) Look for signs of measles - Generalized rash and one of these: - cough, running nose or red eyes	- any general danger sign or stiff neck ----- - any general danger sign or clouding of cornea or deep extensive mouth ulcers	Very severe febrile diseases ----- Severe complicated measles	- give quinine for severe febrile illness (1st dose) - Give patient first dose of appropriate antibiotic. - Treat the child to prevent low blood sugar - Paracetamol if temperature >38.5° - Refer urgently to hospital ----- - Give Vitamin A - Give patient first dose appropriate antibiotic - If clouding of cornea or pus draining from eye, apply tetracycline eye ointment - Refer urgently to hospital
4.	Ear problem Ask if there is: - Ear pain, ear discharge, for how long, - Look for pus draining from ear, tender, swelling behind ear	Tender swelling behind ear	Mastoiditis	- Give first dose of an appropriate antibiotic - Give first dose of paracetamol for pain - Refer urgently to hospital
5.	Check for malnutrition, anaemia and growth faltering	- Visible severe wasting or - Severe palmar pallor or - Oedema of both feet	Severe malnutrition or severe anaemia	- Give Vitamin A - Refer urgently to hospital

IMCI GUIDELINES FOR REFERRAL

(B) AGE 1 WEEK UP TO 2 MONTHS

	ASSESSMENT	SIGNS	CLASSIFICATION	TREATMENT
1.	Check for possible bacterial infection	• Convulsions or Lethargic • Less than normal movement • Fast breathing (60 beats/minute or more) • Severe chest indrawing or Nasal flaring or Grunting or Bulging fontanelle or Pus draining from ear or Umbilical redness extending to the skin or • Fever (37.5°C or feels hot) or low body temperature less than 35.5°C or feels cold • Many or severe skin pustules	Possible serious bacterial infection	- Give first dose of intramuscular antibiotic - If child is convulsing now give diazepam - Treat to prevent low blood signs - Advise care taker how to keep the infant warm on the way to the hospital - Refer urgently to hospital
2.	Diarrhoea	Two of the following signs: • Lethargic or unconscious • Sunken eyes • Skin pinch goes back very slowly	Severe dehydration	- If infant does not have possible serious bacterial infection, give fluid for severe dehydration, (Plan C) or, - If infant also has possible serious bacteria infection; • Refer urgently to hospital with mother giving small frequent supplement of ORS – continue breastfeeding

ASSESSMENT	SIGNS	CLASSIFICATION	TREATMENT
2 (b). Diarrhoea - If diarrhoea 14 days or more	• Diarrhoea lasting 14 days or more	Severe persistent diarrhoea	- If the young infant is dehydrated, treat dehydration before referral unless the infant has possible serious bacterial infection. - Refer to hospital
2 (c) Diarrhoea and if blood in stool	Blood in stool	Blood in stool	- If dehydrated, treat the dehydration before referral unless the infant has also possible serious bacterial infection. - Treat to prevent low blood sugar - Advise mother to keep infant warm on way to hospital
3. Check for breastfeeding problem or low weight	• Not able to feed or • No attachment at all or • Not suckling at all	Not able to feed Possible serious bacterial infection	- Refer urgently to hospital - Give first dose of IM antibiotic - Treat to prevent low blood sugar - Advise the mother to keep the young infant warm on the way to hospital - Refer urgently to hospital

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DRUGS INDICATED FOR PRE-REFERAL TREATMENT

THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

	CLASSIFICATION	TREATMENT
1.	Severe pneumonia or very severe disease or very severe febrile illness If referral is not possible;	• 1st dose of intramuscular chloramphenicol • If Chloramphenicol not available give a first dose of IM Benzyl Penicillin and refer urgently • Repeat Chloramphenicol injection ever 12 hours for 5 days • Then change to an appropriate oral antibiotic to complete 10 days of treatment • Do not attempt to treat with Benzyl Penicillin alone
2.	For severe febrile illness;	• Intramuscular Quinine, 1st dose refer urgently to hospital • Give 1st dose of intramuscular Quinine • Child should remain lying down for one hour • Repeat the Quinine injection at 4 and 8 hours later and then every 12 hours until the child is able to take oral antimalarial

THE SICK YOUNG INFANT

(B) AGE ONE WEEK UP TO 2 MONTHS

	CLASSIFICATION	TREATMENT
1.	Possible serious bacterial infection	• Give first dose of Benzyl Penicillin and Gentamicin intramuscular • If Gentamicin is not available, give oral Cotrimoxazole • If infant cannot take any medication by mouth and Gentamicin is unavailable, given Benzyl Penicillin IM alone before referring urgently.