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Neonatal Hearing Screening Services at Primary Health Care Clinics in Gauteng

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In the Department of Speech Pathology and Audiology

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Declaration

I, Aisha Casoojee, hereby declare that this dissertation is my own work. Assistance that I have received is detailed in the acknowledgements of this report. No part of this dissertation has been previously submitted for a degree at any other University, except where references have been made in this report. I am responsible for the content of this study and the conclusions reached.

Signature: _____ Date: _____

Dedication

For my sons, Muhammed Safi' Ullah and Muhammed Ihsaan

Acknowledgements

Dr Karin Joubert, it is an honour for me to Thank You for your invaluable guidance, your patience, and your academic expertise.

I owe my deepest gratitude and am forever indebted to my parents, for your belief in me, your constant support and understanding. To my mother, you are my pillar of strength.

To my sister Fatima, brother Yusuf and sister-in-law Tasneem, who have made your support available in a number of ways.

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Abstract

Hearing impairment has been hailed a silent epidemic. Early Hearing Detection and Intervention (EHDI) models of service delivery have therefore been proposed for infants in South Africa so that they may be provided with timely, and appropriate audiological, educational and medical intervention. Neonatal hearing screening in South Africa is currently primarily conducted at Primary Health Care (PHC) clinics. The main objective of the study was to determine whether the neonatal hearing screening services provided at PHC clinics in the City of Johannesburg (CoJ) adhere to the guidelines, norms and standards as outlined by the Integrated National Disability Strategy [INDS] (1997), the Health Professions Council of South Africa [HPCSA] Position Statement (2007) on EHDI and the PHC Package (2002). This was achieved through a non-experimental, descriptive, survey research design. Nurses employed at PHC clinics and children who attended the PHC clinics formed the two participant groups. Data was collected via a self-administered questionnaire, a retrospective data compilation form and observations. Descriptive statistical measures were used to describe the information obtained during data collection. Results indicate that nurses employed within the CoJ PHC clinics do not comply with the proposed neonatal hearing screening practices as outlined in the INDS and the PHC Package. Context specific barriers, including limited knowledge, service delivery gaps, and workload inequities have been identified as contributory factors to the variations and inconsistencies of protocol adherence by PHC nurses. Effective referral systems are important to ensure that these children are provided with appropriate services within the critical period for language development. The optimisation of current governmental hearing screening protocols are thus a feasible, temporary measure until such time that EHDI programmes be mandated at a governmental level.

Key Words: Audiologist, Early Hearing Detection and Intervention, Primary Health Care, hearing screening, nurses

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Chapter 1: Orientation

"Anything that interferes with a child's ability to interact with the environment in a normal manner is a potential cause of or contributing factor to the presence of developmental and, more specifically, communication delays" (Rossetti, 2001, p.2).

1.1 Introduction

The purpose of this chapter is to provide a brief discussion of the background of neonatal hearing screening practices in relation to the rationale of this research study. This chapter further defines the contextual terms used within this study, an explanation of abbreviations used and an outline of the chapters that follow.

1.2 Background

The early identification of atypical development often occurs only when children fail to meet specific developmental milestones (such as a lack of responsiveness, behaviour- and language problems) that are typically identified after the age of 18 months (Batshaw, Pellegrino & Roizen, 2007). It has been reported that in South Africa, children with developmental disabilities are often not identified early, as the parents and professionals involved in the care of the child, may not recognize the risk factors before the full expression as a disability (Moodley, Louw & Hugo, 2000).

This challenge arises particularly with the identification of hearing loss. It is postulated that the detection of hearing loss in South Africa is still primarily the result of parental concern about observed speech and language delays, unusual behaviour or the complications of otitis media (Swanepoel, Storbeck & Friedland, 2009). As hearing is

critical for cognitive, speech, and language development; hearing loss is a contributing factor to communication delay (Dettman, Pinder, Briggs, Dowell & Leigh, 2007). It is generally accepted that among all childhood developmental domains, communication skills provide the highest predictive correlation with the attainment of later intelligence and school performance (Rossetti, 2001). The early detection of hearing loss coupled with appropriate early intervention is essential to facilitate speech and language, academic, personal-social and emotional competencies that would serve as the foundation later in life. Infants with hearing loss who are identified early and with whom intervention is initiated by nine months of age, have excellent outcomes which potentially match those of their hearing peers (Swanepoel et al., 2009).

Early intervention, in relation to audiological principles, is based on three components. These include newborn hearing screening, diagnosis of a hearing impairment and the implementation of intervention services. Early hearing detection and intervention (EHDI) has become an increasingly important aspect of neonatal care in developed countries and in some developing countries, including South Africa (Olusanya, 2007; Yee-Arellano, Leal-Garza & Pauli-Muller, 2006).

Despite the availability of nationally adopted policies such as the Integrated National Disability Strategy [INDS] (1997); the Primary Health Care (PHC) Package (2002); and the Position statement of the Health Professionals Council of South Africa [HPCSA] on EHDI (2007), EHDI services are not yet accessible to infants in South Africa (Meyer & Swanepoel, 2011). This study thus aims to illustrate the infant hearing screening component of EHDI, within the milieu of a lack of systematic screening programmes in South Africa.

The INDS (1997) is a comprehensive document which provides a framework that addresses disabilities and advocates that all South Africans should have equal access to their

rights and responsibilities. More specifically, the INDS (1997) highlights prevention as a cornerstone of disability policies, but acknowledges existing prevention policies are not linked to identification and intervention policies. Recommendations within the INDS (1997) for children with communication disabilities is the comprehensive integrated early identification so that they may be referred to the appropriate intervention programmes, such as EHDI programmes.

Taking into consideration the above-mentioned recommendations, relevant stakeholders had developed the PHC Package (2002). This package serves as a national policy guideline with minimum norms and standards for the early detection of disabilities, including hearing screening and the prevention of hearing impairment due to otitis media. The HPCSA Position statement on EHDI (2007) encompasses the above mentioned guidelines, norms and standards and has been developed on the principle that an improvement in early childhood development is central to more equal opportunities (HPCSA, 2007, p. 2). The position statement thus proposes EHDI programmes for infants with disabling hearing impairments in South Africa, in keeping with eliminating the marginalisation of people with disabilities.

Due to the poverty levels in South Africa, 85% of the population rely on public health facilities to access health services. Despite this critical role of the public health care sector in South Africa, it has been found that only 7.5% of public hospitals provide any form of infant hearing screening. Of this percentage, less than 1% of these hospitals offer Universal Newborn Hearing Screening (UNHS) services (Theunissen & Swanepoel, 2008). Given these statistics, and according to Section 27 of the Constitution of the Republic of South Africa (1996) pertaining to access of health care services, it would therefore be necessary for PHC clinics to provide EHDI services.

PHC clinics are service delivery facilities located within reach of the communities and would allow everyone the right to have access to health care services. Additionally, EHDI would be in line with the Department of Health's (DoH) PHC focus of comprehensive and integrated health programmes, as PHC clinics are the first point of entry to the health system and have become the cornerstone of the public health system.

There are however various challenges to the implementation of EHDI in South Africa. These include a limited number of audiologists; inadequate training provided for health professionals, and lack of contextual research (Kanji, 2010; Petrocchi-Bartal, 2011 & Swanepoel, 2005). Hearing impairment is the third highest disability in South Africa with a prevalence of 4.5 million individuals across all age ranges (StatsSA, 2001). Based on these figures, it is estimated that 15 000 children between the ages of birth and four; and 52 000 children between the ages of five and 13 years present with a hearing loss. It is thus estimated that 6116 babies with a significant permanent bilateral hearing loss are born annually in South Africa (Swanepoel, 2008).

With reference to the afore-mentioned prevalence of hearing loss in South Africa, it has been established that each audiologist would thus be required to serve a significantly large number of individuals with a hearing loss. Due to the majority of audiologists in South Africa working within the private healthcare sector, the actual number of patients seen in the public health care sector are further reduced (Swanepoel, 2006).

Many health care professionals are unaware of the significance of EHDI and its reliance on early and appropriate interdisciplinary referrals (Swanepoel, Ebrahim, Joseph & Friedland, 2007). This lack of awareness necessitates united efforts by audiologists, speech-language pathologists, professional associations, and national governmental coordinators who understand this multistep screening, diagnosis and intervention processes, to find ways to

cooperate with PHC nurses to share critical information and resources (Munoz, Shisler, Moeller & White, 2009). The proposed neonatal hearing screening guidelines, protocols and outreach efforts will only be effective if audiologists understand nurses' perspectives on EHDI in relation to nursing training curricula and DoH policy implementation plans; as these commonly affect their ability to serve children who are at-risk for or may have a hearing loss.

There is currently limited contextual information regarding infant hearing screening services in South Africa (Friderichs, Swanepoel & Hall, 2012; Kanji, Khoza-Shangase & Ballot, 2010). This lack of evidence on infant hearing screening further raises obstacles toward developing appropriate and efficient neonatal hearing screening programmes (Swanepoel, Delport & Swart, 2004). Therefore, additional research, specifically on EHDI at a PHC level, is vital for the future expansion and implementation of EHDI services; hence the importance of this current study. The objective of this study was to improve future service delivery within the public healthcare sector by extending the access for majority of the South African population to EHDI (Khoza-Shangase & Joubert, 2011).

Thus, the critical challenge faced by audiologists working in EHDI is how to mobilize on collective resources and capitalize on the current knowledge of the PHC nurses to ensure better health and developmental outcomes. Bringing these different multidisciplinary perspectives of audiologists and PHC nurses together, would promote the well-being of children with hearing losses and their families. Therefore, this research into EHDI in a South African context is important for the collation and development of appropriate and efficient neonatal hearing screening guidelines and protocols (Kanji et al., 2010). However, in order to achieve the successful implementation of EHDI at PHC clinics, it will be useful to gain insight into the current practices of hearing screening. It should be borne in mind that these practices are however determined by the level and quality of services rendered to the public,

the state of the health care facilities and the challenges experienced by the PHC clinics, which the present study aimed to investigate.

Significant challenges inherent to Africa include widespread poverty, a high prevalence of infectious diseases, poor healthcare infrastructure and lack of audiological services (Swanepoel & Storbeck, 2008, p. S2). Taking into consideration these unique contextual realities; Kritzinger, Louw and Rossetti (2001) proposed a transdisciplinary framework for Early Communication Intervention (ECI) to be integrated into public service delivery within the PHC Package (2002). Transdisciplinary models of service delivery aim to enhance service coordination through the sharing of roles across disciplinary boundaries (King, Strachan, Tucker et al, 2009). As the PHC Package was designed to provide comprehensive and integrated health services to be implemented through one combined programme which would overcome a split across disciplines, it has adopted some form of the transdisciplinary approach. It is thus postulated that this approach will result in improved teamwork (Van Rensburg, 2004). This proposal was further acknowledged by Swanepoel (2006) who proposed that PHC clinics (e.g. immunisation visits) would be an excellent platform for the implementation of EHDI.

In order to gain early access to infants with, or who are at risk for hearing loss, PHC nurses would therefore need to become aware of the multiple risk factors that may contribute to a hearing loss (Littleton & Engebretson, 2002). Since a hearing loss can occur during any stage of development; PHC nurses who see the child most often have the advantage of performing surveillance. Surveillance, often used interchangeably with the term monitoring, is a nursing intervention that has been defined as the purposeful and ongoing acquisition, interpretation and synthesis of patient data for clinical decision making (Henneman, Gawlinski & Giuliano, 2012). Hearing screening will thus enable these nurses to review

auditory skill development at immunisation visits, especially in the case of late onset or progressive hearing loss (Eiten, 2010).

In an attempt to address the question of the current state of neonatal hearing screening services at PHC clinics in Gauteng, the objective of this study was to identify the link between these current practices and existing guidelines and protocols implemented for neonatal hearing screening within the CoJ. By highlighting these potential gaps in service delivery it would allow informed decision-making regarding EHDI by policy makers and relevant stakeholders. This information could therefore be used in order to assist the early referral of infants who have or are at risk of developing a hearing loss, to appropriate EHDI services.

1.3 Definition of Terms

Developing Country

Developing countries are known as less-developed countries, comprising nations with a low level of material well-being (The World Bank, 2011). The development of a country is measured with statistical indexes such as income per capita, life expectancy and literacy rates, to name but a few. Developing countries may however have varying levels of development wherein some communities may even enjoy a high average standard of living (Sullivan & Sheffrin, 2003).

Early Hearing Detection and Intervention

Early hearing detection and intervention generally constitutes a programme with three phases that begins with hearing screening, follows through to diagnosis of a hearing impairment, and ultimately provides intervention. Therapeutic, medical and educational interventions are provided which constitute either home-based or clinic-based early intervention (HPCSA, 2007). Such programmes are better known by the acronym EHDI. Timing is a core principal to EHDI service delivery, thus enabling optimal outcomes for infants with hearing loss and the provision of opportunities equal to those of their hearing peers (Yoshinaga-Itano, 2003).

Primary Health Care

PHC is essential health care which is based on practical, scientifically sound and socially acceptable methods and technology. PHC is made universally accessible to individuals and families in the community, with the aim of focusing on a health equity-producing social policy (World Health Organisation [WHO], 2008).

Universal Newborn Hearing Screening

It is a strategy employed for the early detection of hearing loss whereby all newborn infants have their hearing screened by means of physiologic measures. This hearing screening should preferably be conducted before discharge from hospital in order to identify permanent congenital and early onset hearing loss (PCEHL) (HPCSA, 2007). In the event that UNHS may be deemed as unfeasible, risk-based screening (targeted screening) as an intermediate solution may be implemented (Olusanya, Luxon & Wirz, 2005). Risk-based screening is based on the identification and testing of all babies at risk for PCEHL based on established

risk factors as defined by the JCIH and HPCSA (HPCSA, 2007; JCIH, 2007; Olusanya et al, 2004).

1.4 Abbreviations

CoJ	City of Johannesburg
CPD	Continuing Professional Development
DoH	DoH
ECI	Early Communication Intervention
EHDI	Early Hearing Detection and Intervention
EPI	Expanded Programme on Immunisation
GBD	Global Burden of Disease
HPCSA	Health Professions Council of South Africa
IMCI	Integrated Management of Childhood Illness
INDS	Integrated National Disability Strategy
JCIH	Joint Committee on Infant Hearing
PCEHL	Permanent Congenital and Early onset Hearing Loss
PHC	Primary Health Care
PMTCT	Prevention of Mother-to-Child Transmission
RtHC	Road to Health Chart
UNHS	Universal Newborn Hearing Screening
URTI	Upper Respiratory Tract Infection
UNICEF	United Nations Children's Fund
WHO	World Health Organisation

1.5 Chapter Outline

An outline and description of the sections in this study are discussed in Table 1:

Table 1

Outline and Description of Study

Outline	Description
Chapter 1	The first chapter provides a background of neonatal hearing screening, a statement of the problem and the purpose of conducting the current study, with reference to the unique contextual realities of South Africa. It further includes the definitions of terms used within the framework of the research, the abbreviations used and lastly an outline of the chapters in the study.
Chapter 2	The literature chapter provides the conceptual framework for the study. The principles related to EHDI are presented. It also provides an overview of the current practices of neonatal hearing screening in the context of both a developed world and within the developing world.
Chapter 3	The methodology is outlined in this chapter. This chapter provides a description of the research design, the participant selection criteria, material and equipment used and the data collection procedures employed in the study. Finally, the data analysis and statistical procedures are presented.
Chapter 4	This chapter provides an overview of the results obtained. The results are presented in accordance with the sub-aims of the study.
Chapter 5	In this chapter the findings are discussed in relation to current literature and proposed levels of service delivery.
Chapter 6	This chapter provides a conclusion of data collected from the study and recommends a feasibility model of neonatal hearing screening at PHC clinics in conjunction with current planning and future regulatory needs in respect of the National Health System. In conclusion, a critical evaluation of the study is provided along with recommendations for future research.
Appendices	The appendices supply important information for the understanding of the data collection and analysis procedures, and thus the replication of the study.

1.6 Summary

This chapter provided the rationale for the study and described the current status of neonatal hearing screening and the purpose of conducting the current study. This chapter also included definitions of the contextual terms used, an explanation of abbreviations, and an outline of chapters that further described the aims and execution of the study.

Chapter 2: Literature review

"Through Early Hearing Detection and Intervention (EHDI) services hearing loss can be detected early and appropriate intervention initiated to ensure optimal development for all infants and children with hearing loss" (EHDI SA, 2010, p. 1).

2.1 Introduction

The purpose of this chapter is to introduce EHDI, and discuss the influencing factors to its implementation within the context of healthcare in South Africa. This chapter further focuses on the current EHDI practices conducted by PHC nurses and the developmental constraints to its effective implementation.

2.2 Prevalence of hearing loss

The global estimate for permanent disabling hearing impairment is estimated at approximately 278 million people (WHO, 2005). Permanent disabling hearing loss is defined as a moderate (41-60 dBHL) or worse hearing loss in the better ear (Jamison, Feachem, Makgoba et al., 2006). The WHO (2005) estimated that two-thirds of people with permanent disabling hearing impairments live in developing countries. Twenty five percent of these hearing losses are of early childhood onset that originates from birth or within the neonatal period (Olusanya, 2007).

Within the last decade, research has demonstrated the efficacy of early intervention for children with hearing loss who develop and maintain normal language skills in keeping with their cognitive development (Thompson, McPhillips, Davis et al., 2001; Yoshinaga-Itano, 2003). Early detection and intervention for hearing impairment has thus become an

increasingly important aspect of neonatal care in developed countries. Numerous international bodies and organisations have as a result advocated for the universal screening of all neonates and infants through EHDI programmes (International Working Group on Infant Hearing, 2009; JCIH, 2000; Kriek, 2006; Van Straaten, Hille, Kok & Verkerk, 2003). It is well known that EHDI programmes implemented in developed countries, such as Australia, Canada, the United Kingdom and the United States of America (USA) have been very successful (Davis, Bamford & Stevens, 2001; Mencher & Devoe, 2001; Russ, Richards, Poulakis et al., 2003; Young, 2010).

A cross-country study conducted by Olusanya, Swanepoel, Chapchap et al. (2007) set out to examine the progress achieved in developing countries in relation to the implementation of neonatal hearing screening practices. These results, obtained from Brazil, Oman and Chile confirm that infant hearing screening is a feasible and viable early hearing detection strategy in developing countries (Olusanya, Swanepoel, Chapchap et al., 2007). These once rudimentary projects have progressed to important and achievable public health initiatives within these developing countries. It is widely accepted that neonatal hearing screening leads to lowering the age of identification of congenital hearing loss in children (Canale, Favero, & Lacilla, 2006; Holster, Hoeve, Wieringa, et al 2009; Sirur & Rangasayee, 2011; Yoshinago-Itano, 2003). A time-series analysis was thus conducted by Sirur and Rangasayee (2011) in Mumbai, India. The results of this study validate that the absence of neonatal hearing screening practices, inevitably delays the age of identification of congenital hearing impairments which arise in irreversible developmental constraints, hindering service capacities at all levels of healthcare.

South Africa is classified as a developing country as it is characterised by mixed sections of developed and developing contexts (United Nations Environment Programme, 2011). This is further evident in the existence of a healthcare system that consists of both the

public and private sector (Swanepoel, 2006). Research conducted in collaboration with an international project on Globalisation, Inequality and Health (Wadee, Gilson, Thiede, Okorafor & McIntyre, 2003) highlight that the present South African private health care sector predominantly serves the minority higher income groups. These findings further confirm the disparity in socio- economic status whereby 85% of births are within the public health sector and 15% in the private healthcare sector (Swanepoel et al., 2009).

Estimated data indicate that the prevalence of hearing loss in South Africa is approximately 6 per 1,000 live births (Swanepoel et al., 2009). The extrapolation of these estimates yield an incidence rate of 15.5 babies born with congenital, bilateral sensorineural hearing loss (greater than 40 dB) within the public healthcare sector and 1.5 babies born in the private healthcare sector, producing a national daily incidence rate of 17 babies (Swanepoel, 2009). This is higher than the prevalence data in developed countries, where this incidence is estimated at 2 to 4 per 1,000 live births (Tucci, Merson & Wilson, 2010). These estimated prevalence figures thus correspond with the figures reported in more than 100 developing countries which contain 80% of the world's population (Chen & Ravallion, 2008).

Owing to the fairly recent developments and reports on EHDI in South Africa, coupled with the scarcity of services, true prevalence data on infant hearing loss is lacking (Swanepoel et al., 2009). In relation to EHDI and across all Human Services Programmes, the collection and analysis of data contributes to good programme management and support for programme sustainability. Early intervention services for infants in South Africa are thus less developed and less comprehensive when compared to developed countries (e.g. Europe and USA). These developed countries further have access to better database record keeping systems within UNHS programmes, thus facilitating more accuracy in predicting the incidence of hearing impairment (Traynor, 2011).

2.3 Consequences of childhood hearing loss

Early childhood hearing impairment has adverse consequences on speech, language, cognitive and psychosocial development, which if detected late, subsequently impacts on educational and vocational attainment (National Institute of Health, 1993). It should be taken into consideration that congenital and early childhood onset hearing loss could possibly be sequelae to various disease- and injury causes. A non-exhaustive list of examples of these various diseases includes otitis media, meningitis, rubella, congenital anomalies and non-syndromal inherited hearing loss (Mathers, Smith & Concha, 2005).

Infant hearing screening, diagnosis of a hearing impairment and intervention before six months of age, is important in achieving better language development, which leads to better school performance, and ultimately better occupational performance. These achievements are in contrast to the outcomes of those children whose hearing impairments have been identified later (Yoshinaga-Itano, 2003). Regardless of the screening method used, infant hearing screening is thus critical to the implementation of a comprehensive early intervention plan for these children and their families.

2.4 Burden of disease

Disease burden is the overall impact that a health problem has at either an individual level or at a societal level (WHO, 2012). The original World Development Report (1993) introduced the “global burden of disease” (GBD) which measured the total loss of health resulting from diseases and injuries (World Bank, 2011). GBD today is measured by financial costs associated with mortality and morbidity rates, age, sex and region. GBD is quantified in terms of a standardised metric called the disability-adjusted life years (DALYs).

The DALY is an incidence-based measure which allows for the comparison of a population's actual health status and a specified norm (Econex, 2009).

South Africa's burden of disease is on average four times larger than that of developed countries and in most instances almost double that of developing countries (WHO, 2009). Amongst the disease profile, hearing impairment has a significantly higher prevalence than any other birth defect (Olusanya, Luxon & Wirz, 2004). Hearing impairments have far reaching consequences, causing people to be isolated and stigmatised during the entire course of their lives (Copley & Friderichs, 2010). Hearing loss without intervention thus affects an individual's ability to obtain, perform in and keep a job, placing a severe financial burden on both families and the government (Lewis, Eskeland & Traa-Valerezo, 2004; Yoshinaga-Itano, 2004).)

Individuals with hearing loss in developed countries receive income averaging between 40% to 45% less than the hearing population (Copley & Friderichs, 2010). These income figures are further decreased amongst individuals with hearing losses in developing countries such as South Africa, due to the poverty ratio (Olusanya, Ruben & Parving, 2006). Contextual figures regarding the combined expense incurred by the South African government, resultant of a specialised education and loss of productivity in an average lifetime of an individual with a hearing loss, are unavailable. The societal costs of a hearing loss in the USA has however been documented and is estimated to be in excess of US$1 million per individual across a life-span (Mohr, Feldman, Dunbar et al., 2000). It is thus evident that the extensive economic costs associated with a hearing loss directly increase the disability-related expenditure (Mitra, 2005).

Government funding in developing countries are uncertain due to the competing demands of high mortality diseases such as HIV (Human immunodeficiency virus)/AIDS

(Acquired Immune Deficiency Syndrome), tuberculosis and malaria (Olusanya et al., 2007). Given the impact of HIV/Aids across the South African health system, "the priority most keenly felt by national and provincial health ministries is the need to cope with the growing demand for antiretroviral (ARV) therapy" (Harrison, 2009, p. 18). This precedence results in the unduly compromise of EHDI services although it may be equally or even more cost-effective (Harrison, 2009). Furthermore, due to a lack of contextual research, the needs of EHDI programmes in South Africa have not yet been identified. Clear and rational approaches are critical for the sustainability of the South African health system, therefore additional research demonstrating the feasibility of EHDI, current practices and identifying existing challenges are necessary, hence the importance of the current study.

2.5 Importance of EHDI

The standard of care for all children, whether they have a disability or not, is that they should have equal access to the necessary resources which would allow them to reach their maximum potential (Department of Social Development, 2006). Numerous international bodies and organisations; such as the JCIH, the National Institute of Health [NIH]) and the International Working Group on Childhood Hearing [IGCH], have advocated for the universal hearing screening of all neonates and infants through EHDI Programmes (JCIH, 2000; Kriek, 2006; Petrocchi-Bartal, 2011). The JCIH has endorsed the provision of opportunities that maximise linguistic and communicative competence and literacy development for children with hearing impairments (JCIH, 2000).

EHDI is the identification of infants with hearing loss by means of universal hearing screening, thereafter enrolling them into early intervention programmes (Swanepoel, Clark, Koekemoer et al., 2010). EHDI programmes have been implemented successfully in

developed countries such as the United Kingdom and the USA (Davis et al., 2001; Mencher & Devoe, 2001; Russ et al., 2003; Young, 2010). The impact of this success in the USA illustrates a current average of 95% of newborns being screened for hearing loss prior to discharge from hospital in comparison to the less than 3% prior to its implementation in 1989. Additionally, the current age of diagnosis of a hearing impairment is two to four months old in comparison to 31 months old in 1991 (White, Forsman, Eichwald & Munoz, 2003).

2.6 The implementation of EHDI within a South African context

South Africa has taken the first steps towards UNHS with the development of a Position Statement on EHDI by the HPCSA in 2007. This document was guided by the JCIH Year 2000 document and the White Paper on the INDS (1997). It provides valuable direction for implementation of UNHS by setting standards where none existed previously.

The framework of the position statement supports the early detection of and intervention for infants with hearing loss. Firstly, by integrating Provincial and District service delivery mechanisms and secondly, by implementing inter-sectoral collaboration with government departments at all levels of health care. This integrated system of service delivery has been adopted by the South African government at both national and provincial levels, to plan their activities together. Mutual planning allows a variety of departments to jointly address the challenge of policy co-ordination and the integration of service delivery (Brynard, 2005). An EHDI model of service delivery was thus proposed by the HPCSA (2007) for infants in South Africa as an integrated part of primary, secondary and tertiary levels of healthcare. The model recommends that:

- All infants should have access to hearing screening using objective physiologic measures upon discharge from hospital or through immunisation visits at PHC clinics which coincide with the first six week immunisation schedule. The two physiologic measures endorsed include either an Otoacoustic Emission (OAE) or an Automated Auditory Brainstem Response (AABR). These measures may achieve specificity (proportion of negatives which are correctly identified) over 95% and sensitivity (actual positives correctly identified) approximating 100% thereby eliminating false-negative results.
- Those infants who do not pass the initial and repeated screenings should be appropriately and timeously referred for the evaluation and diagnosis of a hearing loss in a clinic-based context.
- Early intervention services should be provided to those infants with confirmed permanent hearing losses in a clinic-based context. Intervention services should allow prompt access to assistive devices and are to be provided within an interdisciplinary programme that is family-centred and asset-based.

Both the HPCSA 2007 Position Statement and the JCIH Year 2000 Position Statement asserts that diagnoses of a hearing impairment should be completed by three months of age and intervention before six months of age. Leeway is provided for infants enrolled in clinic-based screening programmes allowing for diagnoses of the hearing impairment to be completed by four months of age and intervention before eight months of age (HPCSA, 2007). Timely identification, diagnosis and appropriate intervention will ensure optimum, cost effective solutions that enable individuals to communicate effectively, allowing them to develop to their maximum potential. Early enrolment into an EHDI programme would thereby secure their full participation in, and contribution to society and the country's economy (HPCSA, 2007).

2.7 Contextual realities of South Africa

The unique contextual realities of South Africa were also considered in the development of this EHDI framework (HPCSA, 2007). Despite this integrated model of service delivery, many barriers still exist within the South African context. These barriers encompass a lack of awareness of services and the undervalued perception of early intervention services, inadequate instrumentation and tools, insufficient services of trained personnel and the health priorities (Kritzinger, 2000; Strasheim, Kritzinger & Louw, 2011).

The provision of inadequate support services in communities stem from the general lack of public awareness regarding the need for hearing screening and the importance of EHDI programmes (Houston, Hoffman, Munoz & Bradham, 2011). Furthermore, there is a lack of full support from all health professionals for EHDI programmes. This is mainly due to the limited knowledge about the benefits of EHDI, a shortage of EHDI facilities, difficult working conditions and insufficient referral systems (Kritzinger, 2000; Olusanya, 2007; Swanepoel et al., 2004). More specifically, these barriers also exist within the infrastructure of existing audiological and otological health care services which include a shortage of trained healthcare professionals, associated infrastructure and resource limitations (Swanepoel et al., 2010). This is despite the availability of objective measures (such as automated hearing screening tests) that are reliable, non-invasive and simple to use by non-specialists such as PHC nurses. The introduction of EHDI in the developing world is still constrained by reservations concerning the necessity of such a programme because of prevailing adverse health and socio-economic conditions and restricted resources (Swanepoel et al., 2009). The interplay of these factors have resulted in a lack of prevalence and aetiological data of childhood hearing loss making it difficult to gain institutional support and political advocacy (Swanepoel et al., 2010).

In addition, health priorities in South Africa are focussed on the HIV/Aids pandemic as opposed to individuals with hearing loss (Swanepoel, Hugo & Louw, 2006). The resultant impact therefore is that the rights of a significant majority of children with hearing impairments in South Africa remain marginalised, until such time that EHDI is formalised as an integrated nationalised health care strategy (Petrocchi-Bartal, 2011). Only then will this directive be in line with the South African legislation which emphasises the prioritisation of health care for young children, under the age of six years (DoH, 2004b).

The HPCSA has accommodated recommendations made by the JCIH that intermediate steps toward universal screening should be implemented in developing countries with limited resources (Olusanya et al., 2004). This recommendation has been made on the basis of the overriding value of early detection of hearing impairments (Olusanya, 2007). The absence of adequate equipment, staff, facilities and other resources are considered beyond the means of many developing nations, whilst inadequately funded programmes often draw on resources from other programs to exist (Mencher & Devoe, 2001; Olusanya et al., 2004).

Another significant challenge highlighted by Swanepoel (2006) is the increased ratio of individuals with hearing losses in comparison to the number of audiologists in South Africa. In 2010, 211 Audiologists and 1334 Speech Therapists and Audiologists were registered with the HPCSA (HPCSA, 2012). This implies a ratio of 1545 registered Audiologists to a birth rate of between 3306 and 6612 babies with hearing loss (Swanepoel, et al., 2009). Further disparities exist as the majority of these Audiologists provide services to the smaller minority of individuals with hearing losses within the private health sector (Swanepoel, 2005). The ratio of individuals with hearing losses within the public health sector to the number of audiologists is thus significantly increased. This is despite the fact

that South Africa is the only Sub-Saharan country to offer tertiary education in the sciences of hearing impairment (Theunissen & Swanepoel, 2008).

Furthermore, studies suggest that the quality and coverage of child healthcare delivery services in PHC facilities still remain poor in developing countries (Arifeen, Bryce, Gouws et al., 2005; Boonstra, Lindbaek & Ngome, 2005; Rowe, Onikpo, Lama et al., 2005; Ehiri, Oyo-Ita, Anyanwu et al., 2005; Lewis et al., 2004). These studies bring to light the focus of PHC services which has been on measuring changes in mortality and morbidity rates as opposed to the evaluation of the quality of services or the process of service delivery.

2.8 Integrated Management of Childhood Illness

In an effort to improve the health system itself, the skills of healthcare workers and family practices; the Integrated Management of Childhood Illness (IMCI) has been introduced by WHO and the United Nations Children's Fund [UNICEF] (Rakha & Naggar, 2006). The IMCI emphasises the comprehensive health care of children (Thandrayen, 2008). A multi-country evaluation was conducted to evaluate the efficacy of the IMCI protocol. The studies included Tanzania, Uganda and Brazil (WHO, 2003); Zambia (Oluwole, Mason & Costello, 2000) and across four districts in Cape Town, South Africa (Chopra, Patel, Cloete, Sanders & Peterson, 2005). Results of these studies acknowledged the improvements of comprehensive assessments, parent/caregiver education and referrals, and health worker performance after implementation of the IMCI. It is therefore evident that the IMCI protocol ensures a holistic approach to improving the child healthcare services provided at clinics (Thandrayen, 2008).

The comprehensive care approach, as outlined in the IMCI protocol, may provide opportunities for the introduction of some form of EHDI in developing countries where

routine or systematic childhood hearing screening does not exist (Olusanya et al., 2004). By adhering to the guidelines and protocols regarding neonatal hearing screening services within PHC clinics in South Africa, avenues towards the achievement of integrated assessment and management of EHDI could thus be uncovered. Consequently, to achieve the preconditions of EHDI, UNHS should interact with and be embedded in a multidisciplinary framework of audiological, medical, therapeutic and educational services that specialise in working with babies and their families (Bureau International d' Audio Phonologie [BIAP], 2007).

2.9 The Primary Health Care Package

In a joint effort to improve service delivery, the National DoH together with Provincial Health Departments, other Government Departments, Non Governmental Organisations, Universities, Private Hospitals, Professional Bodies and the South African Local Government Association has produced 'The Primary Health Care Package for South Africa' (2002). The PHC package is central to the transformation of health services in South Africa, formulating service delivery around the pillars of prevention, promotion, curative, supportive and rehabilitative services. The integration of curative care and preventive health services provide a comprehensive community-based package. The focus on the health of families and the community further incorporates health promotion as an essential element. By utilising these principles, health equity is promoted with the aim of contributing toward increased social cohesion and empowerment extending beyond individual health alone (DoH, 2002a). The PHC package thus serves as a guide for provincial and district health authorities to provide comprehensive services which are to be delivered at a PHC level of health service (DoH, 2002a).

The PHC package specifically promotes collaboration for the prevention of hearing impairment caused by otitis media (DoH, 2002a). Hearing impairments caused by otitis media affects the slightly older child, and is most common in children between the ages of two to six years old (Copley & Friderichs, 2010). By only adhering to this approach, the implementation of the PHC package runs the risk of excluding newborns and infants with hearing losses caused by factors other than otitis media. Hearing loss may also be hereditary (e.g. genetic disorders) or acquired (e.g. during pregnancy, or soon after birth by exposure to infectious diseases within the environment). These infectious environmental factors (e.g. prenatal infections, pneumococcal and haemophilus respiratory infections, childhood infectious diseases, HIV/Aids and tuberculosis) account for the infant morbidity and mortality in developing countries which give rise to the higher prevalence of hearing loss in children in South Africa (Batshaw, Pellegrino & Roizen, 2007; Copley & Friderichs, 2010).

It is therefore proposed that in order to address the dearth of EHDI services in the public health context, it is essential to recognise the already existing protocol for infectious environmental factors as possible contributory factors to hearing losses. This recognition could consequently decrease the economic burden of hearing impairment for the government and families, as PHC follows the premise to provide accessible services to the whole population.

2.10 PHC in South Africa

PHC is accepted as the best model for delivering basic health care (Swanepoel et al., 2006; WHO, 2008). In South Africa, it is the first point of contact with the health system for at least 85% of the South African population (Swanepoel et al., 2006). The challenge to provide a quality PHC system in South Africa, requires that it continuously responds and

adapts to the ever changing conditions and demands of the population (Kautzky & Tollman, 2008). Amongst the unique and evolving needs of the South African population are those who present with hearing loss. Pivotal to these efforts, the PHC Package carefully considered the skills and competencies needed in the PHC system for its success. The development of this policy document centred on the role of nurses as their service delivery is historical to community health settings (Finlayson, Sheridan & Cumming, 2009).

The competencies of nursing staff at a clinic level include knowledge of otitis media in relation to acute respiratory infections. It further highlights the importance of attendance of continuous professional development (CPD) activities so that nurses may understand the expansion of their roles and to improve their clinical skills and knowledge, thus enabling them to respond to the health needs of their communities with appropriate and cost-effective services (DoH, 2002a; Finlayson, Sheridan & Cumming, 2009).

Incorporated into the PHC Package are IMCI guidelines that outline the activities that should be performed during a typical immunisation session to assess for the risk of hearing loss in babies from birth to 1 year of age. A typical session includes a revision of the child's medical records, an interview with the mother/caregiver, a physical examination and hearing screening (DoH, 2002a). During the physical examination it is stated that an otoscope be used to check the ear status. It is further important to palpate the lymph nodes, conduct a throat examination, check for neck stiffness, and examine the mastoid. This is aimed at identifying the presence of otitis media. The management, referral and record keeping practices to be employed by PHC nursing staff are also outlined.

The present hearing screening protocol, proposed by the PHC Package, is the use of two subjective hearing tests, namely the Swart Questionnaire (Swart, 1996) and the Voice Test (Pirozzi, Papinczak & Galsziou, 2003). These tests, as prescribed by the DoH (2002a),

are conducted either by observation of the infant or based on parent/caregiver report. The Swart Questionnaire comprises a series of questions to be asked for different age groups. From birth to three months of age, information related to the infant's awareness of sound is obtained. This includes questions on whether the infant startles to a loud sound and whether he appears to listen to the parent or caregiver's voice (Swart, 1996). The questions to be asked at six months of age aim to provide information regarding the development of sound localisation in an infant. History of auditory development provides the clinician with insight into the auditory and oral behaviour of a child, and may contribute in understanding possible onset and degree of hearing loss (Northern & Downs, 2002). The Swart Questionnaire thus proves to be a vital inclusion in the neonatal hearing screening practices at PHC clinics.

The Voice Test is conducted on children from twelve months onward (Pirozzi et al., 2003). The procedure entails that the nurse talks behind the baby at an arm's length away. The child is required to either repeat what is said or follow a simple 1-part instruction. The results are classified according to whether the baby responded to the nurses' voice at a whisper, normal conversational voice or raised voice indicating normal hearing, a moderate hearing impairment or a severe hearing impairment respectively (DoH, 2005). An earlier study evaluating the potential use of the Voice Test in detecting hearing loss, yielded sensitivity results of 87% and 96% in both children and adults respectively. It further yielded specificity results of 70% and 90% in both children and adults respectively (Burkey, Lippy, Schring & Rizer, 1998). Disagreement amongst scholars however emerged regarding the appropriate technique and value of the Voice Test in children (Dempster & Mackenzie, 1992; Prescot, Omoding, Fermor & Ogilvy, 1999 as cited in Pirozzo et al., 2003). Pirozzo et al. (2003) thus embarked on a study that aimed to identify the accuracy of the Voice Test in detecting hearing impairment in adults and children. The study concluded that the Voice Test is an accurate and simple test of hearing impairment; however yet again, decreased sensitivity

results were obtained. The decreased sensitivity of results was attributed to the inadequate evaluation of the Voice Test within PHC settings (Pirozzo et al., 2003). The non-standardised technique of the Voice Test brings about concerns regarding the reproducibility of results obtained, hence reducing reliability.

The results of both these tests are to be recorded on the 'Road-to-Health-Chart' (RtHC) and the CoJ Child Health Services 'Blue Card' (See Appendix H1, H2 & H3). The RtHC is a record of a child's health and development which remains in the possession of parents/caregivers and should be presented to the PHC nurse or health worker at every visit to the PHC clinic or other health care facility (DoH, 2002a). The rationale for recording the details of a child's progress on the RtHC is to encourage a partnership between the health professional and parents/caregivers, promote effective decision making and to establish continuity of care (DoH, 2002b). The same information is essentially recorded on the Blue Card, but is retained by the clinic.

Both records include four sections, namely developmental- , family- , obstetric- and pregnancy-history. It further includes space for recording immunisations, nursing care plans, child development and growth plotting. The child development chart guides the nurses to assess age appropriate milestones (including hearing and speech) (Thandrayen, 2008). The RtHC and Blue Card thus serve as a means of record keeping for PHC clinics as well.

The Mother Child Women's Health (MCWH) division of the DoH has developed systems that aim to target disease prevention and treatment for children with disabilities (DoH, 2001). The current inclusion of hearing screening tests at PHC clinics thus provide evidence that the complexity of hearing impairment are recognised at a governmental level (Petrocchi-Bartal, 2011). EHDI recommendations promulgated by the JCIH (2007) and HPCSA (2007) are however absent. As PHC services encompass the preventative, promotion, curative, supportive and rehabilitation services and relate to the professional functions of the

audiologist which emphasises identification, evaluation and auditory habilitation for infants with hearing loss, infant hearing screening at PHC clinics could align to EHDI standards and strategies (HPCSA, 2007; Lewis et al., 2004).

2.11 The suitability of PHC clinics for EHDI

EHDI programmes should be analysed in terms of contextual suitability, as the complexities of EHDI service delivery may vary according to different contexts (Olusanya et al., 2004). The goal of UNHS is wide screening coverage with the highest possible yield (Olusanya et al., 2004). With almost 90% of South African children fully immunised by the age of one year, it is recommended that infant hearing screening should be performed at immunisation clinics within the current PHC structures (Day, Barron, Monticelli & Sello, 2010; Swanepoel et al., 2006).

Screening programmes at the PHC level were accordingly piloted at two immunisation clinics in South Africa (Swanepoel, 2005). The aim of the research was to provide information that would assist in the planning and implementation of widespread screening programmes as the first step in developing an EHDI system in South Africa. It was found that basic and support facilities at these clinics proved to be adequate for the implementation of infant hearing screening programmes. One of the challenges to the implementation was the nurses' complacency in improving their knowledge regarding the effects of hearing loss and the screening process. It is postulated that this could be attributed to a natural resistance to change and the invisible nature of hearing loss (Olusanya, 2000 as cited in Swanepoel, 2005).

It is hereby evident that it is essential to increase these health workers' awareness of hearing loss and promote advocacy for children with hearing impairment (Lewis et al., 2004).

This would require collaborative efforts between audiologists and nurses at a PHC level (Lewis et al., 2004). To achieve collaboration between nurses and audiologists, it is imperative to become acquainted with the current hearing screening practices of PHC nurses. Research into the current hearing screening practices at a PHC level in South Africa are however limited.

The efficiency and effectiveness of hearing screening programmes are judged against follow-up return rates and referral systems (Olusanya et al., 2007). Tracking systems within these screening programmes should therefore be an integral part thereof. The implementation of tracking systems that ensures effective follow-up and referral systems will however ensure that those infants at risk of a hearing loss are provided with appropriate services within the critical period for language development (Swanepoel et al., 2009). This may prove difficult as presently, the screening programmes in South Africa are not sufficiently and systematically implemented (Swanepoel, 2006).

Disappointingly, studies conducted in developing countries reveal low follow-up return rates for secondary screening. Return rates of 16% were reported in Nigeria (Olusanya, 2008) and 56.97% in Malaysia (Mukari & Abdullah, 2006). Similar rates were reported in South Africa with 40% reported by Swanepoel (2005) and 31.4% reported by Kanji et al. (2010). Poor follow-up return rates may be attributed to: (i) a lack of awareness of the consequences of a hearing loss in relation to the age of identification, and (ii) the minimal promotion regarding the importance of follow-up by screening staff (Olusanya & Akinyemi, 2009; John, Balraj & Kurien, 2009).

These low follow-up and referral rates, amongst already limited systematic or routine screening programmes, have a direct impact on the age of detection of hearing loss in South Africa. It has been found that the average age of diagnosis of hearing loss in Gauteng is 31

months (Venter &Viljoen, 2008). The mean age of initial hearing aid fitting is 39 months and 43 months for the enrolment into an early intervention programme (Venter &Viljoen, 2008). Similar findings were reported for a larger scale study conducted in the Western Cape province with a mean age of initial hearing aid fitting at 28 months and 31 months for the enrolment into an early intervention programme (Van der Spuy & Pottas, 2008).

It is postulated that the sustainability of EHDI programmes in South Africa are dependent on the implementation thereof at the PHC level by appropriately trained community based PHC nurses. These front-line health professionals, who have direct contact with at-risk infants, have an important role to play in advocating for and conducting hearing screening (Moodley et al., 2000).

Audiologists should however be central to the PHC service delivery model as they serve infants and young children with hearing loss and their families (American Speech-Language-Hearing Association [ASHA], 2006). The HPCSA Position Statement (2007) specifies the role of the audiologist as the programme manager who supervises the screening programme. Within this capacity and as the experts in infant hearing loss, the audiologist should develop and implement context-specific screening programmes, train support personnel, and ensure holistic follow-up. Follow-up should include diagnostic assessments, and referral for early intervention which includes the fitting of assistive devices, habilitation, parent education and counselling services (HPCSA, 2007). The interactional processes between audiologists and nurses at PHC clinics are therefore an essential part of ensuring successful screening programmes (Swanepoel, 2005). It is therefore of critical importance that audiologists are fully informed of the guidelines, protocols and procedures used by PHC nurses when conducting hearing screening at PHC clinics.

2.12 Conclusion

It is evident from the literature reviewed that there is cause for concern surrounding the effective implementation of EHDI in developing countries such as South Africa. The proposal of aligning follow-up screenings with routine immunisation visits in order to improve follow-up and referral systems may address this challenge (Swanepoel et al., 2009). Immunisation visits at PHC clinics therefore serve as an excellent platform for the implementation of EHDI services in South Africa. Ultimately, South African governmental priorities are to provide infants with hearing loss, the best opportunities for optimal development and societal integration (Swanepoel, 2005). The current research aimed to address the question of whether neonatal hearing screening services provided at Primary Health Care clinics in Gauteng adhere to the guidelines, norms and standards proposed for the South African context.

Chapter 3: Methodology

A sound methodology must underpin quality statistics that requires adequate tools, procedures and expertise (EuroStat, 2012).

3.1 Introduction

The purpose of this chapter is to provide a description of the research design, the participant selection criteria, data collection tools and data collection procedures employed in the study.

3.2 Main Aim

To determine whether the neonatal hearing screening services provided at PHC Clinics in the CoJ adhere to the guidelines, norms and standards as outlined by the INDS (1997), the HPCSA Position Statement (2007) on EHDI and the PHC Package (2002).

Sub – Aims

- To describe the nurses' knowledge relating to the guidelines and protocols which support neonatal hearing screening.
- To describe a typical immunisation session, encompassing neonatal hearing screening at PHC clinics.

3.3 Research Design

The research design is a systematic plan devised to answer significant and pertinent questions accurately by employing a scientific method of gathering and interpreting information (Balsley & Clover, 2002). The research design serves as a bridge between the research question and its execution, thus aiming to add relevance to the research purpose (Terr Blanche & Durrheim, 2002).

This study thus employed a quantitative research approach. For the purpose of this study, a non-experimental, descriptive, survey research design was implemented to determine the status of neonatal hearing screening services provided at PHC Clinics in the CoJ. "Non-experimental research involves variables that are not manipulated by the researcher and instead are studied as they exist" (Belli, 2008, p. 60). Furthermore, descriptive studies seek accurate observations, thus formulating rich descriptions and explanations of human phenomena. It further has the advantage of providing data in terms of magnitude of a disease which allow for planning, organizing and evaluating preventive and curative services (Descriptive Studies, 2010; Terr Blanche & Durrheim, 2002).

Survey research offers uniqueness to studies if the information gathered is not available from other sources. It also enhances the standardization of measurement as the same information is collected from every respondent (Owens, 2002). Although the descriptive survey method relies upon observation for the acquisition of the data, this data must then be organized and presented systematically so that valid and accurate conclusions can be drawn from it (Leedy & Ormrod, 2005). For the purposes of the current study, the data collection protocol was developed after an in-depth literature review. A self-administered questionnaire was completed by the nurses that yielded the required information. Questionnaires are among the principle methods for collecting data in survey research as it provides a standardized list of factual questions or elicited opinions (Leedy &

Ormrod, 2005; Stein & Cutler, 2000). However, it should be borne in mind that surveys also have a number of limitations.

Responses cannot always be taken as accurate descriptions of what the respondents actually do (Badri & Burchinal, 2005). This study thus compensated for these limitations by including observational data and data from other records such as the RtHC and the CoJ Child Health Services Blue Card (Badri & Burchinal, 2005). A nurses' observation form and retrospective data compilation form were thus developed and completed by the researcher to record data that has been collected according to the data collection protocol. These checklists consisted of a list of all possible answers to a question, in which more than one alternative could be selected. "This format is most useful when the researcher wants to survey responses to a full domain of activities" (Terr Blanche & Durrheim, 2002, p. 295).

In addition to the checklists, the researcher observed and video recorded 25% of the sessions conducted by the nurses. The recordings were viewed by the interrater at a later stage, which allowed for interpretation of the results within the context in which the behaviour was produced. The researcher accounted for possible change in the nurses' behaviour due to the attention they received from the researcher (Teijlingen, Rennie, Hundley & Graham, 2001). This Hawthorne Effect was however compensated for by arranging the order of the data collection procedures so that the nurses would not know the exact procedural expectations of the immunisation sessions that the researcher had (Draper, 2009).

The data obtained through the observations and the questionnaires were then cross-checked to the retrospective information on the RtHCs and CoJ Blue Cards. These comparative results allowed the researcher to test the gathered information and analysis for accuracy which therefore involved a triangulated inquiry (DuFon, 2002). The data triangulation thus provided a more complete understanding of the phenomenon being studied.

The researcher lastly conducted a focus group with the aim of clarifying answers obtained from the primary data collection methods. Focus groups provide the advantage of probing more complex issues by drawing on the benefit of group dynamics (Bowling, 2002). The focus groups were carefully composed and balanced in relation to the primary data collection methods and the characteristics of the participants.

3.4 Research Phases

The research comprised three phases, which included the development phase, the pilot study and the main study.

3.4.1 Development of data collection tools. In order to retrieve data from available sources, the researcher designed the data collection instruments with care to ensure that the information is collected systematically. Appropriate data collection techniques were chosen to collect information about the hearing screening practices and about the settings in which they occur, and included the following:

Non-participant observation: Nurses Observation Form

This is a technique that involves systematically selecting, watching, and recording the behaviour and characteristics of the participants and phenomenon to be investigated without participating (Varkevisser, Pathmanathan & Brownlee, 2003).

Questionnaire: Nurses questionnaire

The self-developed questionnaires were used to assist the researcher to obtain information regarding the guidelines and protocols used by nurses when conducting hearing screening at the PHC clinics.

Data compilation sheet: Retrospective Data Compilation Form

A data compilation sheet was developed to review the hearing screening results on infants' RtHC and Blue Cards to identify record keeping practices conducted by nurses.

Focus group: Focus Group Question Sheet

A focus group question sheet was developed to stimulate discussion surrounding the data obtained from the primary data collection methods.

All materials that conveyed information and instructions to the participants were compiled in English. All the materials were then translated into isiZulu and Sesotho, as these are the two languages most widely spoken in Gauteng (StatsSA, 2001).

3.4.2 Pilot Study. All social research requires planning, therefore the researcher conducted a pilot study to (a) assess the feasibility of the research project; (b) validate the data collection tools and procedures; and (c) ensure that the instructions for completing the questionnaire and information were clear (McMillan & Schumacher, 2001; Neuman, 2003).

Context

The pilot study was conducted at two urban CoJ PHC Clinics in Gauteng. These clinics met the same criteria as for the main study (See Section 3.5.1). The pilot study was scheduled at a time that was proposed as convenient by the clinic managers of these PHC Clinics.

Participants

The participants of the pilot study met the same participant selection criteria as for the main study (See Section 3.5.2). Permission was first obtained from the clinic managers prior to approaching potential participants. Potential participants were then invited to participate in the study. The aim of the pilot study was explained to them, confidentiality and their right to withdraw without any penalty were highlighted. Only participants, who met the selection criteria and completed the informed consent forms, were included in the pilot study. The pilot study participants were not included in the main study.

Participants at PHC Clinic 1:

The first participant group included three Professional Nurses employed at a PHC clinic. They were employed at the current clinic and within their current job designations for one, three and five years respectively and had an average of six years working experience at PHC level.

The second participant group consisted of three children who attended the PHC clinic for immunisation. They were included to obtain retrospective data from their RtHCs and Blue

Cards. The participants in this group were aged 6 months, 6 months and 4.6 years old respectively.

Participant at PHC Clinic 2:

One Professional Nurse, who was employed at the PHC clinic with an average of 5 years working experience at PHC level, participated in the pilot study. She was employed at the current PHC clinic and within her current job designation for 3 months.

Procedures

The pilot study commenced once ethical clearance was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand (See Appendix C). Thereafter permission was obtained from the CoJ Health Department to conduct the study at PHC Clinics (See Appendix D). The same procedures as outlined in the main study were followed in the pilot study. It was required of participants who agreed to take part in the pilot study to complete the letter of informed consent (See Appendix E2). A second pilot study was conducted to confirm the recommended changes following the first pilot study.

Results and Recommendations

The aim, material and equipment, procedures, results and recommendations made after completion of the pilot study are further explained in Table 2:

Table 2

Pilot Study Aims, Material and Equipment, Procedures, Results and Recommendations

	Aim	Material and Equipment	Procedures	Results	Recommendations
1	To ensure that information and instructions provided are clear.	• Participant information sheet • Letter of informed consent • Video Consent Form	Participants were questioned on the clarity and understanding of information and instructions provided on the relevant materials.	The participants indicated that the purpose and procedures of the study were conveyed clearly. Additionally, the parents indicated that the translated versions into isiZulu and Sesotho were culturally appropriate.	No changes were required on the participant information sheet, the letter of informed consent, and the video consent form.
2	To determine the accessibility of data and whether the required information will be obtained from the RtHC and Blue Cards.	• Data Compilation Form	Three RtHC and three CoJ Blue Cards were reviewed.	The researcher was able to complete all the items on the checklist as the data required for the study was reflected on the RtHC and CoJ Blue Card.	No changes regarding the content of the data compilation form was required as the compilation of this measuring instrument was based on the DoH RtHC (2004b).
				The data compilation form was printed single sided and in a font size of 12, resulting in a checklist that was four pages long. The researcher found it tedious to complete owing to the coordination required for the number of pages.	Changes to the layout of the data compilation form were made for ease of completion.

	Aim	Material and Equipment	Procedures	Results	Recommendations
3	To determine whether the required information will be obtained during the observations of nurses whilst conducting immunisation sessions with patients.	• Nurses Observation Form	Three Nurses were observed whilst they conducted immunisation sessions with one patient each.	The researcher was able to gain and accurately record the relevant information regarding hearing screening at PHC clinics by observing the nurses.	Section 4.1 of the nurses' observation form was changed from "delayed language development" to read "language development". This change was required as nurses elicit a case history from the parent/caregiver regardless of the presence of a language delay or age appropriate language development.
				The nurses observation form was printed single sided and in a font size of 12, resulting in a checklist with multiple pages. The researcher found it tedious to complete owing to the coordination required for the number of pages.	Changes were made to the layout of the nurses' observation form for ease of completion.
4	To assess the methodological practicality of the video recordings during the observation of the nurses; and to assess the correct usage of the video recorder.	• Video Recorder	The researcher video recorded the observed sessions.	The researcher was able to activate the video recorder at the beginning of the session and stop the recording at the end of the session. The features and compactness of the video recorder allowed for unattended recording whilst the researcher completed the nurses observation forms during the sessions which proved feasible.	It was confirmed that the researcher first conduct the observations of the nurses, then administer the questionnaires to them. This created unawareness on behalf of the nurses regarding the procedural expectations of a session, thus compensating for the Hawthorne Effect (Draper, 2009).

	Aim	Material and Equipment	Procedure	Results	Recommendations
5	To assess the participants' understanding of the questionnaire.	• Nurses Questionnaire	The nurses were questioned on the following two aspects after completion of the questionnaire: • clarity of instructions used. • familiarity and understanding of terminology.	The nurses indicated that the instructions were easily understood and that appropriate terminology was used.	No changes to the instructions or the terminology were required.
6	To determine any shortcomings of the nurses questionnaire.	• Nurses Questionnaire	Pilot study 1: The written responses of the nurses were reviewed after completion of the questionnaire. The nurses were also questioned on the content of the questions.	None of the open-ended questions were answered.	A focus group to be conducted with the nurses who participated in the main study once data had been collected from all the clinics was recommended. The purpose of the focus group is to clarify information received from the questionnaires and to further probe issues surrounding neonatal hearing screening at PHC Clinics.
				It was found that the answers to questions 12 and 21 could be obtained from the nurses observations, thus not providing any additionally relevant information.	The questionnaire was changed accordingly. Once these changes had been made, the researcher piloted the questionnaire again.
				The nurses deem all referrals as urgent, however the availability of referral appointments are dependent on the waiting times at the referral sites.	Question 17 has been removed from the questionnaire.
				The purpose of questions 18 and 19 was to determine the availability of a tracking system with reference to follow-up visits.	These questions were thus combined and simplified.
			Pilot study 2: The same procedure was followed as in the first pilot study.	All the questions were completed. The participant indicated that the content of the questionnaire was applicable to her job description as a PHC nurse conducting immunisations.	Following the second pilot study, no further changes to the questionnaire were required.

	Aim	Material and Equipment	Procedures	Results	Recommendations
7	To determine the time allocation for completion of the data collection techniques, coupled with the video recordings during the observation sessions.	• Timer	The time taken to complete the data collection tools and the video recorded observations were logged.	Pilot Study 1: It took an average of 25 minutes to complete the questionnaire Pilot study 2: It took the participant 20 minutes to complete the questionnaire. The nurses observation form was completed by the researcher during the immunisation visits conducted by the nurses. The data compilation form was completed by the researcher after the immunisation visit.	The time estimation of 30 minutes to complete the questionnaire was appropriate. The immunisation visits lasted for ten minutes on average which allowed the researcher ample time to complete the measuring instrument. The video recording did not alter the time of the observations. Participants need to be informed that the researcher will require an additional five minutes to review the RtHC and CoJ Blue Card after their immunisation visit with the PHC nurse. Appointments at clinics will be scheduled according to these proposed times.

Summary

Results obtained from the pilot study were practical and constructive, and guided the researcher in making the necessary changes for the implementation of the main study.

3.5 Participants

The selection criteria for participants as well as their description are provided in this section.

3.5.1 Participant Selection. Sampling is the process used to select cases for inclusion in a research study (Trochim, 2006). All empirical research is conducted on a sample of cases, which may be individuals, groups, organisations or archival documents (Terr Blanche & Durrheim, 2002). Probability, simple random sampling was used to select the 20 PHC clinics that were included in the research study. By employing a probability sampling technique, the researcher guaranteed that every clinic within the CoJ Metropolitan Council District of Gauteng had an equal opportunity for selection, which further represents clinics across Region A to Region G. Equally, all nurse participants conducting immunisations on the day of data collection within these clinics had an opportunity for selection. At 18 of the clinics in the sample there was only one nurse dedicated to conducting immunisations. At the remainder of the clinics, additional nurses who conduct immunisations were absent on the day of data collection, thus resulting in a sample of one nurse per clinic. Sampling bias was further eliminated through simple random sampling as this process guarantees that the statistical conclusions were valid (Castillo, 2009).

Simple random sampling could however be vulnerable to sampling error, in which the randomness of the selection does not reflect the makeup of the population (Castillo, 2009).

This limitation was however overcome by increasing the number of participants in this study. This ensured that the sample was large enough to make inferences about the population (Terr Blanche & Durrheim, 2002). Probability, simple random sampling was therefore a useful and valuable method of selecting a sample of PHC clinics within the CoJ Metropolitan Council District of Gauteng (Bowling, 2002).

3.5.2 Participant Selection Criteria. The participants comprised of two groups. Participant group 1 included nurses at PHC clinics in order to obtain information on the current practices of neonatal hearing screening. Participant group 2 included children who were attended to by the nurses in participant group 1 in order to obtain retrospective data from their records.

3.5.2.1 Participant group 1: The participants in this group had to meet the following inclusion criteria:

- Registered professional nurses, or
- Enrolled nursing auxiliary.
- Employed at either a rural or an urban PHC clinic in the CoJ, Gauteng.
- Had to currently conduct immunisations at one of the 20 selected clinics.

3.5.2.2 Participant group 2: Only the records of children between the ages of six months and six years, who were attended by nurses in participant group 1, were reviewed, as the research was aimed at collecting data of hearing screening record keeping which is reflected at three, six and twelve months on the RtHC and Blue Cards. In addition, these

children receive their last set of immunisation at age six and only to return again at twelve years old.

3.5.2.3 Focus Group Participants: Participants of the focus group met the same participant selection criteria as for the main study (Section 3.5.2).

3.6 Participant Description

3.6.1 Participant group 1: A total of 20 health care workers participated in the study. The majority of participants were Professional Nurses (*n* = 17), followed by two Operational Managers with a nursing qualification and one Enrolled Nursing Auxiliary.

Six of the nurses held a degree in Nursing, whilst 13 held a Diploma in Nursing and the one Enrolled Nursing Auxiliary held a Matric plus Certificate qualification.

The participants' years since qualification ranged from one to 40 (mean *[M]* = 13.8, standard deviation *[SD]* = 11.41).

The average number of years that the participants had worked as PHC nurses was 4.97 years (range: 0.6-24; *SD* = 5.82). Seventy percent (*n* = 14) of these nurses had worked at their current place of employment for five years or less, with only 30% (*n* = 6) of these nurses having worked at their current place of employment for more than five years.

3.6.2 Participant group 2: Participant group 2 included 80 children who were attended to by the nurses in participant group 1. The data of 80 observations, four observations at each clinic, which spanned over a period of four weeks were analysed. Thereafter, retrospective data was collected from the RtHC and Blue Cards of the 80 children who were observed. The average age of the children included in the study were 20.06

months (range: 6-62; *SD* = 16.14). Thirty five percent (*n* = 28) of the children in the sample were in the age groups 6 – 11 months old, 37.6% (*n* = 30) were aged 12 – 23 months old and 27.5% (*n* = 22) of the children were older than 24 months but less than six years old. In all the cases, the reason for the visit to the clinic was for immunisations.

3.6.3 Focus Group Participants: Of the seven participants who were invited to participate in the focus group, only two nurses participated. They were from clinics within the CoJ Region G and D.

3.7 Material and Equipment

An accurate and adequate survey instrument is a critical component of the research study as it affects the internal validity of the data collection material (Stall, 2004). The data collection forms were developed to gather information to achieve the objectives of this study. Divisions or categorization within the data collection instruments aimed to provide structure to the evaluation process and to simplify the data analysis (Trochim, 2001).

Four data collection tools were developed for the purpose of the study: (i) nurses observation form; (ii) nurses questionnaire; (iii) the retrospective data compilation form; and (iv) focus group question sheet.

The equipment used in this study included a timer and digital video recorder. The time spent by the nurses in each session was logged. A Sony Handycam digital video recorder was used to video record the nurse observation sessions.

3.7.1 Content of the Data Collection Instruments

Nurses Observation Form

The nurses' observation form was utilized during the observation of the nurse participants during their interaction with four patients each. The procedures employed by the nurses when conducting hearing screening was documented onto this observation form. A timer was used to log the time spent by the nurses with a patient during the observed sessions. The observation comprised 40 items. A description of the content and the rationale for the inclusion of the items are presented in Table 3.

Table 3

Description and Explanation of the Nurses Observation form

Category	Type of Questions	Description and Rationale
Demographic Details	Open-Ended	Questions in this section were related to the age of the patient and their reason for the visit to the clinic.
Context	Close-Ended	This section provided details regarding the number of nurses consulting with the patient. It also provided a description of the nurses' job designations.
Session	Close-Ended	The procedure in this section has been adapted from the IMCI protocol which forms an essential component of the PHC package (DoH, 2002a). The aim of this section was to identify how protocols are implemented practically. The researcher further observed the use of an otoscope during the session. Inappropriate referrals can be avoided with the appropriate use of equipment by experienced and trained nurses (Swanepoel, 2005).
Hearing Test Conducted	Close-and Open-Ended	This category listed the types of recommended tests. The aim was to ascertain whether the tests conducted were age appropriate, not conducted, or whether any other type of test had been conducted instead. Adherence to practice guidelines is important for appropriate referrals especially within the poorly resourced developing context of South Africa (Swanepoel, 2005).
Intervention	Close-Ended	The researcher documented the types of intervention implemented by the nurses in the presence of otitis media (where applicable). If otitis media is overlooked, it may have significant adverse effects on the young child's speech and language development and may be related to later learning disorders identified during the school years (Roberts, 2004).
Patient education	Close- and Open-Ended	This was a specific question as to whether the nurses provided the parent/caregiver with instructions on inserting ear drops/dry mopping and follow-up appointments (where applicable). Dry mopping is a procedure conducted in order to keep the ear dry in the presence of discharging pus due to chronic otitis (DoH, 2005). Collaborative services that are family friendly are necessary for success (Swanepoel, 2005).

Category	Type Of questions	Description and Rationale
Referrals	Close-Ended	The questions in these sections have been adapted from the IMCI protocol which forms an essential component of the PHC package (DoH, 2002a). The aim of this section was to establish the follow-up and referral procedures employed by nurses (where applicable).
Records	Close-Ended	The patient-specific administrative and record-keeping procedures were documented with the aim of reviewing the current practices in relation to the proposed protocol (DoH, 2002a).
Duration of session	Open-Ended	The researcher documented the duration of the session for statistical purposes in relation to the purpose of the session and the context of the clinic (DoH, 2002a).

Nurses questionnaire

This form was a structured questionnaire that was completed by the nurses in order to obtain information regarding the guidelines and protocols used by nurses when conducting hearing screening. A description of the content and the rationale for the inclusion of the questions are presented in Table 4.

Table 4

Description and Explanation of the Nurses Questionnaire

Category	Type of Questions	Description and Rationale
Demographic Details, Qualification and Training	Close- and Open-Ended	The first three sections were designed to be non-threatening so as to prevent the participants from becoming discouraged or feeling inadequate in fulfilling their role as respondents (Singleton, Straits & Straits, 2009). These sections aimed to provide information that were important for the description of the participants' work experience and their qualifications, helped place their job descriptions into specific contexts and assisted in determining the nurses' knowledge of the ear and related pathology.
Guidelines, norms and standards for Neonatal Hearing Screening	Close-and Open-Ended	It is of essential importance that nurses have knowledge of guidelines, norms and standards as this ensures best practice (Kahan & Goodstadt, 2002).
Knowledge of approaches performed at the clinic and available equipment	Close-Ended	In these two sections, an overview regarding the equipment used and approaches performed at the clinic to assess the risk for hearing loss were provided. This information keeps nurses informed and allows them the opportunity of an integrated and holistic understanding of their patients (Roy & Jones, 2007).
Overview of a typical immunisation session	Close-Ended	The questions in this section were based on the structure obtained from the PHC Package as it has been developed to be the driving force in promoting equity in health care (DoH, 2002a).

Category	Type of Questions	Description and Rationale
Hearing screening protocol	Close- and Open-Ended	Section 8 aimed to provide information on the manner that the nurses conduct hearing screening with reference to the recommended procedures. Adherence to protocols is an important area in the context of quality improvements (Roy & Jones, 2007).
Parent / Caregiver Education	Close-Ended	The frequency of parent/caregiver education regarding otitis media was documented in this section. Any success a child achieves is through family intervention, and therefore the family must be an essential and equal partner in the hearing and management team (Mencher & Devoe, 2001).
Referrals	Close- and Open-Ended	Sections 10 and 11 aimed at establishing how and to whom referrals are made in the presence of otitis media or a suspected hearing loss. Success is achieved when referrals are made within the critical period of speech and language development (Swanepoel et al., 2009).
Record keeping	Close- and Open-Ended	Efficient tracking systems are necessary to ensure that acceptable follow-up return rates are reached over time (Swanepoel, 2006). These sections aimed to gain an overview of the tracking and record keeping systems employed at clinics for follow-up appointments. These tracking systems provide information about the continuity of care (DoH, 2002b).

Retrospective Data Compilation Form

Thereafter, the researcher reviewed the hearing screening record keeping on the RtHCs and Blue Cards and recorded this data onto a retrospective data compilation form. A description of the content and the rationale for the inclusion of items are presented in Table 5.

Table 5

Description and Explanation of the Data Compilation Form

Category	Type of Questions	Description and Rationale
Biographical Details	Open-Ended	Questions in this section provided information that was important for the description of the participants.
Prenatal History	Close-Ended	A growing number of infants are surviving due to neonatal advances and breakthroughs, resulting in an increased prevalence of high-risk infants (number of live cases) (Moodley et al., 2000). This section aimed to provide information with regard to the prenatal history which could include maternal health during pregnancy, intrauterine infections and circumstances surrounding the pregnancy and birth as documented on the RtHC or Blue Card (Guralnick, 1997).
Peri-natal History	Open-Ended	It is of essential importance to have knowledge regarding risk factors in order to be able to understand its association with later communication delays (Rossetti, 2001). This section therefore aimed to highlight the presence of risk factors within the peri-natal history.
Hearing Screening	Close-Ended	Questionnaires and checklists are useful in identifying at least 50% of children with hearing loss (Cunningham & Cox, 2003). In this section, the researcher documented results of hearing screening as conducted by the nurses.
Referrals/intervention	Close-ended	Early intervention has been proven to be globally effective and is also cost effective (Guralnick, 1997; Rossetti, 2001). This section aimed to provide information regarding the type of current intervention that the participant may be receiving from the medical and allied medical team; and any specific referrals made by the nurses.

Focus Group Questions

The focus group was audio recorded and transcribed; and the transcripts used in the data analysis. A description of the content and the rationale for the inclusion of the questions are presented in Table 6.

Table 6

Description and Explanation of the Focus Group Questions

Category	Type of Questions	Description and Rationale
View on infant hearing screening	Open-Ended	This question aimed to provide information regarding the nurses' view on infant hearing screening in relation to other services offered at PHC Clinics. The HIV/Aids pandemic which emerged concurrently with the country's democratic transition, and the current prevalence of other chronic illnesses; has placed immense strain on all aspects of the health system (Kautzky & Tollman, 2008).
Procedure	Open-Ended	The procedure/technique employed when conducting infant hearing screening, with specific reference to the Voice Test and the Swart questionnaire was probed in order to identify whether nurses adhere to the prescribed criteria (DoH, 2002a).
Record Keeping	Open-Ended	Accurate record keeping is integral to the care process and ensures service delivery of a high standard, relevant to the patient's needs (Trainor, 2007). This question aimed at clarifying record keeping practices and whether nurses weight the completion of the RtHC and the Blue Card as equally important.
Challenges/Barriers	Open -Ended	In lieu of the unequal distribution of health workers and resources across the health sector in South Africa, this question aimed at providing information regarding possible obstacles to the development of the health system and the adequate provision of services (Kautzky & Tollman, 2008).
Training	Open -ended	PHC nurses are afforded opportunities in training. This question aimed to identify the impact that training programmes such as the IMCI, PHC and ARV have on the holistic care of patients. The researcher aimed to identify whether knowledge gained from these topics highlight the importance of infant hearing screening and whether it could be integrated into neonatal hearing screening services (Williams, 2011).
Implementation of guidelines/protocols	Open -ended	By adhering to guidelines and protocols, decision-making processes in patient care are achieved through evidence-based practice (DoH, 2002a). This question thus aimed at identifying the implementation of the relevant guidelines and protocols offering standardised screening procedures.

3.7.2 Informed Consent

The Participant Information Sheets and Letters of Informed Consent had been written in the format of a letter (See Appendices E and F). The Participant Information Sheets and Letter of Informed Consent were available in English, isiZulu and Sesotho which included the main languages spoken in Gauteng (StatsSA, 2001).

3.8 Data Collection

The following procedures were employed in order to collect, record and analyse the data obtained:

3.8.1 Procedures.

- Once a clearance certificate had been obtained from the Human Research Ethics Committee (Medical), University of the Witwatersrand (See Appendix C); permission for conducting research at PHC Clinics in Gauteng was requested from the CoJ Health Department (See Appendix D).
- Permission was then sought from each clinic manager (See Appendix A2).
- The parents/legal guardians of children who attended the clinics and met the participant selection criteria were approached and asked whether they would be willing to participate in the research project. The participant information sheets and informed consent form stating the aims and purpose of the research project were personally given to the participants, which were signed to confirm their voluntary participation in the study. The participant information sheets and informed consent forms were also available in isiZulu and Sesotho. Verbal consent forms were also available in the event of difficulties with a written consent such as illiterate participants (See Appendix F4). The video recording consent form was given to the

parents of the first child that was to be seen by each nurse, which was signed in accordance with the parents' voluntary agreement to be video recorded (See Appendix F3).

- Nurses who met the participant selection criteria were approached and invited to participate in the research project. The participant information sheets which stated the purpose and procedures of the research project, the right to withdraw and confidentiality and disclosure of results; was personally given to the participants (See Appendix E1). In agreement to participate, it was required of them to sign an informed consent form and video recording consent form to confirm their voluntary participation in the study (See Appendix E2 & E3).
- Data collection took place at a time that was proposed as most convenient by the clinic managers. The observations of the nurses were coupled with video recordings. The video recording was played back for the interrater at a later stage, which provided information about the guidelines and protocols employed by nurses when conducting hearing screening. The researcher completed the nurses' observation form which served as the data collection instrument (See Appendix G2).
- Thereafter the records (RtHC and CoJ Blue Cards) of participants (group 2) who were attended to by the nurses during the observations were selected and reviewed. This information was recorded by the researcher onto the Data Compilation Form (See Appendix G3).
- The questionnaires were then disseminated to the nurses to be completed (See Appendix G1).
- A focus group was held with nurses which stimulated discussion and provided insight into the data obtained from the primary data collection methods (See Appendix G4).
- Data was then captured and encoded for statistical analysis.

3.9 Reliability and Validity

Reliability

Reliability is concerned with questions of stability and consistency. This means that the method of conducting a study or the results from it can be reproduced or replicated by other researchers. Reliability and validity are complementary concepts (Neuman, 2003).

In order to establish reliability, an interrater is used to assess the degree to which different raters/observers give consistent estimates of the same phenomenon (Bergman & Coxon, 2005). An interrater was therefore used during the data collection of 25% of participants with the aim of preventing selective reporting and over-interpreting of data. The interrater, a qualified speech therapist and audiologist with four years experience, rated the recorded observations against the categories on the data compilation checklist (Bergman & Coxon, 2005). This allowed for the calculation of a percentage of agreement between the raters (Trochim, 2006). The formula used to calculate the percentage of interrater agreement (*A*) was the observed agreement (*O*) divided by the possible agreement (*P*) (A = O/P x 100) (Bordens & Abbott, 2008). There were six items on which the researcher and the interrater did not agree. The items of disagreement were spread amongst the items on the form and were thus not a cause for concern. The interrater agreement was thus 794/800 items which yielded a high degree of agreement (99.3%) (Bordens & Abbott, 2008).

Validity

Validity is the degree to which the research conclusions are sound, based on whether the instrument was suited to the purposes for which it was used (Terr Blanche & Durrheim, 2002). It thus refers to the extent to which a study accurately reflects or answers a concept that a researcher is trying to measure (Trochim, 2001). Researchers should be concerned with both internal and external

validity. There are four methods of estimating internal validity, namely face validity, content validity, criterion validity and construct validity.

- Face validity is concerned with how a measure or procedure appears, and thus does not depend on established theories for support (Fink, 1995). In order to achieve face validity, the categories in the self-designed data collection tools should reliably gain the information that the researcher is attempting to achieve. Face validity was established by conducting a pilot study.
- Content validity refers to the ideas of conceptualisation and operationalisation. It is thus based on the extent to which a measurement reflects the specific intended domain of content, which was achieved by referring to relevant literature (Bless & Higson-Smith, 2000; Howell, Miller & Park, 2005). The pilot study supported the content validity of the data compilation and nurses observation forms. The nurses' questionnaire was however revised in line with the results of the pilot study, after which the researcher re-piloted this data collection tool. Following the second pilot study, no further changes to the nurses' questionnaire were required.
- Criterion validity is used to demonstrate the accuracy of a measure or procedure by calibrating it against a known standard or procedure which has been demonstrated to be valid (Howell et al., 2005). For the purposes of this study, the data collection tools had been developed according to the standards of the PHC Package (2002), The HPCSA Position Statement (2007) and the INDS (1997).
- Construct validity is the extent to which data collection instrument items are tapping into the underlying theory or model of behaviour (Trochim, 2001). The HPCSA Position Statement on EHDI, The PHC Package and the INDS was used to guide the development of the data collection instrument items. These guidelines, norms and standards highlight factors that contribute to and influence early hearing detection and intervention programmes, such as

endogenous factors (e.g. biological, neurological, cognitive and psychosocial risk factors) and exogenous factors (e.g. cultural, socioeconomic, and familial). In order to minimise threats to construct validity, it was ensured that the data compilation form contained items pertinent to the survey's objectives (Neuman, 2003).

In order to estimate *external validity* the researcher included 20 clinics so that the generalisability of the results were aimed at the wider target group (Bowling, 2002). These clinics were thus representative of the neonatal hearing screening programmes within the CoJ in Gauteng.

3.10 Ethical Considerations

Research designs should reflect careful attention to the ethical issues embodied in research projects (Terr Blanche & Durrheim, 2002). Approval of appropriate ethical procedures in the current study was obtained from the Ethics Committee for Medical Research at the University of the Witwatersrand. The ethical principles of autonomy, non-maleficence, beneficence and confidentiality were the reference points in the planning of this research proposal (Maxwell & Satake, 2006).

These ethical guidelines governed this research project in the following manner:

Autonomy

The researcher conformed to the principle of autonomy by allowing the participants the right to decide whether they would like to participate in the research study. They also had the right to terminate their participation in the study at any time without any negative consequences.

The purpose of the study and the procedures were explained to the participants in an Information Sheet, Letter of Informed Consent and Video Consent Form which was then signed by the participants to show their willingness to co-operate in the research project and an acknowledgement that the purpose and procedures of the research project had been explained and understood (Maxwell & Satake, 2006).

Non-maleficence

The research did not inflict harm to any of the participants associated with this project (Wiles, Heath, Crow & Charles, 2005).

Beneficence

The proposed benefit of the research, although not directly benefitting the research participants, is to assist in facilitating the early referral of infants who are at risk for communication delays or disorders due to possible hearing loss (Wiles et al., 2005).

Confidentiality

No names were identified in the report as all information was used anonymously in the research report. Furthermore, no persons in the videos were identified by name. The video recordings will not be shown publically or at congresses. This ensures that no social, emotional or physical harm is brought to the research participants (Gilbert, 2002).

Research findings have been presented honestly, without distortion, thus all the research data collected has been included even if it contradicted the original hypothesis (Harms, 2004; Leedy & Ormrod, 2005).

3.11 Data Analysis

With the aim of producing credible and trustworthy results in this study, more than one perspective on neonatal hearing screening at PHC clinics was collected by means of data triangulation. The data collected thus resulted in large quantities of contextually loaded, and richly detailed data that were pared down to represent major themes, describing the phenomenon being studied (Bryne, 2001). In order to communicate these findings effectively, the research study employed descriptive statistical measures, which included the averages, means and standard deviations of the data in order to describe the data set. The collected data was tabulated and analysed using the South African Statistics (SAS) Software, Version 9.1.3 for Windows (SAS Institute Inc, 2002–2003). The data was then summarised according to the conditions, populations and the phenomenon of interest (Trochim, 2006).

3.12 Summary

This chapter provided a description of the research design, the materials and the data collection procedures that were employed in the current study in order to address the aims of the study. The participant selection criteria and participant descriptions were discussed. This chapter was concluded with a discussion on ethical issues that governed the study and an overview of the data analysis procedures implemented.

Chapter 4: Results

"Research within the health services aims to produce reliable and valid research data on which to base appropriate, effective, cost-effective, efficient and acceptable health services at the primary care levels" (Bowling, 2002, p. 15).

4.1 Introduction

The results of the study will be presented in this chapter, in relation to the aims of the study, namely to determine whether the neonatal hearing screening services provided at PHC Clinics in the CoJ adhere to the guidelines, norms and standards as outlined by the INDS (1997), the HPCSA Position Statement (2007) on EHDI and the PHC Package (2002).

The chapter commences with a discussion of results applicable to the first sub-aim which provides an overview of the participants' knowledge, training and CPD activities. The procedures used by the participants during a typical immunisation session are then presented as per the second sub-aim. The management practice, referrals and record keeping practices employed by the participants follows. Furthermore, a comparison of data as indicated by the nurses in the Questionnaires, data recorded during the Nurses' Observation and the recording of the Retrospective Data from the RtHC and the Blue Card is provided. The chapter then ends with a discussion of information that was obtained during the focus group.

4.2 Nurses' knowledge of guidelines and protocols which support neonatal hearing screening

4.2.1 Knowledge of guidelines and protocols. As depicted in Table 7, only a minority of participants were aware of the INDS (1997), HPCSA Position Statement on EHDI (2007) and the PHC package (2002). Sixty five percent (n = 13) of the participants in the sample were aware of the IMCI Protocol. No other guidelines or protocols were specified by any of the participants in the sample.

Table 7

Participants who had knowledge of guidelines, norms and standards

Guidelines and Protocols	Frequency	Percentage
Integrated National Disability Strategy (1997)	3	15%
HPCSA Position Statement (2007) on EHDI	4	20%
Primary Health Care Package (2002)	7	35%
Integrated Management of Childhood Illness	13	65%

4.2.2 Training. Linked to the awareness of the guidelines and protocols that govern neonatal hearing screening practices, the researcher felt it important to identify whether participants received training (offered by the Nursing Education Institutions of South Africa), related to the ear and pathologies thereof, thereby providing insight into and an understanding of the current neonatal hearing screening services at PHC clinics in Gauteng. The findings are presented in Figure 1.

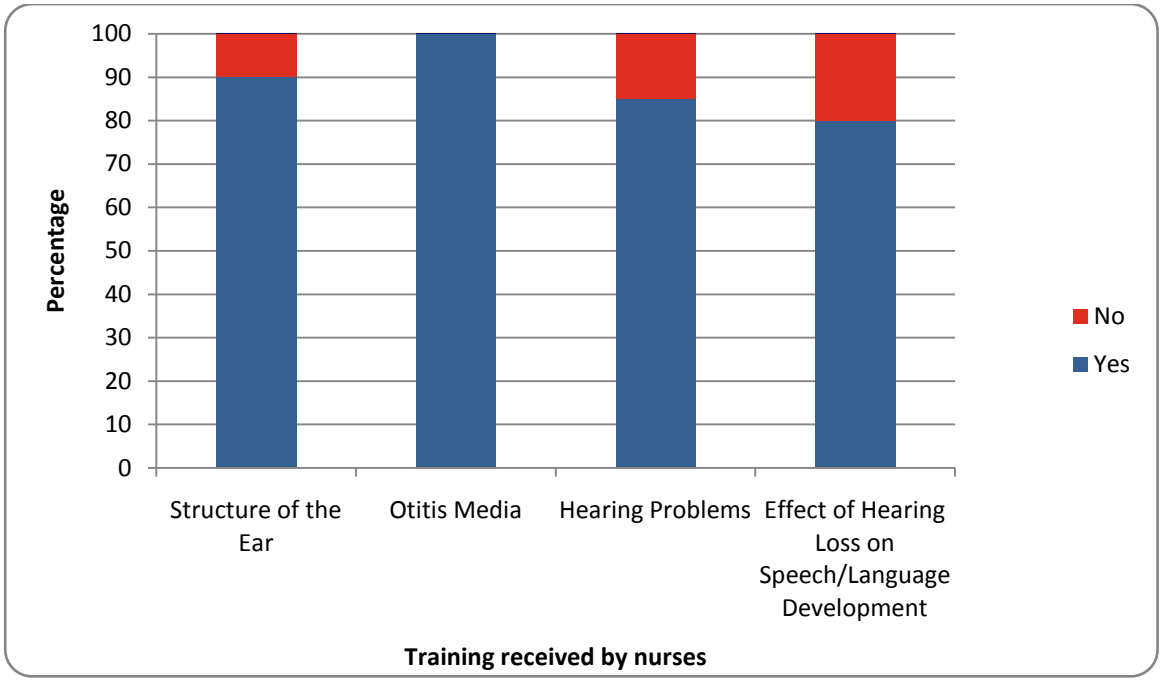


Figure 1: Training received by nurses for children 0-1 year old

Ninety percent (*n* = 18) of the participants indicated that they had received training on the structure of the ear, all the participants (*n* = 20) indicated that they had received training on otitis media, 85% (*n* = 17) indicated that they had received training on hearing problems and 80% (*n* = 16) indicated that they had received training on the effect of hearing loss on speech and language development. The three participants, who indicated that they had not received training on hearing problems, also indicated that they had not received training on the effect of hearing loss on speech and language development.

4.2.3 Continuing professional development activities. All the participants have attended CPD courses, however only 5% (*n* = 1) of the participants have received PHC training and a further 50% (*n* = 10) have received training in IMCI. A variety of other training courses were attended by these participants which focused mainly on the Expanded Programme in Immunisation (EPI); and can further be categorized to include HIV/Aids and Tuberculosis (TB) related disorders and treatment, Child Growth and the Dispensing of Medications.

4.3 Description of typical immunisation sessions

4.3.1 Duration of sessions. The duration of the sessions observed are presented in Figure 2. Fifty percent of the sessions with patients lasted less than 10 minutes. The shortest session was 2 minutes while the longest session was 30 minutes (*M* = 10.14, *SD* = 5.84).

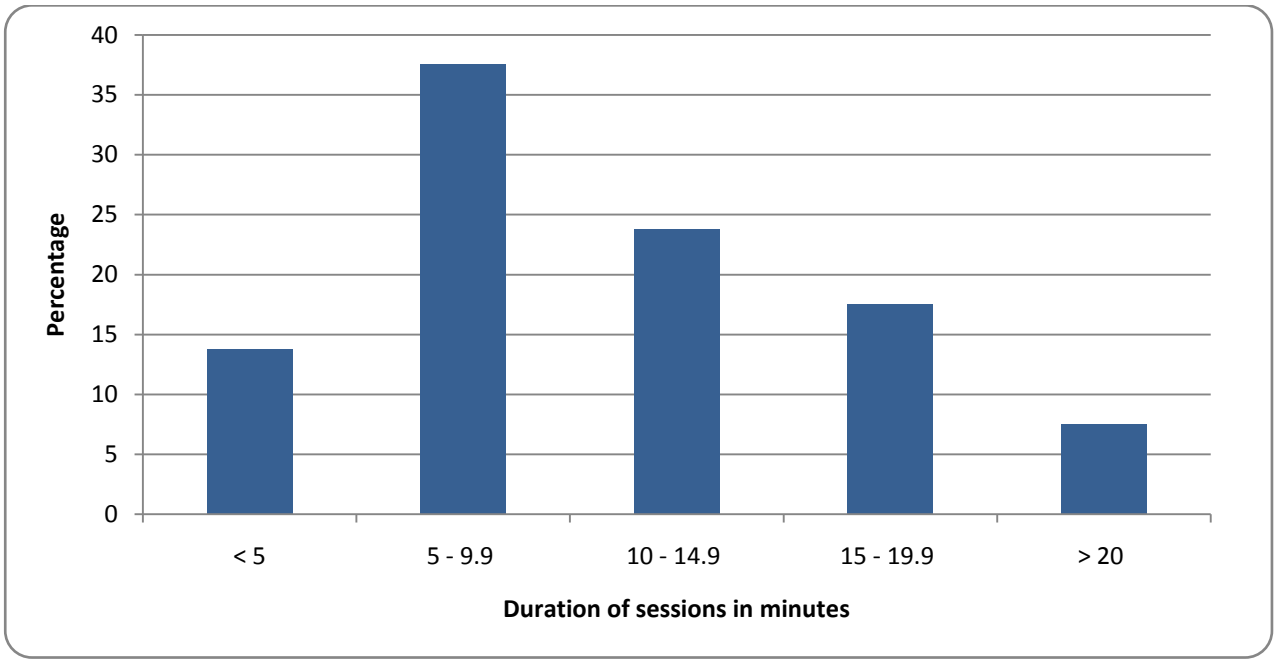


***Figure 2*: Duration of Sessions**

While the duration of a session is not necessarily an indicator of the quality of the service provided, it is interesting to note that those clinics at which children received age-appropriate and appropriately conducted hearing tests mostly had longer sessions, while those clinics where the converse was true, generally had shorter sessions. The clinics that had longer sessions are those where the participants conducted otoscopic examinations and had recorded the results of the hearing screening tests on both the RtHC and Blue cards.

4.3.2 Case history. As per the standards in the PHC Package (2002), nurses are to obtain an adequate case history regarding whether the child presents with irritable behaviour, difficulty sleeping, pulling on the ear, a runny nose, fever, discharge of pus from the ear, snoring, delayed language development and any allergies to penicillin.

Fifty five percent (n = 11) of the nurse participants indicated that they elicit case histories of all patients seen. During observation of the sessions, the researcher observed questions being asked for 82.5% (n = 66) of the children about their motor development and feeding patterns. This was followed by questions about language development in 57.5% (n = 46) of the children. In 8.75% (n = 7) of the observations, no case history was elicited (See Table 8).

Table 8

Case History Questions

Case History	Frequency	Percentage
Motor Development and Feeding Patterns	66	82.5
Language development	46	57.5
Runny nose	7	8.75
Fever	5	6.25
Difficulty sleeping	2	2.5
Pulling on ear	1	1.25
Irritable	1	1.25
Not conducted	7	8.75

In 19 of the 44 cases where participants had indicated that they would gather a hearing-related case history for *all* children seen, they however did not do so (See Table 9). The participant who indicated that he/she doesn't gather a hearing related case history, in fact did so for three of the four children seen. The participant who indicated that he/she gathers a hearing related case history only for *At-Risk* cases, in fact did so for all four children seen, despite there being no indication of the presence of either one of the At-Risk factors.

Table 9

Hearing Related Case History Obtained

Hearing-relating case history obtained in session	**Nurse would obtain hearing-related case history for…**					**Total**
	All	**At Risk**	**Concern**	**Don't**	**Some**	
Stated as Yes in Questionnaire	19	0	14	1	2	36
Conducted during Observation	25	4	6	3	6	44
Total	44	4	20	4	8	80

4.3.3 Physical examination for otitis media

4.3.3.1 Physical Examination as reported by participants. The approach regarding the physical examination for otitis media varied (see Figure 3). Forty percent (*n* = 8) of participants indicated that a physical examination is conducted for all children, 5% (*n* = 1) indicated that a physical examination is conducted on some children and 15% (*n* = 3) of the participants indicated that a physical examination is conducted only on those children in whom At-Risk factors are present. A further 35% (*n* = 7) of the participants indicated that a physical examination is conducted on children whose mothers raise concern regarding otitis media, and 5% (*n* = 1) of the participants were unaware whether a physical examination was conducted at the clinic at which he/she is employed in order to assist in the identification of otitis media.

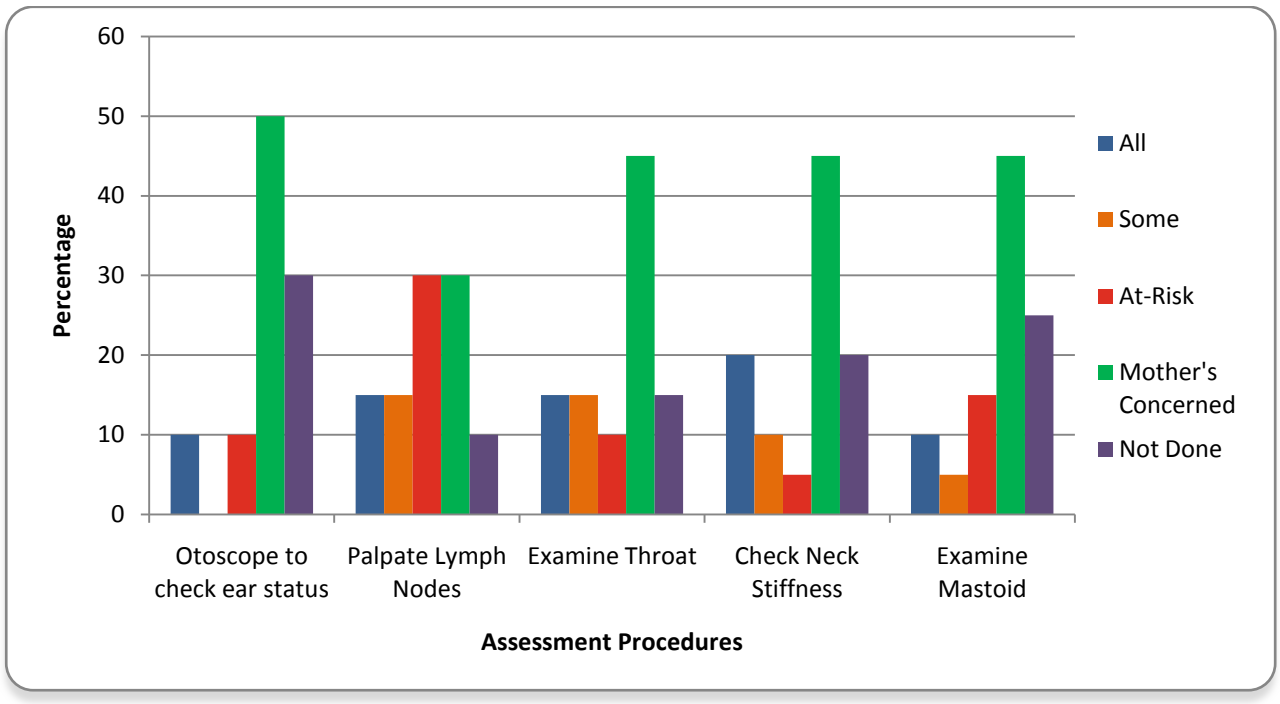


***Figure 3*: Assessment procedures performed during a typical immunisation session**

The majority of the participants are conducting the prescribed assessment procedures as per the PHC Package for a typical immunisation session only *when mothers' raise specific concerns*.

This is evident in Figure 3 for 50% (*n* = 10) of the participants who stated that they use an otoscope to check the ear status. Thirty percent (*n* = 6) of the participants stated that they palpate the lymph nodes of children and 45% (*n* = 9) of the participants stated that they conduct a throat examination during an immunisation session. Forty five percent (*n* = 9) of the participants stated that they only check for neck stiffness and examine the mastoid of children during a typical immunisation session if the mother had raised a specific concern.

A minority of the participants are conducting the prescribed assessment procedures for a typical immunisation session on *all* of the children seen by them. Ten percent (*n* = 2) of the participants stated that they conduct an otoscopic examination to check the ear status on all children. Fifteen percent (*n* = 3) of the participants stated that they palpate the lymph nodes and examine the throats of all children. Twenty percent (*n* = 4) of the participants stated that they check for neck stiffness and only 10% (*n* = 2) of the participants stated that they examine the mastoid of all children who are attending a typical immunisation session.

The prescribed assessment procedures being conducted by participants for children who present with *At-Risk* factors seem to be even less. Ten percent (*n* = 2) of the participants stated that they use an otoscope to check the ear status, 30% (*n* = 6) of the participants stated that they palpate the lymph nodes of these children, whilst 10% (*n* = 2) of the participants stated that they examine the throats and check for neck stiffness, and 15% (*n* = 3) of the participants stated that they examine the mastoid of children who present with At-Risk factors during a typical immunisation session.

Disappointingly, the prescribed assessment procedures for a typical immunisation session are not followed by some nurses. Thirty percent (*n* = 6) of the participants stated that they do not use an otoscope to check the ear status of these children. Ten percent (*n* = 2) of the participants stated that they do not palpate the lymph nodes, 15% (*n* = 3) stated that they do not examine the throat, 20% (*n* = 4) stated that they do not check for neck stiffness and 25% (*n* = 5) of the participants stated that they do not examine the mastoids of children who attend immunisation sessions.

These prescribed procedures are further conducted by participants on *some* children, which are not based on any criteria. This includes 15% (*n* = 3) of the participants who stated that they would palpate the lymph nodes, 15% (*n* = 3) of the participants who stated that they would conduct a throat examination, 10% (*n* = 2) of the participants who stated that they check for neck stiffness, and 5% (*n* = 1) of the participants who stated that they would examine the mastoid of some children who attend a typical immunisation session.

The physical examination of children during a typical immunisation session is further described by the protocols and guidelines that govern this study. Due to the prescribed use of an otoscope by the DoH during a typical immunisation session, the researcher probed into the availability of otoscopes at these clinics. Eighty five percent (*n* = 17) of the participants reported that an otoscope was available, and in all of these cases, that it worked. Fifteen percent (*n* = 3) of the participants reported that no otoscope was available. One participant who indicated that no otoscope was available, then proceeded to indicate that the ear status of babies whose mothers raised concern was checked using an otoscope.

4.3.3.2 Observed by researcher. The researcher then observed the physical examination of the child during the immunisation sessions (N = 80) (See Figure 4). An otoscopic examination was conducted for 5% (*n* = 4) of the children. This was followed by a throat examination which was conducted for 10% (*n* = 8) of children. The lymph nodes were only palpated in 1.25% (*n* = 1) of the children. Children were only examined for neck stiffness in 2.5% (*n* = 2) of the cases and none of the children had their mastoids examined by any of the participants.

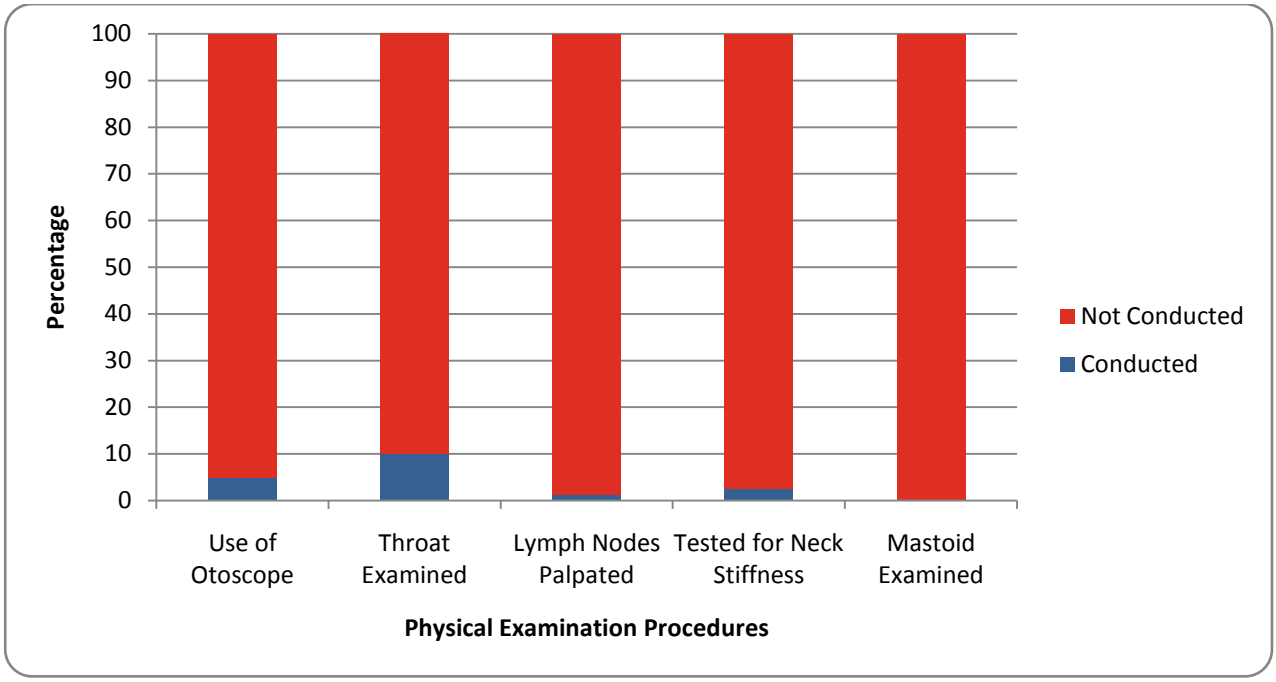


***Figure 4*: Physical Examination as prescribed during an Immunisation Session**

4.3.3.3 Comparison of reported and observed data. A comparison of the reported and observed results for the assessment procedures that are performed during a typical immunisation session are presented in Table 10.

Table 10

Data Comparison of Physical Examinations

	Stated as Yes	Actually Conducted	Total
Otoscopic Examination	76	4	80
Palpation of Lymph Nodes	79	1	80
Throat Examined	72	8	80
Assessed for Neck Stiffness	78	2	80
Assessed Mastoid	80	0	80

An *otoscopic examination* was only conducted on four children during the observations of the immunisation sessions. With reference to the earlier stated availability and good working condition of an otoscope by 17 participants, 16 of the participants' clinics did not use an otoscope during the observations.

Two participants indicated that they use an otoscope for *all* babies during a typical immunisation visit session. When comparing the data, one participant did conduct an otoscopic examination and the other did not. Two further participants said they would conduct an otoscopic examination for children who are *at-risk.* The case histories that were however conducted for the children at these two clinics gave no indication that they ought to have done so, as the only items elicited during the case history were related to motor development and language development. Ten participants said they would conduct an otoscopic examination if the parent/caregiver *expressed concern*, but did not do so for any of the children observed. The case histories obtained for these 40 patients seen by the ten participants included a variety of items, including one child who was reportedly pulling on his/her ear.

The approaches regarding the physical examination to assist in identifying otitis media produced varying results. One participant *palpated the lymph nodes* of a child who was reportedly pulling his/her ear. This participant had stated that she he/she would do so for some patients. Three participants had stated that they palpate the lymph nodes of all children seen during a typical immunisation session, but did so for none. The participant responses as per the questionnaire at the remainder of the clinics varied for some children, those children who present with at-risk factors, or if parents/caregivers raise concern. Amongst these participants, the lymph nodes of one child were palpated during the observations. However, once again, the case history questions conducted did not provide specific information that this child presented with at-risk factors.

Three participants indicated that they would conduct a *throat examination* on all children that they see during a typical immunisation session. One participant did conduct this examination as per

her statement in the nurses' questionnaire. The second of the three participants conducted a throat examination on only three of the four children observed, whilst the last of the three participants did not conduct a throat examination on any of the children during the observations.

Neck stiffness, a possible indicator of meningitis, which could in turn cause a hearing loss, is to be screened for as per the PHC Package (2002) during a typical immunisation session. Four participants indicated they would do so for all patients, but did it for none. Twelve other participants indicated they would do so for at risk/some/concerned patients or those whose caregivers were concerned, and did so for two of the children observed whose caregivers expressed concern. Once again, the case history elicited from the parents/caregivers did not indicate whether any of these children presented with at-risk factors.

Two participants indicated they would *check the mastoid* of all children, but did so for none. Participants at 13 other clinics indicated they would do so for at-risk, some or for those children whose parents/caregivers raised concerns, but did not do so for any of the children. Children with at-risk factors could not be identified based on case history questions elicited by the nurses.

4.3.4 Hearing screening. Actual hearing screening tests should also be conducted during a typical immunisation session (DoH, 2002a).

4.3.4.1 Reported by participants. The two prescribed tests, the Swart Questionnaire and the Voice Test, were indicated by the participants to be conducted as per Figure 5 below.

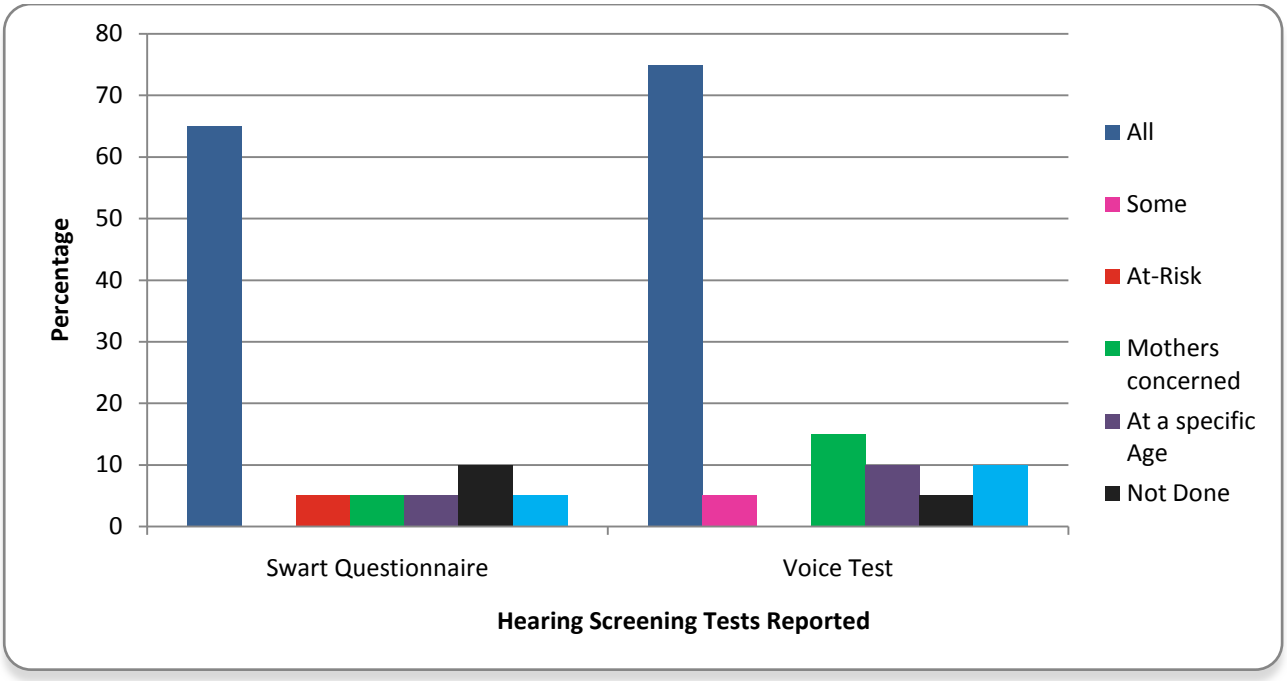


***Figure 5*: Hearing Screening Tests reported to be conducted**

Sixty five percent (n = 13) of participants indicated that they conducted the Swart Questionnaire and 75% (n = 15) indicated that they performed the Voice Test on all children. Five percent (n = 1) indicated he/she does not do the Voice Test but conducts the Swart Questionnaire on all children. A variety of alternative hearing tests was indicated by the participants, which include using noisemakers, knocking a teaspoon against a cup to create noise, finger snapping, talking to the child, and hand clapping or squashing paper near the child's ear.

4.3.4.2 Observed by researcher. The hearing testing procedures, the Swart Questionnaire and the Voice Test were then observed by the researcher. The findings are presented in Figure 6.

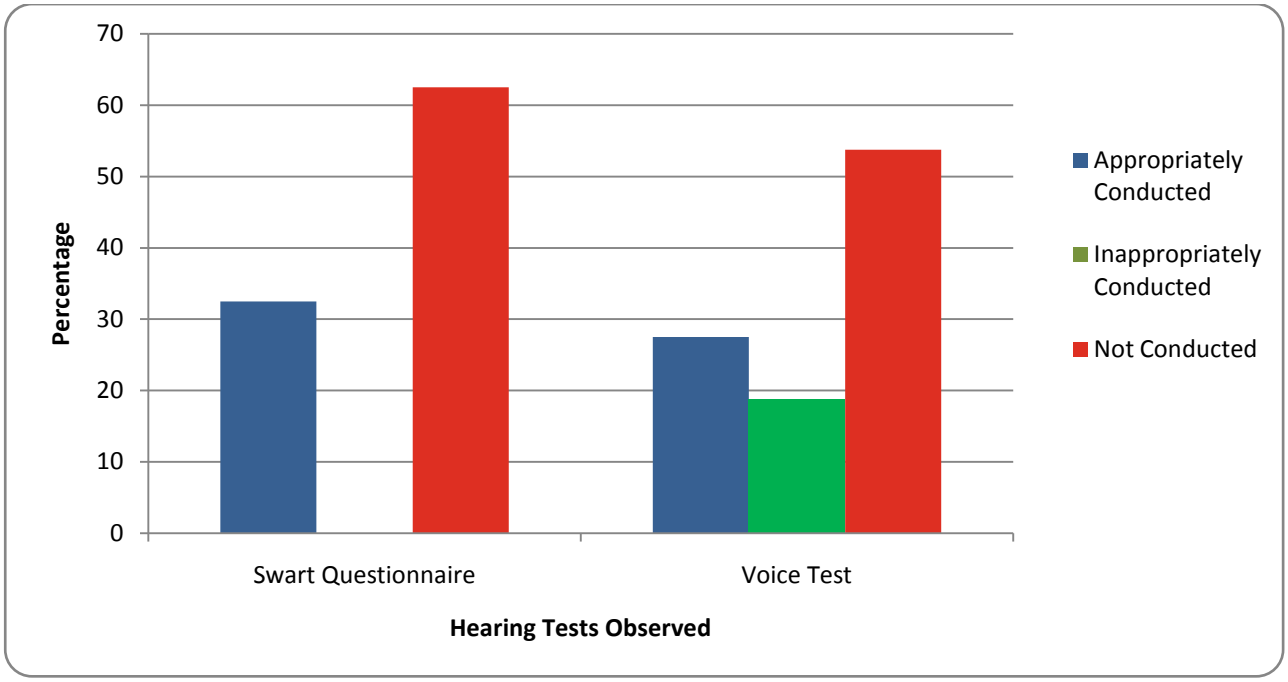


***Figure 6*: Hearing Tests observed to be conducted**

The Swart Questionnaire was conducted for just under a third of the children (32.5%; *n* = 26). In all cases the Swart Questionnaire was administered appropriately. The Voice Test was conducted for just under half of the children (46%; *n* = 37) observed. For these children, the test was conducted appropriately in only 59% of the above cases.

Overall, 74% (*n* = 59) of the children received an age-appropriate hearing test. Of these children, 14% (*n* = 11) received only the Voice test but it was conducted in an inappropriate manner. This reduces the proportion of children who received both age-appropriate and appropriately conducted testing to 60% (*n* = 46). At none of the clinics was all four of the hearing screening tests observed, carried out in an appropriate manner or age-appropriate.

Some alternative methods of hearing testing were observed which ranged from participants clapping their hands on either side of babies to assess sound localisation; participants snapping their

fingers at each of the baby's ears to assess hearing; and shaking of rattles on either side of baby. Participants however approached these babies with the rattle from the front.

4.3.4.3 Comparison of reported and observed data.

4.3.4.3.1 Swart Questionnaire. Of the twenty participants observed during the study, only 10% (*n* = 2) assessed all the children correctly in terms of both test procedure and age appropriateness. Twenty five percent (*n* = 5) of the participants assessed the children correctly only in terms of the test procedure, but at an inappropriate age. There were observed inconsistencies amongst 30% of the participants (*n* = 6) across each of the four children that they conducted immunisation sessions with. Thirty five percent (*n* = 7) of the participants did not conduct the Swart Questionnaire due to the age of the child no longer being appropriate, however these participants did not conduct the Voice Test either.

4.3.4.3.2 Voice Test. Sixty five percent (*n* = 13) of the participants indicated that they would conduct the Voice Test on all children, despite the protocol of this test being age specific. Ten percent (*n* = 2) of the participants indicated that they would conduct the Voice Test at a specific age, but did not specify the appropriate age despite being provided with an open-ended option in the Nurses' Questionnaire. Thirty percent (*n* = 6) of the participants did not conduct nor record any previous Voice Test conducted for ten children despite these children being 12 months or older.

Of the 20 nurse participants observed during the study, only 5% (*n* = 1) assessed all the children correctly in terms of both test procedure and age appropriateness. Twenty five percent (*n* = 5) of the participants conducted the test for children at an appropriate age but followed the incorrect procedure. Twenty five percent (*n* = 5) of the participants conducted the test procedure appropriately but at an incorrect age. Forty five percent (*n* = 9) of the participants did not conduct the Voice Test for children for which the test was now age appropriate. Additionally, these children had not had the

Swart questionnaire conducted during previous immunisation sessions either. The above data is tabulated in Table 11:

Table 11
Data Comparison of Hearing Tests

	Swart Questionnaire	Voice Test
Age Appropriate	0	15
Procedure Appropriate	10	0
Age and Procedure Appropriate	16	23
Previously Conducted and Recorded	30	9
Not conducted due to inappropriate age of child	11	20
Should have been conducted	13	13
Total	80	80

4.3.5 Management practices and intervention. This study additionally aimed to identify whether the participants complied with the recommended follow-up procedures post hearing screening. The three types of intervention as prescribed by the PHC Package in the presence of otitis media include ear drops, dry mopping and the use of other medications. A practical demonstration should also be provided to the parent/caregiver in conjunction with verbal instruction (DoH, 2002a).

4.3.5.1 Management practices and intervention as reported by the participants. The management practices and intervention procedures as reported by the participants are illustrated in figure 7 below:

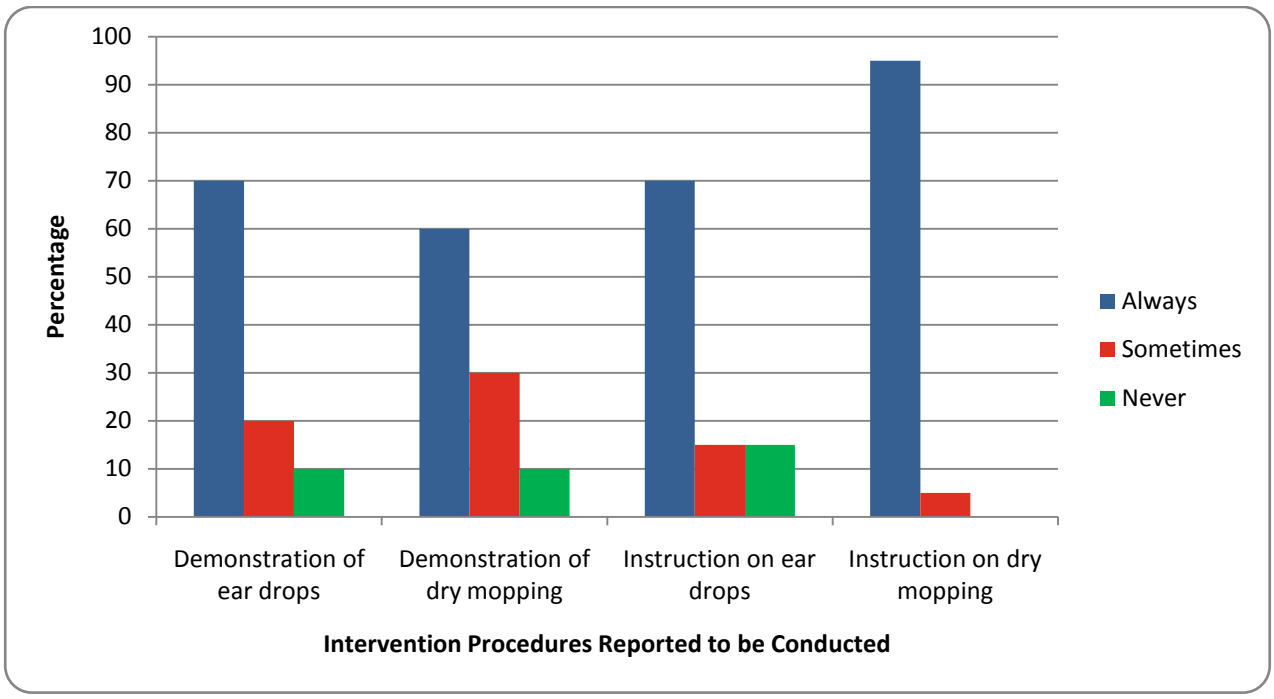


***Figure 7*: Intervention procedures conducted for children who present with otitis media**

Sixty percent (*n* = 12) of the participants indicated that they always conduct a practical demonstration and provide verbal instructions to the parent/caregiver regarding *insertion of ear drops*. One participant indicated that he/she sometimes conducts a practical demonstration to the parent/caregiver regarding insertion of ear drops and 35% (*n* = 7) of the participants indicated that they never conduct a practical demonstration to the parent/caregiver regarding insertion of ear drops. Ten percent (*n* = 2) of the participants indicated that they sometimes provide verbal instructions to the parent/caregiver regarding insertion of ear drops. Thirty percent (*n* = 6) of the participants indicated that they never provide verbal instructions to the parent/caregiver regarding insertion of ear drops (See Figure 7).

Seventy percent (*n* = 14) of the participants indicated that they always conduct a practical demonstration and provide verbal instructions to the parent/caregiver regarding *dry mopping*. Ten percent (*n* = 2) of the participants indicated that they sometimes conducts a practical demonstration to the parent/caregiver on dry mopping and 20% (*n* = 4) of the participants indicated that they never conduct a practical demonstration to the parent/caregiver regarding dry mopping. Fifteen percent (*n* = 3) of the participants indicated that they sometimes provide verbal instructions to the parent/caregiver regarding dry mopping. Fifteen percent (*n* = 3) of the participants indicated that they never provide verbal instructions to the parent/caregiver regarding dry mopping (See Figure 7).

Ninety percent (*n* = 18) of the participants indicated that they always instruct caregivers in the use of *other medications*.

A further 10% (*n* = 2) of the participants indicated that they did not conduct any of these intervention procedures. The one Enrolled Nurse indicated that he/she did not perform any of these activities as, in accordance with the nursing procedures, she is not allowed to.

4.3.5.2 Observed by researcher. Of all the immunisation sessions observed, only a minority of the children (10%, *n* = 8) required intervention. Although three children required intervention for otitis media, no intervention in the form of ear drops, dry mopping, or parent education was given during these sessions.

Interventions that were observed included the prescription of antibiotics for the common flu in two children. Verbal instructions for the administration of antibiotics were only recorded for one of these two children. A further two children were prescribed ointment for an eye infection. For both of these children, nurses gave the parent/caregiver verbal instructions for the application of the ointment. Cough syrup was prescribed for one child for which the nurse gave appropriate verbal instructions to the parent/caregiver. Parent education regarding soft occluding cerumen (wax) for

one child was provided for one child. Further instructions were provided for the administration of a multivitamin in one case. In one further case, verbal instructions should have been provided but were not.

Intervention further includes practical demonstration and/or verbal instructions provided to the parent/caregiver (DoH, 2002a). The enrolled nursing auxiliary did not provide any verbal instructions to the parent/caregiver. This is however in line with the less specialised duties that she may perform.

In 9% (n = 7) of the observations, instructions regarding follow-up visits were not given. Four of these children were seen at a clinic which did not conduct appropriate hearing screening either. The other three children were seen at three different clinics. Instructions regarding follow-up for the remainder of the 91% (n = 73) were provided.

4.3.5.3 Comparison of reported and observed data. The administration of eardrops was necessary for three children but neither instructions nor a practical demonstration was provided by the participant. Two of these children were seen by one (5%) of two participants who had indicated that he/she would always show parents/caregivers how to use eardrops when applicable. The third child was seen by the second participant who had indicated that he/she would never instruct nor show the use of eardrops.

Dry mopping was necessary for three children seen but was not conducted during the session. Two of these children were seen by one (5%) participant who had indicated that he/she would always show parents/caregivers how to do dry mopping when applicable. The third child for whom dry mopping was necessary but not conducted, was seen by the participant who had indicated that he/she would never instruct nor do a demonstration on dry mopping.

Of the 25% (*n* = 5) of the participants who had indicated that they would always instruct on the use of *medications* when applicable, 20% (*n* = 4) did so and 5% (*n* = 1) did not, in relation to the five children for whom it was necessary. Conversely, the participant who had indicated that he/she would never provide such an instruction did however provide instructions on the administration of medications for one child.

4.3.6 Referrals.

4.3.6.1 Referrals as reported by participants. The response by the participants to the referral system prescribed by the guidelines and protocols that govern this study for ear and hearing related conditions are depicted in Table 12. The one enrolled nurse indicated that he/she would make verbal referrals to a Professional Nurse within the clinic at which she worked.

Table 12

Referral Procedure Adopted by Participants

	Verbal follow up appointment to a clinic nurse	**Written follow up appointment to a clinic nurse**	**Verbal referral to a Doctor**	**Written referral letter to a Doctor**	**Written referral to an ENT**	**Written referral to an Audiologist**
Persistent or worsening signs of acute otitis media after 5 - 7 days of treatment.	5%	25%		55%	15%	
Those who on first follow up still have pain or complications	5%	5%		80%	10%	
Those with effusion who have moderate or severe hearing loss, or where effusion has persisted for more than a month	5%			65%	25%	5%
Patients with pain associated with an ear that has been discharging for more than 2 weeks	5%	15%	5%	60%	15%	
If there is an inflammatory swelling or tenderness over mastoid	5%	10%	5%	70%	10%	
If there is neck stiffness or vomiting or drowsiness	5%			90%	5%	
Large central perforation with significant hearing loss	5%			70%	20%	5%
Dry perforation or perforation due to trauma	5%			75%	20%	
If there is pus discharge suspected to be due to a cholesteatoma	5%			80%	15%	
Patients with speech, language and/or auditory perceptual problems				90%	10%	
If a hearing loss is suspected				80%	20%	

4.3.6.2 Referrals as observed by the researcher. For referrals that were required (10%; *n* = 8), one referral was correctly made for "Those who on first follow-up still have pain or complications" and "Patients with pain associated with an ear that has been discharging for more than 2 weeks". No referrals were made for the rest of the children requiring referrals (7.5%; *n* = 6). These include two children who presented with an inflammatory swelling or tenderness over mastoid and four children who presented with speech, language and/or auditory perceptual problems. The purpose of the observations was solely intended to assist the researcher to interpret the data within the context that the hearing screening occurred. Although the researcher did not participate in the sessions, the researcher did intervene after the sessions of the above cases where no referrals were made by the nurse participants as the consequences of the non-referrals may have resulted in harm to the children.

4.3.7 Record keeping. Post delivery and discharge from hospital, PHC clinics are the first point of contact and enrolment into the Health System for majority of babies in South Africa (Thandrayen, 2008). Imperative information regarding a child's health status, family history and milestone achievements are recorded by the PHC nurses onto the RtHC and Blue Card, which accompanies a child throughout his/her development. This information provides insight for health care providers who may be involved in that child's health and well being henceforth. By retrospectively looking at the completion of the RtHC and Blue Cards, the researcher was able to identify the current status of recording keeping within PHC clinics in the CoJ.

4.3.7.1 Record keeping as reported by participants. All the participants (N = 20) in the sample indicated that their clinic had a tracking system both for immunisations and other follow-up visits. As per Figure 8, 80% (*n* = 16) of the participants indicated that they recorded the results on the RtHC, while all the participants (N = 20) indicated that the results were recorded on the CoJ Child Health Services Blue Card. An additional hard copy record keeping system was indicated in 50% (*n* = 10) of cases.

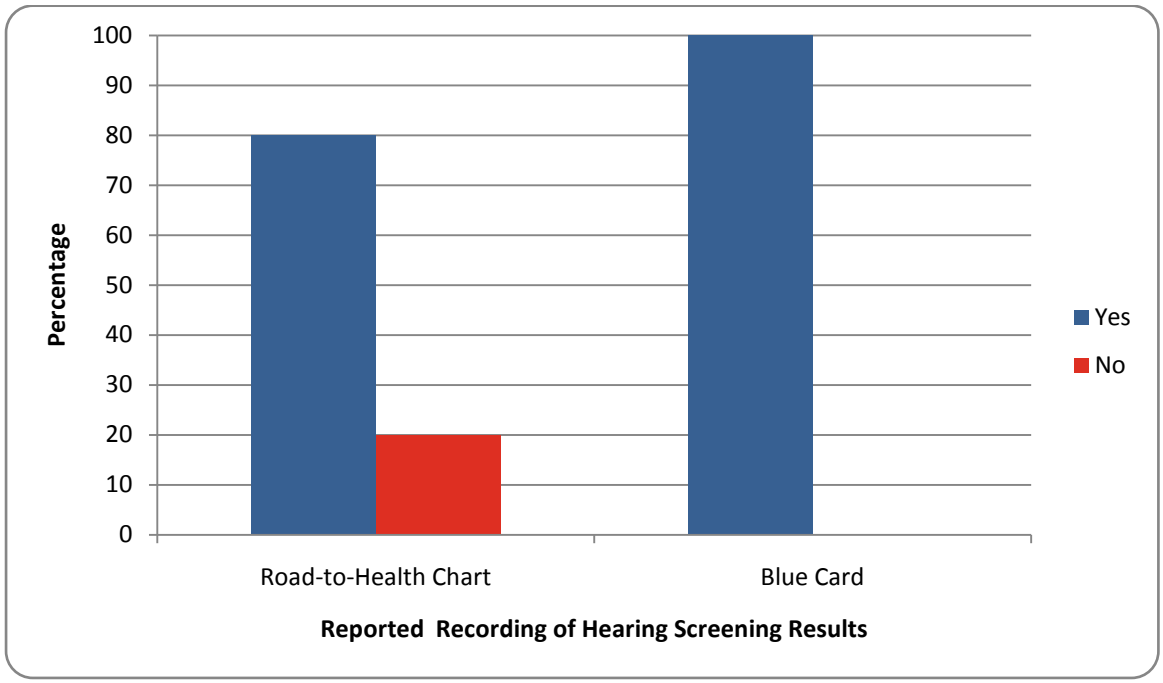


***Figure 8*: Reported Recording of Hearing Screening Results**

4.3.7.2 Record keeping as observed by the researcher during retrospective data compilation. The researcher firstly looked at the pre- and peri-natal histories which would have been recorded during the case history interviews that the nurses conduct with mothers as prescribed by the PHC package. The current study did not look at the proportions of pregnancies with problems or not, but instead focused on the recording of information.

Twenty six percent (n = 21) of the RtHCs reviewed contained incomplete information regarding problems experienced during pregnancy. There was incomplete information in 2.5% (n = 2) of the Blue Cards. Overall, the Blue Cards which remains in the possession of the clinic contained a lower proportion of incomplete information.

The current study acknowledged birth weight, birth length, head circumference and Apgar Scores as perinatal case history. Five percent (n = 1) of the children's data was not recorded in respect of birth length and head circumference. The bivariate plots of the birth weight, birth length and head circumference showed no obvious outliers, indicating no problems with data recording on the RtHC. There was however, a higher percentage of 7.5% (n = 6) where there was missing information regarding the Apgar Scores than for the perinatal information. The Apgar Scores that were recorded by the researcher and then analysed either increased or remained the same on going from one to five minutes which illustrates no problems in the data recording. Had this been present for any of the children in the sample, it would have highlighted a decline in the health of a baby, which was not the case in any of the participants.

There were three observations of otitis media observed during the data collection. The results for all of these three observations were recorded on the Blue Card. However, only one of these observations was recorded on the RtHC.

For the 71% (*n* = 57) of the children who had received some form of hearing test, irrespective of whether it was age-appropriate or appropriately conducted, results were recorded as shown in the Figure 9. In 90.7% of the observations (*n* = 72), results were recorded on the Blue Card. In nine observations (11%), results were recorded on both the RtHC and Blue Card. In three cases (3.75 %), there were no results recorded on either the RtHC or the Blue Card.

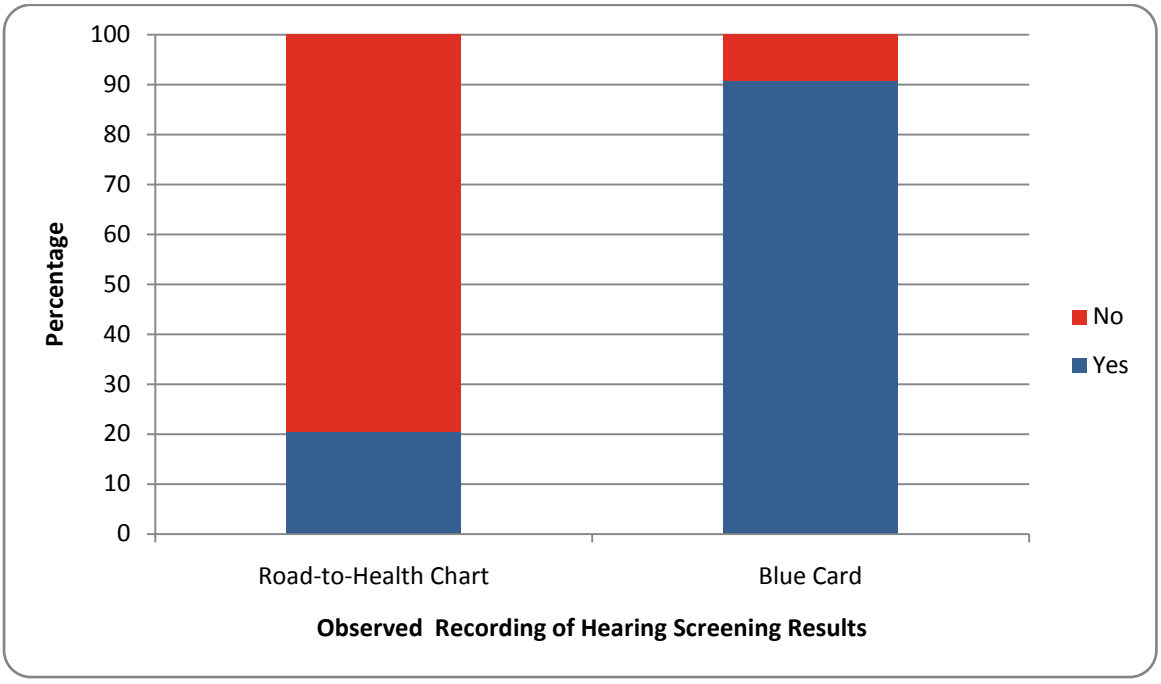


***Figure 9*: Observed Recording of Hearing Tests**

The Swart Questionnaire (DoH, 2002a; Swart, 1996) consists of two essential questions that should be asked at three months and six months old:

Does the baby appear to listen when someone is talking or singing at three months old?

As per Figure 10, it is evident that on only 5% (*n* = 4) of the RtHCs reviewed, was this question completed. For the vast majority of records reviewed (95%, *n* = 76) this section was

not completed. When reviewing the Blue card, for approximately two-thirds of the records, 65% (*n* = 52); a response was recorded. Only in three cases was a response recorded on both charts (all at different clinics). Thirty four percent (*n* = 27) of the cases had no data recorded on either the Road-to-Health Chart or the Blue Card.

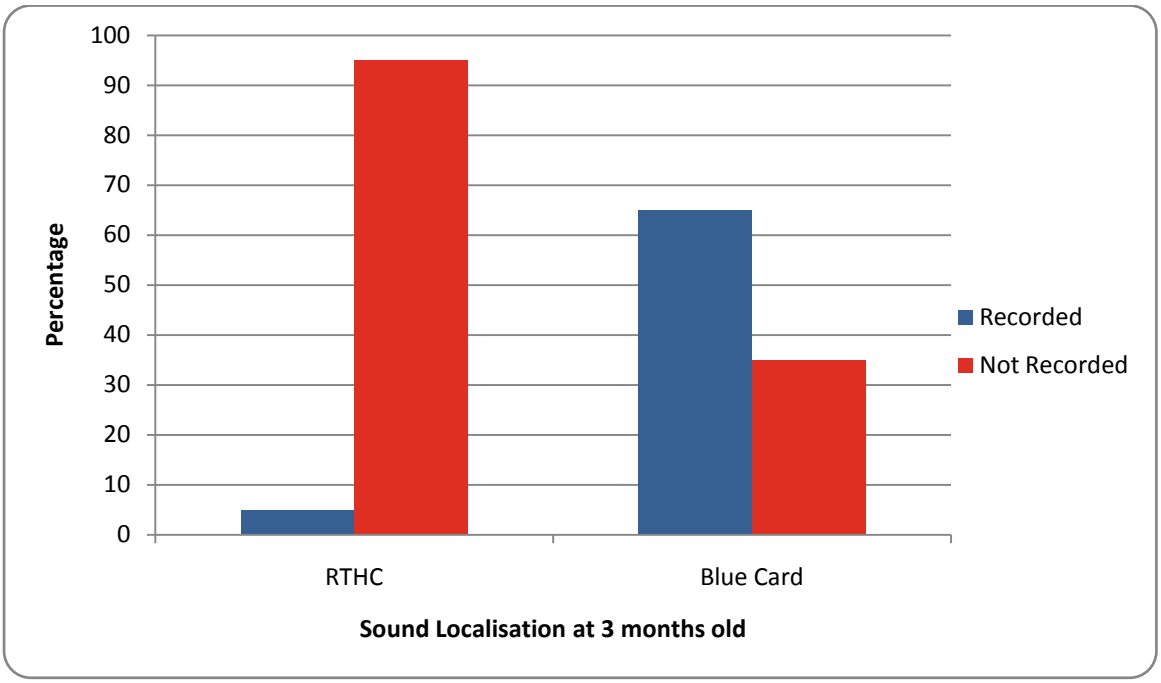


***Figure 10*: Sound Localisation at 3 Months Old**

Does the baby turn towards a loud noise at six months old?

As per Figure 11, 90% (*n* = 72) of the data was not recorded on the RtHC, while just over two-thirds (35%) of the data was recorded on the Blue Card. This recorded data was 68.75% (*n* = 55) and 67.5% (*n* = 54) for localisation to sound of the left and right ears respectively. There was a total of 7.5% (*n* = 11) of the cases that information was recorded on both the RtHC and Blue Card. In 29% (*n* = 23) of the cases, neither chart was found to contain information regarding sound localisation at six months old.

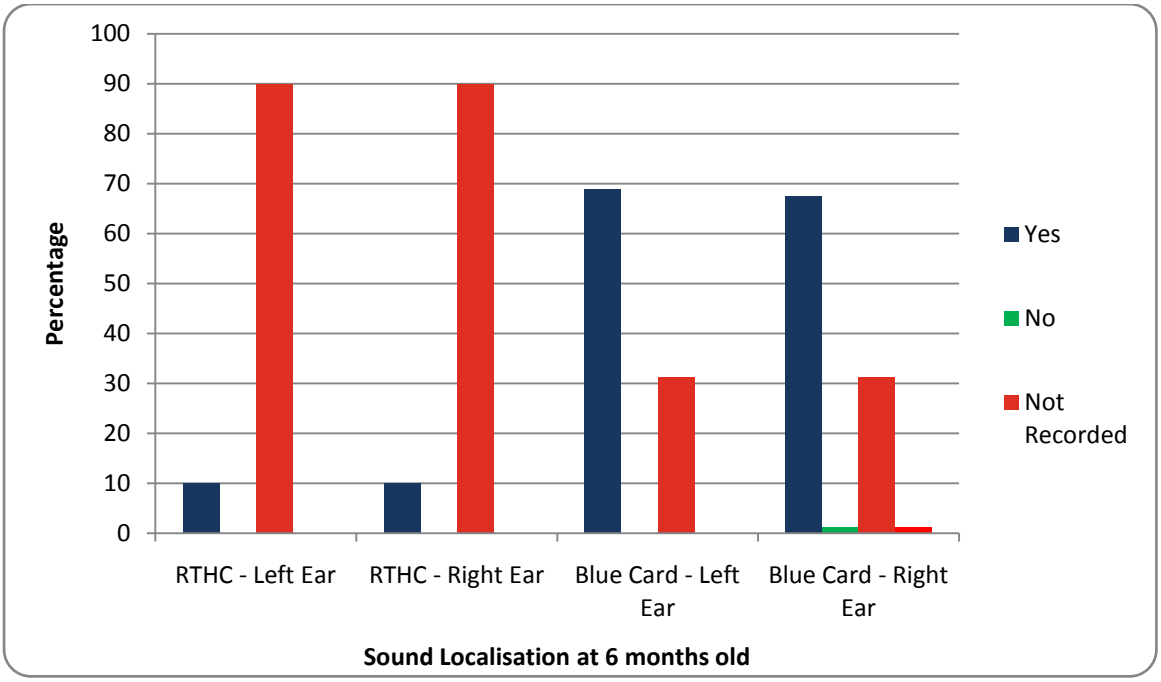


***Figure 11*: Sound Localisation at 6 Months Old**

The *Voice Test* is prescribed to be conducted from the age of 12 months onward. There were no cases of 'moderate hearing impairment', severe hearing impairment' or 'incomplete information' recorded for either the RtHC or the Blue Card.

The Voice Test was not applicable in 31.25% (n = 25) of the children as they were younger than 12-months old. For the remainder of the children for which the voice test was applicable (68.75%; n = 55), neither chart was found to contain the information for 29% (n = 23) of these participants. Overall, for the vast majority of 89% (n = 71), data was not recorded on the RtHC, while 66% (n = 54) of the data was recorded on the Blue Card. Information was only recorded on both charts for 3.75% (n = 3) of the cases reviewed

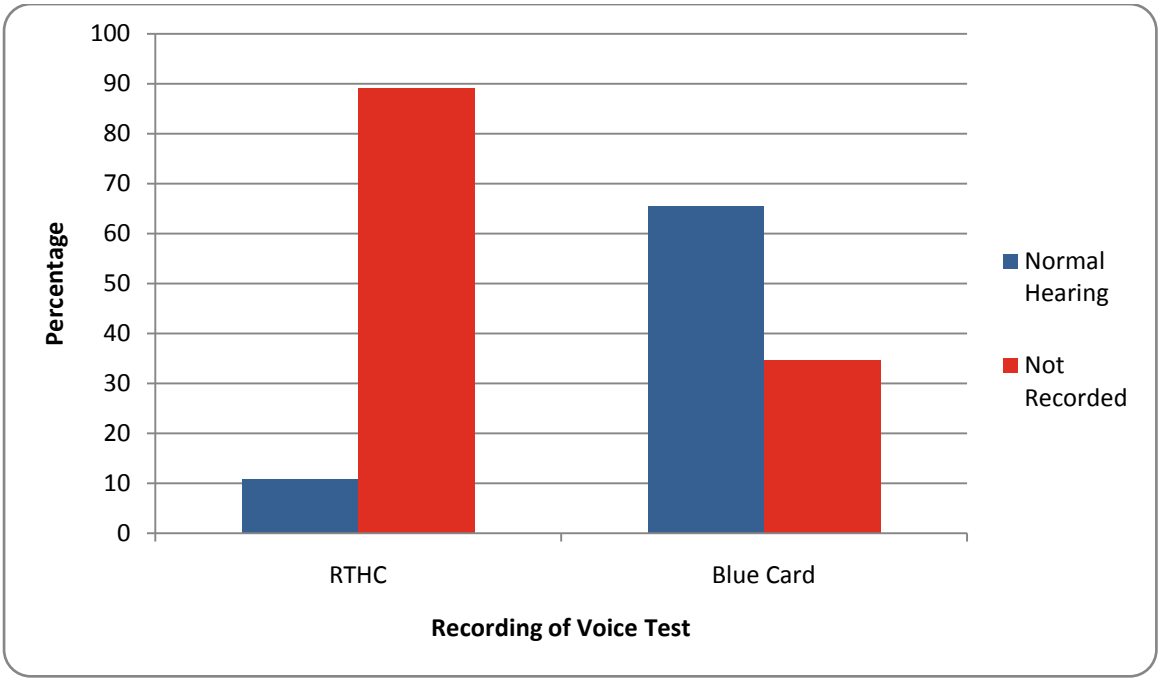


***Figure 12*: Recording of Voice Test**

4.3.7.3 Comparison of reported and observed data. Three children with otitis media were identified during the observations. These results were recorded on the Blue Card as per the indication by all participants (N = 20) that stated they would record this on the Blue Card when applicable. These records of a diagnosis of otitis media for two of these children were not recorded on the RtHC, despite being indicated by the participants who had seen them that they would record this type of information on the RtHC. The record of the third child that was not recorded was in accordance made by the participant who stated that he/she would not do so.

For 30 of the 41 hearing screening tests that were conducted during the observations and for which participants indicated that they would record results on the RtHC, 75% were not recorded. Seventy three percent of the above hearing screening tests was not recorded on the Blue Card, contrary to the statement made by the participants that they would.

The results of the retrospective record review (related to hearing screening) indicated on the Blue Cards and RtHC are presented in Table 13. The participants of this study may not however be responsible for the earlier retrospective records.

Table 13

Retrospective Recording of Hearing Screening

Result recorded		**No**	**Yes**	**Total**
3 month hearing screening	RtHC	60	16	76 (NA = 4)
	Blue Card	28	52	80
6 month hearing screening	RtHC	73	7	80
	Blue Card	25	55	80
12 month hearing screening	RtHC	36	6	42 (NA = 38)
	Blue Card	19	36	55 (NA = 25)

Note: NA = Not applicable

4.4 Focus Group

Focus group discussions seek to gather information that is beyond the scope of quantitative research, thus uncovering the underlying attitudes and beliefs of PHC nurses allowing the researcher to determine additional areas requiring further research (Bowling, 2002). It was required of the two focus group participants to complete the letter of informed consent.

The discussion was guided around the factors relating to the identification of the following themes:

- Infant hearing screening in relation to other services offered at PHC clinics.
- The procedure followed in conducting infant hearing screening.
- The weighted importance of record keeping on the RtHC and Blue Card.
- The challenges/barriers experienced when conducting infant hearing screening.
- The impact that previous nursing training has had on infant hearing screening and the implementation of the PHC Package.

4.4.1 Thematic analysis. Below is a summary presentation of the findings from the focus group of what respondents said to specific questions. This information represents the researcher's interpretation based on the notes taken during the focus group, a review of the audio recordings, and a content analysis of the typed transcripts from the focus group meeting:

Infant Hearing Screening in relation to other services offered at PHC clinics

The participants expressed that infant hearing screening is as important as other services offered at PHC clinics. The participants highlighted that PHC clinics offer comprehensive services, and therefore infant hearing screening should be amongst those services offered. The participants however highlighted that nurses conduct an in-depth case history, concentrating on questions regarding hearing development mainly at the six week immunisation visit.

The procedure followed in conducting infant hearing screening, with specific reference to the Swart Questionnaire and the Voice Test

The participants indicated in unison that the Swart Questionnaire is conducted at the age of six months. The procedure described by the participants varied in respect of the toy used to identify whether the baby responds to sound and the use of a bell to identify whether the baby localizes to the sound. Interestingly, the participants reported that they believed that if a baby lives in a noisy environment, they may not startle to the noises presented by nurses as they may be too accustomed to it. The participants further reported that they elicit a case history from the parent/caregiver and ask the following types of questions:

- "Does the baby hear the door bang?"
- "Does the baby respond to your voice whether you speak loud or soft?"

The participants further indicated that the Voice test is conducted by identifying whether the baby cries with a loud enough vocal quality.

The weighted importance of record keeping on the RtHC and Blue Card

The focus group participants reported that the RtHC and the Blue Card are equally important, but that the information to be recorded on it is not the same. The participants indicated that only the immunisations are recorded on the RtHC whilst the results of the physical examination conducted on the children are recorded on the Blue Card. Due to time constraints, nurses find it easier to complete the Blue Card.

The participants highlighted the following reasons for not comprehensively completing the RtHC and the Blue Card:

- Due to the lack of human resources at PHC clinics, nursing staff often rush through sessions so that all patients will be attended to before the clinic closes. Nursing staff therefore tend to record what they feel are the most pertinent results obtained during a session.
- Due to the HIV/Aids pandemic in South Africa, and in relation to the PMTCT Training that nurses attend, they ensure that they complete the relevant HIV/Aids related case history obtained so as not to miss out on a possible 'positive' case. Due to this, nurses have additional information to record and may therefore skip over hearing screening.

Challenges/barriers experienced when conducting infant hearing screening

Two aspects were identified by the participants during the focus group discussion:

- Time constraints due to lack of staff:

  Participants indicated that at the clinic, each nurse may see as many as 60 patients per day. They further indicated that sharing an otoscope at the clinic results in time wasting, as they often have to spend time locating the otoscope to conduct otoscopy on these children attending immunisation sessions. Participants also mentioned that because parents and children wait so long before being seen, they become increasingly impatient. These parental attitudes thus negatively affect the nursing staff. This may unfortunately create a cycle of stress and indifference on behalf of the nurses.
- Training:

  The participants felt that nurses who are well trained will remember to ask parents/caregivers questions regarding their childrens' hearing development. These

questions will also be more specific and provide more relevant information regarding the hearing development in children.

The impact that previous training has had on infant hearing screening

The participants of the focus group indicated that their knowledge regarding infant hearing screening was obtained during their nursing studies. They felt that should a nurse have been trained many years ago, that was the last time that he/she was provided with input on hearing screening services. Both participants recalled that they should be using a toy to make a noise in order to identify hearing status in children, but could not recall the procedures to be used or the hearing milestones.

The participants further indicated that nurses who are trained in IMCI would in their case history elicit information regarding the ear, hearing and associated pain. These nurses should in addition also conduct a physical examination of the ear, throat and chest. It was highlighted that nurses who are trained in PMTCT would further focus their attention to the HIV/Aids pandemic.

The implementation of guidelines and protocols as per the PHC Package

The focus group participants stated that they implement the guidelines and protocols as per the PHC Package. They stated that they would not risk not following these stipulated guidelines as they feel that they are legally bound by medical ethics to do so. Furthermore, guidelines provide a set of basic principles that assist in providing equity and access to medical care.

Aspects that would encourage nurses to conduct infant hearing screening at PHC clinics

The focus group participants stated that nurses should be empowered with appropriate information that should include a checklist of developmental milestones (speech, language and hearing), and the procedures of how to conduct age-appropriate hearing screening. They further indicated that perhaps children of specific ages should be grouped together, which would make screening easier.

The participants further felt that if parents/caregivers are educated and empowered regarding hearing, hearing loss and the importance of infant hearing screening; nurses would be more accountable. They proposed posters be put up in PHC clinics to educate parents/caregiver on hearing, hearing loss and the importance of infant hearing screening.

Ad hoc issues raised during the focus group discussion

The participants were offered the opportunity to add any additional information or ask any questions they felt were pertinent. They requested information of referral sources. They indicated that they currently refer patients that present with hearing related problems to the general outpatient wards at the provincial hospitals. They indicated that by referring to a direct source (e.g. audiologist or ear specialist), children with ear and hearing related problems will be identified sooner.

The participants added that they are under a lot of pressure to complete administrative tasks (e.g. completion of statistics; stock taking) in addition to seeing to their patients. They indicated that their performance is rated as per the patient statistics they submit on a monthly basis. Nurses therefore focus on “pushing the queues”.

Nurses currently see a “basket” of patients. Nurses at the majority of clinics offer an integrated service that includes anti-retroviral therapy (ART), PHC, ante-natal clinics, immunisations, etc. This causes them not to be able to focus on one area. They propose that a rotational system be implemented, where they focus on one area during a day, such as conducting only the immunisation clinic and not seeing other cases in between. They felt that in this way they provide a more holistic service which would be beneficial in identifying infants with ear and hearing related problems.

Participants noted that they see many infants and children with chronic middle ear infections and skin rashes.

4.4.2 Summary of focus group. Insight was gained from the focus group participants regarding their perceptions of neonatal hearing screening and its implementation within PHC clinics. Participants experience increased workloads within PHC clinics due to time, equipment and staff constraints, but would however be willing to implement hearing screening services should it be a more structured service. Record keeping is currently being impinged upon due to the many administrative tasks that they complete amidst tending to patients.

The focus group data suggests that participants are unsure regarding the test protocol/procedures of the two hearing screening tests that they should be conducting. Additionally, the data also suggests that the participants are unsure regarding the type of information to be recorded onto the RtHC vs. the Blue Card.

The need for initiatives such as in-service training and awareness campaigns for both parents and nurses have been expressed to ensure effective service delivery.

Nurses seem to be making decisions regarding the importance of one disease over another as they have limited time that they spend with each child, trying to ensure that they manage the most important disease, of which HIV/Aids has been specifically mentioned during the focus group discussion.

4.5 Summary

The prevalence of hearing loss varies depending on the criteria used to determine hearing loss, the test procedure or method of detection used (Jukovicova, Aghova, Elmy & Huttova, 2002). In the presence of other health conditions and the burdens of disease, a hearing loss may not be considered with the same relative importance (Korres, Nikolopoulos & Balatsouros et al., 2005). Prioritizing HIV/Aids is relevant, however nurses need to be aware that repeated middle ear infections may result from opportunistic infections associated with HIV which may result in hearing loss (Chandrasekhar, Connelly, Brahmbhatt, et al., 2000). The monitoring of hearing is thus of particular importance, especially in neonates with HIV/Aids (Khoza-Shangase & Turnbull, 2009; Kanji, 2010). Nursing training curricula are thus crucial in highlighting to nurses the effects of a hearing loss which far surpasses its association to HIV/Aids, or that hearing screening is merely a prerequisite within required protocols, but instead, the impact it has on the language, cognitive and social development negatively affects all spheres of life for individuals with a hearing impairment.

Chapter 5: Discussion

"The developing world must start where it can; the developed world should help where it can, so that we may provide the best outcomes for infants with hearing loss as widely as we can" (Swanepoel, 2006, p. 96).

5.1 Introduction

The aim of this chapter is to discuss the results of this study within the milieu of the suggested use of pre-existing health care delivery platforms in developing countries, such as immunisation clinics for newborn and infant hearing screening (HPCSA, 2002; Olusanya et al., 2004). These results elucidate the current practice of newborn hearing screening and the significance thereof.

5.2 Discussion

5.2.1 Knowledge, training and continuous professional development activities. In the development of effective, collaborative partnerships between audiologists and PHC nurses, it is necessary that all the partners possess common core knowledge and share the same philosophy about the outcome of the services provided (Moodley et al., 2000; Swanepoel et al., 2005). PHC nurses will support neonatal hearing screening if they understand the benefits of it (Finitzo & Crumley, 2000). By including more specific hearing related information within the nursing curriculum, collaboration could be achieved.

Often, the success of health awareness programmes or reduction in risk depends on getting the message out and meeting the training needs of the providers (State Advisory Committee on Newborn Hearing Screening [SACNHS], 2001). Findings of the current study

concur with findings from a study conducted by Petrocchi-Bartal (2011) that 86.7% of the nurses had received the relevant training and do possess the knowledge of the effect of hearing loss on speech/language development. It is however important that the link between this knowledge and the outcomes of actual screening programmes is highlighted. This will ensure that effective partnerships between audiologists and PHC nurses are established. It is postulated that empowerment of nurses create collaborative relationships, resulting in ownership of the screening programmes, whereby nurses themselves encourage infant hearing screening and explain its importance to parents/caregivers (Swanepoel, 2005). This premise is further evident in the success of an institutional universal hearing screening program run by nurses in the USA (Brennan, 2004). The empowerment of these nurses allowed for collaboration with physicians, audiologists, and otolaryngologists and compare favourably with published data (Finitzo & Crumley, 2000; Moodley et al., 2000; Petrocchi-Bartal, 2011; SACNHS, 2001; Swanepoel, 2005).

CPD is an international trend, crucial and necessary to ensure that health care professionals remain current and competent at all times (HPCSA, 2011). The findings of the current study indicate that all the participants attended CPD activities. Based on the results of the current study, a more holistic approach to CPD activities would allow for an integrative care approach by PHC nurses.

Furthermore, the impact of HIV/AIDS is reflected in increased attendances for counselling, PMTCT, treatment of opportunistic infections and ARV follow-up (Frisch, 2001). HIV/Aids was amongst the aspects also highlighted during the focus group discussion; whereby nurses indicated they may tend to over look hearing screening at times, owing to the additional administrative work related to the HIV/Aids pandemic. The impact of HIV/Aids should however not hinder service delivery, but rather improve on holistic patient management. Existing CPD activities should incorporate educating nurses on the

effects of a hearing loss and the far-reaching consequences on communication in the paediatric population with HIV/Aids (Scott & Layton, 2000). By highlighting the relation of opportunistic infections related to HIV/Aids and the development of chronic otitis media, nurses would have the advantage of applying their knowledge and providing comprehensive service delivery.

A holistic approach to patient management would ensure that public health workers share a common EHDI framework. The results of the current study correspond with the results of a study conducted by Petrocchi-Bartal (2011) which indicated that 43.3% of participants considered a lack in appropriate training in newborn or infant hearing screening to be a central reason which influenced the provision of EHDI services in their clinics.

5.2.2 Description of typical immunisation sessions.

***5.2.2.1 Duration of sessions*.** It has been found that access to health care is still a major problem for many people, particularly in remote areas. In addition to poor access, is the long waiting periods for consultations (Hirschowitz & Orkin, 1995, cited in Swanepoel, 2005). The results of the current study question whether a balance between the efforts taken by patients to get to clinics and the effort/time taken by service providers in attending to them have been achieved. The shortest session observed during the current study was 2 minutes, with 50% of the sessions lasting less than 10 minutes.

A study conducted by Tshabalala (2002) monitored the duration of consultations (N = 9001) at PHC clinics in South Africa. It was found that 48.72% of the patients spent an average of 5-9 minutes in consultation with PHC nurses, whilst only 9.10% spent an average of 40 minutes in consultation. This is similar to the findings of a later study that focused on the quality of child health services offered at PHC clinics in Johannesburg (Thandrayen,

2008). In that study, the mean duration of consultations were 8.2 minutes, with the minimum duration being two minutes and the maximum duration of 30 minutes. It is therefore postulated that staff shortages (as identified during the focus group discussion), as well as the aspects mentioned above could be the reasons for the focus on the quantity of consultation sessions conducted rather than the quality of care.

5.2.2.2 Case history. A predominantly alerting factor to ear related health issues are upper respiratory tract infections (URTI), with otitis media as a complication (Petrocchi-Bartal, 2011; Chonmaitree, Revai, Grady et al., 2008). It is for this reason that case history elicitation has been included in the PHC Package. The complications resulting from the lack of compliance by the nurses in eliciting an adequate case history has far reaching effects on meeting the fundamental elements of EHDI. One of these fundamental elements is to process a high yield from identification protocols at the earliest age possible (HPCSA, 2007).

The JCIH (2000) has agreed that a High Risk Register may be useful in institutions where UNHS is not available, despite its ability to only identify 40% to 50% of infants with a hearing loss (Spivak, Sokol, Auerbach, & Gershkorvich, 2009; Swanepoel, 2005). The inclusion of risk factors provides an additional advantage of not precluding late-onset or progressive hearing loss in relation to typical hearing at birth (Swanepoel, 2005).

The results of the current study, where only 43% (n = 19) of the participants reported that they would obtain a case history from *all* parents/caregivers during the RtHC immunisation sessions, is similar to the findings of Petrocchi-Bartal (2011). In her study, only 43.3% of the participants reported that they would interview *all* parents/caregivers at RtHC immunisations. This is a cause for concern as this will result in the failure to identify those children with less obvious presentations of ear related problems such as acute otitis

media (Swanepoel et al., 2005). Acute otitis media is an infection of the middle ear which may vary from mild to severe, causing the younger child to tug at the ear or simply act irritable, cry more than usual, eat less than normal or have trouble sleeping. Should the pressure build-up in the middle ear not be high enough to rupture the tympanic membrane, overt fluid drainage from the ear may not be seen (Rovers, Schilder, Zielhuis & Rosenfeld, 2004).

5.2.2.3 Physical examination. Results of the current study indicate that an otoscope was used to examine the external auditory canal and tympanic membranes of only 5% (n = 4) of the childrens' ears. These findings support the results of an earlier study conducted at PHC clinics in Gauteng and the North West Provinces (Petrocchi-Bartal, 2011). The compliance gaps were evident and contradictory to the IMCI intention to be more vigilant in the use of otoscopes to identify otitis media and otitis externa. Although 85% (n = 17) of the participants reported that an otoscope was available within the clinic, this does not reflect that each nurse within a PHC clinic is equipped with their own otoscope. The DoH had identified an otoscope amongst four of the most essential equipment (thermometer, stethoscope, blood pressure apparatus and otoscope), for the effective functioning of PHC facilities (Health Systems Trust, 2004). In a 2003 National PHC Facilities Survey, it was found that nationally only 7% of professional nurses were equipped with all four of these items (Health Systems Trust, 2004).

Regarding the palpation of lymph nodes, throat examination, assessment of mastoid and neck stiffness, it is concerning that only 11% of the children observed in the current study had these procedures performed on them. The importance of these examinations relate to the assistance in identification of otitis media and meningitis, both of which could contribute to a hearing loss. The results of the current study are in contrast to the key

findings in the earlier study conducted by Thandrayen (2008). In that study, it was found that throat examinations were performed in 61% of children seen by PHC nurses. For babies (< 18 months of age) whose primary reason to visit the clinic was ill health, neck stiffness was assessed in 44% of consultations.

From the above, it is thus postulated that PHC nurses are more compliant with the performance of these examinations as per the IMCI and PHC Package guidelines for babies who are ill as opposed to the well-baby encounters at immunisation visits. It is thus evident that assessments conducted by PHC nurses regarding otitis media require improvement to ensure not only hearing health care service delivery, but good overall quality of care services offered (Thandrayen, 2008).

The risk of PHC nurses prioritising some health conditions over others, defeats the attempt of an integrated package of essential PHC services (DoH, 2005). With health priorities focused on saving lives rather than addressing quality-of-life, PHC nurses run the risk of overlooking the very conditions such as tuberculosis and HIV/Aids, that may increase the risk of hearing loss amongst infants in South Africa (Kanji, 2010; Swanepoel, 2005).

5.2.3 Hearing screening. The criteria used to determine a hearing loss varies according to the test procedure or method of detection used, and the sample or population studied (Jukovicova et al., 2002).

The nurses that participated in the current study indicate that they are generally aware that hearing screening procedures need to be conducted at immunisation visits (24%; n = 19). These results are similar to the findings of the Petrocchi-Bartal (2011) study, whereby 30% of the participants indicated that they conducted hearing screening comprising environmental sounds and/or speaking to the infant whilst monitoring the infant's behavioural responses. In

contrast, when PHC nurses were observed when conducting hearing screening at clinics, Thandrayen (2008) found that the Swart Questionnaire was performed on only 7% of the children, and the Voice Test in only 14% of the sessions observed.

The participants of the focus group have aptly reiterated issues described in other studies which include knowledge gaps relating to the benefits of EHDI services. The stance that developmental screening may seem futile and not a priority in comparison to the prevention of infectious communicable diseases is the resultant of child health services not being of an adequate standard (Thandrayen, 2008). Community awareness and parent/caregiver education regarding the benefits of developmental screening, more specifically neonatal hearing screening in terms of EHDI is necessary. Policy makers within the DoH need to align the existing IMCI and PHC Package protocols to include these benefits and may further define it in accordance with the findings of this study. The variation in ages and procedures of the current DoH screening procedures renders an ineffective national data base on the prevalence figures of hearing impairments within the public health care sector.

5.2.4 Management practices and intervention. It is of note that poverty, ignorance, dearth of specialists and limited access to medical care, amongst other factors in developing countries, conspire to worsen the course of otitis media (Ibekwe & Nwaorgu, 2010). The inadequate management of otitis media, especially in developing countries, has potentially severe complications if left untreated.

Otitis media and respiratory conditions such as URTI account for eight of the top ten diagnoses encountered within the PHC sector in South Africa (Bateman, Feldman, Mash et al., 2009). The importance of effective management and intervention is thus apparent not only in respect of hearing loss, but in the broader sense of the prevalence of respiratory

diseases. Lack of adherence to protocols is impinging on the efficacy of PHC services which was evident for the 3.75% (n = 3) of children in the current study who required intervention for otitis media, but received none. It should be noted that the inadequate parent interview (91.25%; n = 73) and lack of any case history (8.75%, n = 7), highlights the possibility that more children who may have required intervention but did not receive it. To achieve this adherence to management protocols for otitis media and respiratory conditions is thus critical as there are clear associations between chronic otitis media and hearing loss; and respiratory complications which depress the CD4 count in patients with HIV/Aids (Lee, Chan, Ng, & Li, 2000). These conditions render patients more prone to a wide array of infectious complications (Lee et al., 2000). Studies in Sub-Saharan Africa suggest the appropriate case management of acute respiratory infections can reduce infant mortality by 20% and mortality rates for children under five years old by 25% (Jamison et al., 2006). It is pivotal that PHC staff relate these implications within their daily service delivery, thus better enabling them to partner in the development of EHDI goals toward overcoming existing barriers.

5.2.5 Referrals. The aim of EHDI is to facilitate referrals following the detection of possible hearing loss during the hearing screening process. This will enable the diagnosis of hearing loss, and the implementation of intervention and treatment as early as possible (HPCSA, 2007). The findings of the current study revealed that participants possess the theoretical knowledge of when and to whom to refer. However, non-compliance to referral protocols as prescribed by the DoH (2002a) was evident, as no referrals were made by participants in the current study despite the fact that referrals were required. The necessary referrals were for acute otitis media, which if left untreated, often spreads beyond the confines of the middle ear and can result in extracranial complications, such as mastoiditis (WHO, 2004). Referrals were also warranted for speech and language delays reported by the parents/caregivers during the session. Communication disorders often co-exist with other developmental disorders and are the most common symptom of a developmental disability in children under three years of age (Rossetti, 2001). It is also generally accepted that communication disorders decrease a child's opportunity to interact with the world, and may pose a challenge to function as an independent adult (Olusanya et al., 2004).

This lack of referrals could be argued as a stumbling block to the development of our health system. Non referrals are especially contradictory to the principles of EHDI and an obstacle to its effective implementation in South Africa. Results within the current study indicate that specific referrals as per the DoH criteria were not made for mastoiditis or speech and language delays reported by parents/caregivers. This could be due to the perceptions regarding the significance of a communication disorder in light of other delays. Audiology and speech-language therapy are services within the larger system of services and supports for these children and their families.

5.2.6 Record keeping. The RtHC and CoJ Blue Cards provide an opportunity to facilitate a national information system that meet the requirements for hearing screening record keeping as recommended in the HPCSA 2007 Position Statement.

Findings of the current study correlate to results of the study conducted by Petrocchi-Bartal (2011), whereby the majority of participants (80%; *n* = 16) in the current study indicated that they record patient results on the RtHC. All the participants in the current study indicated that they document patient results on the Blue Card which remains in the clinic, with a high correlation to the 96.7% of participants that indicated the same in the Petrocchi-Bartal (2011) study.

The poor record keeping practices exhibited by the participants of the current study, especially on the RtHC, supports the findings of the Thandrayen study (2008). These ineffective practices are contrary to the recommendations made in the PHC Package (2002). Poor record keeping practices may make it difficult to track patients who may have defaulted from clinics, or hinder the continuity of care for those patients who do return. The ill effects of these poor record keeping practices hinder service delivery which are necessary components to manage EHDI programmes effectively as it prevents the early diagnosis and subsequent intervention for hearing losses (Kanji et al., 2010; Olusanya et al., 2007).

Record keeping practices provide a means of outcomes measure to the efficacy of hearing screening programmes (Johnson & Danhauer, 2002). Results of the current study elucidate us to the fact that there are no ground rules across clinics despite the presence of the existing framework within the RtHC and CoJ Blue Cards that allow for record keeping of each developmental milestone, including hearing.

5.3 Summary

Based on the discussion of the results obtained from the current study, it is deduced that PHC nurses that participated in this study do not adhere to the guidelines, norms and standards as outlined by the INDS (1997), the HPCSA Position Statement (2007) on EHDI and the PHC Package (2002). Aspects such as budgetary constraints, human resource shortages linked to staff training and staff shortages, gaps in knowledge relating to EHDI service delivery; and lack of equipment have been highlighted as possible factors to the current neonatal hearing screening practices in the CoJ.

5.4 Conclusion

The current study identified the adherence of PHC nursing practices to existing hearing screening protocols for infants. This study provides contextual data for the planning of future screening programmes within PHC immunisation clinic settings. The results obtained from the current study highlights the important role of PHC nurses in neonatal hearing screening service delivery. Unfortunately, the impact of varied and inconsistent practices and application of hearing screening protocols are far reaching as it directly delays the age of identification of a hearing loss and the enrolment of these children into early intervention programmes. By empowering nurses with the knowledge and skills required to conduct hearing screening at PHC clinics, it would create a willingness to conduct hearing screening as part of the EPI programme and encourage their dedication to the objectives for future structured EHDI programmes in South Africa.

Chapter 6: Conclusions and Implications

The implementation of comprehensive services for the early detection of hearing loss must rely on a transdisciplinary team approach that facilitates collaboration and that is essential for community-based early intervention services (Moodley et al., 2000).

6.1 Introduction

This chapter contains an overview of the rationale for the current research. It then provides a summary of the results in relation to the main aim of the study which examined whether the neonatal hearing screening services at PHC clinics in the CoJ adhere to the guidelines, norms and standards as outlined by the INDS (1997), the HPCSA Position Statement (2007) on EHDI and the PHC Package (2002). Conclusions are provided, and a detailed critical evaluation including the consideration of the limitations of the study follows. Finally, clinical implications are discussed and recommendations made for future research.

6.2 Overview of the rationale and summary of the results

With the increasing prevalence rates of hearing loss amongst South African newborns, this study set out to evaluate the current neonatal hearing screening practices in PHC clinics. Due to the vast majority of the South African population who receive medical care through the public health sector, PHC nurses are in the unique position to identify developmental delays (e.g. hearing loss) through the regular, frequent health assessment intervals conducted on infants and young children (Mousmanis & Watson, 2008).

The main aim of the study was to determine whether the neonatal hearing screening practices provided at PHC clinics are in adherence to relevant policies, amidst the hypothesis that immunisation clinics serve as excellent platforms for implementing EHDI programmes (HPCSA, 2002). Owing to the variations and inconsistencies amongst PHC nurses regarding hearing screening practices, it was found that they do not adhere to the guidelines, norms and standards as outlined by the INDS (1997), the HPCSA Position Statement (2007) on EHDI and the PHC Package (2002).

6.3 Evaluation of the study

6.3.1 Study strengths.

- The credibility and validity of the results obtained during the current study was increased by the implementation of data triangulation within the methodology. The data collection techniques included questionnaires, observations, retrospective record review and a focus group.
- PHC immunisation clinics are recommended amongst two other contexts (Neonatal Intensive Care Unit and well baby nurseries) for the widespread implementation of newborn and infant hearing screening programmes (HPCSA, 2002). These immunisation platforms have been considered by the researcher to investigate the current hearing screening practices so that future recommendations for EHDI may be made. By taking one step back, the researcher aimed to identify the barriers to the implementation of EHDI programmes.
- The sample of PHC clinics within the current study was representative of the clinics within the CoJ as at least one clinic per region was included in the study.

- A focus group discussion was included to allow for a comprehensive description of hearing screening practices.
- PHC clinics which formed the representative sample included clinics from each of the seven regions within the City of Johannesburg Health Department.

6.3.2 Study limitations.

- Although the study was conducted in Gauteng, it only focused on the hearing screening practices of nurses employed by the CoJ Health Department.
- Furthermore, the study was only conducted within local government run clinics due to time constraints related to ethical clearance of the research by the provincial government research department.
- There was poor attendance to the focus group discussion and multiple viewpoints would have been the ideal standpoint. However, the limited number of participants in the focus group was to some extent ameliorated by the application of data triangulation within the research design.

6.4 Implications

The results obtained from this study have yielded important implications for effective hearing screening of infants and children at PHC clinics in Gauteng, which highlight the need for compliance to the policies and protocols. Contextual recommendations have been generated from the results obtained from the current study. These steps will be an important advancement in the early diagnosis and intervention of hearing loss and could be achieved through recommendations at both a clinical level and by policy amendments:

Policy

- **Adherence to protocols**

Recommendations of adherence to clinical protocols need to emanate from the highest levels, filtering down to nurses at grass roots. This is especially relevant as despite these protocols being endorsed at a central government directorate level, autonomy is now exercised within district levels (DoH, 2009).

- **Human resources**

Recommendations to negotiate the benefits of hearing screening at a governmental level may improve staff complements and work distribution. This could be achieved with contextual research that may contribute toward a sustainable system capable of accurately ascertaining information required for the implementation of more structured EHDI programmes.

- **Health care priorities**

Recommendations are to highlight the moral, ethical and financial consequences for public health and more specifically PHC, which are caused by disproportionate priorities in health care. These disproportionate priorities would prevent infants with hearing impairments from achieving health equity with the broader population in South Africa. Onus is thus on audiologists and policy makers to eliminate health disparities and reveal the extent and impact of hearing loss for the child, the family and society at large.

Clinical

- **Adherence to protocols**

The Department of Health has introduced the PHC Package and IMCI protocols which attempt to ensure that late-onset or progressive hearing loss in relation to normal hearing at

birth are not precluded. Adherence to these protocols may be a feasible, temporary measure; if not for identification of a hearing loss then at least to assist in referral to specialised services.

The absence of intervention as per the current DoH protocol in the presence of *otitis media* increases the probability of hearing loss with the risk of developing behavioural, speech, language and cognitive problems. Recommendations once again include the vigilance of PHC nurses to adhere to protocols that are in place. Recommendations made by the Petrocchi-Bartal (2011) study to investigate the application of protocols are further accentuated by the current study, and to further identify whether policies that are recommended centrally differ to those protocols being used at a district level.

- **Swart Questionnaire and the Voice Test**

These tests may be a feasible, temporary measure of neonatal hearing screening at PHC clinics, until such time where infant hearing screening will be common practice (Swanepoel, Delport & Swart, 2004). In the interim, recommendations to standardise these tests would be beneficial as they are a cost-effective means of identifying infants and children with a possible hearing loss.

- **Case history**

The current PHC Package case history protocol aims to elicit information regarding URTIs and otitis media, whereas the IMCI protocols elicit case history information of babies who do not present with these symptoms (Petrocchi-Bartal, 2011). Recommendations to collaborate with policy makers within the DoH would be to include more comprehensive case history related questions, which includes a modified list of risk indicators specific to the infrastructure, community and diseases present within our specific PHC context (Kanji,

2010). This recommendation should further extend to the combined use of these protocols. This information would at least identify those infants who require on-going audiological monitoring and surveillance in a system where neonatal hearing screening is far from common practice (JCIH, 2000).

- **In-Service training**

In-service training would provide a sustained effort to incorporate systematic PHC hearing screening in the quest toward South African EHDI outcomes. Ultimately, the quality of programmes is often determined by the quality of training received (McConkey, 1995, cited in Swanepoel, 2005).

- **Referral systems**

Effective referral systems ensure people receive the best possible care and also ensure the cost-effective use of PHC services. Recommendations to define the institution of PHC as an entry level to all other levels of health care and acts as a link between communities and service providers (Bury, 2005).

- **Record keeping**

Recommendations that the administrative responsibilities of PHC nurses as a contributory factor to the quality control of hearing screening programmes need to be addressed. The recognition of the importance of accurate recording and collection of data from the various stakeholders for the success of the future of EHDI programs in South Africa is critical.

6.5 Recommendations for future research

The results revealed a variety of interesting trends. Preliminary answers and many more questions were raised that will need to be answered. The following suggestions for future research would contribute to governmental policy development, as well as to provide contextual research so that EHDI stakeholders may take a firmer stance.

- The current study could thus be replicated:
  - ✓ within the provincially run PHC clinics in Gauteng
  - ✓ across provinces to assist with national policy development
- Further research to identify the knowledge of policy makers and the necessary stakeholders on EHDI, would assist in aligning the existing IMCI and PHC Package protocols to include EHDI service delivery in South Africa.

6.6 Summary

This chapter summarised the rationale and the results of the research as described in Chapter 4 and 5. By means of a critical evaluation of the research, combined with a discussion of the study's strengths and weaknesses, the validity of the study is established. The clinical implications of the research were pointed out.

Given the dearth of information on the current hearing screening practices at the grassroots level of PHC, the groundwork has been laid for future more in-depth research to replicate, refine, and expand the current study in various ways that could be generalised beyond this specific context.

In light of the fact that targeted hearing screening within PHC clinics in South Africa has been identified as a feasible, temporary measure as an alternative to UNHS, the context-

specific barriers to the implementation thereof has been identified in this study. These barriers include limited knowledge regarding hearing loss and its effects on speech-language development in relation to EHDI, service delivery gaps in relation to existing hearing screening and administrative governmental protocols, and inequities surrounding workload distribution and staff establishment.

By optimising the implementation of current governmental hearing screening protocols, nurses' awareness and understanding of the importance of hearing screening will pave the way for more structured, targeted EHDI programmes in years to come. The adherence to the existing protocols by PHC nurses here forth will provide relevant statistical data on the prevalence of possible hearing impairments, which would eventually justify the implementation of widespread hearing screening programmes in South Africa. "Health care practitioners, more specifically PHC nurses and audiologists should jointly bear the moral obligation to facilitate actualisation of the hearing impaired individual's rights to achieve their potential through EHDI" (Petrocchi-Bartal, 2011, p. 158).

In conclusion, the information yielded by this study, contributed to the expansion of evidence-based data on the current hearing screening practices in South Africa.

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Appendices

Appendix A. Request for permission to conduct research at Primary Health Care Clinics in Gauteng

A1. Letter to Directorate Policy, Planning and Research; Department of Health and Social Development

A2. Letter to the Clinic Managers

Appendix A1

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

16 September 2010

The Director
Department of Policy, Planning and Research
Gauteng Department of Health and Social Development

Attention Dr Sue le Roux

Request for permission to conduct a research project at Primary Healthcare Clinics (PHC) in Gauteng.

As a master's student at the Department of Speech Therapy and Audiology, University of the Witwatersrand, I am required to complete a research project in partial fulfilment of the postgraduate degree, MA (Audiology). The title of my research is 'Neonatal Hearing Screening at Primary Health Care Clinics in Gauteng'. The aim of the research project is to identify the current hearing screening practices as conducted by nurses at primary health care clinics in Gauteng; and to review the hearing screening record keeping on the Road-to-Health Charts and the City of Johannesburg Child Health Services Clinic Cards at these clinics.

There will be two participant groups:

The participants in group 1 will include nurses employed at primary health care clinics to complete a questionnaire. The researcher will also observe and video record immunisation sessions conducted by nurses with infants who attend the clinic. The purpose of the video recording is to provide a holistic investigation, as the data collected will be interpreted within context of the Primary Health Care Clinic. The researcher will lastly conduct a focus group with the nurses to clarify answers obtained from the questionnaires and the video recorded observations.

The participants in group 2 will consist of children who are attending the Primary Health Care Clinics in Gauteng in order to obtain retrospective data by reviewing their Road-to-Health Charts and City of Johannesburg Blue Cards.

All potential participants will be provided with a participant information sheet, and all the participants that agree to participate will be required to sign an informed consent and video consent form. Informed consent will be obtained from the parents of participants in group 2.

The data obtained from this study aims to provide valuable information about the link between existing guidelines and protocols regarding neonatal hearing screening and current practice at primary health care clinics. This will therefore allow for informed decision-making regarding Early Hearing Detection and Intervention (EHDI) Services; and assisting in the early referral of infants who have or are at risk of developing a hearing loss to appropriate EHDI services.

For the reasons stated above, I would like to request access to conduct research at the Primary Health Care clinics in Gauteng.

All the names of the clinics, participant names and records will be treated with confidentiality and will only be used for the purposes of the study. The video recorded observations will not be shown publicly or at any congresses. The participants will also have the right to terminate their participation in the study at any time without any negative consequences. All data will be stored in a locked cupboard at the Department of Speech Therapy & Audiology, University of the Witwatersrand; for 5 years, after which it will be destroyed.

On completion of the research project, a copy of the research report will be made available to the Department of Health.

Should you have any questions or concerns, I can be contacted on 071 359 2575. In addition, the chairperson of the Ethics Committee at the University of the Witwatersrand, Professor Cleaton Jones, may be contacted on 011 717 2301.

I hope that this request will meet with your approval.

Yours Sincerely

Aisha Casoojee
MA Audiology student

Dr Karin Joubert
Research supervisor

Appendix A2

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

1 April 2011

The Clinic Manager
_____ Clinic
Gauteng Department of Health

Attention _____

Request for permission to conduct a research project at Primary Healthcare Clinics (PHC) in Gauteng.

As a master's student at the Department of Speech Therapy and Audiology, University of the Witwatersrand, I am required to complete a research project in partial fulfilment of the postgraduate degree, MA (Audiology). The title of my research is 'Neonatal Hearing Screening at Primary Health Care Clinics in Gauteng'. The aim of the research project is to identify the current hearing screening practices as conducted by nurses at primary health care clinics in Gauteng; and to review the hearing screening record keeping on the Road-to-Health Charts and the City of Johannesburg Child Health Services Clinic Cards at these clinics.

There will be two participant groups:

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For the reasons stated above, I would like to request access to conduct research at the Primary Health Care clinics in Gauteng.

All the names of the clinics, participant names and records will be treated with confidentiality and will only be used for the purposes of the study. The video recorded observations will not be shown publicly or at any congresses. The participants will also have the right to terminate their participation in the study at any time without any negative consequences. All data will be stored in a locked cupboard at the Department of Speech Therapy & Audiology, University of the Witwatersrand; for 5 years, after which it will be destroyed.

On completion of the research project, a copy of the research report will be made available to the Department of Health.

Should you have any questions or concerns, I can be contacted on 071 359 2575. In addition, the chairperson of the Ethics Committee at the University of the Witwatersrand, Professor Cleaton Jones, may be contacted on 011 717 2301.

I hope that this request will meet with your approval.

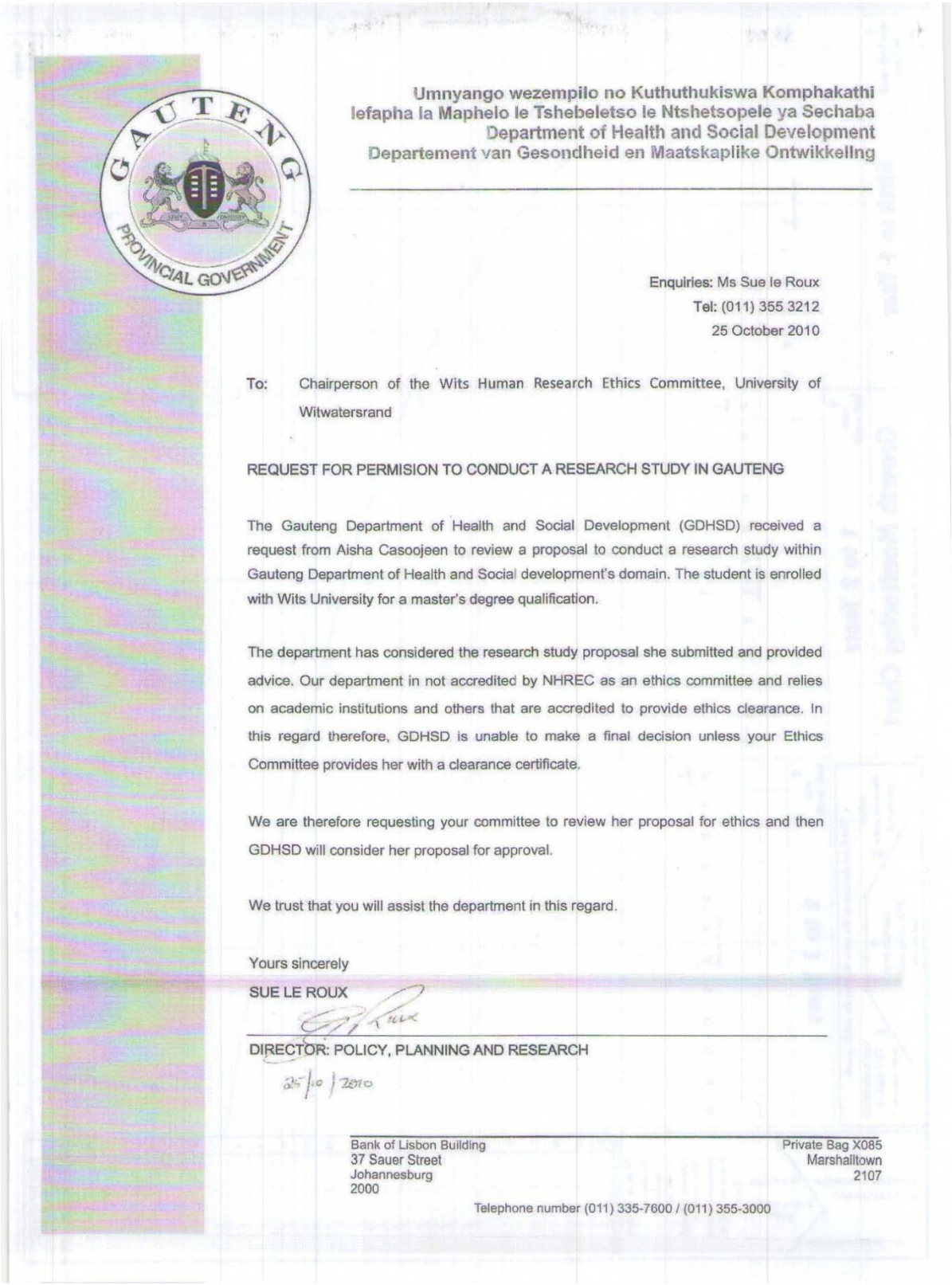
Yours Sincerely

Aisha Casoojee
MA Audiology student

Dr Karin Joubert
Research supervisor

Appendix B. Letter received from the Directorate Policy, Planning and Research; Department of Health and Social Development

Appendix B



Umnyango wezempilo no Kuthuthukiswa Komphakathi
lefapha la Maphelo le Tshebeletso le Ntshetsopele ya Sechaba
Department of Health and Social Development
Departement van Gesondheid en Maatskaplike Ontwikkeling

Enquiries: Ms Sue le Roux
Tel: (011) 355 3212
25 October 2010

To: Chairperson of the Wits Human Research Ethics Committee, University of Witwatersrand

REQUEST FOR PERMISION TO CONDUCT A RESEARCH STUDY IN GAUTENG

The Gauteng Department of Health and Social Development (GDHSD) received a request from Aisha Casoojeen to review a proposal to conduct a research study within Gauteng Department of Health and Social development's domain. The student is enrolled with Wits University for a master's degree qualification.

The department has considered the research study proposal she submitted and provided advice. Our department in not accredited by NHREC as an ethics committee and relies on academic institutions and others that are accredited to provide ethics clearance. In this regard therefore, GDHSD is unable to make a final decision unless your Ethics Committee provides her with a clearance certificate.

We are therefore requesting your committee to review her proposal for ethics and then GDHSD will consider her proposal for approval.

We trust that you will assist the department in this regard.

Yours sincerely
SUE LE ROUX
DIRECTOR: POLICY, PLANNING AND RESEARCH
25/10/2010

Bank of Lisbon Building
37 Sauer Street
Johannesburg
2000

Private Bag X085
Marshalltown
2107

Telephone number (011) 335-7600 / (011) 355-3000

Appendix C. Ethical Clearance Certificate

Appendix C

M110132

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Ms Aisha Casoojee

CLEARANCE CERTIFICATE	**M110132**
PROJECT	Noenatal Screening Services at Primary health Care Clinics in Gauteng
INVESTIGATORS	Ms Aisha Casoojee.
DEPARTMENT	Speech Pathology & Audiology
DATE CONSIDERED	28/01/2011
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 18/02/2011 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Karin Joubert

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Appendix D. Letter of approval received from the City of Johannesburg Health Department to conduct research at PHC Clinics in Gauteng

Appendix D

Joburg

a world class African city

ENQUIRIES: C. Fraser
Tel: +27(0) 11 407 7437
Tel: +27(0) 11 407 6840

4th Floor B Block
Metropolitan Centre
158 Loveday Street
Braamfontein

PO Box 31244
Braamfontein
SouthAfrica
2017

Tel +27(0) 11 407 7513
Fax +27(0) 11 339 2866

29 March 2011

Dear Ms Casoojee

APPROVAL TO CONDUCT RESEARCH WITHIN HEALTH IN THE CITY OF JOHANNESBURG

Permission has been granted to you to conduct research in the Health Department within the City of Johannesburg.

Topic: Neonatal Hearing Screening Services at Primary Health Care Clinics in Gauteng

Please contact the following person(s) before you commence with your project and to gain access to the clinics:

Region	Regional Health Manager	Contact No.	Cell phone
A	Mr Harry Pieters	011 237 8010	082 467 9284
B	Ms Paulinah Maepa	011 718 9656	082 551 5804
C	Mr Tebogo Motsepe	011 761 0257	083 421 9405
D	Ms Mabel Ngcobo	011 986 0164	082 467 9316
E	Mr Vusi Mazibuko	011 582 1504	082 464 9547
F	Mr Oupa Montsioa	011 681 8130	082 467 9423
G	Ms Nelly Shongwe	011 213 0009	082 467 9276

Should you have any queries please do not hesitate to contact our department.

We look forward to your Final Research Report.

Thank you

29/3/11

DR R. BISMILLA
Executive Director
City of Johannesburg
Health Department

Appendix E. Information package for Group 1

E1. Participant Information Sheet for Nurses

E2. Nurses Informed Consent Form

E3. Nurses Video Consent Form

Appendix E1

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Date: _____

Participant Information Sheet for Nurses

Good day, my name is Aisha Casoojee. I am an Audiologist conducting research for the Masters degree in Audiology at the University of the Witwatersrand. I would like to ***invite*** you to consider participating in a research study entitled "Neonatal hearing screening services at Primary Health Care Clinics in the CoJ".

Before agreeing to participate in this study, it is important that you read and understand this information leaflet. This leaflet will help you to decide if you would like to participate as it provides an explanation of the purpose of the study, the study procedures, benefits, risks and discomforts, and your right to withdraw from the study at any time.

If you decide to take part in this study, you will be asked to sign an Informed Consent and Video Consent to confirm that you understand the study and agree to participate in the research.

1. Purpose of Study:
The study is about hearing screening services at Primary Health Care Clinics. With the information that I collect, I plan to describe how nurses conduct the hearing screening of babies.

The results from the study will help audiologists understand the current practice of hearing screening at primary health care clinics. This information may help us to decide which infants need intervention and where to refer them and their parents to.

2. Permission to conduct the study:
Permission has been granted by the City of Johannesburg Health Department and the Ethics Committee of the University of the Witwatersrand.

3. Procedures
If you agree to take part in this study, please indicate in which of the following phases you agree to participate in:

- complete a questionnaire of which the purpose is to obtain specific information from you regarding hearing screening services. The questionnaire would take approximately 30 minutes to complete.
- be observed by the researcher whilst you conduct sessions with infants and toddlers who attend the immunisation clinic. The purpose of the observation is solely intended to assist the researcher to interpret the data within the context that the hearing screening occurs. The researcher will not participate in the sessions. However, the researcher will intervene should bad practice which may result in harm to the children be observed.

- One immunisation session will be video recorded at each clinic with the aim of enhancing reliability, as these results will be interpreted by an interrater to prevent selective reporting and over interpreting of data collected by the researcher.
- lastly, participate in a focus group in which the researcher aims to clarify answers obtained from the questionnaires and the observations.

Please note that the identification of individuals who agree to participate in the study will not be made known to anyone. In addition, individual performances of nurses will not be made known to your superiors.

4. Risks and Discomforts
There are no known medical risks and discomforts by participating in this study.

5. Benefits
It is anticipated that the information obtained may be used to help with the early referral of infants who are at risk for hearing loss to appropriate services.

6. Participant's Rights
You have the right to withdraw from participating in the study at any time without any negative consequences. If you want any information regarding your rights as a research participant, or complaints regarding this study, you may contact the chairperson of the Human Research Ethics Committee at the University of the Witwatersrand, Professor Cleaton Jones, on 011 717 2301. This committee is an independent committee established to protect the rights of research participants.

7. *Confidentiality*
All information obtained during the course of this study from the questionnaires and observations will be kept strictly confidential. The researcher will assure anonymity regarding the information obtained during the course of this study. The reported data will not include any information that identifies you as a participant in this study. The completed questionnaires and the documented observations will be stored for a period of 5 years in a locked cupboard at the Department of Speech Therapy and Audiology, University of the Witwatersrand; after which it will be destroyed. The video recorded observations will not be shown publicly or at any congresses. This gathered information will only be used for purposes of this study unless you ask that it be released.

8. *Disclosure of research results:*
A copy of the dissertation will be available at the Library of the University of the Witwatersrand, the Gauteng Department of Health and disseminated only in academic publications (e.g. journals).

9. If you have any questions or concerns, you can contact me at aisha.casoojee@gmail.com or on 0713592575. In addition, the chairperson of the Ethics Committee at the University of the Witwatersrand, Professor Cleaton Jones, may be contacted on 011 717 2301.

Thank You

Aisha Casoojee
MA Audiology student

Dr Karin Joubert
Research supervisor

Appendix E2

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Nurses Informed Consent Form

Title of Study: Neonatal hearing screening services at Primary Health Care clinics in Gauteng.

I _____, understand my rights as a participant, and I voluntarily consent to participate in this study.

I understand what the study is about and how and why it is being done.

I have received an information sheet explaining the purpose of the study.

I understand that I have the right to withdraw from the study at anytime without any negative consequences.

I understand that no names will be used in the research report as all information will be used anonymously.

Signature of Participant: _____ Date: _____

Signature of Investigator: _____ Date: _____

Signature of Witness: _____ Date: _____

Appendix E3

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Nurses Consent to Video Recording

Title of Study: Neonatal hearing screening services at Primary Health Care clinics in Gauteng.

I _____, am aware that a video recording device will be used during the study and I voluntarily consent to it that my consultations with patients who attend this clinic will be recorded.

I understand what the study is about and why my consultations will be video recorded.

I understand my rights as a participant and that I may withdraw from the study at any time without any negative consequences.

Signature of Participant: _____ Date: _____

Signature of Investigator: _____ Date: _____

Signature of Witness: _____ Date: _____

Appendix F. Information Package for Group 2

F1. Participant Information Sheet for Parents / Legal Guardians

F1.1 English

F1.2 isiZulu

F1.3 Sesotho

Appendix F1.1

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Date: _____

Participant Information Sheet for Parents / Legal Guardian

Good day, my name is Aisha Casoojee. I am an Audiologist who is doing my Masters in Audiology at the University of the Witwatersrand. I would like to ***invite*** you to consider participating in a research study entitled, Neonatal hearing screening services at Primary Health Care Clinics in Gauteng.

1. Before agreeing to participate in this study, it is important that you read and understand this information leaflet.

This leaflet will help you to decide if you would like to take part as it provides an explanation of why the study is being done, how the study will be done, benefits, risks and discomforts, and your right to withdraw from the study at any time.

If you decide to take part in this study, you will be asked to sign an Informed Consent and Video Consent to confirm that you understand and agree to take part in the study.

2. Why the study is being done:
The study is about hearing screening services at Primary Health Care Clinics. With the information that I collect, I plan to look at how the results of the hearing screening are recorded on the Road-to-Health Charts and City of Johannesburg Child Health Services Blue Cards.

The results from the study will help us to understand how the hearing of babies is being screened at primary health care clinics. This information may help us to identify babies who have problems with their hearing.

3. Permission to conduct study:
Permission has been granted by the Department of Health Ethics Committee and the Medical Ethics Committee of the University of the Witwatersrand.

4. How the study will be done:
If you agree to take part in this study:

- I will read your child's Road-to-Health-Chart and Blue Card and only record information about the hearing screening, pregnancy and birth.

- I will observe your baby's immunisation visit with the Clinic Nurse if your baby is between 3 months to 18 months old. The purpose of the video recording is to see how the nurses screen the hearing of babies and to help the researcher interpret information gathered separately from the nurses. The researcher will not participate in the sessions. However, the researcher will intervene should bad practice which may result in harm to your child be observed.

  Please note that the identification of the parents and children whose Road-to-Health-Charts and Blue Cards that I use will not be made known to anyone.

5. Risks and Discomforts
There will be no harm caused to you or your child by taking part in this study.

6. Benefits
I will use the information from the study to help babies who has or may have a hearing loss.

7. You have the right to withdraw from the study at any time without any negative consequences. If you want more information about your rights as a research participant, or complaints regarding this study, you may contact the chairperson of the Human Research Ethics Committee at the University of the Witwatersrand, Professor Cleaton Jones, on 011 717 2301.

8. *Confidentiality*
The report will not include your name or your child's name. The information collected from the Road-to-Health-Charts and Blue Cards, and the observations will be stored for 5 years in a locked cupboard at the Department of Speech Therapy and Audiology, University of the Witwatersrand; after which it will be destroyed. The video recorded observations will not be shown publicly or at any congresses. This information will only be used for the study unless you ask that it be released.

9. *Disclosure of research results:*
Results will be available at the Library of the University of the Witwatersrand, the Gauteng Department of Health and in academic journals.

10. If you have any questions or concerns, you can contact me at aisha.casoojee@gmail.com or on 0713592575. In addition, the chairperson of the Ethics Committee at the University of the Witwatersrand, Professor Cleaton Jones, may be contacted on 011 717 2301.

Thank You

Aisha Casoojee
MA Audiology student

Dr Karin Joubert
Research supervisor

Appendix F 1.2

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Usuku: _____

Ikhasi Lolwazi Lombambiqhaza Labazali / Lomlondolozi Osemthethweni

Sawubona, igama lami ngingu-Aisha Casoojee. NginguSosayensi Wezokuzwa (i-Audiologist) owenza iziqu ze-Masters ku-Audiology eNyuvesi yase-Witwatersrand. Ngithanda **ukukumema** ukuthi ucabange ngokubamba iqhaza esifundweni socwaningo esinesihloko esithi, Izinsizakalo zokuhlunga zokuzwa ezinganeni ezisanda kubelethwa emitholampilo Yokunakekela Ezempilo Yokuqala e-Gauteng (*i-Neonatal hearing screening services at Primary Health Care Clinics in Gauteng).*

1. Ngaphambi kokuba uvume ukubamba iqhaza kulolu cwaningo, kusemqoka ukuba ufunde uphinde uqonde leli pheshana lolwazi.

Leli pheshana lizokusiza ukuba ukwazi ukunquma uma ufuna ukubamba iqhaza ngoba likunikeza incazelo yokuthi kungani ucwaningo lwenziwa, ukuthi ucwaningo luzokwenziwa kanjani, izinzuzo, izingozi kanye nokuphatheka kabi, kanye nelungelo lakho lokuzihoxisa ocwaningweni nganoma yisiphi isikhathi.

Uma uthatha isinqumo sokubamba iqhaza kulolu cwaningo, uzocelwa ukuba usayine Imvume Enolwazi kanye nemvume ukuqinisekisa ukuthi uyaqonda futhi uyavuma ukubamba iqhaza ocwaningweni.

2. Kungani ucwaningo lwenziwa:
Ucwaningo luphathelene nezinsizakalo zokuhlungela ukuzwa Emitholampilo Yokunakekela Ezempilo Yokuqala. Ngolwazi engiluqoqayo, ngihlela ukubheka ukuthi imiphumela yokuhlungelwa ukuzwa irekhodwa kanjani kumaShadi Endlela Eya Kwezempilo kanye Namakhadi Asasibhakabhaka Ezinsizakalo Zezempilo Yezingane Edolobheni laseGoli.

Imiphumela ephuma ocwaningweni izosisiza ukuqonda ukuthi ukuzwa kwezingane ezincane kuhlungwa kanjani emitholampilo yokunakekela ezempilo emikhulu. Lolu lwazi lungasisiza ukubona izingane ezinezinkinga nokuzwa kwazo.

3. Imvume yokwenza ucwaningo:
Imvume inikezwe Ngumnyango Wezempilo Wekomiti Lezimilo (i- Department of Health Ethics Committee) kanye Nekomiti Lezimilo Lezokwelashwa (i-Medical Ethics Committee) yeNyuvesi yase-Witwatersrand.
4. Indlela ucwaningo oluzokwenziwa ngayo:

Uma uvuma ukubamba iqhaza kulolu cwaningo:

- Ngizofunda Ishadi lengane yakho Lendlela eya Kwezempilo (*i-Road-to-Health-Chart*) kanye nekhadi Esasibhakabhaka (*i-Blue Card*) bese ngirekhoda kuphela ulwazi oluphathelene nokuhlungwa kokuzwa, ukukhulelwa kanye nokubeletha.
- Ngizobheka yokuvakasha kokujovwa kwengane yakho kanye Nonesi waseMtholampilo uma ngabe ingane yakho ingaphakathi kwezinyanga ezi-3 ukuya kweziyi-18 zobudala. Inhloso ukubona ukuthi onesi bakuhlunga kanjani ukuzwa kwezingane kanye nokusiza umcwaningi ukuthi ahlaziye ulwazi oluqoqwe lulodwa oluvela konesi. Umcwaningi akasoze abamba iqhaza kusesheni. Kodwa, umcwaningi uzongenela kulolu daba uma ebona kuba nesenzo esibi esingaba nomphumela wokulimaza ingane yakho.

  Sicela uqaphele ukuthi ukwaziswa kwabazali nezingane engisebenzisa Amashadi Endlela Eya kwezempilo kanye Namakhadi Asasibhakabhaka abo kanye asoze lwaziswa kunoma ngubani. Asoze lwaboniswa umphakathi noma lwaboniswa kunoma yimaphi imibuthano.

5. Izingozi kanye Nokuphatheka Kabi
Akusoze kwaba nokulimala okubangelwa ukubamba iqhaza kwakho noma kwengane yakho kulolu cwaningo.

6. Izinzuzo
Ngizosebenzisa ulwazi oluvela ocwaningweni ukusiza izingane ezingezwa noma okungenzeka zilahlekelwe imizwa yokuzwa.

7. Unelungelo lokuzihoxisa ocwaningweni nganoma yisiphi isikhathi ngaphandle kokuba nemiphumela emibi. Uma ufuna ulwazi olwengeziwe ngamalungelo akho njengombambiqhaza ocwaningweni, noma unezikhalazo maqondana nalolu cwaningo, ungaxhumana nomgcinisihlalo weKomiti Lezimilo Locwaningo Lwabantu eNyuvesi yase-Witwatersrand, uSolwazi Cleaton Jones, lapha-011 717 2301.

8. *Ukuba yimfihlo*
Umbiko awusoze wafaka igama lakho noma igama lengane yakho. Ulwazi oluqoqwe kumaShadi Endlela Eya kwezempilo kanye Nakumakhadi Asasibhakabhaka, kanye nokuhlolwa kuzogcinwa iminyaka emihlanu ekhabetheni elihluthulelwe Lomnyango Wokwelashwa Kwezenkulumo kanye nesayensi Lokuzwa (i-Department of Speech Therapy and Audiology), enyuvesi yase-Witwatersrand; kuzokuthi emva kwaloko lulahlwe. Lolu lwazi luzosetshenziswa kuphela ocwaningweni ngaphandle uma ngabe ucela ukuba lukhishwe.

9. *Ukuvezwa kwemiphumela yocwaningo:*
Imiphumela izotholakala eLayibhulari yeNyuvesi yase-Witwatersrand, kumnyango Wezempilo wase-Gauteng kanye nakumajenali emfundo ephakeme.

10. Uma unanoma yimiphi imibuzo noma ukunaka, ungaxhumana nami lapha aisha.casoojee@gmail.com noma ku-0713592575. Ukwengeza kuloku, kungaxhunyanwa

nomgcinisihlalo weKomiti Lezimilo eNyuvesi yase-Witwatersrand, USolwazi Cleaton Jones, lapha- 011 717 2301.

Siyabonga

Ngu-Aisha Casoojee
Umfundi we-MA Audiology

No-Dkt Karin Joubert
Umhloli wocwaningo

Appendix F 1.3

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Letsatsi: _____

Pampitshana ya Tlhahisoleseding ya Monka-karolo bakeng sa Batswadi / Mohlokomedi wa Semolao

Dumela, lebitso la ka ke Aisha Casoojee. Nna ke *Audiologist* mme ke ntse ke ithutela lengolo la *Masters in Audiology* mane Yunivesithing ya Witwatersrand. Ke rata ho o ***mema*** hore o nahane ka ho nka karolo diphuputsong tseo sehlooho sa sona se reng, ditshebeletso tsa tlhahlobo ya kutlo tsa Neonatal Ditliliniking tsa Tlhokomelo ya Motheo ya Bophelo tse Gauteng.

1. Pele o ka dumela ho nka karolo diphuputsong tsena, ho bohlokwa hore o bale le ho utlwisisa pampitshana ena ya tlhahisoleseding.

Pampitshana ena e tla o thusa hore o etse qeto ha o ka rata ho nka karolo ka ha e fana ka tlhaloso ya hore ke ka baka lang diphuputso tsena di etsuwang, ka moo diphuputso di tla etswa ka teng, melemo, dikotsi le ho se tshwarehe hantle, le tokelo ya hao ya ho tswa diphuputsong nakong efe kapa efe.

Ha o ka etsa qeto ya ho nka karolo diphuputsong tsena, o tla kotjwa hore o saene Tumello o na le Tsebo mmoho le Tumello ya Video ho tiisetsa hore o utlwisisa le ho dumela ho nka karolo diphuputsong.

2. Ke ka baka lang ho etsuwang diphuputso:
Diphuputso di mabapi le ditshebeletso tsa tlhahlobo ya kutlo Ditliliniking tsa Tlhokomelo ya Motheo ya Bophelo. Ka lesedi leo ke tla le bokella, ke rera ho sheba ka moo diphetho tsa tlhahlobo ya kutlo di ngolwang ka teng Ditjhateng tsa Road-to-Health le Dikareteng tse Bolou tsa Ditshebeletso tsa Bophelo ba Bana tsa Toropo ya Johannesburg.

Diphetho tse tla tswa diphuputsong tsena di tla re thusa ho utlwisisa ka moo kutlo ya bana e hlahlojwang ka teng ditliliniking tsa tlhokomelo ya motheo ya bophelo. Tlhahisoleseding eo e ka re thusa ho hlwaya bana ba nang le mathata ka kutlo ya bona.

3. Tumello ya ho tsamaisa diphuputso:
Ho fanwe ka tumello ke Komiti ya Boitshwaro ya Lefapha la Bophelo le Komiti ya Boitshwaro ba Bongaka ya Yunivesithi ya Witwatersrand.
4. Ka moo diphuputso di tla etswang ka teng:
Ha o dumela ho nka karolo diphuputsong tsena:

- Ke tla bala Tjhate ya Road-to-Health ya ngwana wa hao e be ke ngola feela lesedi le mabapi le tlhahlobo ya kutlo, boimana le peleho.
- Ke tla sheba e be ke hatisa video ya ketelo ya ho tla entwa ha ngwana wa hao le Mooki wa Tliliniking ha ngwana wa hao a le pakeng tsa dikgwedi tse 3 le tse 18 boholo. Morero wa ho hatisa video ke ho bona ka moo baoki ba hlahlobang kutlo ya bana le ho thusa mofuputsi ho hlalosa lesedi le bokelletsweng ka thoko ho la baoki. Mofuputsi a ke ke a nka karolo dikopanong tsena. Le ha ho le jwalo, mofuputsi o tla kena dipakeng ha ho ka etsahala hore ho bonwe ho ba le tshebetso e mpe e ka bang le sephetho sa ho ntsha ngwana wa hao kotsi.

  Re kopa hore o ele hloko hore boitsebiso ba batswadi le bana bao Ditjhate tsa Road-to-Health le Dikarete tse Bolou tseo ke di sebedisang mmoho le tsa batho ba leng ho di-video bo ke ke ba tsebiswa motho ofe kapa ofe. Kgatiso ya video e ke ke ya bontshwa phatlalatsa kapa sebokeng sefe kapa sefe.

5. Dikotsi le ho se Tshwarehe hantle
Ha ho na kotsi e ka o hlahelang wena kapa ngwana wa hao ka ho nka karolo diphuputsong tsena.

6. Melemo
Ke tla sebedisa tlhahisoleseding e tswang diphuputsong ho thusa bana ba nang le tahlehelo ya kutlo kapa ba ka bang le yona.

7. O na le tokelo ya ho tswa diphuputsong nakong efe kapa efe ntle le ho ba le diphetho tse seng ntle. Ha o batla lesedi le eketsehileng ka ditokelo tsa hao jwalo ka monka-karolo diphuputsong, kapa o na le ditletlebo mabapi le diphuputso tsena, o ka iteanya le modulasetulo wa Komiti ya Boitshwaro ya Diphutso tse etsuwang ka Batho mane Yunivesithi ya Witwatersrand, Professor Cleaton Jones, ho 011 717 2301.

8. *Sephiri*
Raporoto e ke ke ya kenyelletsa lebitso la hao kapa lebitso la ngwana wa hao. Tlhahisoleseding e bokelletsweng ho tswa Ditjhateng tsa Road-to-Health le Dikareteng tse Bolou, ekasitana le Kgatiso ya Video e tla bolokwa bakeng sa dilemo tse 5 khabotong e notletsweng mane Department of Speech Therapy and Audiology, Yunivesithing ya Witwatersrand; mme ka mora moo e tla sengwa. Tlhahisoleseding ena e tla sebediswa feela bakeng sa diphuputso ntle le ha wena o ka kopa hore e lokollwe.

9. *Ho hlahisa diphetho tsa diphuputso:*
Diphetho di tla fumaneha Laeboraring ya Yunivesithi ya Witwatersrand, Lefapheng la Bophelo la Gauteng le dijenaleng tsa thuto.

10. Ha o na le dipotso dife kapa dife kapa matshwenyeho, o ka iteanya le nna mona aisha.casoojee@gmail.com kapa ho 0713592575. Hodima moo, o ka iteanya le modulasetulo wa Komiti ya Boitshwaro mane Yunivesithi ya Witwatersrand, Professor Cleaton Jones, ho 011 717 2301.

Re a leboha

Aisha Casoojee
Moithuti wa MA Audiology

Dr Karin Joubert
Suphavaesa ya Diphuputso

F2. Parental / Legal Guardian Informed Consent Form

F2.1 English

F2.2 isiZulu

F2.3 Sesotho

Appendix F 2.1

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Parental / Legal Guardian Informed Consent Form

Title of Study: Neonatal hearing screening services at Primary Health Care clinics in Gauteng.

I _____ as parent / guardian, understand my rights as a participant, and I voluntarily consent to participate in this study.

I understand what the study is about and how and why it is being done.

I have received an information sheet explaining the purpose of the study.

I understand that I have the right to withdraw from the study at anytime without any negative consequences.

I understand that no names will be identified in the research report and that all information will be used anonymously.

Signature of Parent/Guardian: _____ Date: _____

Signature of Investigator: _____ Date: _____

Signature of Witness: _____ Date: _____

Signature of Translator/other
person explaining informed consent: _____ Date: _____

Appendix F 2.2

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717

Ifomu lemvume Enolwazi Lomzali / Lomlondolozi Osemthethweni

Isihloko Socwaningo: Izinsizakalo zokuhlunga zokuzwa ezinganeni ezisanda kubelethwa emitholampilo Yokunakekela Ezempilo Yokuqala e-Gauteng.

Mina_____ njengomzali / njengomlondolozi, ngiyawaqonda amalungelo ami njengombambiqhaza, futhi ngivuma ngokuzithandela ukubamba iqhaza kulolu cwaningo.

Ngiyaqonda ukuthi ucwaningo luphathelene nani, nokuthi luzokwenziwa kanjani kanye nokuthi lwenzelwa ini.

Ngilitholile ikhasi lolwazi elichaza ngenhloso yocwaningo.

Ngiyaqonda ukuthi nginelungelo lokuzihoxisa ocwaningweni nganoma yisiphi isikhathi ngaphandle kwanoma yimiphi imiphumela emibi.

Ngiyaqonda ukuthi akekho amagama azokwaziswa embikweni wocwaningo kanye nokuthi lonke ulwazi luzosetshenziswa lungaziwa ukuthi lungolukabani.

Isignesha Yomzali/Yomlondolozi: _____ Usuku: _____

Isignesha Yomphenyi: _____ Usuku: _____

Isignesha Kafakazi: _____ Usuku: _____

Isignesha Yomhumushi/omunye umuntu
ochaza imvume enolwazi: _____ Usuku: _____

Appendix F 2.3

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717

Foromo ya Tumello o na le Tsebo ya Motswadi / Mohlokomedi wa Semolao

Sehlooho sa Diphuputso: Ditshebeletso tsa tlhahlobo ya kutlo tsa Neonatal Ditliliniking tsa Tlhokomelo ya Motheo ya Bophelo mona Gauteng.

Nna _____ jwalo ka motswadi / mohlokomedi, ke utlwisisa ditokelo tsa ka jwalo ka monka-karolo, mme ke dumela ka boithaopo ho nka karolo diphuputsong tsena.

Ke utlwisisa hore diphuputso di mabapi le eng le ka moo di tla etswa ka teng le hore hobaneng di etswa.

Ke fumane pampitshana ya tlhahisoleseding e hlalosang morero wa diphuputso.

Ke a utlwisisa hore ke na le tokelo ya ho tswa diphuputsong nakong efe kapa efe ntle le ho ba le diphetho dife kapa dife tse seng ntle.

Ke a utlwisisa hore ha ho na mabitso a tla tsebahatswa raporotong ya diphuputso mme tlhahisoleseding yohle e tla sebediswa ntle le ho hlahisa mabitso.

Tshaeno ya Motswadi/Mohlokomedi: _____ Letsatsi: _____

Tshaeno ya Mofuputsi: _____ Letsatsi: _____

Tshaeno ya Paki: _____ Letsatsi: _____

Tshaeno ya Mofetoledi/motho
e mong ya hlalositseng tumello o na le tsebo: _____ Letsatsi: _____

F3. Parental / Legal Guardian Consent to Video Recording

F3.1 English

F3.2 isiZulu

F3.3 Sesotho

Appendix F 3.1

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717

Consent to Video Recording

Title of Study: Neonatal hearing screening services at Primary Health Care clinics in Gauteng.

I _____, am aware that my consultations with the nurse will be video recorded.

I understand what the study is about and why my consultations will be video recorded.

I understand my rights as a participant and that I may withdraw from the study at any time without any negative consequences.

I understand that no names will appear in the research report and all information will be used anonymously.

Signature of Parent/Guardian: _____ Date: _____

Signature of Investigator: _____ Date: _____

Signature of Witness: _____ Date: _____

Signature of Translator/other
person explaining informed consent: _____ Date: _____

Appendix F 3.2

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Imvume Yomzali / Yomlondolozi osemthethweni Yokurekhoda Ividiyo

Isihloko Socwaningo: Izinsizakalo zokuhlunga zokuzwa ezinganeni ezisanda kubelethwa emitholampilo Yokunakekela Ezempilo Yokuqala e-Gauteng.

Mina_____, ngiyaqaphela ukuthi ukuxhumana kwami nonesi kuzorekhodwa kuvidiyo.

Ngiyaqonda ukuthi ucwaningo luphathelene nani kanye nokuthi kungani izikhathi zami zokuxhumana zizorekhodwa kuvidiyo.

Ngiyawaqonda amalungelo ami njengombambiqhaza nokuthi ngingakwazi ukuzihoxisa ocwaningweni nganoma yisiphi isikhathi ngaphandle kwanoma yimiphi imiphumela emibi.

Ngiyaqonda ukuthi akukho magama azovela embikweni wocwaningo futhi lonke ulwazi luzosetshenziswa lungaziwa ukuthi ngolukabani.

Isignesha Yomzali/Yomlondolozi:_____ Usuku: _____

Isignesha Yomphenyi: _____ Usuku: _____

Isignesha Kafakazi: _____ Usuku: _____

Isignesha Yomhumusho/omunye
umuntu ochaza imvume enolwazi: _____ Usuku: _____

Appendix F 3.3

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717 4572

Tumello ya Motswadi / Mohlokomedi wa Semolao ya ho Hatiswa ha Video

Sehlooho sa Diphuputso: Ditshebeletso tsa tlhahlobo ya kutlo tsa Neonatal Ditliliniking tsa Tlhokomelo ya Motheo ya Bophelo mona Gauteng.

Nna _____, ke a tseba hore ditherisano tsa ka le mooki di tla hatiswa ka video.

Ke utlwisisa seo diphuputso di leng mabapi le sona le hore ke ka baka lang ho hatiswang video.

Ke utlwisisa ditokelo tsa ka jwalo ka monka-karolo le hore nka tswa diphuputsong nakong efe kapa efe ntle le diphetho tse seng ntle.

Ke a utlwisisa hore ha ho na mabitso a tla hlahella raporotong ya diphuputso mme tlhahisoleseding yohle e tla sebediswa ntle le ho hlahisa mabitso.

Tshaeno ya Motswadi/Mohlokomedi: _____ Letsatsi: _____

Tshaeno ya Mofuputsi: _____ Letsatsi: _____

Tshaeno ya Paki: _____ Letsatsi: _____

Tshaeno ya Mofetoledi/

motho e mong ya hlalositseng

tumello o na le tsebo: _____ Letsatsi: _____

F4. Parental / Legal Guardian Verbal Participant Informed Consent

Appendix F4

SPEECH PATHOLOGY AND AUDIOLOGY
School of Human & Community Development
Faculty of Humanities
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4577; Fax: (011) 717

Parental / Legal Guardian Verbal Participant Informed Consent Form

I, the undersigned, Aisha Casoojee have read and have explained fully to the participant, named _____ and/or his/her relative/friend/legal representative, _____, the participant information sheet.

The account I have given has explained what the study is about and how and why it is being done. The participant and his/her relative/friend/legal representative understand these.

The participant and his/her relative/friend/legal representative indicated that he/she understands that the participant has the right to withdraw from the study at anytime without any negative consequences.

The participant and his/her relative/friend/legal representative indicated that he/she understands that no names will appear in the research report and all information will be used anonymously.

I hereby certify that, the participant and his/her relative/friend/legal representative, acting on his/her behalf, has agreed to participate in this study.

Participant Mark/Thumbprint (if applicable): _____ Date: _____

Signature of Investigator: _____ Date:_____

Signature of Witness: _____ Date: _____

Translator/other person
explaining informed consent: _____ Date: _____

Parent/Legal Guardian/
Friend/Legal Representative: _____Date: _____

Appendix G. Data Collection Tools

G1. Nurses Questionnaire

G2. Nurses Observation Form

G3. Data Compilation Form

G4. Focus Group Questions

Appendix G1

Participant Number: _____ (for official use only)

Nurses Questionnaire

Compiled from: Department of Health (2002)

Thank you for taking the time to complete this questionnaire.

Instructions for completion:

- Please answer all the questions
- Choices are to be indicated with an **X** in the appropriate block
- Please provide descriptions in the spaces provided

1. Demographic Details

Date: _____

Job Title: _____ _____

Year of Qualification: _____ _____

Number of years working as a Primary Health Care (PHC) nurse: _____

Number of years working at current clinic: _____

2. Qualification / Training

2.1	Qualification	Degree	
		Diploma	
		Matric plus Certificate	
		Matric	
2.2	Training in PHC	Yes	
		No	
2.3	Training in IMCI	Yes	
		No	
2.4	Additional Training		

3. I have received training regarding the following during my nursing training for babies 0-1 year old ...

		Yes	No
3.1	Structure of the ear		
3.2	Otitis Media		
3.3	Hearing problems		
3.4	Effect of hearing loss on speech/language development		

4. I know of the following guidelines, norms and standards which support neonatal hearing screening services

		Yes	No
4.1	Integrated National Disability strategy (1997)		
4.2	Primary Health Care Package (2002)		
4.3	The HPCSA Position Statement on Early Hearing Detection and Intervention (2007)		
4.4	Integrated Management of Childhood Illness (Locally adapted, based on the WHO/UNICEF Guidelines)		
4.5	Other, please specify		

5. Otoscope Availability

		Yes	No	I Don't Know
5.1	Do you have an otoscope available for use at the clinic?			
5.2	If you answered yes to 5.1, does the otoscope work?			

6. The following approaches are performed at my clinic to assess the risk for hearing loss in babies 0 – 1 year old

		all babies	some babies	babies who are at-risk only	babies whose mothers have raised concern	I am unaware if this is performed at my clinic
6.1	Reviewing medical records					
6.2	Interviewing mother					
6.3	Physically examining the baby for signs and symptoms for otitis media					
6.4	Conducting hearing screening					

7. During a typical immunisation visit session ...

		all babies	some babies	babies who are at-risk only	babies whose mothers have raised concern	I don't do this
7.1	I use an otoscope to check the ear status ...					
7.2	I elicit a case History from the parent/caregiver about hearing, language development and ear related pains of ...					
7.3	I palpate the lymph nodes of...					
7.4	I examine the throat of ...					
7.5	I test for neck stiffness of ...					
7.6	I examine the mastoid for pain, oedema or tenderness of ...					

8. I conduct the following hearing screening on...

		all babies	some babies	babies who are at-risk only	babies whose mothers have raised concern	babies who are a specific age, please specify age	I don't conduct this type of hearing screening
8.1	Voice test						
8.2	Swart Questionnaire						
8.3	Please name any other hearing tests that you conduct						

9. I conduct the following during an immunisation consultation for babies who present with otitis media

		Always	Sometimes	Never
9.1	I show parent / caregiver how to insert ear drops (when applicable)			
9.2	I show parent / caregiver how to do dry mopping (when applicable)			
9.3	I provide parent / caregiver with instructions on inserting ear drops			
9.4	I provide parent / caregiver with instructions on dry mopping			
9.5	I provide parent / caregiver with instructions on how to administer other medication (e.g. antibiotics)			

10. Our Referral Hospital / Clinic for the following professionals on the multidisciplinary team are...

10.1 Doctor
10.2 ENT
10.3 Audiologist

11. I make the following referrals when children (0-1 year) present with...

		Verbal Follow-up appointment to a clinic Nurse	Written Follow-up appointment to a clinic Nurse	Verbal referral to a Doctor	Written referral letter to a Doctor	Verbal referral to an ENT	Written referral to an ENT	Verbal referral to an Audiologist	Written referral to an Audiologist	Other. Please specify
11.1	Persistent or worsening signs of acute otitis media after 5 - 7 days of treatment.									
11.2	Those who on first follow up still have pain or complications									
11.3	Those with effusion who have moderate or severe hearing loss, or where effusion has persisted for more than a month									
11.4	Patients with pain associated with an ear that has been discharging for more than 2 weeks									
11.5	If there is an inflammatory swelling or tenderness over mastoid									
11.6	If there is neck stiffness or vomiting or drowsiness									
11.7	Large central perforation with significant hearing loss									
11.8	Dry perforation or perforation due to trauma									
11.9	If there is pus discharge suspected to be due to a cholesteatoma									
11.10	Patients with speech, language and/or auditory perceptual problems									
11.11	If a hearing loss is suspected									

12. Does your clinic have a statistics tracking system for...

		Yes	No
12.1	Immunisation Visits		
12.2	Other Follow-up Visits		

13. I record the results obtained from the hearing screening on...

		Yes	No
13.1	The Road-to-Health Chart		
13.2	The Blue Card		
13.3	Electronic Statistics System		
13.4	Hardcopy of Statistics		
13.5	Other, please specify		

I greatly appreciate you taking the time to complete this questionnaire!

---------- **End of Questionnaire** ----------

Appendix G2

Participant Number: _____ (for official use only)

Nurses Observation Instrument

Compiled from: Department of Health (2000)

1. Demographic Details

Date of observation: _____

Name of observer: _____

Age of patient: _____

Reason for patient's visit to clinic: _____

2. Context

2.1	Number of Nurses tending to patient	1		
		2		
2.2	Job Description of nurse 1	Nursing Sister	PHC Sister	
			Antenatal Sister	
			Immunisation Sister	
		Auxiliary Nurse		
		Nursing Assistant		
		Contract Health promoter		
		Other		
2.3	Job Description of nurse 2	Nursing Sister	PHC Sister	
			Antenatal Sister	
			Immunisation Sister	
		Auxiliary Nurse		
		Nursing Assistant		
		Contract Health promoter		
		Other		

3. Session

3.1	Case History elicited from parent/caregiver (as part of Integrated Management of Childhood Illness)	Irritable	
		Difficulty sleeping	
		Pulling on ear	
		Runny nose	
		Fever	
		Discharge of pus from ear	
		Snoring	
		Language development	
		Allergy to penicillin	
		ADL	
		Not conducted	
3.2	Appropriate use of otoscope to evaluate tympanic membrane	Yes	
		No	
		Not conducted	
3.3	Lymph nodes palpated	Yes	
		No	
		Not conducted	

3.4	Throat examined	Yes	
		No	
		Not conducted	
3.5	Tested for neck stiffness	Yes	
		No	
		Not conducted	
3.6	Examined the mastoid for pain, oedema or tenderness	Yes	
		No	
		Not conducted	

4. Hearing test conducted

		Yes	No
4.1	a. Voice Test Conducted		
	b. Description of Voice Test conducted and equipment used		
4.2	a. Swart Questionnaire Conducted		
	b. Description of Swart Questionnaire conducted and equipment used		
4.3	Age appropriate procedure followed		
4.4	Hearing test conducted in any other manner, specify		

5. Intervention

		Yes	No	Not Applicable
5.1	Eardrops used			
5.2	Dry mopping conducted			
5.3	Was parent/caregiver taught how to do above			
5.4	Other, please describe			

6. Staff provided parent / caregiver with instructions on...

		Yes	No	Not conducted	Not applicable
6.1	Inserting ear drops				
6.2	Dry Mopping				
6.3	Follow-Up Appointments				
6.4	Other, please describe				

7. Referrals made in the presence of the following:

		Yes	No	Not Applicable
7.1	Persistent or worsening signs of acute otitis media after 5 - 7 days of treatment.			
7.2	Those who on first follow up still have pain or complications			
7.3	Those with effusion who have moderate or severe hearing loss, or where effusion has persisted for more than a month			
7.4	Patients with pain associated with an ear that has been discharging for more than 2 weeks			
7.5	If there is an inflammatory swelling or tenderness over mastoid			
7.6	If there is neck stiffness or vomiting or drowsiness			
7.7	Large central perforation with significant hearing loss			
7.8	Dry perforation or perforation due to trauma			
7.9	If there is pus discharge suspected to be due to a cholesteatoma			
7.10	Patients with speech, language and/or auditory perceptual problems			

8. Records

		Yes	No	Not Applicable
8.1	Information of hearing test recorded on RtHC			
8.2	Information of hearing test recorded on blue card			
8.3	Information of otitis media recorded on RtHC			
8.4	Information of otitis media recorded on blue card			

9. Duration of session: _____

Appendix G3

Participant Number: _____ (for official use only)

Retrospective Data Compilation Form

Compiled from: Department of Health (2004)

1. Biographical Details

Date of Birth: _____

2. Prenatal History as recorded on the ...

			RtHC	BLUE CARD
2.1	Problems experienced during pregnancy or birth	Yes, specify		
		No		
		Incomplete information		

3. Peri-natal History as recorded on the RtHC

3.1	Gestational Age	
3.2	Birth Weight	
3.3	Birth Length	
3.4	Birth Head Circumference	
3.5	Apgar 1 min	
3.6	Apgar 5 min	

4. Hearing Screening record keeping on the...

				RtHC	BLUE CARD
4.1	Does the baby appear to listen when someone is talking or singing at 3 months old	Yes			
		No			
		Incomplete information			
		Not Recorded			
4.2	Does the baby turn to a loud noise at 6 months old	Left	Yes		
			No		
		Right	Yes		
			No		
		Incomplete information			
		Not Recorded			

4.3	Voice Test: Hearing Impairment (>12 months)	Normal hearing		
		Moderate impairment		
		Severe impairment		
		Incomplete Information		
		Not Recorded		
		Not Applicable		

5. Has the following Referrals / Intervention been recorded on the...

			RtHC	BLUE CARD
5.1	Referral to a Doctor	Yes		
		No		
		Reason for referral		
		Not Applicable		
		Incomplete Information		
		Not Recorded		
5.2	Referral to a speech language therapist / audiologist?	Yes		
		No		
		Reason for referral		
		Not Applicable		
		Incomplete Information		
		Not Recorded		
5.3	Does the patient receive any of the following rehabilitation services?	Audiology		
		Speech Therapy		
		Occupational therapy		
		Physiotherapy		
		Dietary		
		Other		
		Incomplete Information		
		Not Recorded		
		Not Applicable		

Appendix G4

Focus Group Question Sheet

1. What is your view on infant hearing screening in relation to other services you offer at PHC Clinics?

2. How do you conduct Infant hearing screening in your clinic? (with specific reference to the Voice Test and the Swart questionnaire)

3. Do you view either of the records (e.g. RtHC and the Blue Card) as more important in recording your observations/data/referrals for each child? Please elaborate

4. What are the challenges / barriers that you experience with conducting infant hearing screening at the PHC Clinics?

5. What, if any impact has IMCI, PHC, PMTCT, ARV training had on you conducting infant hearing screening?

6. Do you implement the guidelines/protocols as per the PHC Package? Please elaborate

7. What would encourage you to conduct infant hearing screening at PHC Clinics?

8. Is there anything else regarding infant hearing screening that you would like to share?

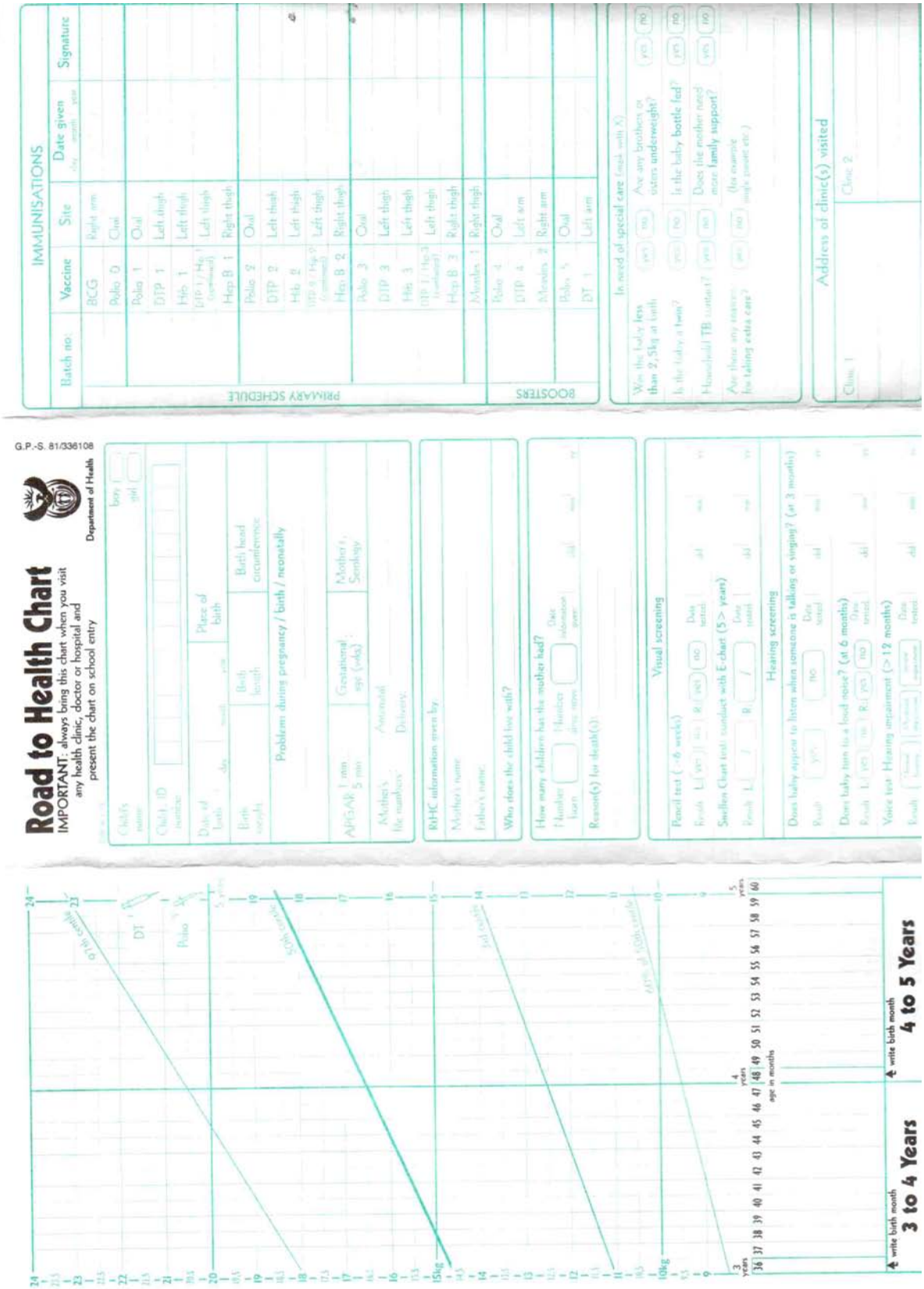
Appendix H. Sample Documents

H1. Road-to-Health Chart (2002)

H2. Road-to-Health-Chart (2011)

H3. City of Johannesburg Child Health Services Blue Card

Appendix H1


Road to Health Chart
IMPORTANT: always bring this chart when you visit any health clinic, doctor or hospital and present the chart on school entry
Department of Health
G.P.-S. 81/336108
IMMUNISATIONS
PRIMARY SCHEDULE
BOOSTERS
In need of special care
Address of clinic(s) visited
3 to 4 Years
4 to 5 Years
age in months

Growth Monitoring Chart
Chart revised August 2004
Birth to 1 Year
1 to 2 Years
2 to 3 Years
Child's name:
write birth month and year
write birth month
age in months
IMMUNISATIONS
BCG
Polio
Hib, DTP & Hep B
Measles
DTP
Polio
Measles
Diarrhoea
Breastfeeding
Child sucking
Food intake
Oral rehydration solution
95th centile
50th centile
3rd centile
Date for next visit
nr.
day
month
year
Write on the chart
Any illness e.g.
— diarrhoea,
— ARI, etc
Admission to hospital,
Solids introduced,
Breastfeeding stopped,
Birth of next child, etc
like this:
ARI
Admitted to hospital (2-7 September)
Diarrhoea
Extra meals given
Worm medicine
Watch the direction of the curve showing the child's growth
GOOD
Means the child is growing well
DANGER SIGN
Not gaining weight. Find out why.
VERY DANGEROUS
Child may be ill, needs extra care

Road to Health Chart (RtHC)

HEALTH WORKER CONSULTATION SHEET

Child's name : _____

Date of birth : | dd | mm | yy |

Does the child have any allergies?
Specify: _____

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	①

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	②

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	③

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	④

continue in volume 5

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	⑤

VITAMIN A SUPPLEMENTATION

Supplementation: age in months	Schedule	Date given day – month – year	Signature
PROPHYLAXIS			
Mother at delivery (not later than 6-8 weeks)	1 x 200 000 IU		
Infant not breastfed (at 6 weeks)	1 x 50 000 IU		
At 6 months* (up to 11 months)	1 x 100 000 IU		
At 12 - 60 months (each 6th X)	1 x 200 000 IU every 6 months	12 mths / 18 mths / 24 mths 30 mths / 36 mths / 42 mths 48 mths / 54 mths / 60 mths	
TREATMENT OF : (NOT if prophylactic dose was given within previous month)			
Disease according to following age group (see IMCI classification)		2 - 5 mths: 50 000 IU 6 - 11 mths: 100 000 IU 12 - 60 mths: 200 000 IU	
Measles* Diarrhoea with some dehydration	Immediate	1 x IU	
Measles	Immediate 24h repeat	1 x IU 1 x IU	
Xerophthalmia	Immediate 24h repeat	1 x IU 1 x IU	
Severe malnutrition	Immediate	1 x IU	

* Allow a period of at least one month between doses

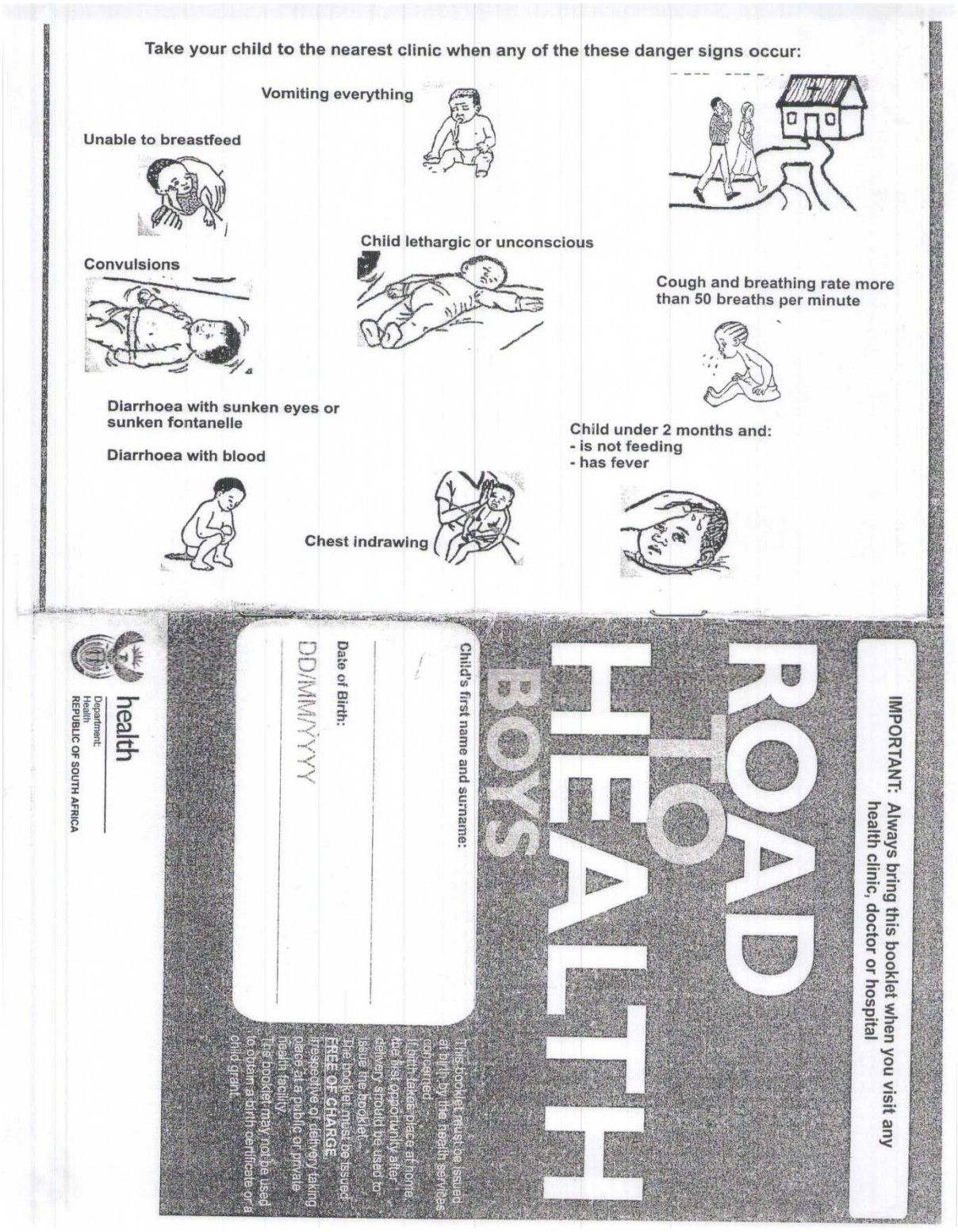
HOSPITAL ADMISSIONS

Hospital name	Admission number	Date of admission	Date of discharge	Discharge diagnosis

A PASSPORT FOR HEALTHY CHILDREN

Show mothers you value the use of the Road to Health Chart and they will take care of it

Appendix H2


Take your child to the nearest clinic when any of the these danger signs occur:
Vomiting everything
Unable to breastfeed
Convulsions
Child lethargic or unconscious
Cough and breathing rate more than 50 breaths per minute
Diarrhoea with sunken eyes or sunken fontanelle
Diarrhoea with blood
Chest indrawing
Child under 2 months and:
- is not feeding
- has fever
IMPORTANT: Always bring this booklet when you visit any health clinic, doctor or hospital
ROAD TO HEALTH BOOKLET
BOYS
Child's first name and surname:
Date of Birth:
DD/MM/YYYY
This booklet must be issued at birth by the health services concerned. If birth takes place at home, the first opportunity after delivery should be used to issue the booklet.
The booklet must be issued FREE OF CHARGE irrespective of delivery taking place at a public or private health facility.
The booklet may not be used to obtain a birth certificate or a child grant.
health
Department:
Health
REPUBLIC OF SOUTH AFRICA

WELL CHILD VISITS – RECORDING SHEET FOR CHILDREN LESS THAN 5 YEARS OLD

Record the following information for each visit on the spaces that are not shaded. Refer to the page numbers given in this booklet and complete the relevant section.						Remember to check the following. Tick if done, and record details on the relevant page					Date of next visit
Age	**Date**	**Growth (IMCI)** (page 14)	**PMTCT/ HIV status (IMCI)** (page 7&8)	**TB status (IMCI)**	**Feeding** (EBF/EFF/ mixed feeding for first 6 months)	Immunisations (page 6)	Vitamin A (page 9)	Deworming (page 9)	Development (page 13)	Oral Health (page 20)	
3 days		2 SCORE MEDIAN OLINE	EXPOSED		EBF						
6 wks						✓					
10 wks											
14 wks											
4 mths											
5 mths											
6 mths											
7 mths											
8 mths											
9 mths											
10 mths											

ROAD TO HEALTH

Age	**Date**	**Growth (IMCI)** (page 14)	**PMTCT/ HIV status (IMCI)** (page 7&8)	**TB status (IMCI)**	**Feeding** (EBF/EFF/ mixed feeding for first 6 months)	Immunisations (page 6)	Vitamin A (page 9)	Deworming (page 9)	Development (page 13)	Oral Health (page 20)	**Date of next visit**
11mths											
12 mths											
14 mths											
16 mths											
18 mths											
20 mths											
22 mths											
2 yrs											
2.5 yrs											
3 yrs											
3.5 yrs											
4 yrs											
4.5 yrs											
5 yrs											

ROAD TO HEALTH

DETAILS OF CHILD AND FAMILY (To be completed at birth)

Child's first name and surname: _____

Child's ID number: | | | | | | | | | | | | | |

Mother's ID number: | | | | | | | | | | | | | |

Date of birth / / dd mm yyyy	Name of facility where child was born:
Child's residential address:	
Mother's name:	Mother's birth date:
Father's name:	Who does the child live with?

How many children has the mother had (including this child?)

Number born (including stillbirths) ☐	Reason(s) for death(s):
Number alive now ☐	Date information given: / / / dd mm yyyy

Child in need of special care (mark with X)
(Complete at delivery or at first contact with health services)

Is the baby a twin, triplet, etc? Yes ☐ No ☐	Does the mother need additional support to care for the child? (Specify) Yes ☐ No ☐
Any disability present (including birth defects?) (Specify) Yes ☐ No ☐	Other: (Specify)

ROAD TO HEALTH

NEONATAL INFORMATION

Birth weight:	Birth length:	Head circumference at birth:
Gestational age (weeks)	Mother's blood group	Mother's RPR
Antenatal (Maternal history):	Intrapartum (including mode of delivery)	
APGAR	1 min	5 min

Neonatal problems: (identify high risk problems):

Neonatal Feeding: ☐ Exclusive breast ☐ Exclusive formula

Special care plan / input required (e.g. Kangaroo Mother Care)

Specify:

Post-discharge plan (if baby was admitted in a neonatal ward/premature):

ROAD TO HEALTH

IMMUNISATIONS

Name and surname:

ID number:

Age group	Batch no.	Vaccine	Site	Date given dd/mm/yy	Signature
Birth		BCG	Right arm		
		OPV0	Oral		
6 weeks		OPV1	Oral		
		RV1	Oral		
		DTaP-IPV-Hib1	Left thigh		
		Hep B1	Right thigh		
		PCV 1	Right thigh		
10 weeks		DTaP-IPV-Hib2	Left thigh		
		Hep B2	Right thigh		
14 weeks		DTaP-IPV-Hib3	Left thigh		
		Hep B3	Right thigh		
		PCV2	Right thigh		
		RV2	Oral		
9 months		Measles1	Left thigh		
		PCV3	Right thigh		
18 months		DTaP-IPV-Hib4	Left arm		
		Measles2	Right arm		
6 years		Td	Left arm		
12 years		Td	Left arm		

HEAD CIRCUMFERENCE AT 14 WEEKS AND AT 12 MONTHS

14 Weeks: _____ (Range: 38 - 43 cm) **12 Months:** _____ (Range: 43.5 - 48.5)

REFER if head circumference is outside range

ROAD TO HEALTH

PMTCT/HIV INFORMATION

Child's first name and surname:

Child's ID Number:

Fill in this section on discharge from Midwife Obstetric Unit (MOU) or obstetric ward or at first subsequent visit if not yet done

Mother's latest HIV test result: Positive | Negative | To be done

When did mother have the test? ☐ Before pregnancy ☐ During pregnancy ☐ At delivery

Is the mother on life-long ART? Yes | No

If yes, duration of life-long ART at time of delivery ☐ < 4 weeks ☐ > 4 weeks ☐ Before pregnancy

Document ARVs the mother received: AZT, TRUVADA, NVP

Did the mother receive infant feeding counseling? Yes | No

Decision about infant feeding ☐ Exclusive breast ☐ Exclusive formula

Document Nevirapine given:

All HIV exposed infants should receive Nevirapine for a minimum of 6 weeks

Has the mother disclosed to anyone in the household? Yes | No

Has the mother's partner been tested? Yes | No

Remember to offer testing for all the mother's other children if not yet done

Offer a mother with unknown HIV status a rapid HIV test.
If mother's HIV rapid test is positive, perform an HIV DNA PCR test on infant if ≥ 6/52

ROAD TO HEALTH

Fill in this section if infant is HIV exposed

6 week visit

What feeds has the infant received? ☐ Exclusive breast ☐ Exclusive formula ☐ Mixed feeding

HIV PCR test done? Yes / No
Date:

Affix NHLS tracking barcoded sticker here

Cotrimoxazole started? Yes / No

Infant feeding discussed? Yes / No

Has the child received Nevirapine? Yes / No — If yes: Stop now / Continue

Stop Nevirapine if the mother is on life-long ART or the child has stopped breast-feeding. If not, continue until breastfeeding stops

10 week visit, or earlier if ill

PCR result: Positive / Negative

Post test counseling done? Yes / No

Referred for ART? Yes / No — Stop Nevirapine if PCR is positive

Cotrimoxazole given? Yes / No

Has child received Nevirapine? Yes / No — If yes: Stop now / Continue

Encourage a mother whose baby is HIV positive to continue breastfeeding

Retest HIV negative children 6 weeks after cessation of breastfeeding, or if clinical suspicion.
An HIV exposed child should be retested with a rapid HIV Antibody test at 18 months

Repeat PCR test Date: ☐ Positive ☐ Negative

Post test counseling done? Yes / No

Referred for ART Yes / No — Stop Nevirapine if PCR is positive

Cotrimoxazole given? Yes / No 6/52

Has child received Nevirapine? Yes / No — If yes: Stop now / Continue

VITAMIN A SUPPLEMENTATION

	At age	Date given dd/mm/yy	Signature	At age	Date given dd/mm/yy	Signature
200 000 IU Mother at delivery (not later than 6-8 weeks)		/ /				
100 000 IU	6 mths	/ /				
200 000 IU every 6 months	12 mths	/ /		42 mths	/ /	
	18 mths	/ /		48 mths	/ /	
	24 mths	/ /		54 mths	/ /	
	30 mths	/ /		60 mths	/ /	
	36 mths	/ /				

ADDITIONAL DOSES:

For conditions such as measles, severe malnutrition, xerophthalmia and persistent diarrhoea. Omit if dose has been given in last month.
Measles and xerophthalmia: Give one dose daily for two consecutive days. Record the reason and dose given below.

Date	Dose given	Reason	Signature	Date	Dose given	Reason	Signature

DEWORMING TREATMENT (Mebendazole or Albendazole)

Dose	At age	Date given dd/mm/yy	Signature	At age	Date given dd/mm/yy	Signature
	12 mths	/ /		18 mths	/ /	
	24 mths	/ /		48 mths	/ /	
	30 mths	/ /		54 mths	/ /	
	36 mths	/ /		60 mths	/ /	
	42 mths	/ /				

HEALTH PROMOTION MESSAGES

Up to 6 months

Feeding:

- Breastfeed exclusively (give infant only breast milk and no other liquids or solids, not even water, with exception of drops or syrup consisting of vitamins, mineral supplements or medication;
- Breastfeed as often as the child wants, day and night;
- Feed at least 8 to 12 times in 24 hours;
- When away from the child leave expressed breast milk to feed with a cup;
- Avoid using bottles or artificial teats (dummies) as this may interfere with suckling, be difficult to clean and may carry germs that can make your baby sick.



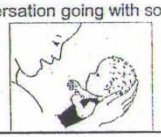
Why is exclusive breastfeeding important?

- Other foods or fluids may damage a young baby's gut and make it easy for infections (including HIV) to get into the baby's body;
- Decreases the risk of diarrhoea;
- It decreases risk of respiratory infections;
- It decreases risk of allergies;

If you have chosen to formula feed your baby, discuss safe preparation and use of formula with the health care worker

Play: Provide ways for your child to see, hear, feel, and move.
Have colorful things to see and reach

Communicate: Look into your child's eyes and smile at him or her
Talk to your child and get a conversation going with sounds or gestures.



HEALTH PROMOTION MESSAGES

6 - 12 months



Feeding:

For all children start complementary foods at 6 months

- Continue breastfeeding;
- Always breastfeed first before giving complementary foods;
- Start giving 2—3 teaspoons of soft porridge and begin to introduce vegetables and then fruit. Give mashed dried beans and locally available animal foods daily to supplement the iron in the breastmilk. Examples include egg (yolk), minced meat, fish, chicken/chicken livers, mopani worms;
- Gradually increase the amount and frequency of feeds.
- Children between 6—8 months should have two meals a day. By 12 months this should have increased to 5 meals per day, whilst frequent breastfeeding continues;
- Offer your baby safe, clean water regularly;
- If the baby is not breastfed, give formula or at least 2 cups of full cream cow's milk (cow's milk can be given from 9 months of age);

Play: Give your child clean household things to handle, bang and drop.



Communicate:

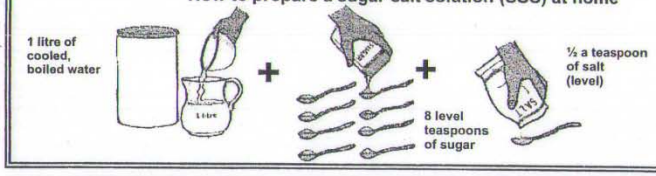
Respond to your child's sounds and interests. Tell your child the names of things and people.

Encourage feeding during illness Suggest an extra meal a day for a week after getting better

Feeding recommendation for DIARRHOEA

- Follow feeding recommendations for the child's age, but give small frequent meals (at least 6 times a day);
- Give a sugar-salt solution (SSS) in addition to feeds. Give SSS after each loose stool, using frequent small sips from a cup (half cup for children under 2 years and 1 cup for children 2—5 years). If the child vomits, wait for 10 minutes then continue, but more slowly

How to prepare a sugar-salt solution (SSS) at home



HEALTH PROMOTION MESSAGES

Feeding: 12 months up to 5 years

- If the child is breastfed, continue breastfeeding as often as the child wants until the child is 2 years and beyond;
- If not breastfeeding, give at least 2 cups of full cream milk, which could be maas, every day;
- Encourage children to eat a variety of foods;
- Feed your children five small meals a day;
- Make starchy foods the basis of a child's main meals;
- Children need plenty of vegetables and fruit every day;
- Children can eat chicken, fish, eggs, beans, soya or peanut butter every day;
- Give foods rich in iron and vitamins A and C;



Iron-rich foods: Liver, kidney, dark green leafy vegetables, egg yolk, dry beans, fortified cereal;
Remember that tea interferes with the absorption of iron. Iron is best absorbed in the presence of vitamin C;
Vitamin A-rich foods: Liver, dark green leafy vegetables, mango, paw paw, yellow sweet potato, full cream milk;
Vitamin C-rich foods: Citrus fruit (oranges, naartjies), guavas, tomatoes;

- If children have sweets, treats or drinks, offer small amounts with meals;
- Offer clean, safe water regularly;
- Encourage children to be active every day.

Play and communicate: 12 months to 2 years

Play: Give your child things to stack up, and to put into containers and take out.



Communicate: Ask your child simple questions. Respond to your child's attempts to talk. Play games like "bye".

Play and communicate: Above 2 years

Play: Help your child count, name, and compare things. Make simple toys for your child.

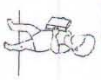


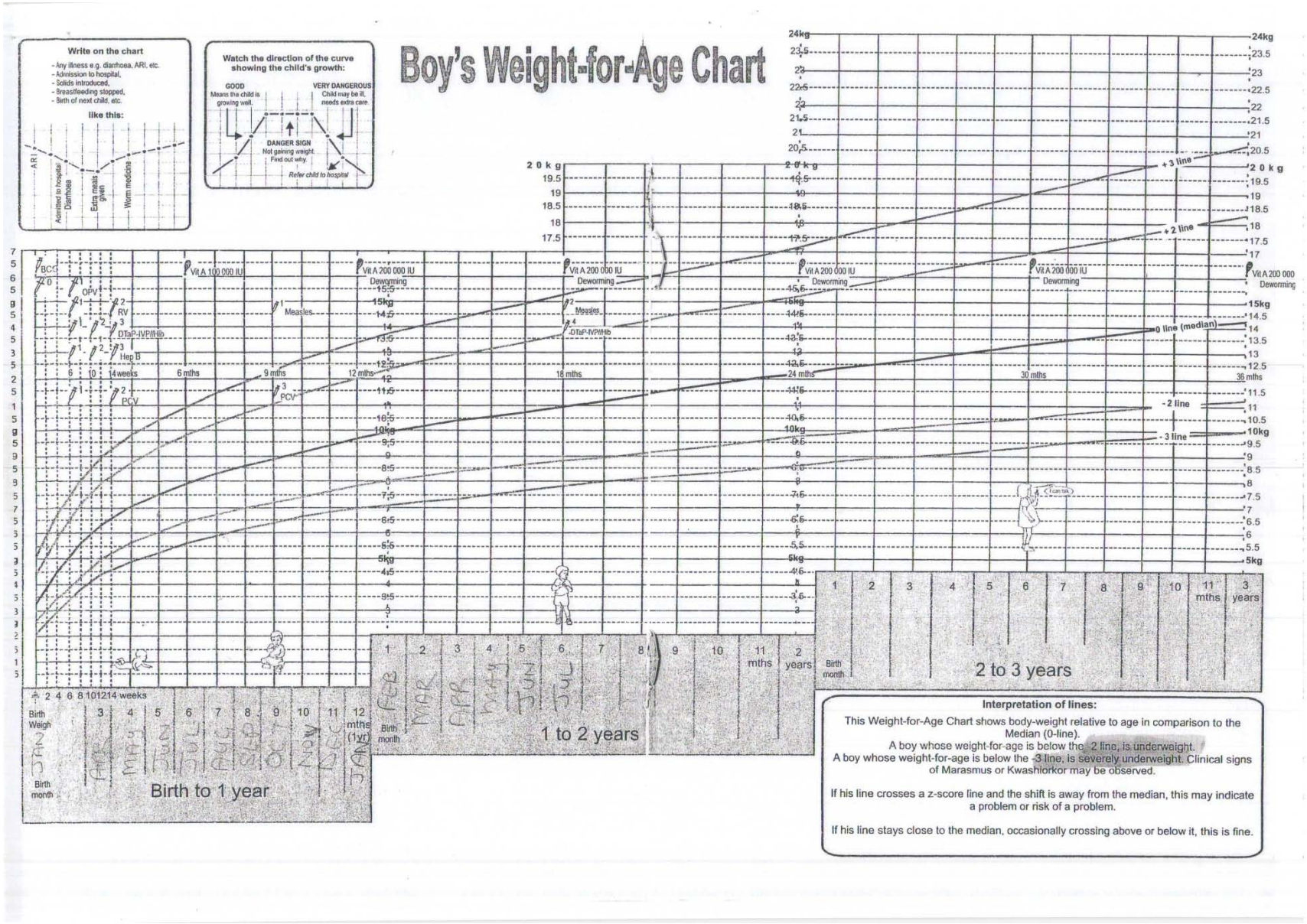
Communicate: Encourage your child to talk and answer your child's questions. Teach your child stories, songs and games.

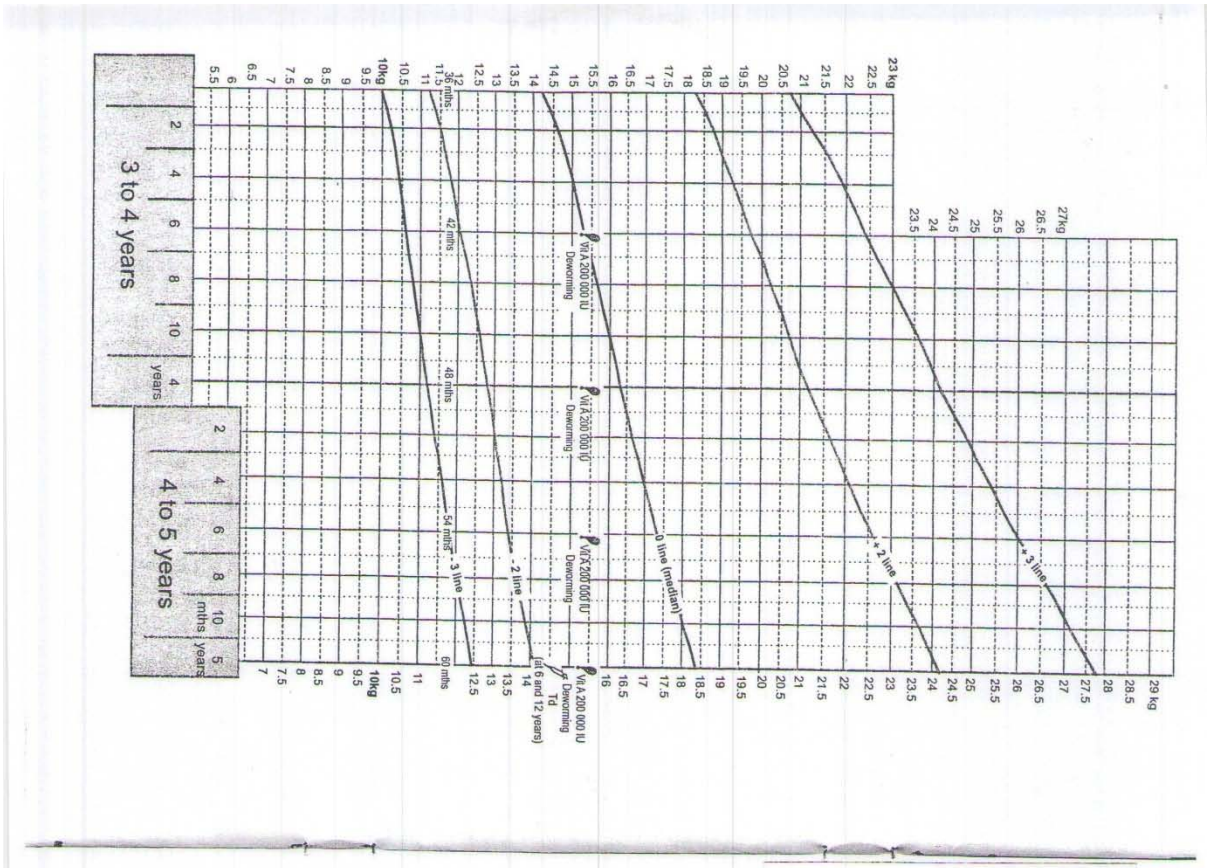
ROAD TO HEALTH

ROAD TO HEALTH

Preterm – the weeks/months until @ 9/12

DEVELOPMENTAL SCREENING	VISION AND ADAPTIVE	HEARING AND COMMUNICATION	MOTOR DEVELOPMENT
ALWAYS ASK	Can your child see?	Can your child hear and communicate as other children?	Does your child do the same things as other children of the same age?
14 weeks	Baby follows close objects with eyes	Baby responds to sound by stopping sucking, blinking or turning	Child lifts head when held against shoulder 
6 months	Baby recognises familiar faces	Child turns head to look for sound	Child holds a toy in each hand 
9 months	Child's eyes focus on far objects Eyes move well together (No squint)	Child turns when called	Child sits and plays without support 
18 months	Child looks at small things and pictures	Child points to 3 simple objects Child uses at least 3 words other than names Child understands simple commands	Child walks well  Child uses fingers to feed
3 years	Sees small shapes clearly at 6 metres	Child speaks in simple 3 word sentences	Child runs well and climbs on things
5-6 years: School readiness	No problem with vision, use a Snellen E chart to check	Speaks in full sentences and interact with children and adults	Hops on one foot Able to draw a stick person 
REFER	**Refer the child to the next level of care if child has not achieved the developmental milestone. Refer motor problem to Occupational Therapist/Physiotherapist and hearing and speech problem to Speech therapist/Audiologist if you have the services at your facilities.**		

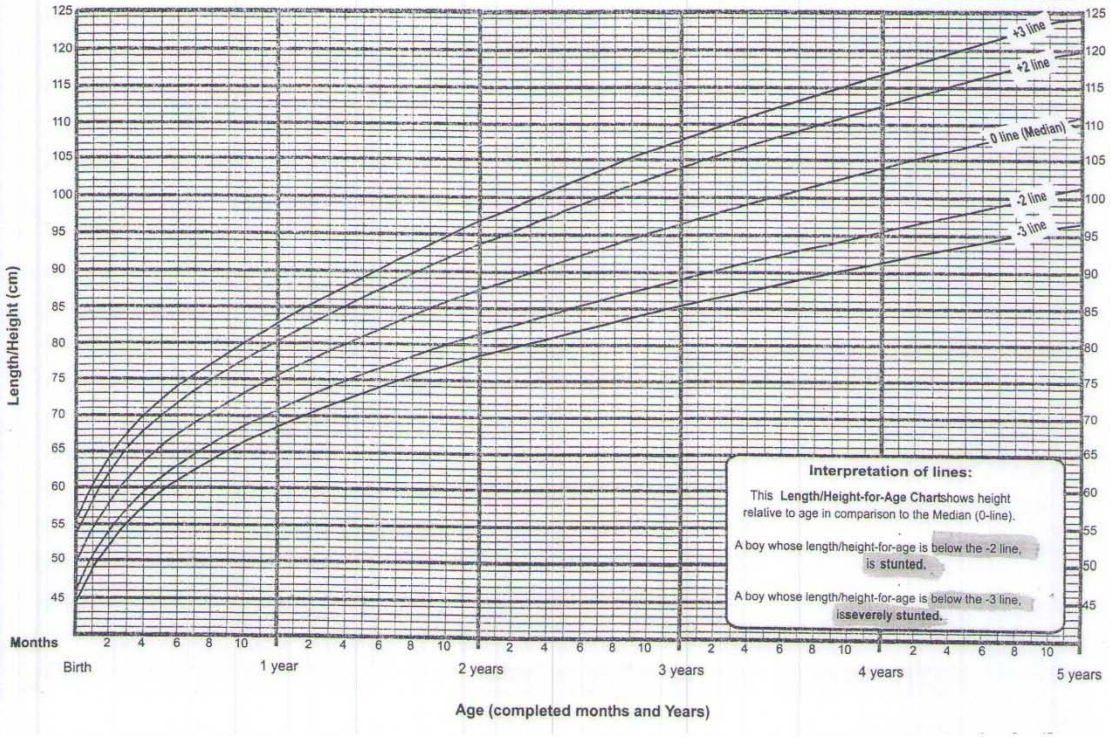

Write on the chart
- Any illness e.g. diarrhoea, ARI, etc.
- Admission to hospital,
- Solids introduced,
- Breastfeeding stopped,
- Birth of next child, etc.
like this:
ARI
Admitted to hospital
Diarrhoea
Extra meals given
Worm medicine
Watch the direction of the curve showing the child's growth:
GOOD
Means the child is growing well.
VERY DANGEROUS
Child may be ill, needs extra care
DANGER SIGN
Not gaining weight
Find out why.
Refer child to hospital
Boy's Weight-for-Age Chart
+ 3 line
+ 2 line
0 line (median)
- 2 line
- 3 line
Vit A 100 000 IU
Vit A 200 000 IU
Deworming
BCG
OPV
RV
DTaP-IVP/Hib
Hep B
PCV
Measles
6 mths
9 mths
12 mths
18 mths
24 mths
30 mths
36 mths
Birth to 1 year
1 to 2 years
2 to 3 years
Birth month
Interpretation of lines:
This Weight-for-Age Chart shows body-weight relative to age in comparison to the Median (0-line).
A boy whose weight-for-age is below the -2 line, is underweight.
A boy whose weight-for-age is below the -3 line, is severely underweight. Clinical signs of Marasmus or Kwashiorkor may be observed.
If his line crosses a z-score line and the shift is away from the median, this may indicate a problem or risk of a problem.
If his line stays close to the median, occasionally crossing above or below it, this is fine.



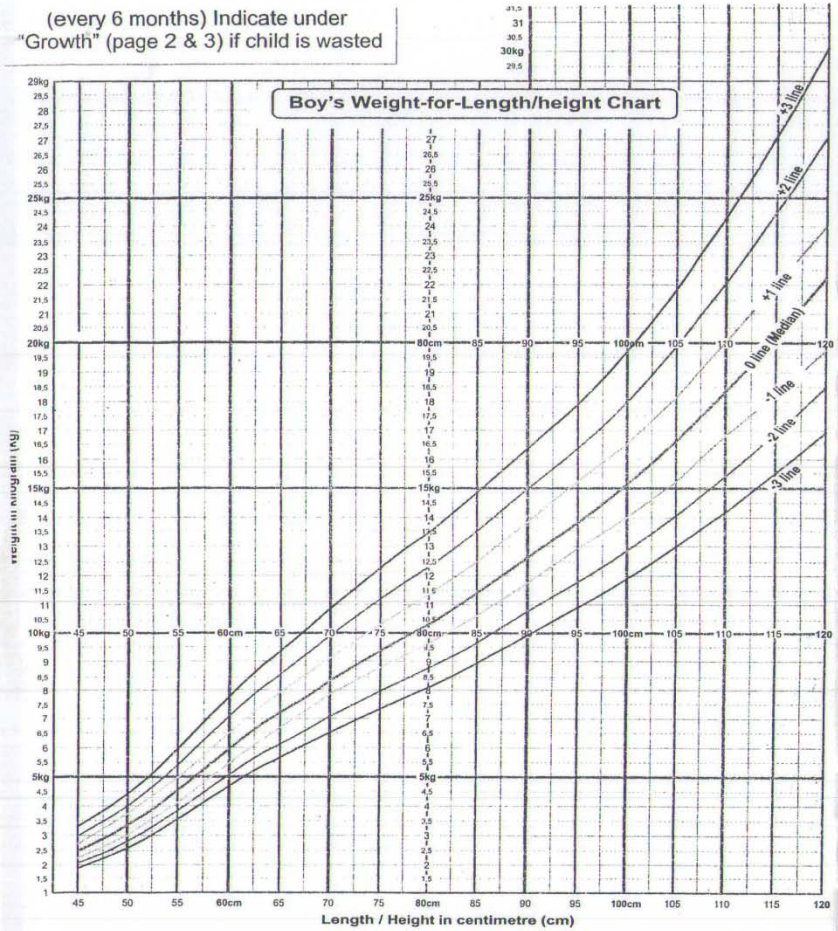
Length/height -for-age BOYS

Birth to 5 years (z-scores)

FOR PERIODIC USE (every 6 months)
Indicate under "Growth" (page 2&3) if child stunted



(every 6 months) Indicate under "Growth" (page 2 & 3) if child is wasted



This **Weight-for-Length/height Chart** shows body-weight relative to length/height in comparison to the Median (the 0 z-score line).

A boy whose weight-for-length/height is above the +3 line, is **obese.**
A boy whose weight-for-length/height is above the +2 line, is **overweight.**

A boy whose weight-for-length/height is below the -2 line, is **wasted.**
A boy whose weight-for-length/height is below the -3 line, is **severely wasted. Refer for urgent specialised care.**

1-5yrs

MID-UPPER ARM CIRCUMFERENCE (MUAC) (Every 3 months)

Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC

< 11.5 cm indicates severe acute malnutrition (REFER urgently)
≥11.5 < 12.5 cm indicates moderate acute malnutrition (Manage as in IMCI guide-lines)

HOSPITAL ADMISSIONS

Hospital name	Admission number	Date of admission dd/mm/yyyy	Date of discharge dd/mm/yyyy	Discharge diagnosis
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	

NAME OF CLINIC(S) VISITED

Clinic 1:	Clinic 2:
Clinic 3	Clinic 4:

ORAL HEALTH EXAMINATIONS

Refer child if scheduled examinations have not been done.
To be completed by Dentist, Dental Therapist or Oral Hygienist.

Schedule of visits:

1st visit on appearance of first tooth

Examiner: _____ Health facility: _____ Date: _____

At age 12 months, when attending immunizations

Examiner: _____ Health facility: _____ Date: _____

In the 2nd year, with other health checks

Examiner: _____ Health facility: _____ Date: _____

In the 3rd year, with other health checks

Examiner: _____ Health facility: _____ Date: _____

In the 4th year, with other health checks

Examiner: _____ Health facility: _____ Date: _____

In the 5th year, with other health checks

Examiner: _____ Health facility: _____ Date: _____

Use a clean cloth to clean your baby's gums
Use a small soft toothbrush to clean the baby's teeth

CLINICAL NOTES		
Date	Assess and classify	Counsel and treat

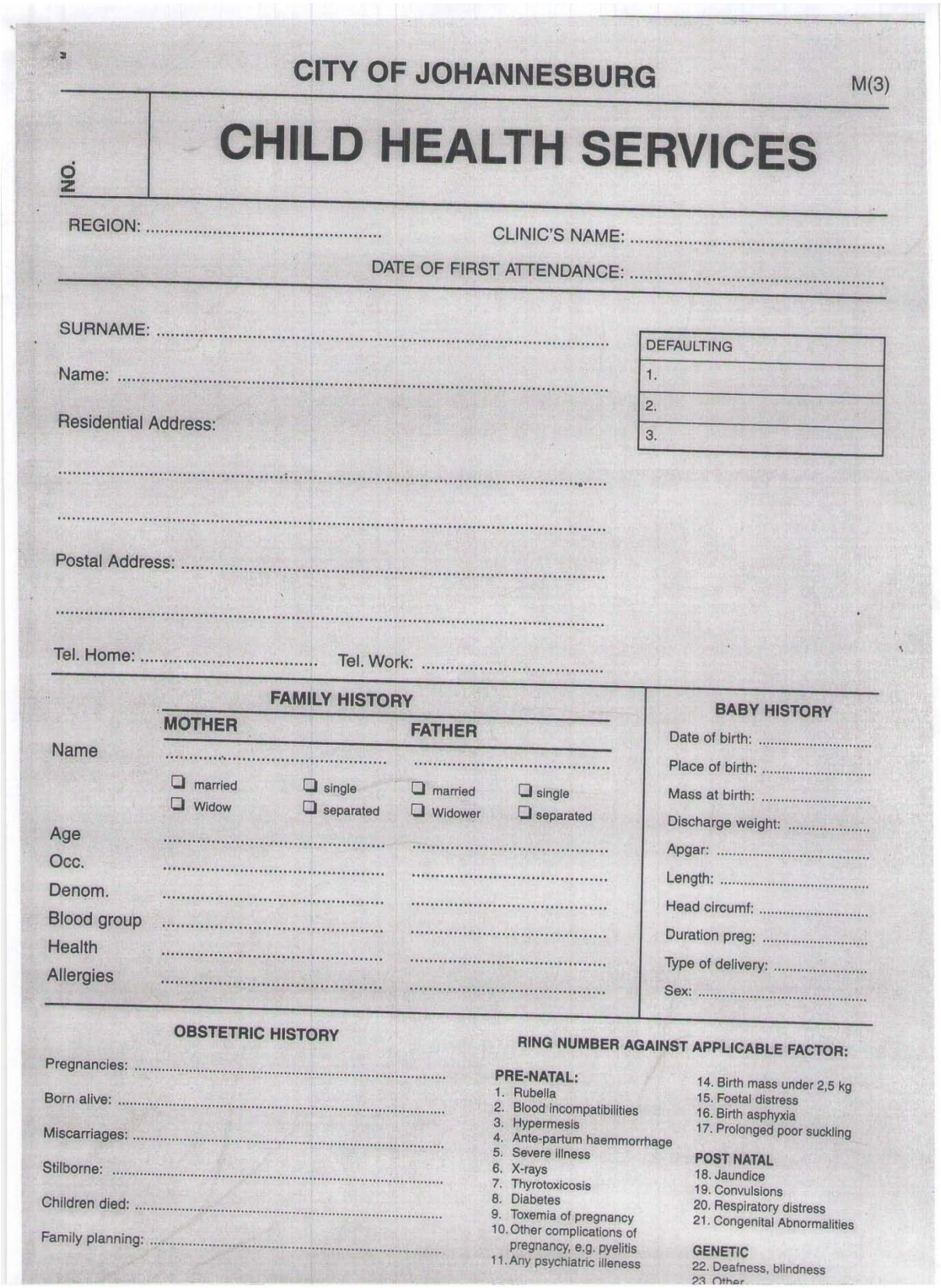
CLINICAL NOTES		
Date	Assess and classify	Counsel and treat

ROAD TO HEALTH

CLINICAL NOTES		
Date	Assess and classify	Counsel and treat

ROAD TO HEALTH

Appendix H3



CITY OF JOHANNESBURG M(3)

NO.

CHILD HEALTH SERVICES

REGION: ..... CLINIC'S NAME: .....

DATE OF FIRST ATTENDANCE: .....

SURNAME: .....

Name: .....

Residential Address:

.....

.....

Postal Address: .....

.....

Tel. Home: ..... Tel. Work: .....

DEFAULTING
1.
2.
3.

FAMILY HISTORY

	MOTHER		FATHER	
Name	.....		.....	
	❑ married	❑ single	❑ married	❑ single
	❑ Widow	❑ separated	❑ Widower	❑ separated
Age	.....		.....	
Occ.	.....		.....	
Denom.	.....		.....	
Blood group	.....		.....	
Health	.....		.....	
Allergies	.....		.....	

BABY HISTORY

Date of birth: .....

Place of birth: .....

Mass at birth: .....

Discharge weight: .....

Apgar: .....

Length: .....

Head circumf: .....

Duration preg: .....

Type of delivery: .....

Sex: .....

OBSTETRIC HISTORY

Pregnancies: .....

Born alive: .....

Miscarriages: .....

Stilborne: .....

Children died: .....

Family planning: .....

RING NUMBER AGAINST APPLICABLE FACTOR:

PRE-NATAL:

1. Rubella
2. Blood incompatibilities
3. Hypermesis
4. Ante-partum haemmorrhage
5. Severe illness
6. X-rays
7. Thyrotoxicosis
8. Diabetes
9. Toxemia of pregnancy
10. Other complications of pregnancy, e.g. pyelitis
11. Any psychiatric illeness
14. Birth mass under 2,5 kg
15. Foetal distress
16. Birth asphyxia
17. Prolonged poor suckling

POST NATAL

18. Jaundice
19. Convulsions
20. Respiratory distress
21. Congenital Abnormalities

GENETIC

22. Deafness, blindness
23. Other

PREVIOUS PREGNANCIES IN ORDER OF BIRTH

DATE	SEX	NAME	TYPE OF DELIVERY	IMM UP TO DATE	ILLNESSES
1.					
2.					
3.					
4.					

IMMUNISATIONS

I, the undersigned, hereby consent to the administration of the necessary immunisation.

Date ..... Signature: .....

AGE	IMMUNISATION	DATE	SITE	BATCH	DOSE	PLACE & SIGNATURE	RETURN DATE
0-6 WEEKS	TOPV		Per Os		2 drops		
0-3 months	BCG		R Arm		1 drop		
6 weeks	TOPV		Per Os		2 drops		
	DTP		R L		0,5 ml IM		
	HBV		R L		0,5 ml IM		
10 weeks	TOPV		Per Os		2 drops		
	DTP		R L		0,5 ml IM		
	HBV		R L		0,5 ml IM		
14 weeks	TOPV		Per Os		2 drops		
	DTP		R L		0,5 ml IM		
	HBV		R L		0,5 ml IM		
9 months	MEASLES		R L		0,5 ml IM		
18 months	TOPV		Per Os		2 drops		
	DTP		R L		0,5 ml IM		
			R L		0,5 ml IM		
	MEASLES		R L		0,5 ml IM		
5 year	TOPV		Per Os		2 drops		
	DT		R L		0,5 ml IM		
Other							

ABBREVIATIONS:

Refer to	:	→	Tetanus	:	T
Immunisation	:	Imm	Diphtheria	:	D
With	:	I/C	Pertusis	:	P
Reduce	:	▼	Subcutane	:	SC
Increase	:	▲	Intra-Muscular	:	IM
4 hourly	:	qh	Per Os	:	PO
3 times per day	:	tds	Paediatrician	:	PAED
4 times per day	:	qid	Gynaecologist	:	GYNAE
Left	:	L	Return date	:	TCA
Right	:	R	Teaspoon	:	ts
Nil Abnormaz	:	NAD	Dessertspoon	:	ds

CHILD ILLNESSES DATE

Measles: .....

Whopping cough: .....

Chickenpox: .....

German measles: .....

Diphtheria: .....

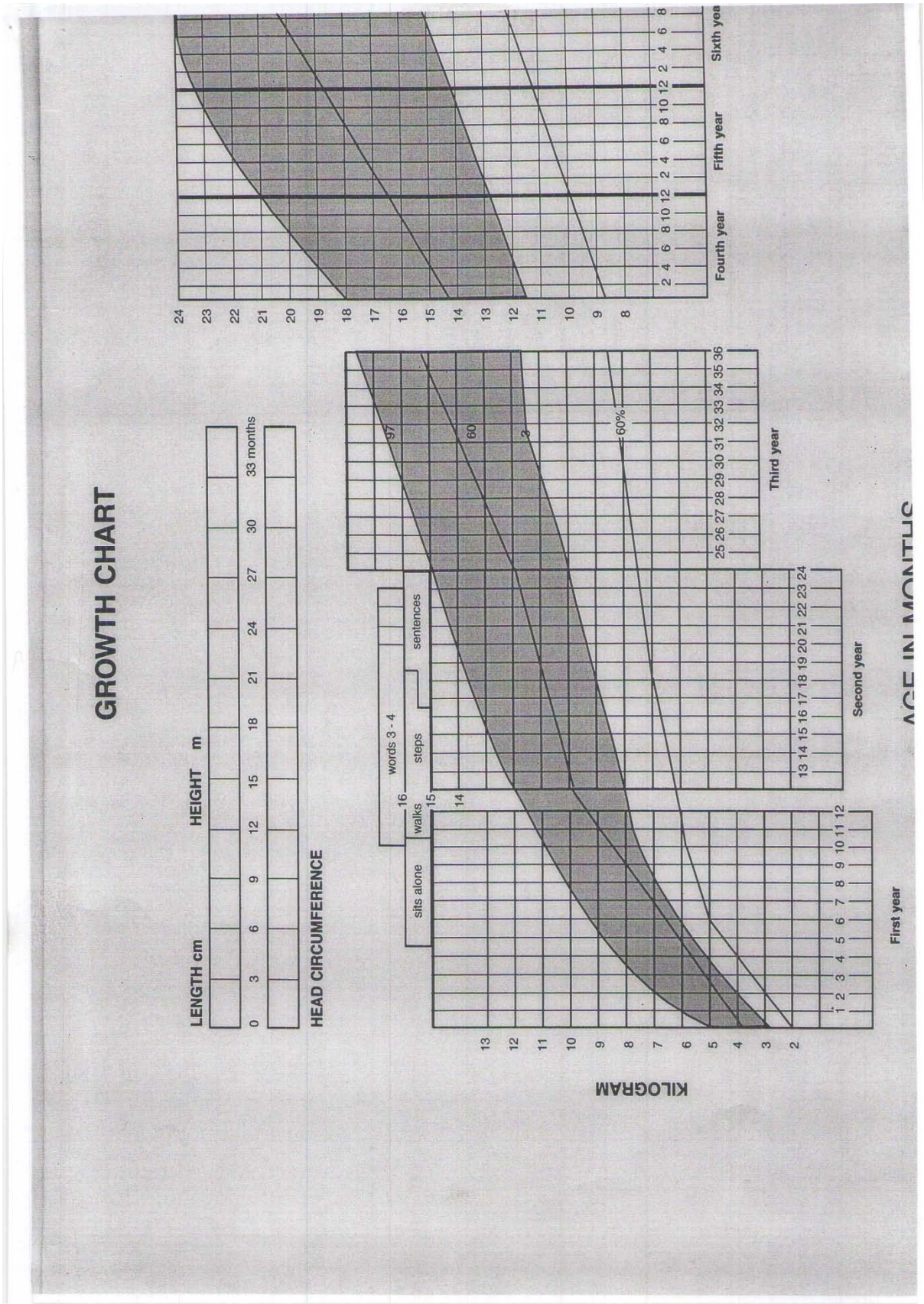
Other: .....

.....

HOME VISIT

DATE: ..... TOTAL RESIDENTS: .....

DATE	AGE	MASS		SIGNATURE
			1. Mothers Emotional Condition	
			2. Physical examination	
			— Fontanells	
			— Umbilical cord	
			— Eyes	
			— Mouth	
			— Skin	
			— Genitals	
			3. Jaundice	
			4. Stools	


GROWTH CHART
LENGTH cm
HEIGHT m
0 3 6 9 12 15 18 21 24 27 30 33 months
HEAD CIRCUMFERENCE
sits alone
walks
steps
words 3 - 4
sentences
97
60
3
60%
KILOGRAM
First year
Second year
Third year
Fourth year
Fifth year
Sixth year
AGE IN MONTHS

CHILD DEVELOPMENT CHART

DATE AGE	SIGNATURE	SOCIAL BEHAVIOUR AND PLAY	O	M	VISION AND FINE MOVEMENT	O	M	HEARING AND SPEECH	O	M	GROSS MOTOR (Posture and large movement)	O	M	OUTCOME FOLLOW UP DATE OF NEXT V
0-6 Weeks		— Watches mother in feeding			— Hands closed thumbs in — Shuts eyes tightly to light			— Stops crying when spoken to — Startled by sudden noise			— Moro, grasp sucking reflexes sometimes still present			
3 Months		— Reacts to voices by smiling and noises			— Follow objects slowly from side to side — Hands loosely open — Finger play			— Gets excited when hearing footsteps • Deaf baby doesn't react — Back straight			— Slight head lag — Head control for a few seconds			
6 Months		— Everyting goes to mouth — Shakes rattle			— Eyes move together • Squinting abnormal — Transfers toys — Palmer grasp			— Recognizes mother's voice — Responds to hearing test — Makes sounds like oe & dada			— Rolls over — Kicks with alternative legs			
9 Months		— Holds — Reaches out to grasp spoon when feeding			— Picks up blocks but can't build tower — Transfers objects from hand to hand			— Calls for attention — Listens, calls again — Responds to hearing test			— Sits alone for 10-15 min — Starts crawling — Rolls over and over on floor			
12 Months		— Clasps hands — Waves goodbye — Drinks from cup — Helps with dressing			— Grasps objetcs between thumb and forefinger — Points with finger to object			— Knows and reacts immediately to name — Says mommy and daddy			— Crawls — Stands up against furniture — Starts walking			
15 Months		— Intensely curious — Throws and picks up objects — May indicate if wet or soiled			— Builds tower of two blocks — Looks at picture and pats page			— Speaks 2-6 recognisable words — Understands and obeys simple instructions			— Independent steps — Falls frequently — Climbs onto furniture			
18 Months		— Takes off shoes and socks — Dry by day, occasional accidents — Emotionally very dependent on mother			— Builds tower of three blocks — Turns page 2 or 3 at a time — Scribbles			— Uses 5-20 words — Attempts to sing — Points to own hair, nose, eyes, etc. — Squats to pick up objects			— Climbs into an adult chair forward, turns to sit — Climbs steps with help			
24 Months		— Turns door handles — Defends possessions — No idea yet of sharing			— Builds tower of 6-7 blocks — Turns pages singlely — Hand preference becomes evident			— Talks to himself — Understands 50 and more words — Refers to self by name			— Runs safely — Kicks ball — Throws small ball overhead			
3 Years		— Eats with fork and spoon — Washes hands — Can pull pants down and up — Dry through night			— Builds tower 9 cubes — Copies circle — Cuts with scissors — Matches 2 or 3 primary colours			— Large vocabulary — Gives full name, age — Asks many questions — Listens eagerly to stories demand over/over			— Can walk on tiptoe — Jumps from steps two feet together — Rides a tricycle with agility			
5 Years		— Uses knife and fork — Dresses and undresses alone — Chooses own friends — Brushes teeth			— Writes few letters — Draws house with doors, roof, windows — Counts fingers on one hand			— Speech fluent — Articulation correct except for confusion s/f/th and r/l/w/y groups			— Stands on one leg — Walks on straight line — Skips on alternate feet			

O: OBSERVED **M: MOTHER**

GJMO

NURSING CARE PLAN

DATE	AGE	PROBLEM	EXPECTED OUTCOME	DEADLINE	NURSING ACTION	EVALUATION	SIGN.