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The quality of child health services offered at primary health care clinics in Johannesburg

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CHAPTER 1

Literature review

The delivery of Primary Health Care to children

1.1 Introduction

While the concept of primary health care (PHC) as the preferred strategy to deliver health care to communities, including children, was already being practiced in many settings, including districts in South Africa by the 1930s, it was the Alma Ata meeting in 1978 that first offered the approach a global prominence.(1) The South African government embraced this approach, and it formed the backbone of the first democratically elected government's health policy in 1994.(1;2) Since then, various additions have been incorporated, including offering primary health care at no cost, not only for children, but the entire populace.

This chapter defines the concept of primary health care; summarises the successes and failures of paediatric primary care delivery in low and middle-income countries, including the Integrated Management of Childhood Illness (IMCI) strategy; reviews the South African literature on paediatric primary care; and concludes by describing key elements of quality assurance, as it relates to primary health care.

1.2 What is primary health care?

Primary health care was described in the 1978 Declaration of Alma-Ata as: "essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self

determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process."(3)

Primary health care is the first point of contact with the health system and involves the provision of integrated, accessible health care services by a variety of providers in the health sector. It includes care given on first contact and in ambulatory settings. Primary care services encompass preventative, promotive, curative, supportive and rehabilitation services. These services, provided by professionals from different disciplines, attempt to enhance the individual's physical, mental, emotional and spiritual well-being, and address factors that influence their health. The services are usually designed to deliver services in conjunction with community service providers.

Primary health care services encompass the general health of a population. Most poor and middle income nations' disease burdens are managed by primary health care services.(4) Primary health care constitutes the foundation of the health care delivery system in these countries and is accepted as the best model for delivering basic health care to their populations. (5;6)

1.3 Assessing PHC performance

Many factors undermine the quality and efficiency of primary health care services in developing countries. If patients find public primary care clinics poorly staffed, lacking medicines, and poorly organised, they may under utilise primary health care clinics and go 'up the chain' to a higher level, often to more costly public hospitals, or to the private sector.(4)

There are several indicators of poor quality of health care. These include overall management weaknesses, technical incompetence, lack of drugs owing to

mismanagement of drug supply, drug leakage or illegal drug selling, poor attitudes and behavior of health staff, low staff motivation and morale, and insufficient supervision. The major challenge is thus how to approach and improve such a detrimental state of affairs. High morbidity and mortality rates in patients attending PHC can sometimes be ascribed to poor health worker skills and inappropriate diagnosis and treatment.(7) Medical technology may be incorrectly utilised and funds inappropriately focussed onto high-tech equipment to deal with basic health problems. Health care facilities may lack essential drugs on an ongoing basis which proves detrimental to patients' well-being.

The performance of primary health care systems have traditionally been assessed in terms of coverage of services with little attention to the quality of the services provided.(5) The ability to assess the quality of care provided is an essential component of quality assurance and improving quality. Ehiri, et al. argue that inadequacy in the quality of health service delivery at the primary health care level is a product of failures in a range of quality measures - structural problems, process failings and a lack of a protocol for systematic supervision of health workers.(5)

The conceptual framework for assessing quality of care developed by Donabedian in 1988 is still a major reference point.(8) Donabedian's conceptual framework consists of three main perspectives:

1. ***Structure***- this involves assessing the adequacy of facilities and equipment, administrative process, quality and quantity of health personnel in terms of their medical training.
2. ***Process*** – this includes adherence to good medical care: clinical history, physical examination, diagnostic tests, justifications of diagnosis and therapy, technical competence, evidence of preventative management, co-ordination and continuity of care, acceptability of care to the recipient. At community level, this includes the quality of performance of health personnel with regards to managing acute problems such as acute respiratory infections and diarrhoea in children.
3. ***Outcome***- considers whether a change in a person's current and future health status can be attributed to health care received. Measuring of infant mortality and maternal mortality or quality of health are other means of reflecting the impact of the health system on community health.(9;10)

In 1995, the World Bank attempted to operationalise Donabedian's concept in developing countries.(8) Indicators that have been frequently used to assess the quality of primary health care in developing countries are structural aspects of the health care infrastructure and improved availability and access to drugs.(8) Technical quality is assessed by evaluating the health workers performance skills and ability to correctly diagnose and treat illnesses.(8)

Donabedian argues that the interpersonal process is a vehicle by which technical care is implemented and on which its success depends and therefore, interpersonal quality of service provision is an essential part of the process of health care provision.(8) Almost no attention has been focussed on the importance of attitudes and behaviour of health professionals in the provision of health care in developing countries.

There is a recognisable inability of consumers to assess the technical quality of services and their acceptance of quality of care is based on service availability, waiting times, provider's attitudes and costs of care rather than medical competence.(10-12)

1.4 Quality of paediatric PHC in developing countries

Recent findings suggest that despite the availability of effective and affordable guidelines for the management of children in primary health care facilities, the quality and coverage of these services remain low.(13) Good quality of paediatric care in both outpatient and inpatient services of health facilities at first referral, is essential for a credible and efficient primary health care system.(7) Most studies emphasise that there is poor child health care delivery in many developing countries and key findings of these studies are described in table 1.1. Consistent areas of concern are incorrect diagnosis and assessments, misuse and inappropriate prescription of drugs and long waiting hours. The need to focus on improving primary health care delivery is mandatory in all developing countries.

Table 1.1: Key findings of previous studies on primary health care facilities in developing countries

Author, year, country	Study	Key finding(s)	Ref
Arifeen SE, et al., 2005, Bangladesh	Quality of care for under-fives in first-level health facilities in one district of Bangladesh.	• The quality of care offered to sick children in these facilities was very poor even without the IMCI strategy being utilised. • Antibiotics were both overused and underused.	(14)
Boonstra E, et al., 2005, Botswana	Adherence to management guidelines in acute respiratory infections and diarrhoea in children under 5 years old in primary health care in Botswana.	• Health care provider's adherence to guidelines on history taking was suboptimal in acute respiratory infection and diarrhoea, and poor on examination in both conditions. • A high level of inappropriate antibiotic prescriptions was present in both conditions.	(15)
Rowe AK, et al., 2005, Benin	Management of childhood illness at health facilities in Benin: problems and their causes.	• Incomplete assessment of children's signs and symptoms • Incorrect diagnosis and treatment of potentially life threatening illnesses • Inappropriate prescription of dangerous sedatives • Missed opportunities to vaccinate • Failure to refer severely ill children for hospitalisation	(16)
Lewis M, et al., 2004, El Salvador	Primary health care in practice: is it effective?	• Long waiting hours with an average of 3 hours • Inaccessibility of health services and their limited hours of operation. • Lack of staff and resources, especially medication • Poor infrastructure and limited road access to clinics	(6)

Ehiri JE, et al., 2005, Nigeria	Quality of child health services in primary health care facilities in south-east Nigeria.	• Long waiting time • Lack of essential drugs • Poor attitude of health workers • Facilities for emergency care was lacking • Facilities were adequately equipped to provide immunisation services and to manage diarrhoea but not for other aspects of care.	(5)

1.5 The impact of IMCI on quality of paediatric care in developing countries

The introduction of the IMCI strategy by WHO and UNICEF aims to improve skills of health workers, the health system itself; and also the knowledge and practices of families in relation to their young children.(17) Each year approximately 10 million children less than 5 years of age in developing countries die from one of the following 5 conditions: pneumonia, diarrhoea, malaria, measles and malnutrition. Other causes of under five mortality include neonatal causes and HIV/AIDS.(18) To reduce child mortality, the IMCI strategy was developed and targeted these five diseases. Besides these major childhood illnesses, mortality and unnecessary morbidity of children is due to poor quality of health care provided to children. Surveys performed prior to the IMCI intervention reveal that many sick children were not properly assessed and treated by health care providers, and that their parents were poorly advised.(7)

In Benin, Rowe et al. surveyed all health facilities in Que'me'. They concluded that assessment of children's clinical signs and symptoms were incomplete, diagnosis and treatment of potentially life-threatening illnesses were incorrect, opportunities to vaccinate were missed, and severely ill children were not referred for hospitalisation. Even when health workers prescribed the correct medicine, caregivers rarely left health facilities with both the medicine in hand and the knowledge of how to give it.(16)

IMCI emphasizes the comprehensive care of children. Critical elements of IMCI include clinic access, availability of essential supplies and health worker performance including their behaviour and rapport toward patients.(19) IMCI's first implementation step is an inventory of the level of quality of services currently delivered in a setting. Measurements of immunisation rates, compliance with the chart-booklets, treatment and counselling protocols, and numbers of children weighed during their primary care visits are important in assessing the standard of achievements with the IMCI process. By measuring and reporting how facilities function and by using that information to identify both successful and unsuccessful innovations in care; participating developing countries have in fact put in place an essential first component of a strategy to monitor and improve the overall quality of their health system for children by utilising IMCI.(19)

The benefits of training health workers in IMCI appear to include more rational drug use, increased attendances, improved health care provider morale, and improved perceptions of quality of care by mothers.(17) An evaluation in Uganda showed that health workers trained through the programme shared their knowledge and skills with other staff, immunisation services improved, weighing of children increased from below 50% to 85% after training, and that despite problems with drug supply, the use of first line drugs increased. Health workers felt more confident because their skills and classification of disease had improved.(17) In Zambia, health workers correctly managed less than 5% of cases of diarrhoeal disease before IMCI training. After training they appropriately managed 82% of cases at three month follow-up, although this had decreased to 60% after 1 year.(17)

The Multi-country Evaluation of IMCI Effectiveness, Cost and Impact progress report described substantial improvements in health worker performance in Tanzania, Uganda and Brazil after IMCI implementation.(20) These observation-based surveys proved that IMCI training is an effective intervention to improve the rational use of antibiotics for sick children visiting primary health care facilities in developing countries.(8;20)

A study performed by Chopra et al. across four districts in Cape Town, South Africa concluded that IMCI is associated with improvements in some important aspects of care and under normal operating conditions and in context of good facility infrastructure and

management support. Improvements were acknowledged in the assessment of danger signs (7% before versus 72% after), assessment of co-morbidity (5.2% versus 8.2%), rational prescribing (62% versus 84%) and starting treatment in the clinic (40% versus 70%).(21)

Certain aspects of the health-system are found to hinder the delivery and impact of IMCI. These included poor and infrequent supervision, high staff turnover, poor attitudes of health workers and lack of initiative, conflict between the IMCI strategy and the existing primary health care training protocols, difficulties in scaling-up and the preferred utilisation of private and tertiary health services instead of government health services.(20)

1.6 PHC provision in South Africa

"The principles of accessibility, affordability and acceptability are mentioned, but in terms of primary care in South Africa we do not have standards for these ideals, neither do we know what is acceptable or affordable"(1)

There are different models of primary care provision in South Africa. They differ in their accessibility, acceptability and affordability.
These models consist of:

- South African public clinics which are further fragmented into provincial funded clinics that are tasked with providing curative services and local government funded clinics that provide preventive services. The clinics are fixed clinics usually operating five days a week, mobile/satellite clinics and community health centres (CHCs).
- Private general practitioners (GPs).
- Traditional healers.
- Family practitioners (district surgeons) providing services under public contracts.
- Private clinic chains.
- Government hospitals that provide primary curative care, though they are meant to provide secondary and tertiary level care.(22)

The community health centres were developed in the early 1930's by the local authority but is currently run by the provincial authority predominantly. After 1976, primary health care sisters were trained and introduced into clinics. These nursing sisters now primarily manage the primary health care clinics whilst the doctors are consulted for problematic cases.(1)

During 1988 to 1990, there was a decline in the number of people attending clinics.(1)

The postulated reasons were:

- An increase in the number of private general practitioners
- The increase in the number of people on medical aid
- The increase in clinic fees
- Preference for general practitioners over primary health care workers

However, in 1994 user fees for children aged under 6 years and pregnant women were removed; and thereafter, in 1997, all user fees at primary health care clinics were abolished. These policies were implemented to provide health services that were accessible to the entire South African nation including the very poor.(2;23)

1.7 What are the problems with health services in South Africa?

The introduction of free health care for all at clinics led to congestion in clinics and a reduction in consultation time.(2;23) Clinic health workers felt pressurised into shortening the consultation time and as a result found their jobs frustrating and tiring.(2) Wilkinson, et al. investigated the impact of user fees policy changes on clinic attendance patterns in Hlabisa health district in rural South Africa. Attendance at curative services increased but declined for preventative services. This was worrisome because "if vaccine coverage is low due to poor attendance, outbreaks of vaccine-preventable diseases may occur."(23)

The major issues of local primary health care facilities are accessibility and the patients' perceptions of the quality of these services. In a study on the utilisation of primary curative services in Diepkloof, Soweto; comparison of opinions on service attributes

between clinic users and general practitioner users were described and ranked. Both groups of users, ranked services in exactly the same order as follows: attitudes of health workers, the kind of treatment, the waiting time, continuity of treatment by the same person and distance to the service.(1) Mills study on the performance of different models of primary care provision in Southern Africa is supported by the evidence provided by Bachmann(24), Goldstein(1) and Netshandama(2). Her work confirmed that services provided by the state lead to longer waiting times, shorter consultation times and thus poor acceptability of care to users.(22)

An initial study on the assessment of the quality of care of primary health care services in six study sites, both urban and rural, in South Africa was performed between 1992 and 1993 and results were published in 1996.(25) Based on the recommendations of this study, a project was undertaken to improve quality of care in public clinics in North-west province from August 1996 to March 1998. The main achievements of this study were improvements in drug supplies; better integration of service delivery; better technical performance and improved attitudes towards patients and the community. This study concluded that there is a need for constant quality assessments. However, a major concern at the end of the study was how to sustain the improvements achieved.(8)

1.8 Research on child PHC services in South Africa

Research has been conducted in South Africa concentrating on different aspects of child health services offered at primary health care clinics. Bachmann conducted studies at the community health centre in Khayelitsha, Cape Town and focussed on the analysis of waiting times and queues at the clinic(24); reasons for missed opportunities at the clinic(26) and paediatric utilization of a teaching hospital over the community health centre(27). The median waiting times at the clinic in both the curative and preventive services were long (4.1 hours and 2.6 hours respectively). The major problem encountered was the separation of preventive and curative services. Improvements made were staggering of staff tea and lunch breaks so as to maintain patient flow and designated child health sessions were extended from 2.5 to 4 days per week. Thirteen

months later, patient flows and work processes were analysed and the changes proved to decrease waiting times for the preventative services only.(24)

The separation of curative and preventive paediatric care resulted in many missed opportunities for immunisation in the curative service (92% versus 16%). The suggestions for improvement were provision of immunisation services should be all day and every day.(26) The utilisation of a teaching hospital was preferred because mothers perceived the quality of care at the clinic to be poor and were being turned away because of overcrowding. Accessibility and quality of care at the clinic needed to be improved.(27) Bomela conducted a study in four Johannesburg clinics on the evaluation of the use of growth monitoring as a tool for nutritional intervention for children less than 5 years of age and concluded that many children with growth faltering or failure were missed and few interventions other than nutritional advice were offered. The study confirmed the need for greater organization of growth monitoring activities, with greater involvement of care-givers and community support systems.(28) A study conducted in KwaZulu Natal concentrated on the technical efficiency of public clinics that focused on primary health care as well as on certain aspects of child care. This study found 70% of primary health care clinics to be technically inefficient and 84% were scale inefficient.(29) Lastly, Chopra conducted the study on IMCI intervention on the quality of care across four districts in Cape Town which was associated with improvements in assessments of danger signs, co-morbidity, rational prescribing of antibiotics and commencing treatment in the clinic.(21) Most research in South Africa on child PHC services point out problems with the implementation of free health care and separation of curative and preventative services. The long waiting hours and overcrowding is an ongoing problem. The separation of services still exists but daily provision of services has improved.

1.9 Quality assurance

Quality assurance is a clinical and management approach that involves the systematic monitoring and evaluation of pre-defined and agreed levels of service provision to ensure and improve quality of health care.(8;9) In many developing countries, various

actions have been taken to look into quality of primary health care, through either research and development or full blown quality assurance.(30)

Two frequently utilised patterns of assessing quality of care are the observed and perceived methods. The observed quality of care concentrates on structural and process measures and focuses on standards of care and refers to whether health care services adhere to these standards. Perceived quality of care concentrates on the views of patients which seem to be of more importance in determining quality of care and has a strong influence on utilisation patterns. Hence, studying patients' perceptions of quality of care may be the key to influence the respective authorities to improve quality of care and increase the frequency of utilisation of services offered.(30)

The implementation of the elements of quality assurance is one of the methods of improving quality of care. The two elements are quality assessment and total quality management or continuous quality improvement. Quality assessment entails measurement of actual performance and comparison with expected and normative performance standards. Quality management means implementing changes to health services to improve the quality of care delivered.(8)

Quality assurance targets the different levels of the health service delivery system.
It improves the execution of the health care procedures at the level of primary health care and hospital care provision. District health systems' behaviour is improved by quality assurance through better interaction between hospital and ambulatory services. It aims at increasing co-ordination of care for individuals and for public health interventions. Quality assurance encompasses strategic services planning, organisation, evaluation, appropriateness of services in relation to morbidity and mortality, public-private mix, regulatory activities and accreditation to improve national health services.(6)

Quality management can help an organisation to achieve better outcomes with fewer resources, thus, leading to an increase in effectiveness and appropriateness of quality care coupled with greater efficiency and cost containment.(9) Essential components of a quality improvement strategy are standards, assessment tools and driving forces.(7)

There are a variety of tools for quality assurance. These consist of certification, licensing and accreditation to regulate activities; protocols and guidelines to set standards; training, continuous education, supervision, incentives, peer-review, complaints' procedure to improve skills and behaviour of health workers; and health provider surveys, user and community surveys, record and death review, utilisation review and technology assessment for quality assessment.(8) Assessing outcomes has merit both as an indicator of the effectiveness of different interventions and as part of a monitoring system directed to improving quality of care as well as detecting its deterioration. Quality assessment studies usually measure one of the three types of outcomes: medical outcomes, costs, and client satisfaction. For the last mentioned, patients are asked to assess not their own health status after receiving care but their satisfaction with the services delivered.(31)

Any quality assurance system must be based on standards and indicators and on the monitoring of adherence to these standards. Minimum standards should be achievable and affordable, and must be determined for each of the three components of quality of care as defined by Donabedian. The main objective of an evaluation is to influence decisions.(32)

1.10 Conclusion

There are major obstacles toward providing quality health care to children in South Africa and other low and middle-income countries. These include overall management weaknesses, technical incompetence, lack of drugs due to mismanagement of drug supply, drug leakage or illegal drug selling, poor attitudes and behavior of health staff, low staff motivation and morale, poor and infrequent supervision, staff turnover, conflict between the IMCI strategy and the existing primary health care training protocols, difficulties in scaling-up and the preferred utilisation of private and tertiary health services instead of government health services. Primary health care services could be targeted for improvement, using the three main perspectives of Donabedian's conceptual framework, to ensure a holistic approach to improving the child health care

services provided at clinics. Quality assessments and continuous quality improvement must be implemented to achieve and maintain a high standard of care for children.

CHAPTER 2

AIM

The aim of the study was to assess the overall quality of child health services provided at primary health care facilities in the Johannesburg metropolitan area.

OBJECTIVES

Primary Objective

To evaluate the quality of clinical care provided by health care workers caring for children; including an assessment of the treatment of common childhood illnesses, counselling and health promotion.

Secondary Objectives

1. To assess the quality of well baby services such as immunisation, growth promotion and developmental monitoring.
2. To assess the availability of drug supplies and equipment.
3. To assess the quality of record keeping.
4. To describe the infrastructure available at health facilities and the availability of services provided to children, including appropriate referral services.

STUDY METHODS

Study design

This was a cross-sectional, observational study. It was conducted over a period of seven weeks from the 10 October 2005 until the 30 November 2005.

Study population

The study population consisted of all clinics within the Johannesburg metropolitan area that offered child health services as part of their primary health care programme. The Gauteng provincial health department and the local health authority (Johannesburg

Metropolitan health department) provide similar services to the same target population but their responsibility and accountability mechanisms are separate. Child primary care services offered in the city are therefore fragmented.

The Johannesburg metropolitan area is divided into 11 regions. The regions are served by 109 fixed clinics; 75 of which belong to the local authority and 23 belong to the provincial authority. There are eleven community health centres of which nine are shared by the provincial and local authority and two (Alexander Health Centre and Witkoppen Health Centre) are run by non-governmental organisations (NGOs).

The community health centres in Johannesburg serve approximately 300 000 people.(33) The services provided by these centres include curative and chronic care, maternal and child health care; including maternity care, immunisations, health promotion activities, community outreach, mental health, rehabilitation services and minor surgical procedures. Some of these services are available for 24 hours a day.

The primary health care clinics in Johannesburg serve approximately 100 000 people.(33) The services provided by these clinics include curative care, maternal and child health, immunisations, health promotion and community outreach services. These services are meant to be provided on a daily basis for between 8 to 10 hours. Clinics are closed on weekends.

Study sample

The study sample consisted of 16 primary health care clinics selected from the 11 regions in the Johannesburg metropolitan area. Four community health centres (CHCs) and 12 “ordinary” clinics were included in the study. “Ordinary” clinics were fixed primary health care facilities that provided curative and preventative services and that were open 5 days a week for at least 8 hours per day and excluded satellite and mobile clinics. CHCs were randomly selected (clinics coded and numbers pulled from a box). There are 98 “ordinary” PHCs in Johannesburg. Only 88 “ordinary” primary health clinics that managed 40 or more patients per day qualified for the study. Clinics that

assessed 40 or more patients per day were included in the study as a pragmatic measure, to reduce the number of visits needed to clinics and maximise the number of consultations observed. Clinics were first stratified into local and provincial authority clinics. Thereafter, 12 primary health care clinics were randomly selected (pulled from a box); nine from the local authority and three from the provincial authority. The sample, therefore, included 16% (16/99) of the study population. The study population represented 91% (99/109) of all PHC facilities in Johannesburg.

At each clinic, clinical encounters between health professionals and a child/caregiver were assessed. Only children under the age of 13 years were included in the study as children over the age of 13 years are seen and treated as adults at clinics. Encounters were selected on a convenience basis. The researcher joined the health professional in the consultation room and selected the session for inclusion in the study as the child/caregiver entered the consultation room.

Owing to the fragmentation in the services provided by the two different authorities, certain clinics only provided curative services and others well baby services. However, both the services are usually provided in close proximity to each other or within the same vicinity (i.e. a few kilometres apart).

Study measurements

The study had four components. A researcher-developed tool was devised for each of these components. (see Appendix A-E). The tool consisted of structured checklists.

Grading of certain aspects of the consultations and clinic facilities was implemented into the checklists. The grading system was based on the following training courses, national guidelines and protocols:

- Primary health care training course
- Integrated management of childhood illness (IMCI)
- Standard Treatment Guidelines and Essential Drugs List(34)
- Growth monitoring and promotion policy of City of Johannesburg

(Appendix I)

- Guidelines for the management of HIV-infected children(35)
- Workshop on screening for developmental disabilities in the pre-school population: Discussion document(36)
- Expanded programme on immunization (EPI-SA)
- Road to Health Card (RTHC) (Appendix F)
- "Blue" card (Appendix G)

The standard setting for the grading system of the structured checklists is discussed in table 2.1.

Table 2.1: Standard setting for the grading system of certain aspects of the structured checklists

TEST/ASSESSMENT	**REFERENCE STANDARD**	**DETAIL/ EXPECTATION**
9. Does the health worker greet the caregiver?	IMCI	Y = Yes N = No (All caregivers should be greeted)
12.a. Was an adequate history taken?	Primary health care training	0 = poor; only asked why came to clinic 1 = less than adequate; Asked why came to clinic and about the duration of symptoms 2 = satisfactory; asked about the duration, frequency and nature of symptoms, if any medication was taken and if the clinic or general practitioner was visited
12.b. Did the health worker probe about related symptoms?	Primary health care training	0 = poor; did not ask about any related symptoms 1 = less than adequate; Vaguely asked about related symptoms 2 = satisfactory; asked about key information related to the main complaint such as blood in stool or loss of weight and night sweats and fever
12.c. Asked about other symptoms/problems?	Primary health care training	0 = poor; did not ask 1 = less than adequate; asked but did not acknowledge complaint 2 = satisfactory; asked about other symptoms and problems and attempted to address or further enquire about the problem
12.d. Asked about past	Primary health	0 = poor; did not ask

medical history or illnesses	care training	1 = less than adequate; asked about past medical history but did not get details 2 = satisfactory; relevant and detailed past medical history obtained
13.a. Not able to drink or breastfeed	IMCI	Y = Yes N = No (All children should be assessed or caregivers asked)
13.b. Vomits everything	IMCI	Y = Yes N = No (All children should be assessed or caregivers asked)
13.c. Convulsions this illness	IMCI	Y = Yes N = No (All children should be assessed or caregivers asked)
13.d. Lethargic or unconscious	IMCI	Y = Yes N = No N/A (Not applicable) (This sign is visibly seen and therefore if children are obviously active or responsive then it was not applicable to check)
14.a. Appropriately undressed	Primary health care training	0 = no clothing removed 1 = less than adequate; trunk exposed only 2 = satisfactory; child was completely exposed except for removal of napkin or underwear (applies to all children)
14.b. Temperature checked	IMCI/Primary health care training	0 = not done 1 = less than adequate; temperature checked but thermometer not placed for 3 minutes 2 = satisfactory; temperature taken correctly (applies to all children)
14.c. Was the child examined for pallor	IMCI	0 = not done 1 = Less than adequate; checked but incorrect diagnosis 2 = satisfactory; correctly checked (palms and mucosa) and diagnosed correctly (Applies to all children)
15.a. Was the throat examined	Standard treatment guidelines and essential drugs list	0 = not done 1 = less than adequate; did not correctly visualize and use the laryngoscope and spatula 2 = satisfactory; correctly checked and visualized the throat N/A = Not applicable (Applied to children with upper respiratory tract symptoms, sore throat, pain on swallowing and fever)

15.b. Were the ears examined	Primary health care training	0 = not done 1 = less than adequate; only checked one ear 2 = satisfactory; checked both ears and proper positioning of the child N/A = Not applicable (Applies to children with upper respiratory tract symptoms, ear pain, ear discharge and fever)
15.c. Was the respiratory rate counted in 1 minute	IMCI/Primary health care training	0 = not done 1 = less than adequate; counted for less than one minute 2 = satisfactory; correctly counted for one minute N/A = Not applicable (Applies to children with cough, difficulty breathing, wheeze, stridor and upper respiratory tract symptoms)
15.d. Was chest auscultation performed with a stethoscope	Primary health care training	0 = not done 1 = less than adequate; only the anterior aspect of chest was auscultated 2 = satisfactory; entire chest was auscultated N/A = Not applicable (Applies to children with upper respiratory tract symptoms, cough, difficulty breathing, wheeze and stridor)
15.e. Was the child assessed for sunken eyes	IMCI/ Primary health care training	0 = not done 1 = less than adequate; incorrectly assessed. 2 = satisfactory; correctly assessed the child N/A = Not applicable (Applies to children with diarrhoea and vomiting)
15.f. Was skin turgor assessed	IMCI/ Primary health care training	0 = not done 1 = less than adequate; incorrectly assessed. 2 = satisfactory; correctly assessed the child N/A = Not applicable (Applies to children with diarrhea and vomiting)
15.g. Was the child offered a test feed of ORS	IMCI/Standard treatment guidelines and essential drugs list	0 = not done 1 = less than adequate; incorrectly administered 2 = satisfactory; correctly administered and assessed N/A = not applicable (Applies to children with some and

		severe dehydration)
15.h. Was the child's abdomen examined	Primary health care training	0 = not done 1 = less than adequate; incorrectly examined by not lying the child on the bed 2 = satisfactory; correctly positioned and palpated the abdomen N/A = Not applicable (Applies to children complaining of abdominal symptoms)
15.i. Was the perineum examined	Primary health care training	0 = not done 1 = less than adequate; incorrectly examined 2 = satisfactory; correctly examined and exposed; inclusive of palpating the genitals in males N/A = Not applicable (Applies to children complaining of buttock rashes and genital problems)
15.j. Was a urine dipstix done	Primary health care training/ Standard treatment guidelines and essential drug list	0 = not done 1 = less than adequate; incorrectly interpreted 2 = satisfactory; correctly interpreted N/A = Not applicable (Applies to children with lower abdominal complaints, urinary symptoms and fever of unknown origin in infants)
15.k. Was the level of consciousness assessed	IMCI	0 = not done 1 = less than adequate; incorrectly assessed 2 = satisfactory; correctly assessed N/A = not applicable (Applies to children with convulsions and lethargy or unconsciousness)
15.l. If child less than 18 months of age was the child examined for (i) bulging fontanelle (ii) neck stiffness	IMCI	0 = not done 1 = less than adequate; incorrectly assessed 2 = satisfactory; correctly assessed N/A = Not applicable (Applies to children with fever, irritability, confusion and fever, < 18 months of age)
15.m. If child greater than 18 months of age was child examined for neck stiffness	IMCI	0 = not done 1 = less than adequate; incorrectly assessed 2 = satisfactory; correctly assessed N/A = Not applicable (Applies to children with fever, irritability, confusion and fever, > 18

		months of age)
16.a. Was the child examined for enlarged lymph glands	IMCI/Guidelines for the management of HIV-infected children	0 = not done 1 = less than adequate; all sites were not examined 2 = satisfactory; all sites were examined (Applies to all children)
16.b. Was the child examined for oral thrush	IMCI/Guidelines for the management of HIV-infected children	0 = not done 1 = less than adequate; did not correctly visualize and use the laryngoscope and spatula 2 = satisfactory; correctly checked and visualized the mouth (Applies to all children)
16.c. Was the child examined for hepatosplenomegaly	Guidelines for the management of HIV-infected children/WHO clinical staging	0 = not done 1 = less than adequate; incorrectly examined by not lying the child on the bed 2 = satisfactory; correctly positioned and palpated the abdomen (Applies to all children)
16.d. Was the child examined for parotid enlargement	IMCI/Guidelines for the management of HIV-infected children	0 = not done 1 = less than adequate; incorrectly examined and diagnosed 2 = satisfactory; correctly examined and diagnosed (Applies to all children)
16.e. Was the child examined for ear discharge	IMCI/Guidelines for the management of HIV-infected children	0 = not done 1 = less than adequate; only checked one ear 2 = satisfactory; checked both ears and proper positioning of the child (Applies to all children)
17. Is the child's assessment correct?	IMCI/ Standard treatment guidelines and essential drug list	0 = incorrect 1 = Partial assessment/diagnosis 2 = Correct assessment/diagnosis
19. Was it necessary to prescribe antibiotics?	IMCI/Standard treatment guidelines and essential drug list	Y = Yes N = No
20. Did the health worker correctly explain: - dose - duration - frequency	IMCI/ Standard treatment guidelines and essential drug list	Y = Yes N = No
21. If any other medication is prescribed, did the health worker correctly	IMCI/ Standard treatment guidelines and essential drug list	Y = Yes N = No N/A = Not applicable

explain: - dose - duration - frequency		
22. Was the medication provided appropriate?	IMCI /Standard treatment guidelines and essential drug list	Y = Yes N = No N/A = Not applicable (Not all children should be given medication, home remedies are recommended by IMCI)
23. If requiring a drip, was an intravenous line inserted?	IMCI/Standard treatment guidelines and essential drug list	Y = Yes N = No N/A = Not applicable (Applies to children with severe dehydration if hospital > 30 minutes away and children with hypoglycaemia)
24. If requiring oxygen, was the child administered oxygen?	IMCI/Standard treatment guidelines and essential drug list	Y = Yes N = No N/A = Not applicable (Applies to children with severe pneumonia, wheeze, convulsions and hypoglycaemia and unconsciousness)
26. If requiring nebulisation, was it administered	Standard treatment guidelines and essential drugs list	Y = Yes N = No N/A = Not applicable (Applies to children with wheezing and stridor)
27. Was the child appropriately referred (if needed)	IMCI/Standard treatment guidelines and essentials drug list	Y = Yes N = No N/A = Not applicable
28. Was the caregiver counselled about: a. the current condition	IMCI/Standard treatment guidelines and essentials drug list	0 = poor; not counseled 1 = less than adequate, told what the current problem was 2 = satisfactory; told what the current problem was and how it occurred N/A = not applicable (Applies to all children)
28. Was the caregiver counselled about: b. prevention	IMCI/Standard treatment guidelines and essentials drug list	0 = poor; not counseled 1 = less than adequate; told that it can be prevented but not properly discussed 2 = satisfactory; told properly how to prevent the current problem N/A = not applicable (Applies to most children unless it is not a preventable condition such as a ‘Flu’)
28. Was the caregiver counselled about: c. home management	IMCI/Standard treatment guidelines and essentials drug list	0 = poor; no home management discussed 1 = less than adequate; told that the child can be treated at home but not how 2 = satisfactory; told that the child can be treated safely at home and how to do so

		for the underlying problem N/A = not applicable (Applies to most children except for conditions where there is no home management)
28. Was the caregiver counselled about: d. follow-up	IMCI/Standard treatment guidelines and essentials drug list	0 = poor; not given follow-up when needed 1 = less than adequate; told about follow-up but no date given 2 = satisfactory; date given for follow-up and why return is warranted N/A = not applicable (Applies to most conditions except if the condition was a minor ailment)
28. Was the caregiver counselled about: e. danger signs	IMCI/Standard treatment guidelines and essentials drug list	0 = not counseled about danger signs 1 = less than adequate; told about danger signs but not told how to respond 2 = told about danger signs and how to respond or treat acutely N/A = not applicable (Applies to all conditions that warrants the caregiver looking for danger signs)
29. Was the road to health card requested	Growth monitoring and promotion policy of City of Johannesburg	Y = Yes N = No (Applies to all children)
30. Was the child weighed on this visit	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	Y = Yes N = No (Applies to all children)
31. Was the weight accurately plotted?	Growth monitoring and promotion policy of City of Johannesburg	Y = Yes N = No Not plotted
32. Was the interpretation of the RTHC correct?	Growth monitoring and promotion policy of City of Johannesburg	Y = Yes N = No
33. Was the child's growth discussed with the caregiver?	Growth monitoring and promotion policy	Y = Yes N = No (Applies to all caregivers even if weight gain is satisfactory, it is important to

	of City of Johannesburg/ IMCI	commend the caregiver)
34. **IF CHILD NOT GROWING WELL:**		
a. Was a nutritional history taken?	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = poor; asked about what feeds and meals child is being fed but no details as to how the feeds where prepared and when and how the feeds were given; or not asked at all. 1 = Less than adequate; asked about all feeds (breastfeeds, bottle feeds and complimentary feeds), including the preparing and constituents 2 = satisfactory; asked about all feeds as above; encouraged breastfeed and cup and spoon feeding and encouraged the mother N/A = not applicable (Applies to children that are not growing well)
b. Was choice of milk feed discussed?	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = poor; Only asked what milk feed the baby was on; or not asked at all. 1 = less than adequate; Asked what milk feed child was on and how often fed 2 = satisfactory; asked about the type of milk feed, frequency of feeds and how the feeds are prepared and given N/A = not applicable (Applies to children that are not growing well and < 2 years)
c. Was complementary feeding discussed?	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = poor; Was only told when to wean the diet; or not discussed at all 1= less than adequate; told when and what type of complementary feeds to prepare. 2 = satisfactory; told when, what type of feeds and how to prepare and give feeds, encouraged mom to prepare home cooked meals N/A = not applicable (Applies to children that are not growing well and excluded those that did not need complementary feeding to be discussed >6 months)
d. Was nutritional advice offered?	Growth monitoring and promotion policy of City of Johannesburg/	0 = poor; only said the child needs to be fed better but no discussion as to how; or not discussed at all 1 = less than adequate; minimal advice offered

	IMCI	2 = satisfactory; detailed advice offered on type of feeds, frequency and proper preparation and feeding techniques and utensils N/A = not applicable (Applies to children that are not growing well)
e. Was nutritional advice appropriate?	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = poor; inappropriate advice for the age, underlying retroviral status and socioeconomic status of the patient 1 = less than adequate; discussed one of the above issues and omitted the rest 2 = satisfactory; appropriate discussion for all aspects of feeding practices. N/A = not applicable (Applies to children that are not growing well)
f. Was food supplementation offered?	Growth monitoring and promotion policy of City of Johannesburg	0 = not offered 1 = less than adequate; incorrect food supplementation or improper instructions on use and preparation of food supplementations given. 2 = satisfactory; correct supplementation offered to those patients in need of it N/A = not applicable (Applies to children that are not growing well)
g. Was the parent referred to social welfare services, to enable access to social support grant?	Growth monitoring and promotion policy of City of Johannesburg	0 = poor; not asked about social support grant 1 = less than adequate; Asked but no action taken 2 = satisfactory; asked and referred for social support grant N/A = not applicable (Applies to children that are not growing well and includes the child care, care dependency and foster care grants)
h. Was the child appropriately referred (if needed)	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = poor; not referred 1 = less than adequate; assessed as needing referral but not referred 2 = satisfactory; assessed and efficiently referred N/A = not applicable (Applies to children that are not growing well)
35. **PROMOTION OF OPTIMAL GROWTH OF ALL CHILDREN**		
a. choice of milk feed discussed (particularly exclusive breastfeeding for the 1st 6 months)	Growth monitoring and promotion policy of City of	0 = poor; Only asked what milk feed the baby was on; or not asked at all. 1 = less than adequate; Asked what milk feed child was on and

	Johannesburg/ IMCI	how often fed 2 = satisfactory; asked about the type of milk feed, frequency of feeds and how the feeds are prepared and given N/A = not applicable (Applies to children that are less than 2 years of age)
b. complementary feeding and discouragement of complementary feeding of infants under 4 months.	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = poor; Was only told when to wean the diet; or not discussed at all 1= less than adequate; told when and what type of complementary feeds to prepare. 2 = satisfactory; told when, what type of feeds and how to prepare and give feeds, encouraged mom to prepare home cooked meals (Applies to children < 6 months of age)
c. micronutrient (vit A) and iron supplementation	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = not checked and given micronutrients and iron supplementation. 1 = less than adequate, assessed as needing micronutrients or iron but not given 2 = given micronutrients and iron if in need of them N/A = not applicable (Applies to all children < 5 years and in need of the iron if pale and vitamin A if not already given a dose within the past month)
d. Was regular deworming discussed?	Growth monitoring and promotion policy of City of Johannesburg/ IMCI	0 = poor; not checked or discussed with the caregiver 1 = less than adequate; Checked but not given 2 = satisfactory; checked and given (Applies to all children < 5 years and if not already given a dose within the last 6 months)
36. Were other problems addressed appropriately?	IMCI	0 = not done 1 = less than adequate; incorrect assessment 2 = satisfactory; correctly assessed and treated N/A = Not applicable (Other problems such as skin rash or infection, scabies, mouth ulcers, eye infection that can be missed with the routine IMCI consult)
37. Were immunisations checked on the road to health	IMCI/Expanded programme on immunisations(E	Y = Yes N = No (Applies to all children)

card	PI-SA)/ Standard treatment guidelines and essential drugs list	
38. Was vitamin A checked and given if necessary	RTHC/Expanded programme on immunisations(EPI-SA)/ Standard treatment guidelines and essential drugs list	Y = Yes N = No (The health worker had to ask or check the RTHC for previous doses and had to decide if the child was eligible to receive vitamin A and the correct dose. If the child had received vitamin A in the last month or the mother that is breastfeeding received vitamin A at time of delivery then do not give a dose)
39. Was the caregiver asked about age appropriate milestones?	"Blue card"/Workshop on screening for developmental disabilities in the pre-school population: Discussion document	Y = Yes N = No (Assessment included performing or watching the child for age appropriate developmental milestones .e.g. making the child sit, weight-bear/walk, handle objects etc.)
40. Were maternal health issues discussed and addressed	IMCI	Y = Yes N = No (If mom present)
41. a. Is the HIV status of the baby/mom known?	IMCI/Guidelines for the management of HIV-infected children	Y = Yes N = No
41. b. If yes, where is the information recorded	IMCI/Guidelines for the management of HIV-infected children	Can be directly recorded or coded in the RTHC or "Blue card"
41. c. If no, was the mother's/child's status asked about?	IMCI/Guidelines for the management of HIV-infected children	Y = Yes N = No (Applies to all mother's whose status is not known)
42. If HIV unknown was pre-test counselling offered	IMCI/Guidelines for the management of HIV-infected children	Y = Yes N = No (All should be offered counseling if status unknown)
43. Was cotrimoxazole prescribed for HIV exposed or positive	IMCI/Guidelines for the management of	Y = Yes N = No (All exposed or HIV positive children should be given cotrimoxazole from 4-6

babies?	HIV-infected children	weeks of age unless proven HIV negative)
44. If HIV infected, was the need for ART considered?	IMCI/Guidelines for the management of HIV-infected children	Y = Yes N = No (Applies to children with suspected or confirmed HIV infection but those children that were exposed but no clinical signs do not need to be considered for ART)

1. **Assessment of the clinical encounter (either sick or well baby visit; Appendix A & B)**

The researcher observed and assessed encounters according to the checklist and using standard guidelines. Observation of the consultation between the health professional (nurse) and the caregiver was done in the consultation room in the presence of the index child by the researcher (KT). In most instances the children were weighed and temperature recorded prior to entering the consultation room and in other instances by the nurse examining the child. During the encounter the researcher observed the interview without any interruptions except when needing clarification from the sister herself owing to the language barrier.

The researcher located herself at a corner of the consultation room. The structured checklist was used and kept out of sight of the health worker. The observations were done in the mornings during the busiest period of the day at the clinics. The researcher sometimes accompanied children into the consulting room for the consultation, and on other occasions awaited their arrival into the consulting room.

Encounters were selected on a convenience basis: as child/caregiver entered the consultation room and participants were included based on whether the researcher was ready for the next encounter (i.e. the paper work from the previous observed consultation was complete). Appendix A was used to assess the sick infant clinical encounter and appendix B was used to assess the well baby visit. Most of the components of both checklists were easy to tick off. A few items were unnecessary to complete or not applicable (N/A) in some consultations.

The Road to Health card (RTHC) [see appendix F] is a home-based record card for the use and benefit of the mothers and children, as well as for all who provide their health care. The following information is recorded on the card:

- Mother's antenatal history
- Details of delivery
- Neonatal period
- Family planning
- Immunisations
- Milestones
- Feeding practices
- Space for notes on intercurrent illnesses and their management
- Weight for age graph

The following tests in the RTHC are for vision and hearing screening and forms part of well baby visits (see appendix B):

1. The pencil test in a child greater than 6 weeks of age
2. The Snellen chart used to assess vision in a child greater than 5 years of age
3. The health worker asks the caregiver if the child listens to voices and songs in a child of 3 months of age
4. The health worker asks the caregiver if the child of 6 months turns to loud noises
5. The voice test is done in a child of greater than 12 months

The pencil test is a difficult test to perform in children younger than 3 years of age. The test is in fact the Two Pencil Test of Lang and determines if a child has strabismus or no stereopsis. With both eyes open the patient uses both eyes to produce stereopsis and can put his pencil accurately on the examiner's pencil if stereopsis is present and if the same person with one eye closed or with manifest strabismus or no stereopsis will miss the examiner's pencil initially and place it correctly only after the second or third try.(37)

The 'voice test' is a potential non-technological alternative method of assessing hearing in developing countries with limited or no access to standard audiometric methods.(38) The tester, standing behind the child at about an arm's length away, delivers the test words, first in a whisper followed by gradation to conversational or loud voice if necessary. The child should gently occlude one of their auditory canals at a time with a finger while rubbing the tragus in a circular motion. The voice level at which the subject

correctly identified more than 50% of the test words is noted and recorded. If there is hearing loss then the child should be referred for pure tone audiometry testing. The limitation of this test is that it is difficult to perform in a child of less than 3 years of age.

Some health workers assessed development as guided by the child development chart in the City of Johannesburg child health services "Blue card" (see appendix G). The "Blue card" is similar to the RTHC and is a means of record keeping for clinics as the card remains in the clinic. The components of this card include baby, family, obstetric and pregnancy history sections; and sections for recording immunisations, nursing care plans, child development and growth plotting.

The child development chart section guides the health worker to assess the milestones (included social behaviour and play, vision and fine movement, hearing and speech and gross motor) that is appropriate for the age of the child and the health worker marks off whether this milestone was observed or reported by the mother.

2. **Assessment of clinic facilities, infrastructure, supplies and equipment (Appendix C-E)**

After the clinical observations were completed or during periods when there were no patients available for observation, the researcher inspected the clinic with regards to infrastructure and checked if equipment was available and functioning. The researcher, with the aid of a health worker, inspected the store room for medical supplies and specific drugs that were listed on the structured checklist. The refrigerator was also inspected with regards to its functioning and for vaccine storage and expiry.

3. **Review of personnel, in-service activities and training, services provided by clinics (Appendix C-E)**

The researcher interviewed the facility manager or deputy manager (usually in the afternoons whilst it was quiet) for information regarding personnel numbers, job descriptions, in-service activities, training material or guidelines, functioning and services of the clinic, transport and the efficiency of the referral system.

4. **Review of clinic registers and records (Appendix E)**

Clinic registers were reviewed to determine the number of patients and pathologies seen, and referred. This was usually done with the aid of the manager or the clerks of the clinics.

The clinic visits and evaluations occurred over 1-2 days, depending on how busy the clinic was.

Pilot study

A pilot study was conducted at Yeoville clinic, an "ordinary" clinic, to test the use of the study tool and to incorporate any changes before the main study. The pilot study also guided the researcher about her own time management strategies and about the best sequence to use in completing the four components of the study.

Ethical considerations

Ethical approval was obtained from the Committee for Research on Human Subjects (Medical) at the University of Witwatersrand. Permission was obtained from the Directors of Health of the respective local and provincial authorities to evaluate the facilities' services and to observe the consultations. Dates were provided in advance of the visit to the randomly selected clinics via memos by the local authority to the regional directors. The clinics were phoned 2-3 days prior to the visit by the researcher to inform the facility manager of the scheduled visit and to obtain their permission. Information sheets were provided and informed consent was obtained from facility managers and from the individual health workers that were being observed on the day of the visit. Information sheets either in English, Sotho or Zulu were provided to the caregivers on entry to the consultation room and verbal consent was obtained from the caregivers before the interview for participation in the study.

In the event where the mother was thought to have received incorrect or inappropriate advice from the health worker, the researcher, at the end of the consultation, informed the health worker about her disagreement with the advice offered, once the caregiver had left.

Financial considerations

A grant was received from the University of Witwatersrand Medical Research funding committee for stationery, printing, telephone and transport expenses.

Statistical analysis

Data was entered onto three Microsoft Excel spreadsheets, and then imported into Statistica statistical software version 6.0 (StatSoft, USA). Most results are descriptive, but standard statistical measures (such as chi-square and t-tests) were used when appropriate. Parametric, continuous variables were described using means and standard deviations. Medians were used for non-parametric data. Categorical variables were described using percentages and frequencies. a. A p value of <0.05 was considered to be statistically significant.

CHAPTER 3

RESULTS

A total of 16 clinics were evaluated. Of these, 12 (75%) were “ordinary” primary health care (PHC) clinics and four (25%) were community health centres (CHCs).

The number of health workers assessed at each clinic varied. The minimum number of health workers that were assessed at the clinics was two and the maximum was five.

The results of the different components of the study are presented as follows:
3.1. The sick baby clinical encounter
3.2 The well baby clinical encounter
3.3 Assessment of infrastructure, clinic facilities, equipment and supplies
3.4 Review of personnel, in-service activities and training, services provided by clinics
3.5 Review of clinic registers and record

3.1. The sick baby clinical encounter

Fourteen clinics participated in the observation of sick baby clinical encounters component of the study since two local health authority clinics only provided well baby services.

A total of 141 sick encounters were observed. There was 23 nursing staff involved. The minimum number of patients seen by one nurse was one and the maximum number was 16. The youngest baby seen was 1 month old and the oldest child was 144 months (12 years old). The patient’s mean age was 39.9±36 months (mean ±standard deviation). There were 33(23%) infants and 26(18%) children were older than 5 years of age. The majority of patients (82%) were within the cut-off age for IMCI consults. (1 week to 5 years)

3.1.1 Years of experience of health workers and attendance at courses

A total of 23 health workers were assessed, all of whom were professional nurses. The average number of years of experience since qualification was 17.5±10.1 years with a median of 15 years. The majority (83%) of health workers were primary health care trained and 57% had completed the IMCI course as shown in table 3.1.

Table 3.1: Attendance at courses by nurses observed during consultations

Course name	**Number (n=23)**	**Percent (%)**
Primary health care training	19	83
Family planning	17	74
Pharmacy issuing	17	74
Voluntary counselling and testing	13	57
Integrated management of childhood illness (IMCI)	13	57
HIV/AIDS	13	57
Sexually transmitted infections	9	39
Tuberculosis	8	35
Termination of pregnancy	1	4
Infection control	1	4
Other	13	57

The other courses attended included

- Prevention of mother to child transmission of HIV (2)
- Diploma in Paediatrics (2)
- Community health nursing (2)
- HIV and TB collaboration (2)
- Diploma in Nursing (1).
- B.Cur in nursing (1)
- Nursing education (1)

- Customer care (1)
- HIV in paediatrics (1)
- Neonatal intensive care course (1)
- Perinatal education programme (1)
- Comprehensive nursing course (1)
- Trauma and crisis counselling (1)
- Midwifery (1)
- Psychiatry (1)
- Diabetes management (1)
- Primary health care service management (1)
- Child abuse (1)

3.1.2 Escorts or caregivers of patients

The majority (108/142 [76%]) of caregivers that brought the children to clinics were mothers. Fifteen percent of caregivers were grandmothers, aunts, nannies and fathers. Five percent were uncles, neighbours, siblings and grandfathers. A few (4%) children came unaccompanied.

3.1.3 Waiting time of patients

Caregivers waited to be seen for between 6 to 383 minutes, with a mean of 135±71.5 minutes (two and one-quarter hours) and median waiting time of 124 minutes. At one clinic, caregivers waited nearly the whole day only to be turned away at 16h00 without being seen by any health worker.

3.1.4 Health workers time management and methods used for consultation

The mean duration of a consultation was 11.2±6.1 minutes and the median was 9 minutes; with a minimum duration of two minutes and a maximum of 38 minutes.

There were three basic consultation methods used by nurses:

1. Primary health care technique
2. Primary health care technique combined with IMCI
3. IMCI technique

At one of the 12 PHC clinics, a single nurse practiced a combination of IMCI and PHC methods. In one CHC a single nurse practiced IMCI and in another CHC, two practiced IMCI. The rest of the consultations were performed using a traditional primary health care technique. The mean duration of the consultations of the nurse that practiced a combination of IMCI and PHC methods was 26.5±6.97 minutes. This was the least busy clinic with 8 sick baby visits and 2 well baby visits in a 48 hour period. The mean duration of the 22 IMCI consultations of the three nurses in the CHCs was 10.8±5.8 minutes. The mean duration of a PHC consultation was 10.1±4.5 minutes. The duration and number of consultations and standard deviation values of the three basic consultations methods are tabulated in table 3.2. There was no statistical difference in the duration of a consultation between the PHC and IMCI method groups ($p = 0.55$). There was a statistical difference when comparing the combination PHC and IMCI consults with the PHC only or IMCI only groups (for both, $p < 0.0001$).

Table 3.2: Comparison of the duration and number of the three basic consultation methods.

Method	**Number**	**Duration (mins)**	**SD**
Primary Health Care (PHC) technique	111	10.1	4.5
Primary Health Care (PHC) and Integrated management of childhood illness (IMCI) technique	8	26.5	7.0
Integrated management of childhood illness (IMCI) technique	22	10.8	5.8
All techniques	141	11.2	6.1

3.1.5 Staff and patient interaction

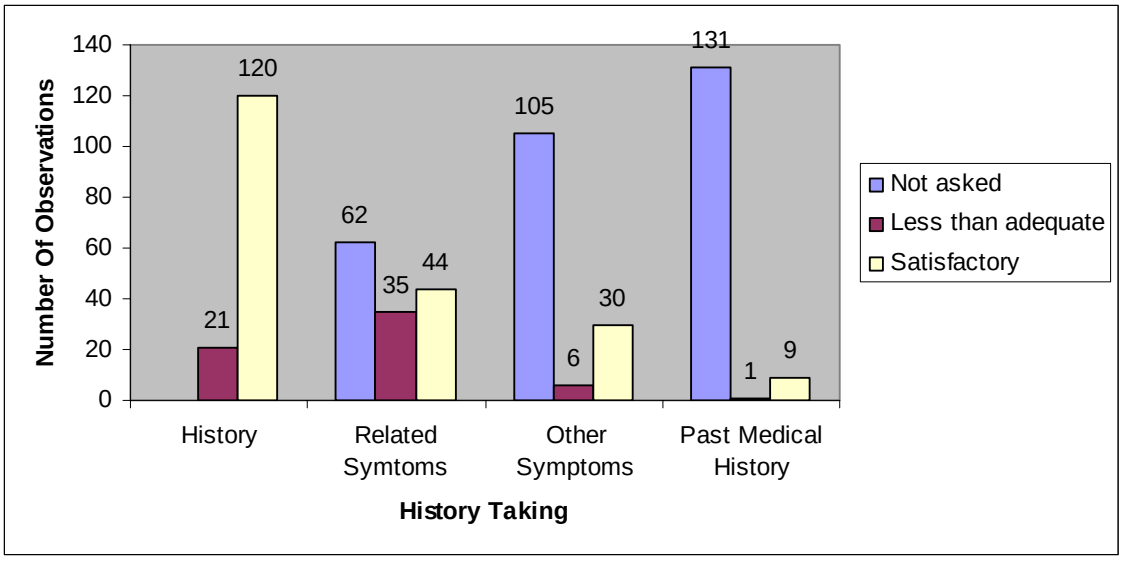
In the majority (117/141[83%]) of encounters the health worker greeted the caregiver. Less than three-quarter (102/141[72%]) of staff confirmed the caregiver's relationship with the child. In five (4%) instances the child came unaccompanied.

3.1.6 Health workers performance in the following clinical aspects:

3.1.6.1 History taking

The adequacy of history taking was classified as "satisfactory", "less than adequate", "poor" or "not asked" by the researcher based on the questions that the health workers asked about the main complaint, related symptoms, other symptoms and problems and past medical history (Figure 3.1). The grading system used is described in table 2.1 (Chapter 2). For the majority (120/141[85%]) of consultations, history taking was gauged to be satisfactory, whilst at 21 (15%) consultations less than an adequate history was taken. None were of poor quality. Forty four percent of health workers did not ask about key information related to the main complaint and 25% of health workers inadequately requested key information related to the main complaint. Similarly 74% of health workers did not request information unrelated to the main complaint. Few (9/141[6%]) health workers requested a relevant and 'satisfactory' past medical history; with one encounter being "less than adequate" and the rest (93%) were not asked at all.

Figure 3.1: Comparison of the different aspects of history taking



3.1.6.2 Danger signs

The health workers performances were assessed with regards to assessing the child or questioning of caregivers about "danger signs" as classified by the IMCI strategy. These are:

1. Not able to drink or breastfeed
2. Vomits everything
3. Convulsions during this illness
4. Lethargic or unconscious

This data is summarised in table 3.3. Danger signs were asked or assessed in very few encounters even in consultations using the IMCI approach. "Convulsions during this illness" was the worst assessed danger sign and was asked in only one non-IMCI consult. Lethargy as a sign was not relevant in all cases, as all the children were visibly active and alert. There was no statistical difference between the assessments for danger signs in the IMCI and non-IMCI consults (p value > 0.05).

Table 3.3: Summary of "danger signs"

Sign	Asked (n=141)	IMCI consults (n=22)	Non-IMCI consults (n=119)	p value
Not able to drink or breastfeed – no. (%)	40 (28)	9 (41)	31 (26)	0.34
Vomits everything– no. (%)	23 (16)	3 (14)	20 (17)	0.46
Convulsions during this illness– no. (%)	1 (0.5)	0 (0)	1 (1)	0.52

3.1.6.3 General and systems examination

Adequate exposure of the child is important. "Satisfactorily undressed" was defined as a completely exposed child except for removal of napkin or underwear depending on the

complaint, “less than adequate” as trunk exposed only, “poor” as no clothing removed (Table 2.1). Forty percent (56/141) of children were appropriately undressed.

Key findings of examination that were not performed are highlighted in bold in table 3.4 and are listed below:

- Pallor (90%)
- Counting the respiratory rate (74%)
- Assessment of skin turgor (70%)
- Administration of ORS (73%)
- Examination of urinary dipstix (66%)
- Bulging fontanelle in children less than 18 months of age (100%)
- Neck stiffness in children younger than 18 months (66%)

Key findings that were satisfactorily performed in most instances included (table3.4):

- Throat examination (61%)
- Ear examination (53%)
- Auscultation of chest (53%)
- Assessment of sunken eyes (86%)
- Perineum examination (71%)
- Neck stiffness in children older than 18 months (50%)

Table 3.4: Adequacy of examination of signs applicable to the complaints

Sign	Necessary to check (N =141) No. (%)	Not done No. (%).	Less than adequate No. (%)	Satisfactory No. (%).
Temperature	141 (100)	21 (15)	2 (2)	118 (84)
Pallor	**141 (100)**	**127 (90)**	**1 (1)**	**13 (9)**
Throat	122 (87)	25 (21)	22 (18)	75 (61)
Ears	113 (80)	51 (45)	2 (2)	60 (53)
Respiratory rate	**107 (76)**	**79 (74)**	**20 (19)**	**8 (7)**
Auscultation of chest	105 (75)	33 (31)	16 (15)	56 (53)
Sunken eyes	28 (20)	4 (14)	0 (0)	24 (86)
Skin turgor	**27 (19)**	**19 (70)**	**0 (0)**	**8 (30)**
ORS	**22 (16)**	**16 (73)**	**1 (4)**	**5 (23)**
Abdominal examination	9 (6)	3 (33)	4 (44)	2 (22)
Perineum examination	7 (5)	2 (29)	0 (0)	5 (71)
Examination of urine dipstix	**3 (2)**	**2 (66)**	**0 (0)**	**1 (33)**
Bulging fontanelle	**6 (4)**	**6 (100)**	**0 (0)**	**0 (0)**
Neck stiffness <18/12	**6 (4)**	**4 (66)**	**0 (0)**	**2 (33)**
Neck stiffness >18/12	2 (2)	1 (50)	0 (0)	1 (50)

3.1.6.4 Examination of a child for HIV

On examination of the child for HIV, the health workers were assessed on whether they assessed the following signs in all children:

- enlarged lymph glands

- oral thrush
- hepatosplenomegaly
- parotid enlargement
- ear discharge

As shown in table 3.5, most of the signs of HIV were not assessed at all. Only oral thrush was satisfactorily assessed in (86/141[61%]) of encounters. Examination for hepatosplenomegaly faired the worst, for the majority (135/141[97%]) of encounters, this part of the examination was not performed. According to IMCI criteria, all of the above signs (except for hepatosplenomegaly) should be checked in all children to detect symptomatic HIV. However, hepatosplenomegaly is part of primary health care training, the WHO clinical staging of HIV and is a sign that can be examined for according to the guidelines for management of HIV-infected children.

Table 3.5: Clinical signs of HIV (N = 141)

Signs	**Not Done No. (%)**	**Less than Adequate No. (%)**	**Satisfactory No. (%)**
Enlarged lymph glands	105 (75)	17 (12)	19 (13)
Oral thrush	49 (35)	6 (4)	86 (61)
Hepatosplenomegaly	137 (97)	0	4 (3)
Parotid enlargement	132 (94)	0	9 (6)
Ear discharge	79 (56)	1 (1)	61 (43)

3.1.6.5 Assessment

In three-quarter (108/141[77%]) of all encounters, health workers made a satisfactory final diagnosis, whilst in 23/141(16%) of encounters they made a less than adequate diagnosis and in ten (7%) instances delivered a poor or incorrect diagnosis.

3.1.6.6 Prescribing of antibiotics and medication:

Antibiotics were prescribed in 46% of encounters. In the 65 instances where antibiotics were prescribed, they were deemed necessary by the researcher in only two thirds (43/65[66%]) of encounters. Examples of incorrect indications was the prescribing of metronidazole and cotrimoxazole for an eleven month old child diagnosed with gastroenteritis and penicillin VK tablets for an eight year old child with a blocked nose and cough. While both the dosage and frequency of antibiotic administration was adequately explained in the vast majority of consultation (97% and 98%, respectively), in less than half (48%) of encounters was the duration of antibiotic use indicated to the caregiver. Similarly, for non-antibiotic medications the dosage and frequency were explained in 88% (124/141) of encounters whilst the duration was explained in 35% (50/141) of encounters. For most (103/127[81%]) encounters where other medication was prescribed, its use was deemed appropriate by the researcher. No medication was prescribed in only 10% (14/141) of encounters.

3.1.6.7 Appropriate treatment and referrals

Three encounters required insertion of an intravenous line in the child; however, this procedure was not performed in any of the three instances. Two children required oxygen, one of whom received it. Nine (6%) children received intramuscular medication or stat doses of medication. Only one of four children (25%) requiring a nebulisation received it. Referral was regarded as being necessary by the researcher in 13 encounters (9%); 12 children (92%) were referred.

3.1.6.8 Counselling

Counselling about the child's condition was assessed in terms of how the health worker gave advice to caregivers for the following aspects of the child's health and management: explanation of the current condition, prevention, home management, follow-up plans and danger signs about when to return. The grading system is discussed in table 2.1. Table 3.6 summarises the data.

Counselling on the current condition was done satisfactorily in only a third (44/141[31%]) of encounters. Counselling on prevention, home management, follow-up and danger signs were not routinely discussed for the most part.

Table 3.6: Comparison of the different aspects of counselling

Aspects of counselling:	**Necessary to counsel N = 141 No. (%)**	**Not discussed No. (%)**	**Less than adequate No. (%)**	**Satisfactory No. (%)**
Current condition	141 (100)	55 (39)	42 (30)	44 (31)
Prevention	140 (99)	94 (67)	18 (13)	28 (20)
Home management	140 (99)	86 (61)	14 (10)	40 (28)
Follow-up plans	139 (98)	105 (75)	3 (2)	31 (22)
Danger signs to return	113 (80)	109 (97)	1 (1)	3 (2)

3.1.7. Evaluation of the Road to Health Card (RTHC), nutrition and promotion of growth

Only 80% (113/141) of children were weighed. The Road to Health Card (RTHC) was requested in just two-thirds (95/141[67%]) of patient encounters. Of those weighed, only a quarter (32/113 [28%]) were plotted on a RTHC card (all but one was correctly done). Most plotted weights (30/32[94%]) were correctly interpreted. In nearly a fifth of encounters (27/141[19%]), the caregivers did not bring road to health cards. There were no growth charts for children greater than 5 years; therefore in 3/141(2%) instances where the health workers mentioned that they would like to plot the child's weight, the weights were not plotted. The growth of the child was discussed with the caretaker in very few (17/141[12%]) encounters.

In the majority of encounters, the children were growing well and therefore the different aspects of nutrition did not need to be discussed in detail with the caregiver. Furthermore, milk feeds and complementary feeding did not always need to be

discussed as these children may have been in the age group that did not require milk feeds or complementary feeding. In ten encounters, children were not growing well and results are shown in table 3.7. All aspects of the nutritional assessment and advice in children that were not growing well were dealt with poorly.

Table 3.7: Assessment of the different aspects of nutrition

Aspects of nutrition	**Necessary to discuss N = 141 No. (%)**	**Satisfactory No. (%)**	**Less than adequate No. (%)**	**Poorly discussed No. (%)**
Nutritional history	10 (7)	3 (30)	1 (10)	6 (60)
Milk feeds	5 (4)	0 (0)	3 (60)	2 (40)
Complementary feeding	2 (2)	0	0	2 (100)
Nutritional advice	10 (7)	3 (30)	0	7 (70)
Appropriate advice	10 (6)	3 (30)	0	7 (70)

Of the 4 children requiring food supplementation, only one received it. From the four children that required supplementation, 3 required social support grant and none received advice or referral. Two children required referral of which one was referred.

The quality of the different aspects of growth promotion is tabulated in table 3.8 below. The majority (80% and 93%) of encounters did not require milk feeds and complementary feeding to be discussed as most of the children were out of the age group that required milk feeds or complementary feeding. When discussion was appropriate, in the majority of these encounters the milk feeds and complementary feeding was poorly discussed, 71% and 80% respectively.

In 72% (101/141) of encounters it was necessary to check the vitamin A status. The required dose of vitamin A was given satisfactorily in 36% (36/101) of encounters. In 65/101 (64%) of encounters it was neither checked nor given. Forty (28%) of children did not require vitamin A to be checked and/or given as they were either older than 5 years or had already received appropriate doses of vitamin A according to the schedule

in the past month. It was necessary to check 15/141(11%) of children for pallor and to administer iron supplementation but none were checked or received supplementation.

In only 3 children (3%) was deworming performed satisfactorily, less than adequately in 4 (4%) as it was checked but not administered, and done poorly in most instances (92/99[93%]). Thirty percent of children (42/141) did not require deworming as they had already received a dose within the past 6 months or were older than 5 years of age.

Other identified problems, such as relatives being the caregivers and no foster care grant being received or problems such as scabies and squints that the caregivers failed to complain about, were addressed satisfactorily in 8/14(57%) of encounters and poorly in 6/14(43%). In the rest (127/141[90%]) of the encounters it was not relevant to discuss as there were no identifiable problems.

Table 3.8: Comparison of different aspects of growth promotion

Aspects of growth promotion:	**Necessary to discuss or check N = 141 No. (%)**	**Satisfactory No. (%)**	**Less than adequate No. (%)**	**Poorly performed or not checked No. (%)**
Milk feeds	28 (20)	3 (11)	5 (18)	20 (71)
Complementary feeding	10 (7)	1 (10)	1 (10)	8 (80)
Vitamin A	101 (72)	36 (36)	0 (0)	65 (64)
Iron supplementation	15 (11)	0 (0)	0 (0)	15 (100)
Deworming	99 (70)	3 (3)	4 (4)	92 (93)
Other problems	14 (10)	8 (57)	0	6 (43)

3.1.8 Health promotion and maternal health

Immunisation status was checked in less than half (65/141[46%]) of patients; 21% (29/141) did not bring their road to health cards and therefore immunisations were not checked or asked about. Vitamin A status was checked and given to 36/101(36%) of patients in whom it was deemed necessary to check. In 65/101(64%) vitamin A status was not checked in those whom it was deemed necessary to check and in 40/141(28%) it was not necessary to be checked as it was already given or the child was greater than 5 years of age. Age appropriate milestones were not asked in 137/141(97%) of encounters. It was unnecessary to ask this in 2/141(2%) instances. Maternal health issues were discussed and addressed in 14/141(10%) of patients, in 101/141(72%) instances they were not discussed, and did not apply in 26/141(18%) of consultations as the caregiver who brought the child to the clinic was not the mother or the child came alone.

3.1.9 HIV status and testing:

Patients with known HIV status and recording of HIV status:

The HIV status of the baby or the mother was known in only 4/141(3%) of patients and in 137/141(97%) patients HIV results were unavailable. In all four encounters where the HIV status was known, the results were recorded in the Road to Health Card (RTHC) except for one child where Pelargon feeds (usually provided to HIV positive or exposed infants) was recorded on the RTHC and the mother disclosed her status after the health worker enquired as to why the child was on Pelargon.

Asking about mother's /child's HIV status and offering pre-test counselling:

In the majority (125/141[89%]) of encounters, patients were not asked about their HIV status. The nine percent (13/141) that were asked about their status included the mother whose baby was on Pelargon as mentioned above. Pre-test counselling was offered to 1/141(1%) and not offered to 117/141(83%) of patients, whilst in 23/141(16%) it was not appropriate to offer HIV counselling as the status was known, the caregivers were not the parents or the child came unaccompanied.

Prescribing of cotrimoxazole and consideration of the need for ARTs:

In 134/141(95%) encounters the prescribing of cotrimoxazole was not considered as the HIV status of the mother was not established. After checking the Road to Health Card and asking the mothers about their HIV status, 7 children who were HIV positive or exposed were in need of cotrimoxazole prophylaxis and 5 were prescribed cotrimoxazole.

Two out of the 7 children that were HIV exposed or positive with clinical signs may have been candidates for antiretroviral therapy (ART). None were considered for ART by the health workers.

3.2 The well baby clinical encounter

Fourteen clinics were included in the observation of well baby clinical encounters component of the study as two provincial health authority clinics only provided sick baby services.

A total of 149 well baby encounters were observed. The youngest baby seen was 1 month old and the oldest child was aged 60 months (5 years old). There was a skewed distribution with the median age of children being 7 months.

3.2.1 Years of experience of health workers and attendances at courses

A total of 16 health professionals were assessed, all of whom were professional nurses. The average number of years of experience since qualification was 16.9±9.1 years with a median of 16 years and ranging from 1 to 33 years. Health workers attending to well baby visits do not have to be primary health care trained and thus only a quarter had primary health care training as shown in table 3.9 below.

Table 3.9: Attendances at courses by nurses observed during consultations

Course name	**Number (n = 16)**	**Percent (%)**
Family planning	13	81
Pharmacy issuing	13	81
HIV/AIDS	8	50
Voluntary counselling and testing	7	44
Integrated management of childhood illnesses	7	44
Sexually transmitted infections	6	38
Primary health care training	4	25
Tuberculosis	4	25
Termination of pregnancy	3	19
Infection control	0	0
Other	8	50

The other courses attended included:

- Prevention of mother to child transmission of HIV (3)
- Anti-retroviral therapy (3)
- Customer care (2)
- Epidemiology and infection control (1)
- Diploma in Paediatrics (1)
- Primary health care skills (1)
- Community health nursing (1)
- Integrated wellness course (1)

3.2.2 Escorts or caregivers of patients

Although there were 149 consults in total, in four encounters both parents (mother and father) had brought the child for check up, therefore 153 caregivers attended. The majority (135/153[88%]) of caregivers accompanying children were their mothers. Four percent (6/153) of caregivers were fathers and 3% (5/153) were grandmothers. The remaining 5% (7/153) of caregivers were aunts, nannies, neighbours and siblings.

3.2.3 Waiting time of patients

Caregivers waited for between 5 to 363 minutes before being seen, with a mean waiting time of 117.5±81.0 (almost two hours) and a median of 102 minutes.

3.2.4 Health workers time management

The mean duration of a consultation was 8.2±4.7 minutes: with a minimum duration of two minutes and a maximum of 30 minutes and the median was 7 minutes.

3.2.5 Staff and patient interaction

In the majority (119/149[80%]) of encounters the health workers greeted the caregiver. In only 58% of encounters (87/149) were the caregiver's relationships with the child confirmed. In three-quarter (111/149) of encounters the health workers did not ask caregivers about other problems such as feeding difficulties, developmental delay or vision and hearing problems or on other minor ailments such as rashes.

3.2.6 The Road to Health Card (RTHC)

In all instances, the Road to Health card was requested by nurses. Ninety nine percent (147/149) of children were weighed; 130/147 (88%) of children's weights were correctly plotted; 9/147(6%) were incorrectly plotted and in 8 instances (6%) the weight was not plotted. Of the 130 weights correctly plotted, 122 (94%) were correctly interpreted; 8 (6%) were incorrectly or not interpreted. In most (106/149[71%]) encounters, the growth of the child was not discussed with the caregiver.

3.2.7 Management of a child not growing well

In the majority of encounters, children were growing well and therefore the different aspects of nutrition did not need to be discussed in detail with the caregiver. As shown

in table 3.10 below, all aspects of the nutritional assessment and advice were dealt with either less than adequately or poorly in the fourteen encounters where children were not growing well.

Table 3.10: Assessment of the different aspects of nutrition

Aspects of nutrition:	**Necessary to discuss N = 149 No. (%)**	**Satisfactory No. (%)**	**Less than adequate No. (%)**	**Poorly discussed No. (%)**
Nutritional history	14 (9)	4 (28.5)	6 (43)	4 (28.5)
Milk feed	12 (8)	2 (17)	6 (50)	4 (33)
Complementary feeding	7 (5)	3 (43)	1 (14)	3 (43)
Nutritional advice offered	14 (9)	5 (36)	3 (21)	6 (43)
Appropriate nutritional advice	14 (9)	5 (36)	3 (21)	6 (43)

Eleven (79%) out of 14 children required food supplementation because there was either growth faltering where weight gain or the growth curve was declining for more than 2 months or the child was severely malnourished or due to insufficient food supply resulting from a poor socioeconomic background. None of those children were offered food supplementation. Five of the 14 patients were assessed as requiring a social support grant by the researcher due to poor socioeconomic status; however, none received advice or referral to facilitate this. One child was identified as having severe malnutrition and was appropriately referred to the hospital.

3.2.8 Promotion of optimal growth of all children

As shown in table 3.11 all aspects of growth promotion were dealt with less than adequately or poorly. Milk feeds were equally less than adequately and poorly discussed whilst complementary feeding was in the majority (77%) of encounters poorly

discussed. Iron supplementation was not checked and given in almost all (88%) cases that warranted iron. In the majority (96%) of encounters where deworming should have been checked and given, it was not.

Table 3.11: Comparisons of different aspects of growth promotion

Aspects of growth promotion:	**Necessary to discuss or check N = 149 No. (%)**	**Satisfactory No. (%)**	**Less than adequate No. (%)**	**Poorly performed or not checked No. (%)**
Milk feed	105 (70)	14 (13)	46 (44)	45 (43)
Complementary feeding	73 (47)	9 (13)	7 (10)	54 (77)
Iron supplementation	8 (5)	0 (0)	1 (13)	7 (88)
Vitamin A	149 (100)	96 (64)		53 (36)
Deworming	54 (36)	2 (4)		52 (96)

3.2.9 Immunisations and vitamin A

In almost all (143/149[96%]) of encounters the RTHCs were signed, whilst in 2/149 (1%) it was not signed and in the remaining 4/149 (3%) encounters, there was no need for immunisations or vitamin A doses to be signed as these children came for weight gain checks.

A follow up date was given in the majority (130/149[87%]) of encounters; in 3/149 (2%) no follow up date was given and in 16/149 (11%) it was not applicable as these children were 5 years old and did not require any further immunisations.

In only a minority (16/116[14%]) of encounters were adverse effects of immunisations discussed.

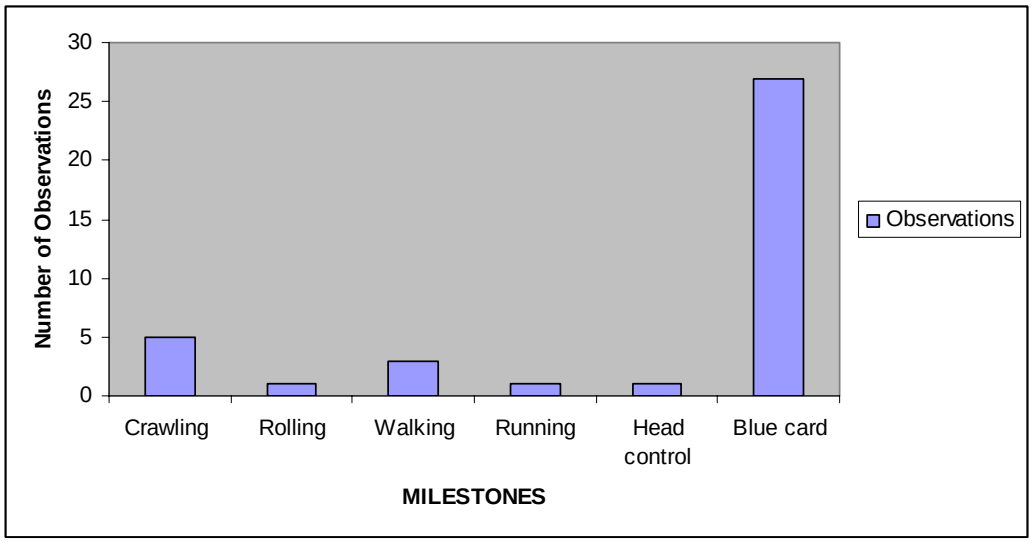
Vitamin A was checked in 96/149(64%) of children and given to those that were in need of a dose (as some children may have already received a dose within the last 6 months).

3.2.10 Development and milestones

Asking about milestones:

Age appropriate milestones were asked for in 38/149 (26%) of encounters. In the 38 children whose milestones were asked about by the health worker, 71% asked questions as guided by the "blue card" available at clinics. The frequency with which individual milestones were reviewed is shown in Figure 3.2.

Figure 3.2: Frequency of milestones asked (n = 38)



Examining for development:

Development was not assessed in the majority (128/149[86%]) of encounters.

In the 21/149(14%) of patients where developmental assessment was performed, only 3/21(14%) were offered reassurance, advice or counselling regarding development.

3.2.11 Vision and hearing screening

The pencil test is a difficult test to perform in younger children and this test was not performed in any child of greater than 6 weeks of age. The Snellen chart was not utilised in any child of 5 years or older to screen for vision impairment.

The song and voice test was not performed in 32/37 (86%) of children needing a hearing test. In the remaining 112/149 (75%) it was unnecessary to perform the test, as these children were less than 3 months of age or 6 months of age and older.

Only in two encounters (2/28[7%]) were the caregivers asked whether the child reacted to loud noises and in the remaining 121/149 (81%) it was unnecessary to ask as these children were less than 6 months of age or 12 months and older.

The voice test was not performed in any child older than 12 months of age.

3.2.12 HIV status and testing

Patients with known HIV status and recording of HIV status:

The HIV status of the baby or the mother was known in only 15/149(10%) of patients and in 134/149 (90%) patients HIV results were unavailable. In the 12/15(80%) patients where the HIV status was known, the result had been recorded in the Road to Health Card and for the remaining 3/15(20%) it was recorded in the “blue” card.

Asking about mother’s /child’s HIV status and offering pre-test counselling:

In only 9/149(6%) encounters, where the mother’s or baby’s HIV status was not known, were they asked about their HIV status. None of the parents were offered pre-test counselling. Pre-test counselling should have been offered at 123/149(83%) of encounters whilst in 26/149(17%) it was not appropriate to offer HIV counselling, as the status was known or the caregivers were not the parents or the child was unaccompanied.

Prescribing of cotrimoxazole and consideration of the need for ARTs:

In 140/149 (94%) encounters the prescribing of cotrimoxazole was not considered as the HIV status of the mother was not established. Of the remaining 9 children who were HIV positive or exposed, 6 (67%) received cotrimoxazole.

Four out of the nine children that were HIV positive or exposed with clinical signs may have been candidates for ART. None were considered for ART by the health workers.

3.2.13 Responding to risk factors

There were obvious risk factors such as teenage or twin pregnancies, low birth weight infants and childhood obesity in 35/149 (23%) of encounters. Only in 3/35 (9%) of encounters did the health worker respond to these risk factors by offering the mother family planning or counselling and advice.

3.3 Assessment of infrastructure, clinic facilities, equipment and supplies

3.3.1 Infrastructure

The clinics' infrastructure was assessed in terms of the availability of basic amenities as shown in Table 3.12. All clinics had tap water and a telephone. One clinic did not have electricity for the duration of the researcher's visit, although it had a connection. Half the clinics had a working computer available. Most (81%) clinics had a counselling room and one-half had a procedure room (56%). Seven (44%) of clinics had an oral rehydration therapy (ORT) corner.

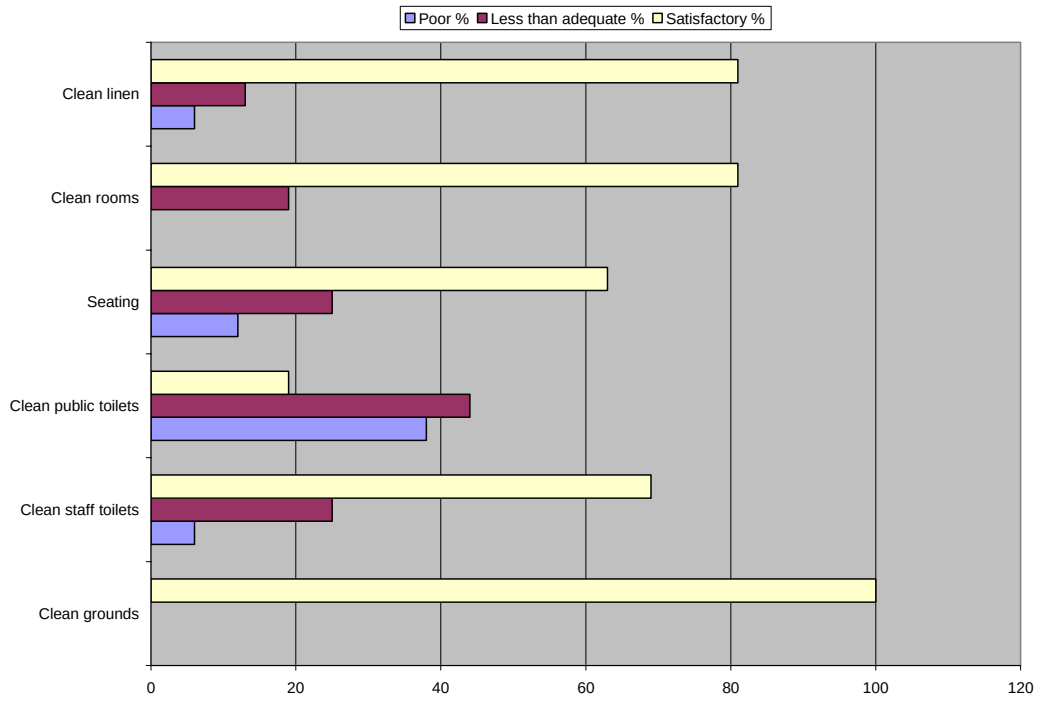
Table 3.12: Clinic infrastructure and availability of basic amenities

Infrastructure available	**Number (%)** **(n = 16)**
Tap water	16 (100)
Telephone	16 (100)
Electricity	15 (94)
Counselling room	13 (81)
Procedure room	9 (56)
Computer	8 (50)
Oral rehydration therapy corner	7 (44)

3.3.2 Clinic facilities

Clinic facilities (as shown in figure 3.3 below) were graded as poor, less than adequate or satisfactory by the researcher. While the cleanliness of the clinic grounds, rooms and linen was not a concern, the state of the public toilets was satisfactory in less than one fifth of clinics.

Figure 3.3: Grading of clinic facilities



3.3.3. Equipment

The availability of equipment that was deemed to be essential by the researcher is shown in Table 3.13. Scales, stethoscopes, otoscopes, thermometers and oxygen were available in all clinics. Equipment availability was satisfactory except for phototherapy units (3/16[19%]) and clocks in the consulting rooms (1/16[6%]). Essential equipment such as dextrostix, nebulisers, paediatric resuscitation masks and Laerdel resuscitation bags should be present at all clinics but were available in 81%, 88%, 81% and 69% of clinics respectively. Peak flow meters were available in less than two-thirds of clinics. All equipment appeared to be in working order except for a dysfunctional phototherapy unit at one clinic.

Table 3.13: Equipment available at clinics

Equipment	**Available No (%) (N = 16)**
Adult scale	16 (100)
Baby scale	16 (100)
Oxygen	16 (100)
Clinic stethoscope	16 (100)
Otoscope	16 (100)
Thermometer	16(100)
Heater	15 (94)
Nebulisation	14 (88)
Paediatric resuscitation mask	13 (81)
Dextrostix	13 (81)
Laerdel resuscitation bag	11 (69)
Height chart	11 (69)
Peak flow meter	10 (63)
Measuring tape	10 (63)
Measuring board	9 (56)
Phototherapy unit	3 (19)
Clock in consulting room	1 (6)

The availability of standard minor stock is shown in table 3.14. The majority of clinics had syringes, needles and intravenous catheters. Only one clinic had a size 6F and 8F nasogastric tube. Ten (63%) of the clinics had both a litre container and cups available for mixing oral rehydration solution (ORS) and thirteen (81%) of clinics had ORS sachets.

Table 3.14: Standard minor stock availability at clinics

Stock	**Available Number (%) (N = 16)**
2cc syringe	16 (100)
5cc syringe	16 (100)
Road to Health Card (RHTC)	13 (81)
10cc syringe	9 (56)
20cc syringe	4 (25)
20G needle	13 (81)
22G needle	10 (63)
23G needle	15 (94)
BCG/25G needle	13 (81)
20G IV catheter	11 (69)
22G IV catheter	10 (63)
24G IV catheter	11 (69)
1 litre container	10 (63)
Cups	10 (63)
Teaspoon/tablespoon	6 (38)
Oral rehydration solution sachets	13 (81)
6F Nasogastric tube	1 (6)
8F Nasogastric tube	1 (6)
10F Nasogastric tube	0
12F Nasogastric tube	0

3.3.4 The refrigerator

The adequacy of the use of the refrigerator was assessed by reviewing the vaccines stored there, the working of the thermometers and the recording of temperatures, as shown in table 3.15. Fourteen fridges were assessed as two clinics provided curative services only and did not need a refrigerator for vaccine storage.

The majority (93%) of clinics had working refrigerators. Vaccines were stored correctly in eleven (79%) clinics. In the three clinics where the vaccines were stored incorrectly, the measles vaccine was stored on the incorrect shelf in two clinics and in another clinic there was no vaccine storage refrigerator and all the vaccines were stored in the bottom shelf of the staff's refrigerator, together with food items. Eighty six percent of the refrigerators had a working thermometer.

The shake test was positive in one clinic for DTP (this indicated that the vial was damaged and should not be used). There were no expired vaccines stored in any of the fridges.

Table 3.15: Functioning of the refrigerator and storage of vaccines at clinics

Refrigerator functioning	**Number (%) (n = 14)**
Working refrigerator	13 (93)
Vaccines stored correctly	11 (79)
Working thermometer	12 (86)
Temperatures recorded daily	13 (93)
Positive shake test	1 (7)

3.3.5 Essential drugs

The availability and stocks of essential drugs are shown in table 3.16.

- Most of the drugs in the table are on the Essential Drug List except for the tine test, purified protein derivative, sterile water and intravenous fluids.

- All clinics had amoxicillin, erythromycin, cotrimoxazole, paracetomol, sterile water and intravenous fluids.
- All clinics that provided immunisation had measles vaccine available.
- Cloxacillin, nalidixic acid, vitamin A 50 000 IU and intravenous phenobarbitone were not available at any clinic.
- Ceftriaxone and purified protein derivative (PPD) were available in 44% and 25% of clinics respectively.
- Most clinics failed to keep records of the drugs that were out of stock.
- Penicillin, amoxicillin, vitamin A 100 000IU and benzyl benzoate were the drugs that were recorded as being out of stock in the last month preceding the study visit.

Table 3.16: Availability and stocks of essential drugs at clinics

Essential drugs	**Available today Number (%) (N = 16)**	**Out of stock in the last month (N = 16)**		
		Yes	**No**	**NR**
Amoxicillin	16 (100)	2	7	7
Penicillin VK	14 (88)	3	5	6
Erythromycin	16 (100)		6	10
Cloxacillin (flucloxacillin)	0 (0)			
Cotrimoxazole (Bactrim)	16 (100)		6	10
Paracetamol	16 (100)		7	9
Nalidixic acid	0 (0)			
Oral rehydration solution	15 (94)		7	9
Deworming medication (albendazole/mebendazole)	15 (94)		6	10
Vitamin A 50 000IU	0 (0)			
Vitamin A 100 000IU	15 (94)	1	8	6
Vitamin A 200 000IU	15 (94)		8	7
Iron Supplements (ferrous gluconate syrup)	10 (63)		3	7
Beta2-agonist (salbutomol 0.5% solution)	14 (88)		14	
Prednisone	11 (69)		3	8
Adrenaline	15 (94)		3	12
Diazepam	9 (56)		2	7
Phenobarbitone (intravenous)	0 (0)			
Ceftriaxone	7 (44)		6	1
Chloramphenicol	15 (94)		8	8
Tine test	9 (56) + 2 (13) expired		4	7
Purified protein derivative	4 (25)		2	2

Benzyl benzoate	14 (88)	1	5	10
Monosulfiram	13 (81)		6	9
Nystatin	15 (94)		5	10
Sterile water	16 (100)		3	13
Intravenous fluids	16 (100)		1	15
Measles vaccine	14 (88)		10	4

NR = Not recorded

3.4 Review of personnel, in-service activities and training, services provided by clinics

3.4.1 Clinic Personnel

Doctors:

Half of the clinics (8[50%]) had doctors working in the facility. One "ordinary" clinic had a full-time doctor and another a sessional doctor and two "ordinary" clinics had doctors that came once a week. One CHC had a full-time and a sessional doctor, another had two permanent and two sessional doctors and a third CHC had four doctors but did not verify as to whether they were full or part time. The clinic with the most number of doctors was the biggest CHC and had twelve full-time and 4 sessional doctors.

General and Nursing staff:

The numbers of staff at clinics are tabulated in table 3.17. The mean number of professional nurses in the ordinary PHCs was 4.2, and the mean was 44.5 in the CHCs. There was a skewed distribution of clerks and general workers in the CHCs as indicated by the mean and median values because the biggest CHC in Johannesburg had far more clerks and general workers compared to the other 3 CHCs.

Table 3.17: Number of staff at clinics

	Min	Max	Mean	Median
'Ordinary' PHCs				
Professional nurses	2	8	4.2	4
Staff nurses	0	2	0.4	0
Enrolled nursing assistants	0	3	0.8	0.5
Community health workers	0	3	0.9	0.5
Clerks	1	2	1.3	1
Voluntary counselors	0	2	0.5	0
General workers	1	4	1.7	1
CHCs				
Professional nurses	39	48	44.5	45.5
Staff nurses	5	19	11.5	11
ENAS	13	28	19	17.5
Community health workers	0	3	1.5	1.5
Clerks	7	44	**17.3**	**9**
Voluntary counsellors (No data = 2)	0	6	3	3
General workers	7	60	**29.8**	**26**

PHCs = Primary health care clinics

CHCs = Community health centres

The numbers of health workers attending to adults and children are shown in table 3.18. The mean number of health workers attending to children only in PHCs was 0.7 and 1.5 in CHCs. Half of the clinics did not have a dedicated health worker attending to children only. A quarter of clinics had a single health worker attending to children only and the other quarter had two to three health workers attending to children only.

Table 3.18: Health workers attending to adults and children

	Min	Max	Mean	Median
'Ordinary' PHCs				
Health workers attending to both adults and children	2	8	3.8	3
Health workers attending to adults only	0	1	0.3	0
Health workers attending to children only	0	3	0.7	0
CHCs				
Health workers attending to both adults and children	10	16	12.3	11.5
Health workers attending to adults only	0	36	**22.8**	**27.5**
Health workers attending to children only	0	3	1.5	1.5

3.4.2 Training and Support

The mean number of primary health care trained staff was 2.2 in PHCs and 11.8 in CHCs. Half of the professional nurses were primary health care trained in the PHCs and a quarter were primary health care trained in the CHCs. The mean number of professional nurses that were IMCI trained was 1.5 in PHCs and 4 in CHCs, although IMCI was not practised at all clinics as reflected in table 3.19. Thirteen percent of all nurses were IMCI trained. Seventy five percent of clinics had IMCI trained nurses. None of the doctors were IMCI trained.

Table 3.19: Comparison of the level of training and status of staff

	Min	**Max**	**Mean**	**Median**
'Ordinary' PHCs				
Staff that were primary health care trained (No data = 1)	0	5	2.2	2
Professional nurses that were IMCI trained	0	2	1.2	1.5
New staff members that joined in 2004	0	6	1.8	1.5
Staff members that resigned in 2004	0	1	0.4	0
CHCs				
Staff that were primary health care trained	8	16	11.8	11.5
Professional nurses that were IMCI trained	2	5	3.8	4
New staff members that joined in 2004	0	4	2.3	2.5
Staff members that resigned in 2004	0	5	1.8	1

Guidelines were variably available as shown in table 3.20. Policy guidelines for growth monitoring and promotion were only available in 13% of clinics.

Table 3.20: Availability and accessibility of paediatric protocols and guidelines at clinics

Guideline	Available at clinic No. (%)	Accessible in consulting rooms No. (%)
National tuberculosis control programme guidelines	15 (94)	15 (94)
SB – Primary clinical care manual	13 (81)	13 (81)
Standard treatment guidelines and EDL lists	13 (81)	13 (81)
Handouts for Vitamin A training and protocol	11 (69)	11 (69)
IMCI chart booklets	10 (63)	10 (63)
Management of HIV infection in children: guidelines for clinics and hospitals	9 (56)	8 (50)
National antiretroviral HIV guidelines	2 (13)	2 (13)
Policy guidelines for growth monitoring and promotion	2 (13)	0 (0)

3.4.3 Posters, videos and flyers and in-service activities

Posters for health professionals were available in 15/16 (94%) of clinics and for the public in all clinics. Posters for the health professionals included some on vitamin A, milestones, skin rashes, cotrimoxazole dosages, vaccines and immunisation, IMCI guidelines and danger signs, meningitis, polio eradication and acute flaccid paralysis.

Posters for the public included those on immunisation, ARVs, HIV/AIDS, meningitis, child safety, milestones, BCG adverse events, breastfeeding, TB and Patient's Rights. Videos were available for health professionals in 4/16(25%) of clinics and for the public in 6/16(37.5%) of clinics. The videos consisted of topics on TB (2/16) and Lovelife (1/16) and those videos developed by Mindset were based on HIV/AIDS and TB (3/16). Flyers were available in 15/16(93.75%) of clinics and were directed to the public. Flyers consisted of topics on immunisations, oral rehydration solutions, tuberculosis, child safety, HIV/AIDS, Lovelife, vitamin A and ARTs. Other activities included talks to the public on immunisation and TB. In-service activities at clinics included campaigns on RTHCs, immunisations, health awareness, breastfeeding talks and baby-friendly

workshops and competitions. Activities elsewhere in the district included immunisations campaigns and a child safety awareness programme at Gold Reef City.

3.4.4 Services provided

The majority (12/16[75%]) of the clinics were open for 5 days a week. Three clinics (19%) were open 6 days a week and one clinic (6%) was open twice a week. The average time that a clinic remained open from Monday to Friday was 525±16 minutes (8 and 3/4 hours) with a median of 525 minutes. One PHC and two CHCs were open on Saturdays for 360 minutes (6 hours). Three CHCs provided a 24-hour maternity service. One CHC provided a 24-hour casualty service and one a casualty service until 22h00 every night. Fourteen clinics (88%) did not have a triage system.

The services provided by clinics varied and are listed in table 3.21. The majority (14/16[88%]) of clinics provided curative care and immunisation services. Chronic care services were only provided at one clinic. All clinics provided HIV counselling. The majority of clinics provided TB DOTS, family planning and community support groups (94%, 81% and 81% respectively). Antenatal care was provided by one PHC and three CHCs and midwife obstetric unit services were provided by the three community health centres except for one CHC that had their midwife obstetric unit located separately in the Johannesburg Hospital.

Table 3.21: Maternal and child services offered at clinics

Service provided	**Number (%)**
HIV counselling	16 (100)
TB DOTS	15 (94)
Curative care	14 (88)
Immunisation	14 (88)
Community support groups	13 (81)
Family planning	13 (81)
Post-natal care	7 (44)
AIDS home-based care	6 (38)
Rehabilitation	5 (31)
Antenatal care	4 (25)
Midwife obstetric unit	3 (19)
Chronic care (asthma)	1 (6)
Mental health	1 (6)

DOTS= Directly observed therapy - short course

Table 3.22 categorises the clinics services by the number of days services were offered per week. Most clinics provided curative, preventative, TB DOTS, family planning and HIV counselling services from Monday to Friday; however there was one clinic that did not provide curative services, two that did not provide family planning and three that did not provide preventative, TB DOTS and HIV counselling on a daily basis.

Chronic care for asthma was only provided by one clinic from Monday to Friday.
Antenatal and postnatal care was provided Monday to Friday by all four CHCs. Midwife obstetric unit services were provided daily by three CHCs and the fourth CHC had their maternity unit at the Johannesburg Hospital. A few clinics provided AIDS home-based care and community support group services were not provided by two clinics but the others provided a variable service and certain clinics focused on diabetics, psychiatry and antiretroviral therapy.

Table 3.22: Clinic services categorised by number of days services offered per week (N = 16)

Services provided	**No. of days**							
	0	**1**	**2**	**4**	**5**	**6**	**7**	**Weekly /Monthly**
Curative care	2	-	1	-	9	2	2	-
Immunisations	2		3	-	11	-	-	-
Chronic care (asthma)	15	-	-	-	1	-	-	-
Mental health	15	1	-	-	-	-	-	-
Rehabilitation	11	1	-	-	4	-	-	-
HIV Counselling	-	2	1	-	12	1	-	-
TB DOTS	1	1	1	1	12	-	-	-
Antenatal care	12	-	-	-	4	-	-	-
Midwife obstetric unit	13	-	-	-	-	-	3	-
Post-natal care	9	-	-	-	5	1	1	-
Family planning	3	-	2	-	10	1	-	-
AIDS home-based care	10	-	1	-	4	-	1	-
Community support groups	3	3	2		2			6

DOTS = Directly observed therapy – short course

3.4.5 Transport

Half of the clinics (8[50%]) organised transport for extremely sick children to the next referral level by ambulance. A fifth of clinics (3[19%]) transported children either by ambulance or clinic car or bus and one clinic (6%) used a clinic car or bus. One clinic used an ambulance in emergency situations. Parents were responsible for organising their own transport in that clinic if their children were sick and needed to be referred non-urgently. One clinic used ambulance and other means of transport. Two clinics had no transport mechanism as they provided well baby services only.

The ambulance was based a minimum of 0 kilometres and a maximum of 20 kilometres away from the clinic, with a mean of 9.5±6.5 kilometres and a median of 8.0 kilometres. The minimum distance of 0 kilometres applied to one clinic that kept ambulances on site. The minimum time for the ambulance to respond to a call to transport a sick child was estimated by the health workers and clinic managers to range between 10 to 45 minutes with a mean of 24±11 minutes and a median waiting time of 30 minutes. The maximum time for the ambulance to respond to a call to transport a sick child ranged between 10 to 180 minutes, with a mean of 59±48 minutes and a median waiting time of 42.5 minutes. The distance to the referral centre ranged between 5 to 25 kilometres, with a mean of 12±5.6 kilometres and a median of 10 kilometres.

In ‘ordinary’ PHCs, the minimum number of sick children transferred per month was 0 and the maximum number was 103, with a mean of 21.6±38 and median of 7.5. In CHCs, the minimum number of sick children transferred per month was 10 and the maximum number was 101, with a mean of 47±47.8 and median of 30. In the majority (13[81%]) of clinics there was transport available for routine referrals to referral centres. The transport provided was usually the clinic cars or condors that are based at the regional head offices. The vast majority of clinics (15[94%]) communicated with referral centres with a transfer or referral note and only one clinic used the telephone and a referral note.

3.5 Review of clinic registers and record

Records of headcounts and cases of dehydration, pneumonia and malnutrition as well as vitamin A administration and home visits are listed in table 3.23. Some of the clinics had zero incidences of some illnesses and malnutrition. It was unclear whether this was a true reflection of the lack of children presenting with these complaints or merely due to poor record-keeping.

Table 3.23: Record of patient head counts, new cases of dehydration and pneumonia, malnutrition, vitamin A and home visits.

	Min	**Max**	**Mean**	**Std Dev**	**Median**
'Ordinary' PHCs					
Under five year headcount for last month	113	1694	792	519	835
Over five year headcount for last month	366	4658	2122	1452	1938
New cases of < 5 years old with dehydration seen last month	0	10	1.8	3	0.5
New cases of < 5 years old with no dehydration seen last month	0	24	6	8.5	4
New cases of pneumonia of < 5 years old seen last month	0	37	3	11	0
Children < 5 years old underweight for age last month	0	20	5	7	0
Children < 5 years old not gaining weight last month	0	22	3	7	0
Children < 5 years old severely malnourished	0	24	2	7	0
Infants between 6-11 months of age received vitamin A last month	0	271	63	73	36
Infants between 12-60 months of age received vitamin A last month	0	770	206	235	82.5
How many home visits were done last year	0	31	7	12	0
CHCs					
Under five year headcount for last month	752	3276	1526	1178	1039
Over five year headcount for last month	9418	16377	12904	2849	12910
New cases of < 5 years old with dehydration seen last month	0	14	5	6	3.5
New cases of < 5 years old with no dehydration seen last month in CHCs	0	30	9	14	2.5
New cases of pneumonia of < 5 years old seen last month in PHCs	0	37	3	11	0
New cases of pneumonia of < 5 years old seen last month	0	22	9	9	7
Children < 5 years old underweight for age last month	0	30	8.5	14	2

Children < 5 years old not gaining weight last month	0	4	2	2	1.5
Children < 5 years old severely malnourished	0	3	1	1.5	0
Infants between 6-11 months of age received vitamin A last month	0	106	42	47	31
Infants between 12-60 months of age received vitamin A last month	0	113	57	51	57.5
How many home visits were done last year	0	435	205	180	193

CHAPTER 4

DISCUSSION

4.1 Summary of key findings

The quality of child heath services for sick children offered at clinics in Johannesburg was disappointingly poor. The main areas of concern were the long waiting hours; poorly skilled staff (e.g. unfocussed consultations; poor history taking and examination skills, limited identification of children with HIV; over-prescription of antibiotics); absence of triage and emergency management facilities; and limited practice of child health promotion activities.

There was inadequate attention to routine health promotion and prevention activities such as adequate growth monitoring and promotion, immunisation, vitamin A supplementation and developmental assessment. Food supplementation was mostly unavailable for children who were failing to thrive.

Issues related to structure should not be entirely ignored as this is an important aspect of quality of care. In this study basic amenities were available but emergency equipment such as dextrostix, nebulizations, laerdal bags and resuscitation masks were not available at all clinics. Not all clinics had ORT corners and EDL drugs were unavailable at clinics. Essential drug lists and growth monitoring protocols were not available at all clinics.

The separation of preventative and curative care services still continues.

4.2 Justification for the study

Primary health care has been a major strategy for pursuing health improvement in developing countries over the past two decades. Assessment of the quality of primary

health care services is important because it serves as a litmus test of the effectiveness of the entire health system.(5) In 2000, South Africa ranked 151 out of 191 WHO member states on the basis of overall health system goal attainment.(39) This is a sad indictment of the quality of health care services offered to South Africans considering the country's relative wealth and resource availability.

Evaluating the quality of basic health care services available at the community level is a key concern for any government in developing an equitable, affordable and accessible health care system.(10) Measuring performance is the first step on the road to improving it.(40)

The determinants of the quality of care offered by PHC centres include qualifications of the health workers, in-service training attended, the level of clinical skills of health workers in the management of childhood illnesses, the quality of scheduled supervision of health workers, availability of drugs and vaccines, availability of equipment and utensils for selected childhood services and regularity of services offered.(5;15;39) Lewis, et al. suggest that staff numbers have little if anything to do with service quality and drug availability appears to be a determining factor for choosing a facility.(6)

Assessment tools have been developed for both hospitals and clinics in several countries. These tools include assessments of the infrastructure, drugs, equipment, human resources, records and observed quality of clinical care for key common diseases. A useful assessment tool or systematic screening checklist should be simple to conduct, provide rapid feedback for clinicians, be presented in a form which is usable by busy clinical staff, prompt innovative suggestions for change and have a component of evaluation and reassessment.(7) These checklists should be able to identify and address missed opportunities or unmet child health needs.(41)

The Gauteng Health Department developed a clinic supervisor's manual in November 2003 to provide a set of flexible, adaptable tools and guidelines to facilitate quality clinic supervision.(42) The supervisor's manual was devised to ensure:

a) that resources are in place to ensure technically correct care
b) quality services from the client's perspective.

The tools assess both qualitative and quantitative aspects of care.

The supervisor's manual evaluation process is, however, quite extensive and laborious to complete. It does not assess in detail certain essential aspects of the clinical encounter such as counselling and health promotion. The clinic supervisor's manual checklist is also based on Integrated Management of Childhood Illness (IMCI) based assessments. However, this may be an inappropriate assessment tool as most Johannesburg's health workers are not IMCI trained and do not practice IMCI when providing clinical care to children.

No studies have been conducted in Johannesburg to assess how primary health care services for children are implemented on the ground. The Data Envelopment Analysis (DEA) method has been used to assess efficiencies of health facilities and programmes, mainly in KwaZulu-Natal.(29;39) In 1996, 70% of primary health care clinics in KwaZulu-Natal province in South Africa were found to be technically inefficient and 84% scale inefficient.(29)

This study attempted to evaluate the structure and process quality perspectives of Donabedian's assessment concept of primary health care systems. The study tool developed for this study is useful because it efficiently evaluates the structure of the primary health care clinics and the quality of child health services provided by health workers. It is a quick and user-friendly tool. The tool enables the supervisors or evaluators to complete a single clinic's evaluation within a morning visit and covers various aspects of quality care including structure, equipment, drugs, facilities and services as well as quality of care provided by health workers.

4.3 Strengths in the delivery of child health services offered

In general, there was little cause for celebration based on the performance of staff and the service in this study. Certain aspects of the well baby clinical encounter component were well performed and assessments by health workers were satisfactory. The major positive finding was health professionals requesting the RTHC during all well baby encounters. A study performed at a local authority clinic in Khayelitsha, in the Cape Peninsula in 1993 showed that 95% of preventative clinic patients reported being asked

for their RTHC.(26) Ninety nine percent of children at well baby clinics were weighed – another positive development, although plotting of weights and interpretation was less satisfactory. Signing of the RTHC and providing follow-up dates was also well done.

4.4 Weaknesses in the clinical components of child health services

There were numerous weaknesses identified in the delivery of child PHC services and these are discussed below under the following themes:

- Waiting times
- Sick child clinical encounter
- Well baby clinical encounter
- HIV care
- Infrastructure and equipment
- Personnel and training
- Organisation of clinic services

4.4.1 Waiting times

For both the sick baby as well as the well baby clinical encounter component, the waiting hours were long – an average of around two hours. This is consistent with the total time for GP (general practitioner) and public models which are around two hours.(22) A 1993 study in the Khayelitsha CHC, an informal settlement on the periphery in Cape Town, found median waiting times in both curative and preventative services were long; 4.1 and 2.6 hours respectively. Patients who arrived earlier tended to wait longer than those who arrived later. During the afternoons the health centre was relatively empty and many staff were not working with patients.(24) Long waiting times is a worldwide problem and issues leading to this need to be addressed in order to improve quality of care offered. In El Salvador, for example, waiting times varied on average between 2 and 5 hours for public facilities and one to two hours for NGO services.(6)

An average waiting period of two hours for a well-baby visit is simply unacceptable. Waiting causes indirect costs to health services, by deterring patients from early use of inexpensive preventative and curative primary care, leading patients to bypass clinics in favour of more distant and costly hospitals and requiring building space to house queues. Queues may seem as inevitable result of scarce resources, but inefficient organization often contributes. For instance, the paediatric outpatient department at Chris Hani Baragwanath Hospital in Soweto operates as a level 1, 2 and 3 facility due to inadequacy of the primary health care facilities in the region. The services offered at Chris Hani Baragwanath Hospital is inadequate and the patients are dissatisfied due to long waiting hours, unavailable drugs, unavailable 24-hour level 1 facilities, inappropriate referrals to Baragwanath and lack of staff at clinics. This is overwhelming the hospital service.

4.4.2 Sick child clinical encounters:

The sick encounters observed were short. The mean duration for all consultations in this study was 11.2±6.1 minutes. As confirmed by other studies, paediatric consultations are generally brief, ranging from 4-11.5 minutes.(15;16;24)

Mills et al., found that in southern African, state-financed services had waiting times that were higher compared to GPs practising privately and clinic chains that are run by commercial companies, consultation times that were shorter, and with a poor attitude of health workers dominating, the standard of treatment offered to patients suffered correspondingly. Because of no user fees and thus excess demand for services; these two closely related features had adverse implications for the care offered.(22)

Danger signs (as defined by the IMCI approach) were assessed in a minority of cases in both the IMCI and non-IMCI consultations in this study. This is not dissimilar to findings in other settings. No children were checked for the following danger signs (unable to drink or breastfeed, vomiting all feeds, or convulsions) in Bangladesh prior to implementing the IMCI strategy.(14) Even though the IMCI strategy was being implemented in Benin, health workers checked if the child had convulsions in 8% of encounters. They checked for lethargy or unconsciousness in 98%; for “unable to drink or breastfeed” in 5% and “vomiting everything” in 4%.(16) In a local study examining

the effect of IMCI intervention on the quality of care across the four districts in Cape Town, the assessment of danger signs was not done well before IMCI. There was a statistically significant improvement from 7% to 72% ($p<0.001$) after IMCI implementation. The most commonly assessed danger sign was ability to drink or breastfeed and the least commonly asked was the presence of convulsions.(21) Danger signs are poorly assessed in most developing countries even if staff were IMCI trained. However; with proper training and a re-emphasis on adopting the IMCI strategy, studies such as the Cape Town study have confirmed that there can be improvements post-training.

Certain aspects of examination were poorly or not performed in this study. It is clearly negligent for staff not to check the respiratory rate in children with respiratory symptoms, to ignore assessment of skin turgor in 70% of children with diarrhoea or vomiting, or to fail to assess for a bulging fontanelle or neck stiffness in a child with suspected meningitis. Other routine activities such as checking for pallor was not done in 90% of all encounters, administration of ORS ignored in 73% of children requiring rehydration, and a urinary dipstix not done in 67% of instances where it was warranted. Whether this situation is the result of a lack of knowledge or training, or if this simply reflects a “can’t be bothered” attitude was outside the scope of this study. Some solace can be found, if the study results are compared to health services in other poor countries. In Benin, health workers never measured a 60 second respiratory rate; checked for palmar pallor in 4%, skin turgor in 14%, neck stiffness in 12% of child consultations and never offered a child fluid to assess his/her thirst level. Rating of clinical skills observed was poor.(5)

Over prescription and abuse of antibiotics in the treatment of acute childhood illnesses is a worldwide problem, leading to widespread antibiotic resistance.(15) Antibiotics were prescribed in 46% of encounters and were deemed necessary in two-thirds of encounters in this study. At primary health centres in Botswana; antibiotics were inappropriately prescribed in 79% of non-pneumonia cases, while all antibiotics prescribed in diarrhoea cases were inappropriate.(15) In a district in Bangladesh, over half of the prescriptions for antibiotics were assessed as being unnecessary in their first level health facilities.(14) Health workers at facilities in Benin often treated children unnecessarily and sometimes with dangerous drugs. A large number of medicines were

prescribed for some children and health workers did not always explain effectively how to administer medication.(16)

Emergency management such as insertion of intravenous lines, administration of oxygen and nebulisation was not performed in all encounters that necessitated these procedures. The insertion of an intravenous line is a life-saving procedure in a child with severe dehydration and should be at least attempted in all children in need of this procedure. According to IMCI guidelines this would be the first option of treatment if the health worker has these skills and could be followed by nasogastric tube insertion if intravenous line insertion failed. Oxygen was administered in only 50% of encounters where it was needed. Oxygen is the most easily and readily available treatment that can be given in any emergency situation and there should be no reason as to why it was not administered unless there was no oxygen in the clinic. A quarter of children received nebulisation. Oxygen, masks and salbutomol or adrenaline are available at clinics and nebulisations should be administered in all encounters in need of this as airway obstruction can be easily reversed.

Counselling on the current condition was done satisfactorily in less than a third of encounters. Counselling on prevention, home management, follow-up and danger signs were all performed poorly. In Cape Town, counselling given to caregivers remained poor after IMCI. Only one third of caregivers were informed of at least three signs that would necessitate immediate return to the clinic. There was some improvement in the counselling about the sick child's need for extra fluids and food after IMCI.(21) In Bangladesh, health providers made little effort to explain the necessary home treatment or to counsel the caregiver. Only one of 274 caregivers was advised by the health provider about danger signs indicating the need for immediate return to the health facility.(14) Health workers in Benin rarely performed counselling tasks recommended by IMCI. They explained the child's diagnosis to caregivers in 11% of consultations, verified comprehension of instructions in 6% of the consultations, and asked caregivers if they had questions in only 1% of the consultations.(16) Counselling is a poorly performed aspect of health care worldwide. Counselling needs to be improved as it is a means of empowering the caregiver, family and community and thus improving child and maternal well-being.

The RTHC was requested in two-thirds (67%) of encounters. This finding is in direct contrast to that of Bachmann and Barron's finding at a community health centre in Khayelitsha, South Africa where 67% of curative service patients reported not having been asked for a RTHC by a doctor or nurse.(26) Children were weighed in 80% of encounters and growth of the child was discussed in few (12%) encounters. Comparing these study results to Benin health facilities, it was noted that 39% of children were weighed which was worse than the Johannesburg clinics.(16) Arifeen et.al found that in first-level health facilities in one district of Bangladesh none of the children under-five had their weight checked against a growth chart. Almost none of the children who were identified as having very low weight on subsequent re-examination by the surveyors were assessed for feeding practices by the facility providers.(14)

In this study, clinics failed to offer food supplementation and discuss diet and milk feeds for optimal growth promotion. Families qualifying for social support grant or referral were missed. All these aspects of child management have to be discussed and approached in order to improve the quality of child health services offered.

Other areas of optimal growth promotion such as prescribing of deworming medication and vitamin A supplementation where necessitated, were neglected. Immunizations were checked in less than half (46%) of sick child encounters. A WHO-EPI review in 1993 of missed opportunity studies showed that leading causes include separation of curative and preventative services; health workers 'not offering, thinking about or screening for immunizations ', and clinics scheduling immunization sessions for limited periods only.(43) In Benin health facilities, health workers often missed opportunities to vaccinate.(16) The lowest prevalence of missed opportunities of immunisations internationally have been reported from South Africa's poorer neighbours, Zimbabwe (0%) and Mozambique (2-4%); suggesting that a concerted effort, rather than additional resources, are needed to improve South African services.(26) Immunizations were missed in 16% and 12% of preventative care visits in 1993 and 1994 at a community health centre in Khayelitsha, South Africa and in 92% and 91% of curative care visits in the same clinic in 1993 and 1994.(26) A decade later there has been improvement but still not adequate to ensure proper health care.

Age appropriate milestones were checked in 3% of encounters. Milestones and development are an important part of a child's well-being and growth. These areas of child health and growth should not be neglected in order to ensure a healthy and growing population. Early detection of poor development and delayed milestones ensures earlier intervention and prevention of progression of disease and disorders.

Maternal health issues were discussed and addressed in ten percent of encounters. Child health and maternal well-being are linked and the mother's health should not be ignored as their well-being forms an integral part of a family. Mothers form the foundation of their family's structure and growth.

4.4.3 Well baby clinical encounters:

Similar aspects of child health were neglected in both sick and well baby encounters. Areas that need focusing are optimal growth promotion, food supplementation and referral for child social support grants.

In South Africa, the nutrition transition which includes the co-existence of under-and over-nutrition, is evident between and within populations and across all ages.(44;45) It has been recognized that as a result of the prevalence of under-nutrition, micronutrient deficiencies and emergent over-nutrition, both primary and secondary interventions are essential.(45;46) In 1999, the National Food Consumption survey (NFCS) on children aged between 1 and 9 years showed a national prevalence for underweight of 10.3%, stunting 21.6% and wasting 3.7%.(45;47) The main constraints to the management of under-nutrition include lack of staff training, inadequate coverage and targeting of undernourished children, incorrect or no distribution of nutrition supplements and ineffective counselling of mothers and caregivers. This is evidenced by the findings of this study wherein the majority (71%) of encounters, the growth of the child was not discussed with the caregiver and food supplementation was not offered to those children in need of supplementation.

The Draft Policy Guidelines for Health Facility Based Nutrition Interventions (2001) states that all children who fail to grow adequately, especially those below the age of two years should be included on the Nutrition Supplementation Programme (NSP). The

NSP distributes food supplements through primary level clinics and has been operation since the early 1960's. The Department of Health guidelines state that where nutritional supplements are available and affordable, they should be given to all HIV positive children.(48) In 2001, over 90% of the clinics in South Africa did not provide HIV positive children with nutritional supplements citing unavailability of the porridge or formula as the main reason for not giving it. It can therefore be assumed that these clinics were not providing any children both HIV-infected or not with supplements through the NSP. Irregular supplies of porridge and formula were also a problem for those clinics that did administer the NSP.(48)

Guidelines and training materials have been developed on growth monitoring and promotion (GMP) nationally.(45) Growth monitoring and promotion (GMP) includes the regular measurement and recording of weight, and action needed to improve growth. Provision of the Road to Health card and training of health workers are essential in ensuring effective GMP. (45) Studies conducted by Bomela (28) and Schoeman SE et. al (49) found that PHC nurses missed children in need of nutrition intervention because of failure to plot weights on the RTHC. Growth monitoring practices need to be improved and other criteria may be needed to identify children nutritionally at risk.

The results of this study and others have shown that access to social assistance grants is appalling at primary health care clinics. Social grants are associated with a number of positive spin-offs for poor households such as greater share of household expenditure on food and less hunger and more resources to finance education for children.(45) In 2001, in 79 public sector clinics (21%) in South Africa, clinic staff assisted clients in accessing a grant and 253 clinics (68%) reported that they referred clients to social workers for grant applications without providing any form of assistance.(48) These figures deal with HIV positive children and do not meet standard requirements. The clinic environment provides an ideal opportunity for sharing information on social security and clinic staff should be informed of what is available and kept up-to-date on the latest developments with respect to accessing grants. Grant application forms could be made available at clinics, as well as information on how to apply for a grant and how to obtain the necessary documents. Collaborations between the Departments of Health, Social Development and Home Affairs could go a long way towards improving the take up of the much needed child support grant.(48)

Vitamin A is a micronutrient deficiency of public health significance. High-dose vitamin A supplementation is being implemented nationally in children aged 6-60 months and in post-partum mothers within 6-8 weeks of delivery. Supplementation could constitute a cost-effective intervention to decrease the burden of growth retardation in settings where infectious diseases are highly prevalent.(50) The targets for vitamin A coverage are 95% for infants and post-partum mothers and 80% for children aged 1-5 years. The target is to reduce vitamin A deficiency from 33% to 19%. For children aged 6 to 11 months and 12 to 59 months, vitamin A supplementation coverage rates nationally were 72.8% and 13.9% respectively.(45) A study conducted in the West Coast Winelands and Cape Metropole Regions of the Western Cape between April 2003 and October 2004 showed that only 34% of the children that were eligible for vitamin A supplementation received it, despite the fact that 80% of staff had received training.(45) Nationally, 35% of the clinics reported that they routinely administer vitamin A to HIV positive children.(48) The results of this study are not much different to national results and other studies as vitamin A was checked in 64% of encounters and given to those in need of a dose. The large percent of patients that were not given vitamin A was attributable to the fact that none of the clinics had 50,000IU of vitamin A and therefore children < 6 months did not get their dose of vitamin A.

Monitoring children's development is of importance but how and when such monitoring should be performed is not standardized. Developmental screening is the favoured method for developmental monitoring in many developed countries, including South Africa.(51;52) Developmental screening is best performed during well baby or immunization visits to detect disability in apparently healthy children. The tests include checking for developmental milestones such as sitting, standing, crawling, walking, talking and handling objects. The child's vision and hearing ability is also checked.(51) Developmental screening is not viewed as a priority child health service in South Africa and supporting guidelines and training materials are lacking. Barriers to implementing developmental screening include: nurses' heavy workloads, lack of facilities and human resources for the management of children with developmental disability, particularly at primary health care level.(53) The existence of such barriers for developmental screening is reflected in this study where age appropriate milestones were asked in a quarter (26%) of encounters and development was not assessed in the majority (86%) of

encounters. Few (14%) parents were given advice or counselling on development. Vision and hearing screening as recommended in the RTHC was not performed in most instances where required. Development is another area that is poorly assessed by health workers in both sick and well baby encounters as discussed earlier, and needs much improvement to ensure good overall quality of care services offered. However, developmental screening may be viewed as a "luxury" because in provinces in South Africa where immunization coverage is not adequate, developmental screening may seem futile and not a priority compared to preventing communicable infectious diseases and decreasing the rates of co-morbidities. Despite other areas of child health not being of adequate standard, community and parent awareness of the benefits of developmental screening, and early identification and intervention is necessary. The benefits of developmental screening in the country need to be defined. On-going research about the ability of health professionals to successfully perform this task and identify deficiencies, referral mechanisms, follow-up and long-term outcomes of children identified with developmental disability are necessary. (51)

The health workers response to identified risk factors such as teenage pregnancies, childhood obesity, twin pregnancies and low birth weights were minimal and poor.
A holistic approach to child health care is lacking as demonstrated by the results of this study.

4.4.4 HIV Care:

Paediatric HIV care has lagged behind that for adults in South Africa. It is estimated that almost 300 000 children are HIV-infected in the country.(54) South Africa faces many challenges in implementing the Comprehensive HIV and AIDS, Care, Management and Treatment Plan. The contributing challenges include lack of sufficiently trained staff, laboratory capacity, drug procurement and distribution problems as well as integration of services. In both well and sick child encounters, the majority of patients (84% and 89% respectively) in the study were not asked about their HIV status and pre-test counselling was not offered to more than eighty percent of patients. Health workers need assistance to easily identify exposed children by the recording of the maternal HIV status on the child's Road to Health card or the mother's antenatal clinic card which should be presented at well baby visits.

The South African IMCI guidelines have been adapted to include the diagnosis and management of HIV infection. Despite the relatively low sensitivity (67%), the current HIV algorithm is relatively specific (82%), and should provide opportunities for early identification of children with HIV at PHC level.(51)

Cotrimoxazole prophylaxis for the prevention of Pneumocysitis Jirovecii pneumonia (PCP) and other commonly acquired infections reduces mortality in HIV-infected children by as much as 43%.(55) South Africa follows WHO guidelines in advising cotrimoxazole prophylaxis from 4-6 weeks of age for all HIV-exposed infants, continuing in those with a definitive diagnosis of HIV until such time as demonstrated CD4 response has occurred on ART.(35) In 2001, only a third of clinics in South Africa reported routine administration of cotrimoxazole to HIV-exposed children and the majority of those providing cotrimoxazole were administering inappropriate doses.(48) In 2005, 85% of HIV-exposed infants at community health centres in the Cape Town metropole received cotrimoxazole. There are a few data elsewhere, but anecdotal reports indicate that this coverage is inadequate with occasional stock-outs of cotrimoxazole occurring at CHC facilities in Soweto.(54) Cotrimoxazole was not prescribed in almost a third of both well and sick child encounters which is a persistent problem and is emphasized in the previous surveys and studies done. Cotrimoxazole prophylaxis is a cheap and simple method of preventing PCP infection worldwide. HIV-infected mothers should be educated about the benefits of cotrimoxazole prophylaxis via the media and during clinic visits and they have the right to demand for this service. Pharmacy control systems need to be in place to ensure that stock-outs of this essential drug do not occur and that it is widely available at primary health care levels.

An estimate of at least 40% (110 000 children) of all HIV-infected children in South Africa require ART. From 2005 till 2006, the number of children receiving antiretroviral therapy has increased from roughly 3000 to more than 14000.(54) The need for ARTs (antiretroviral therapy) was not considered in all encounters in this study. There are many problems associated with paediatric antiretroviral therapy which include lack of sufficiently trained health care personnel, inadequate facilities, complexity of treatment recommendations as well as drug regimens and formulations. Almost half of all children on treatment in Gauteng are receiving ART from tertiary

hospitals and only 6% at community health centres. Many facilities lack doctors and primary health care nurses have not been trained to manage HIV-infected patients on ART.(54) In primary health care settings, services are generally delivered independently of each other. HIV-related services are independent from the immunisation, IMCI and tuberculosis programmes, resulting in missed opportunities. There needs to be nationally standardised training programmes in paediatric ART and guidelines for the management of HIV-infected children should be readily available.

Although all clinics provide HIV voluntary counselling and testing, the majority of patients are not offered these services. This is appalling especially with the current HIV epidemic in Africa. AIDS home-based care was a service that was provided by four clinics from Monday to Friday and by one clinic twice a week. Furthermore only half (56%) the clinics had guidelines for the management of HIV infection in children and two percent had national antiretroviral HIV guidelines in their clinics. In 2001, eighty percent of the clinic managers in South Africa who were interviewed had no knowledge of the Department of Health guidelines and about 10% of clinics sampled reported using the Department of Health guidelines.(48) This clearly indicates that this is an on-going problem. Not only are areas in the management of the HIV illness being neglected but the services offered need to be more efficient and accessible to prevent and control the spread of this deadly disease. The normalization of HIV, particularly HIV testing, within the health sector is appropriate and necessary, especially since ART has become available.(56) Emphasis should shift away from a doctor-based to a nurse-based service with clinically trained primary health care nurses becoming the key personnel to prescribe treatment to stable patients on ART.(54) HIV prevention and care for all children must be addressed appropriately and measures should be put in place in both primary and secondary settings to track outcomes.

4.4.5 Infrastructure and equipment:

The low utilisation of government health facilities has been attributed to the lack of proper facilities, which in turn limits the utilisation of the resources available, such as the staff.(57) Availability of physical infrastructure is crucial for the staff to perform better. In terms of infrastructure; tap water, telephone and electricity were available in 94-100% of the clinics evaluated. These findings were consistent with the Health

Systems Trust evaluation of the quality of service provision at primary level between provinces in South Africa; where Gauteng and Western Cape's means of emergency communication via telephone was always working and almost all (98%) urban clinics visited had taps within the clinic premises which were always functioning.(58) Despite the availability of telephonic communication, primary health care facilities uniformly failed to utilise this facility (and therefore missed an opportunity to minimise unnecessary referrals to tertiary centres such as Baragwanath Hospital). Only one clinic in this study used the telephone together with a referral note to transfer patients. Johannesburg primary health care clinics had superior facilities to Benin health centres where only 60% of clinics had running water, 45% had electricity and 44% had a scale for weighing infants and a scale for older children.(16)

The majority of clinics in our study were adequately equipped and well stocked with drugs. Almost all (15/16) clinics had working refrigerators and vaccines were stored correctly in most (79%) clinics. Essential emergency equipment such as dextrostix, nebulisation, paediatrics' resuscitation masks and laerdal bags were not present at all clinics. Only one clinic had nasogastric tubes and not all clinics had ORT corners and facilities for mixing rehydration solution. Emergencies are poorly managed at clinics and patients are sent in a critical condition to tertiary hospitals which could have been avoided by proper emergency primary care treatment. All facilities should have an oral rehydration therapy (ORT) corner and nasogastric tubes (NGTs) to rehydrate orally as diarrhoea is a leading cause of infant mortality in developing countries and is preventable.

In a survey conducted by the Health Systems Trust in 1997; 96% of urban clinics in South Africa had antibiotics; 98% of urban clinics had vaccines and 65% of urban clinics had oxygen. All of Gauteng's urban clinics had all of these supplies available.(58) Almost all (99%) clinics visited had baby weighing scales which were in good working order and in Gauteng 100% of clinics had functional refrigerators.(58) There are variations in the availability of supplies of equipment and drugs and functioning of refrigerators between developing countries. All the community health centres in rural Vietnam had 100% supplies of newborn scales, stethoscopes, thermometers, adult scale, otorhinolaryngological sets, telephones and disposable plastic syringes.(10) Primary health care facilities in South-east Nigeria, had fairly

adequate supplies of equipment and drugs and 60% of clinics had functioning freezers/fridges.(5) Facilities in one district of Bangladesh were not well equipped and supported.(14) In Kyrgyzstan, all 19 health facilities except for one with a broken refrigerator, had well-maintained and well-organised refrigerators with current temperature logs.(59) In Benin, all IMCI recommended drugs except vitamin A were in stock at most facilities but only 60% of clinics had vaccines in stock.(16) The Health Systems Trust survey and the results of this study prove that South Africa does have better supplies and facilities compared to other developing countries. but more drastic improvements need to be implemented with regard to quality of care rather than focusing on structure and quantity of care.(21)

Primary clinical care manuals, essential drug lists, IMCI chart booklets, HIV guidelines, vitamin A protocols and tuberculosis guidelines were available in half of the clinics evaluated. In this study, only two health workers referred to the IMCI chart booklet during consultations. There was no copy of standing orders in the consulting room of any of the 10 health facilities assessed in South-east Nigeria and no health worker made reference to the national case management algorithm.(5)

In this study, posters for health professionals were available in the majority (94%) of clinics and for the public in all clinics. Flyers that were directed toward the public's health and well-being were available in the majority (94%) of clinics.

The majority (75%) of clinics that were evaluated in this study were open for 5 days a week and most provided curative and immunization services, TB DOTS, family planning and community support groups. All clinics provided HIV counselling services. Similarly, in south-east Nigeria, seventy five percent of clinic services were available regularly.(5) The Health Systems Trust survey showed that only 48% of all the clinics visited offer immunizations services on a daily basis.(58) In this study, eighty one percent of clinics provided immunization services 5 days per week. This lack of daily immunization services still occurs despite the move towards integration of services, particularly at clinic level. The separation of curative and preventative services still persists as two clinics provided only curative services and two only provided preventative services.

4.4.6 Personnel and training:

Half of the clinics did not have doctors working in the facility and none of the doctors were IMCI trained. However in the sick baby encounters, fifty seven percent of professional nurses were IMCI trained and in the well encounters forty four percent were IMCI trained. Despite professional nurses having IMCI training, only two clinics and three sisters in the study practiced IMCI. The majority (83%) of health workers attending to sick babies had undergone primary health care training and this was the preferred method of consultation. The IMCI strategy cannot be ignored, even by primary health care trained nurses, as it provides a holistic approach to child care and treatment.

4.4.7 Organisation of clinic services:

Triage:

The majority (88%) of clinics did not have a triage system. A triage policy needs to be in place at all health facilities to identify children requiring high priority treatment.(7) Morbidity and mortality can be prevented by continuous monitoring of high risk patients entering clinics and health centres.

Transport:

Half of the clinics (50%) organized to transport extremely sick children by ambulance. Seventy four percent of urban clinics in the Health Systems Trust survey had an ambulance at their doorstep within an hour of an emergency call.(58) In this study, the reported time taken for an ambulance to respond was between 10 to 180 minutes and the mean time was 59±48mins with a median of 42.5 minutes. No studies have been done to determine the time taken for ambulances to respond to emergency calls from clinics. The time taken for an ambulance to respond would not be truly reflected as most of the house calls are inappropriately lodged by the community who are poverty stricken and have no means of transport to clinics or hospitals and therefore abuse the services provided and are unnecessarily taken to a tertiary setting rather than to the clinics.

4.5 Limitations of the study

The study had a number of limitations that are outlined below.

Study design:

1. Due to restricted resources and time constraints, the sample size had to be limited. A larger study sample would have been preferable to improve generalisability.
2. Clinics that assessed 40 or more patients per day were included in the study and smaller clinics were thus excluded. This was a pragmatic measure, to reduce the number of visits needed to clinics and maximise the number of consultations observed.
3. The study design focussed on structure and process rather than on outcome measures.
4. Staff morale and attitudes, which are key determinants of the quality of child health services, were not assessed in this study.

Positive bias:

5. Clinics were informed, prior to the visit, about the evaluations and may have updated record keeping and improved stocks and supplies and ensured that equipment was repaired or working.
6. Observed performance may not be “routine” performance as health workers may have modified their behaviour while being observed. During consultation there was only minimal interference by the researcher. Only in cases where clinical management posed a serious threat to the health of the child, was information given to the consulting health worker before the child left the health facility. This, together with observer bias, may have resulted in overestimation of adherence to management guidelines.

Negative bias:

7. As most consultations were conducted in a local language (not English), the interpretation by the researcher of the quality of counselling and advice may have been suboptimal.

8. The researcher, being a specialist paediatrician, may have been biased in terms of evaluating the assessment and treatment. However, this was minimised by using standard guidelines as the standard for evaluation.
9. In the sick baby clinical encounters, the clinical illnesses that the children were assessed as having by the health workers were not recorded and included in the checklist (i.e. appendix A).
10. In the well baby clinical encounters, the checklist did not make provision for whether immunisations were given when indicated or whether there were missed opportunities for immunisations (appendix B).

CHAPTER 5

CONCLUSION

South Africa's health care system is still facing numerous threats despite advances made in the post-apartheid era with implementation of a National Health Plan in 1994.
The adoption of the elements of the Alma-Atta conference in 1978 and the Batho Pele principles has not adequately served to improve the quality of primary health care services offered in South Africa.

This study emphasizes that the quality of child heath services offered at clinics in Johannesburg needs revising and the standard of care offered needs improvement with more focus on issues relating to process rather than structure.

Emphasis needs to be placed on health worker training and appropriate use of standard case management guidelines. The researcher-structured tool or checklist utilized in this study can be reconstructed and implemented into a scoring system for systematic supervision and evaluation of child health services offered at clinics.

General recommendations

A focused attention to establishing norms and standards for the delivery of child health care services in the City is required. The impression obtained by this study is of a range of activities occurring at clinics that are dependent on the idiosyncrasies of individual clinics (e.g. staffing, enthusiasm, management style) rather than on a well-structured health service. Each child health worker needs to have clear expectations of what is required at any individual clinical consultation This will also enable greater accountability for the (lack of) delivery of adequate services to children.

A consensus on the structure and mechanisms whereby child care will be provided by the City needs to be established to address issues such as:

- Should children have separate queues from adults?

- Should a dedicated staff member (with basic paediatric skills) care for children whenever possible (at least in larger clinics and CHCs)?
- What are the basic paediatric skills required by health professionals caring for children at the PHC level?
- Is the IMCI approach the preferred strategy for clinical consultations?
- Should promotive and sick care services be combined?
- Standardised recording of clinical information (use of RTHC, standardised consultation sheets [e.g. IMCI sheet], out-patient cards, etc)
- Standardised referral mechanisms (communication, forms, transport mechanisms)
- Standard equipment needed at every child health service (including emergency equipment)
- Better supervision and routine, regular evaluation of child health services is needed. We would favour the awarding of a “child friendly service” score to every clinic on a 6-monthly basis, based on an easy-to-perform scoring system (which could be developed by the researchers). Clinics scoring poorly would be offered incentives, while those scoring highly would be offered rewards.

Detailed Recommendations for the clinics

1. Dedicated nursing assistant to weigh all children and to take a temperature prior to being seen by the health worker.
2. Public health promoters to focus on health care promotion and education through “health talks” mostly on hygiene and health education which can be done whilst patients wait in queues to be seen.
3. A screening or triage system must be adopted whilst patients are waiting in queues, for early detection of critically ill children.
4. Designated child health sessions such as immunisations must be extended from 2-3 days to 5 days per week and this will contribute to a decrease in waiting time. One clinic provided curative care services twice a week and the rest provided this service for more than 5 days per week. Preventative services were provided for two days at three clinics and the rest provided this service for five days a week.
5. Single queue for paediatric patients and to combine both curative and preventative baby services
6. Services could be staggered during the day. Curative services throughout the day and preventative services in the afternoons when clinics are quiet.
7. Children should be attended by a dedicated health worker who is ideally specifically skilled in paediatrics. Less rotation of staff would help.
8. Staff tea and lunch breaks must be staggered so as to maintain patient flow.
9. Advice and difficulties in assessment and management should be discussed telephonically with hospitals centres prior to referral. Only one clinic communicated via the telephone.
10. Introduction and improvement of the IMCI strategy. Strict adherence to the chart booklet is recommended so that aspects of the clinical examination as well as danger signs, and preventative measures such as immunizations, vitamin A, deworming and HIV are not missed.

    After IMCI is implemented, health workers thereafter need continuous support even after training. Health workers also need to focus on communities by improving the caregivers understanding and acceptance of IMCI goals so that there is optimism about public health improvements with the use of IMCI.

11. Some aspects of treatment and management need greater focus or attention such as HIV diagnosis and management, food supplementation, counselling and developmental assessments. VCT must be offered to all patients, food supplementation and growth promotion needs further focus and training. Reassurance and encouragement to mothers is required both in the well and sick children.
12. More active role needs to be played in emergency situations. Attempting of intravenous line insertion, where appropriate, should be encouraged.
13. Ensure that there is emergency equipment such as dextrostix, nebulisation, paediatric resuscitation masks, laerdal bags and nasogastric tubes present at all clinics.
14. Mandatory to establish ORT corners for oral rehydration.
15. Drugs such as cloxacillin, nalidixic acid, phenobarbitone and vitamin A should be stocked at clinics.
16. Vaccines must be stored correctly and refrigerators must always be working.
17. EDLS, IMCI chart booklets, primary clinical care manuals and growth monitoring guidelines together with food supplementation should be available for reference and dispensing at all clinics.
18. Clinic toilets should be kept clean at all times and adequate seating must be provided for patients.

Specific Recommendations for health authorities

1. Integration of curative and preventative child health services could reduce inefficiencies in child health care whilst increasing appropriateness of care and provide more accessible holistic care.
2. Conducting regular assessments: quality of care needs to be assessed repeatedly over time in a comprehensive manner using the same assessment tool at regular intervals. These assessments should include appraisal of infrastructure and equipment; assessments of staffing levels; structured interviews with staff and patients to elicit their opinions and knowledge; observation of consultations assessing technical as well as interpersonal skills of health workers and record reviews on tracer conditions.
3. Improving structural aspects in terms of the physical condition of buildings and availability of equipment, drugs and proper sanitation.
4. Improving organizational aspects such as number of staff and qualifications as well as improving managerial and administrative procedures.
5. Improving technical level and qualifications of health workers by:

a) Regular refresher courses or in-service training

Frequent training is the single biggest productivity booster and incentive among promoters. Promoters state that “training empowers us to perform better and to follow our commitment to the community.” (6)

b) Frequent quality supervision

Facilitative supervision is defined as ensuring that providers in peripheral primary health facilities follow appropriate guidelines, continuously seek to improve their performance, overcome operational barriers and maintain their motivation. (33).

Supervisors must be provided the resources and support they need to supervise effectively such as access to official vehicles, travel allowances, essential supplies and guidelines.

Many supervisors act as inspectors rather than as facilitators, educators and problem solvers. There must be a good relationship between supervisor and providers for effective supervision. More time is generally spent on facility level

issues rather than on service quality and patient care issues. This needs to be changed to ensure quality assurance and patient satisfaction.

The researcher-developed checklist utilized in this study can be implemented as a tool for systematic supervision of child health services offered at clinics.

Incentives to motivate good performance by promotion and career development will assist

Greater accountability to supervisors is warranted

6. Programme planners and health policy makers can utilize the researcher-developed structured checklist from this study as well as the recommendations mentioned above to undertake a major review of the quality of child health care offered at primary health care clinics in Johannesburg and South Africa.
7. Emphasis needs to be placed on health worker training and appropriate use of standard case management guidelines.

CHAPTER 6

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