



Clinical Skills Building **for Child Health** PARTICIPANT MANUAL



THE SOUTH TO SOUTH PARTNERSHIP FOR COMPREHENSIVE FAMILY HIV CARE AND TREATMENT PROGRAM (S2S)

South Africa has the largest HIV burden of any country in the world, with an estimated 5.7 million people living with the virus. Women and children remain at the centre of the pandemic in terms of transmission, vulnerability and potential for impact.

To continue to build on the existing successes of South Africa’s antiretroviral (ARV) program, the capacity for HIV disease management must be enhanced. It is essential that HIV disease management transition from an individual case management to a family-centred and chronic-care approach targeting and prioritising pregnant women and children. Enrolling pregnant women and children into HIV care and treatment early and regularly can prevent new HIV infections and reduce morbidity and mortality, effectively sustaining the quality of life of mothers, their children, and their families.

The scale up of effective prevention of mother-to-child transmission (PMTCT) and paediatric ARV care and treatment programs are crucial in the fight against HIV but are challenged by many factors including perceived complexity of treating pregnant women and children, inadequate paediatric and PMTCT knowledge and clinical skills, lack of psychosocial and adherence support, delays in integrating PMTCT services with antenatal and child health management systems, and gaps in referral systems.

The South to South Partnership for Comprehensive Family HIV Care and Treatment Program (S2S), a collaboration between the Department of Paediatrics and Child Health, Stellenbosch University, Cape Town, and the International Centre for AIDS Care and Treatment Programs (ICAP), Mailman School of Public Health, Columbia University, New York, aims to address these gaps in support of quality HIV care and treatment services. This is accomplished through the provision of comprehensive technical, programmatic, capacity building and systems support for healthcare workers at public health care facilities throughout South Africa by integrating and strengthening PMTCT, paediatric HIV and adherence and psychosocial (APS) programs.

S2S is funded by the United States Agency for International Development (USAID).

ACKNOWLEDGEMENTS

The “HIV Care and Treatment Training Series”, serves as a comprehensive collection of training material for members of the multidisciplinary team caring for women, infants and children living with HIV and their families in South Africa.

Module 1: Clinical Skills Building for Child Health was developed by the South to South (S2S) team, in collaboration with and with support from the International Center for AIDS Care and Treatment Programs (ICAP) of Columbia University Mailman School of Public Health.

S2S would like to thank the François-Xavier Bagnoud (FXB) Center, School of Nursing, University of Medicine and Dentistry of New Jersey, for coordinating development of the module. Members of the FXB Center consultancy team who provided technical expertise in the development of this module included: Mary Jo Hoyt, Beth Hurley, Jennifer Kasper, Melanie Percy, Virginia Allread and Anne Reilly.





Development of this module was supported by funding from USAID and US President's Emergency Plan for AIDS Relief (PEPFAR).

DISCLAIMER

The content expressed herein does not necessarily reflect the views of the USAID. Although every effort was made to ensure that all information in this document is accurate and up-to-date, the authors accept no liability for the consequences of inaccurate or misleading data due to errors in writing or printing/duplication. Every effort has been made to ensure that drug doses are presented accurately, but readers are advised that these should only be followed in conjunction with the drug manufacturer's published literature.

CONTENTS

Session 1.1: Overview: Under-5 Mortality in South Africa.....	6
Child health in South Africa	6
Session 1.2: Overview of Paediatrics	8
Differences between adults and children.....	8
Session 1.3: Family-centred Care.....	12
Family-centred care	12
Session 1.4: Developmental Approach to Paediatric Care	15
Developmental approach to primary care	16
Session 1.5: Growth Monitoring and Assessment.....	22
Growth monitoring.....	22
Visual assessment	24
Measuring weight.....	25
Measuring length and height.....	27
Measuring head circumference.....	29
Measuring mid-upper arm circumference.....	29
Growth charts	30
Intrepreting growth charts	32
Growth faltering.....	33
Session 1.6: Child Health History	36
Child health history	36
The interval history	38
Session 1.7: Paediatric Primary Care.....	40
Overview of the well-child (EPI) visit.....	40
Unique aspects of child health exams by age	42
Assessment and guidance parameters for children.....	43
Immunisation	49
Vitamin A supplementation and deworming	52
Identifying children with HIV infection	56
Clinical Features of HIV Infection in Children	57
Laboratory tests for HIV.....	57
HIV-exposed infants.....	59
Tuberculosis screening	65
History and physical examination	66
Questions and answers for Exercise 8: paediatric 1-2-3 interactive game	80
Summary of key points	83
Appendix 1: Leading Causes of Death Among South African Children	86
Appendix 2: Road to Health Booklet.....	90
Appendix 3: Normal Vital Signs in Children by Age	120
Appendix 4: Developmental Milestones Screening Tool.....	121
Appendix 5: Sample medical records form for children.....	132
Appendix 6: Growth curve charts without labels.....	136
Appendix 7: Grant for Caring for A Young Child (Child Support Grant).....	137
Resources for Further Information	140
References.....	143



MODULE I

Clinical Skills Building for Child Health



DURATION

9 hours 10 minutes (not inclusive of time required for clinical experience)



LEARNING OBJECTIVES

By the end of this module, participants will be able to:

- Provide an overview of the current status of child health in South Africa.
- Explain fundamental differences impacting health and health care of children vs. adults.
- Discuss the components of family-centred care and why family-centred care is important.
- Describe what is meant by a “developmental approach to paediatric care”.
- Describe the rationale for performing developmental assessment and surveillance as an integral component of paediatric care.
- Discuss rationale for monitoring growth.
- Describe protocol for obtaining child measurements.
- Demonstrate plotting measurements on growth charts.
- Discuss interpretation of growth data.
- Demonstrate obtaining the family, birth and child health history.
- Conduct interval history.
- Describe the key elements of the paediatric physical examination, including elements specific to age and development.
- Conduct a developmental assessment.
- Discuss the primary care schedule, including the schedule for immunisation, vitamin A supplementation, deworming and TB screening.



CONTENT

- I Introduction for Facilitators
- I.1 Overview: Under-5 Mortality in South Africa (30 minutes)
- I.2 Overview of Paediatrics (30 minutes)
- I.3 Family-centred Care (30 minutes)
- I.4 Developmental Approach to Paediatric Care (60 minutes)
- I.5 Growth Monitoring and Assessment (90 minutes)
- I.6 Child Health History (45 minutes)
- I.7 Paediatric Primary Care (265 minutes)

Notes:

- Initiate each section through facilitated discussion, using the key questions in the “Facilitator Instructions” boxes. When you present the content, you need only cover the material not already mentioned during the discussion.
- Time estimates are not inclusive of time required for clinical experience. Clinical experience is not outlined in this module.
- Time estimates may also change depending on whether it is feasible and desirable to use the DVD to demonstrate components of the physical examination (described below in *Materials and Resources*).
- Any topics that come up before they are timetabled (as per the module outline) can be “parked” on a flip chart as a reminder for later discussion when that topic is covered.



SESSION 1.1: OVERVIEW: UNDER-5 MORTALITY IN SOUTH AFRICA



SESSION LEARNING OBJECTIVES

- Provide an overview of the current status of child health in South Africa.

CHILD HEALTH IN SOUTH AFRICA

While infant mortality (the death of children one year of age or younger) had been decreasing into the early 1990's in South Africa, the downward trend has halted and shown reversals in recent years; the primary cause of this reversal is HIV. The under-5 mortality, which refers to the number of children that die before reaching their fifth birthday and is often used as an indicator of the level of child health and overall development in countries, has also increased due to HIV. About 57% of deaths in children less than five years of age in South Africa are due to HIV-related causes. The disease has orphaned more than 1.4 million children.¹

In South Africa, approximately 69 of every 1,000 children do not live to see their fifth birthday. It is important for clinicians to note that *preventable* illnesses are the major causes of death in children less than five years old; these include:

- HIV
- Diarrhoea-related conditions
- Acute respiratory illnesses
- Tuberculosis (TB)

Improved clinical care of mothers and children can have a positive impact. Additional information related to paediatric morbidity and mortality in South Africa is included in Appendix 1: Leading Causes of Death Among South African Children

Malnutrition contributes indirectly to the severity of a wide range of illnesses, and further makes children more vulnerable to infection.

A number of factors make reducing infant and under-5 mortality challenging, including:

- Low coverage of antenatal care
- Difficult-to-access healthcare facilities
- Lack of adequate sanitation infrastructure
- Poor access to emergency care for mothers and newborns
- Insufficient staffing and uncertain supply chains in the health care system

Family-centred care is an important strategy in reducing the number of child deaths as it focuses not only on the health of the child, but also on family, community and environmental factors that may have a direct impact on child health. Family-centred care will be covered later in the module.

Exercise 1: Child health: describing the issues Small group work: participants break into three groups	
Purpose	<ul style="list-style-type: none"> • To help participants gain a better understanding of under-5 mortality in South Africa, and to relate this knowledge to interventions that decrease the incidence of preventable disease
Duration	20 minutes
Introduction	<ul style="list-style-type: none"> • Participants will divide into three groups to discuss the following questions: <ul style="list-style-type: none"> • What are the main causes of illness and death for children under the age of five years in South Africa? • How can we, as health care providers, do to contribute to efforts to reduce the number of deaths in young children? • Small group discussions should take about 10 minutes, during which time someone from each group should record their group's answers on flipchart paper in preparation for the large group discussion.



SESSION 1.2: OVERVIEW OF PAEDIATRICS



SESSION LEARNING OBJECTIVES

- Explain fundamental differences impacting health and health care of children vs. adults.

DIFFERENCES BETWEEN ADULTS AND CHILDREN

Children have unique anatomic, physiologic, immunologic, developmental and psychological characteristics that affect the healthcare worker's approach to assessment, care and treatment. It is vitally important that medical staff understand the differences between children and adults in these areas. This section is somewhat technical and is therefore meant primarily for clinical staff.

Table 1.1: Examples of clinically important differences between adults and children

Anatomic differences	Clinical significance
A smaller body has less circulating blood volume and less fluid reserve compared with an adult.	Fluid loss — as from diarrhoea, for example — that would be easily handled by an adult can result in shock in a child.
Children have smaller stomach capacity, rapid metabolism and increased energy demands associated with growth.	Young children generally require more frequent meals well into school age.
The brain doubles in size in the first six months of life and achieves 80% of its adult size by age two. During childhood, there is ongoing brain and nervous system development.	Disease or trauma that delays or interrupts development of the nervous system can have long lasting negative consequences.
The airways are small in infancy and young children and can be easily blocked by oedema, mucus or a foreign body.	Risk of choking is higher in children than in adults.
Immunologic differences	Clinical significance
The immune system goes through a period of very rapid development within the first two years of life. Children's immune systems do not approach the maturity of an adult's system until they reach puberty.	Children are at higher risk for infectious illness, especially children less than two years of age.
Before the age of five or six children have higher CD4 cell counts than adults. For this reason CD4 cell percentage is used in young children under this age. CD4% below 25% suggests that	Young children can become ill with HIV when they have CD4 cell counts that would seem high in an adult (e.g. count of 1000-2000),

there may be damage to the immune system. CD4% below 15% indicates severe damage and needs immediate intervention.	therefore it is extremely important to use CD4% rather than CD4 cell count in children under five or six years.
Physiologic differences	Clinical significance
Vital signs, including heart rate, respiratory rate and blood pressure, vary with age. Heart and respiratory rates are much faster during infancy, becoming slower over time.	It is important for healthcare worker to know what is normal and what is not. See Appendix 3: Normal Vital Signs in Children by Age.
Drug absorption, distribution, metabolism and elimination are different in younger children because of body composition and differences in metabolism.	Higher drug doses (per unit of body weight) are often needed for children until puberty. Doses derived from adult pharmacologic studies are often inaccurate in children.
Psychological differences	Clinical significance
Children have a continuing need for close attachment and support from caregivers. As they mature, children face social and emotional challenges that revolve around self-esteem and the need to fit in. Because of their emotional/cognitive immaturity, children often come to conclusions based on lack of information and inability to think things through logically.	Until they approach adolescence, children are not mature enough to understand the need for painful or uncomfortable medical procedures. In addition, inaccurate conclusions may lead to fear or worries that might interfere with delivering appropriate care.
During adolescence, the need for separation and independence from caregivers becomes more pronounced.	Medication adherence often becomes a challenge during adolescence.

FAMILY-CENTRED, DEVELOPMENTAL APPROACH TO CARE

Children are dependent upon adults — the health and development of a child ultimately depends on the child’s environment. At the population level, society must value its most important yet most vulnerable citizens. On an individual level, children receive care and treatment within the context of their families. The *family-centred approach to care* acknowledges that the best health outcomes occur when clinicians recognise that the family is central to supporting the health of the child. A healthy, engaged and involved family is the best environment for the child. In the family-centred approach to care, the clinician engages the child and caregivers in the clinical assessment and decision-making. This approach also provides support and reduces barriers to health care for the entire family.

“Growth” refers specifically to physical size. “Development” refers to specific physical, mental and social skills that develop as a child matures. The many years of childhood allow for elaborate brain development, body growth and the development of those characteristics of personality that distinguish human beings from other animals. There are definite and predictable patterns in growth and development that are continuous, orderly and progressive. The patterns of growth and of development are universal. Great individual variation exists, but the sequence is predictable and normal ranges have

been identified. Therefore, it is critical to assess the growth and development of a child and to identify abnormalities. A child whose growth and/or development fall outside the expected range needs further evaluation; this is an important indicator of health. Attention to developmental progress also guides the healthcare worker's discussion with caregivers on how best to support a child's development and how to assess any abnormalities. Consideration for child development and the incorporation of developmental principles into communication with children and into the physical examination of children makes the process more effective. This is often referred to as the "developmental approach" to care.

Young children, even those who are healthy, require regular, frequent health care visits. These visits are required to not only monitor health, growth and development, but to provide routine preventive care, including immunisations, TB screening, providing vitamin A supplementation and deworming. These visits are also an important time to provide anticipatory guidance to caregivers. Anticipatory guidance is information that helps families prepare for expected physical and behavioural changes during their child's current and approaching stage of development. These components of paediatric care are addressed in this module.

THE ROAD TO HEALTH BOOKLET

All children are issued a Road to Health booklet, shown in Appendix 2, at birth or at the first contact with the healthcare system after birth. The booklet is carried by the caregiver, who should bring it to every health visit. Healthcare workers should use the booklet to help caregivers gain a better understanding of the child's health and health care. It is important, therefore, to explain, discuss and review data in the booklet with caregivers. When used properly, the booklet also serves as a critical means of communication among clinicians. Visits can be documented and described, which allows for continuity of care and reduces redundancy and error.

The Road to Health booklet is also an important clinical tool for high quality paediatric primary care — allowing the opportunity to record and monitor key information, including growth and development, immunisations, Vitamin A supplementation, deworming, TB status, PMTCT (prevention of mother-to-child transmission) and HIV testing, results of routine visual and hearing screening, growth charts, infant and young child feeding information, information on hospital admissions and record visit notes.

The booklet includes space to record all of the most critical elements of paediatric primary care. Briefly review each page to note contents, including:

- Demographic information
- Birth history
- Immunisation
- Prevention of mother-to-child transmission of HIV
- Infant and young child feeding information
- Vitamin A prophylaxis and treatment
- Deworming
- Health promotion messages
- TB screening
- Developmental screening
- Growth charts:
 - Weight-for-age (gender-specific)
 - Length/height-for-age (gender specific)

- Weight-for-length (gender specific)
- Mid-upper arm circumference
- Hospital admissions
- Oral health examinations
- Clinic(s) visited
- Visit notes

Participants should take every opportunity to become familiar with the booklet.

HEALTHCARE WORKER CHALLENGES

Clinicians who are inexperienced in providing paediatric care may feel overwhelmed or fearful of assuming responsibility for the care of children.

This training is a first step toward mastering the necessary elements of quality care. The module addresses *knowledge*, or the factual information you need to provide basic care. These facts must be combined with the development of specific *skills* — such as physical examination and developmental assessment — that must be practiced in the clinical setting under the guidance of an experienced mentor. This is an ongoing need, even for experienced clinicians. No one person can master all the knowledge and skill needed to address every health care issue in children or adults. Healthcare workers are dependent upon each other. The third critical factor (in addition to knowledge and skill) necessary to provide high quality paediatric care is one of *attitude*; the desire and the commitment to implement knowledge and skills on behalf of children and their families.



SESSION 1.3: FAMILY-CENTRED CARE



SESSION LEARNING OBJECTIVES

- Discuss the components of family-centred care and why family-centred care is important.

FAMILY-CENTRED CARE

A child, whether infant, toddler, pre-school, school age or adolescent, is fundamentally different from an adult. The healthcare worker's approach to the child will differ depending on the child's developmental stage as well as the child's particular health issues. In addition, the healthcare worker must assess and care for the child in the context of the family, upon whom the child is dependent.

The healthcare worker partners with the family in order to exchange information and make clinical decisions. Healthcare workers need information and cooperation from the caregiver to know how best to care for the child; in return, the caregiver needs information, guidance and support to care for the child at home. Caregivers may also need guidance and support to access health care for themselves and other family members.

Since children live with and are raised within a family (i.e., they do not live in isolation), the health and well-being of the family has a direct impact on the child. A healthy family fosters the growth and development of a healthy child.

According to the Institute for Family-Centred Care², the core concepts of family-centred care are:

- **Dignity and Respect.** Healthcare workers listen to and honour child and family perspectives and choices. Child and family knowledge, values, beliefs and cultural backgrounds are incorporated into the planning and delivery of care.
- **Information Sharing.** Healthcare workers communicate and share complete and unbiased information with children and families in ways that are affirming and useful. Families and children receive timely, complete and accurate information in order to effectively participate in care and decision-making. Children are included in the information sharing and decision making *in a manner appropriate to age and development*. Ultimately, the goal is collaborating with the child is to guide the child toward becoming an autonomous and responsible partner in their care as the child reaches late adolescence and adulthood.
- **Participation.** Children and families are encouraged and supported in participating in care and decision-making at the level they choose (and which, for the child, is appropriate to age and level of development).

Healthcare workers begin the process of engagement with family by creating a caring environment in which they clearly and effectively communicate health messages and

where they support children and families in developing healthcare knowledge and skills. In this way, the family and the healthcare system work in partnership. The focus of care includes attention to the needs of the child and the family.

This requires both the healthcare worker and the family to communicate openly and honestly. Tips for effective communication include:

- Ask open ended questions.
- Listen to and learn from the caregiver and child.
- Use body language and gestures that show interest.
- Acknowledge caregiver’s and child’s concerns and emotional responses.
- Accept what the caregiver thinks and feels.
- Give relevant information in language the caregiver and child can understand.
- Build confidence and offer support to both the child and caregiver.
- Recognise and praise what a caregiver and child are doing right.
- Avoid words that sound judging.
- Use anticipatory guidance and evaluate understanding (see below).

The caregiver and child’s ability to understand basic goals of primary (well-child) care is critical to the family’s success in participating in, developing and carrying out a plan of care. The evaluation component of the plan’s outcome is tied to this comprehension.

Key areas for evaluation include understanding the following:

- What is meant by healthy growth and development;
- What is and is not healthy in diet, sleep and social habits;
- Different parenting strategies;
- Episodic illness or, if applicable, disease process and course;
- Symptoms and symptom management;
- Knowledge of when and how to seek further care; and
- When it is appropriate to use over-the-counter or traditional remedies.

Exercise 2: Family-centred care case study
Large group discussion

Purpose	<ul style="list-style-type: none"> • To provide participants with an opportunity to discuss case studies that illustrate different concepts related to family-centred care.
Duration	10 minutes
Introduction	<ul style="list-style-type: none"> • After reading the case studies (below) participants will be asked how each case study does or does not illustrate the concept of family-centred care. • Second, the group will identify concrete actions and strategies to better implement a family-centred approach to care.

Case Study 1:

Jewel, a mother of four, has spent two hours in a crowded waiting room with all of her children. She has come to the clinic today because her three-year-old child, Dingane, has had a fever for two days. She is finally ushered into the exam room by a pleasant but uninterested nurse, who takes Dingane’s temperature and weight, tells him to take off his shirt, and leaves the room. A few minutes later the healthcare worker enters the room and asks, “Why are you here today?” Jewel describes the fever and other symptoms; the healthcare worker does not comment. He examines the child without speaking to him, and then says “It’s just a virus. He will be OK.” and leaves.

Case Study 2:

Limpho brought her daughter, Thandie, to the hospital at 19h. Thandie is four-years-old and has had a fever for two days. Limpho was working all day and so wasn't able to bring Thandie to the clinic during the day. She left her other three children in the care of her husband, but she is worried because he has to leave for work at 22h; it is 21h when she and Thandie are called to the exam room. The healthcare worker greets Limpho and Thandie, introduces herself and sits down. She acknowledges the long wait for attention before asking Limpho a number of questions about Thandie's health and current symptoms. She also asks Limpho about her own health and asks how things are at home. Before examining Thandie, she also asks Limpho "Is there anything else you would like to tell me or ask me?" The healthcare worker then examines Thandie closely, explaining some of her findings along the way, such as "It does not look like her ears are infected" and notes "It looks like you've been taking good care of her." When she is finished, she sits again and explains that she thinks Thandie is suffering from a common virus that has been making a lot of children in the area sick. She explains why she thinks this, and describes what she expects ("This virus generally lasts around three days"). She describes how to manage Thandie's symptoms with fluids and a fever-reducer, and shows her how to measure and administer the medicine. Before leaving, she asks Limpho if she has any questions or anything she'd like to discuss. She provides a follow-up appointment for Thandie and tells Limpho about a clinic where she can receive treatment for her own health.



SESSION 1.4: DEVELOPMENTAL APPROACH TO PAEDIATRIC CARE



SESSION LEARNING OBJECTIVES

- Describe what is meant by a “developmental approach to paediatric care”.
- Describe the rationale for performing developmental assessment and surveillance as an integral component of paediatric care.

Exercise 3: Understanding basic developmental milestones Individual work and large group discussion	
Purpose	• To develop an understanding of basic developmental milestones
Duration	10 minutes
Introduction	<ul style="list-style-type: none">• Participants will take five minutes to review and complete Table 1.2: Basic developmental milestones by filling in the approximate age when mastery of the milestone is expected (the column on the right).• Answers will be reviewed with the group in a discussion about how child development is fundamental to paediatric clinical practice.

Table 1.2: Basic developmental milestones

	Milestones	Age
1	First smile	
2	Walks unassisted	
3	Child able to sit without support	
4	Knows own name	
5	Dresses self with minimal help	
6	Rolls over (from back to stomach)	
7	Speaks in two word phrases	
8	Can name major body parts	
9	Stands on one foot	
10	Knows dozens of words; makes 2-3 word sentences	
11	Lifts cup to mouth	
12	Recognises mother’s voice	
13	Follows simple directions	
14	Speaks in detailed sentences; tells short stories	
15	Copies a drawing of circle or cross	

DEVELOPMENTAL APPROACH TO PRIMARY CARE

The supervision of children's health takes a broader approach to care than is necessary for simply detecting disease. Paediatric healthcare workers monitor children's overall *physical, cognitive and psychosocial* development. This serves two primary purposes: 1) To approach the assessment of the child from a developmental framework and to provide developmentally-appropriate guidance to the family and the child as the child grows; and 2) To comprehensively assess the child's health according to developmental standards. Normal development is an important indicator of good health.

The developmental approach to care requires a good background in child development, knowledge of strategies that help caregivers understand and adjust to their child's development, knowledge of how to incorporate development into the overall approach to the child and family with the goal of establishing effective relationships with the child and caregivers. Finally, the developmental approach requires enough knowledge of development to incorporate an assessment of development and ability to recognise abnormalities in the course of routine well-child care.

General developmental principles:

1. **Development is orderly and sequential.** Although children differ in rates and timing of developmental changes, they generally follow certain predictable stages or phases.
2. **The pace of development is specific for each child.** Developmental changes vary considerably. Some children demonstrate early skill in motor coordination, others in language acquisition.
3. **Development occurs in a cephalocaudal (from the head) and proximodistal (from the centre of the body) manner.** For example, infants develop head control before sitting and walking. Similarly, they develop the ability to roll over (a centre-body movement) before developing a pincer grasp (ability to pick up a small object with the fingers).
4. **Development becomes increasingly integrated.** Simple skills and behaviours are integrated into more complex behaviours as the child grows and develops, e.g. from the ability to walk while holding a hand or holding onto furniture, to walking unassisted, to skipping, running and hopping.
5. **Development is affected by the child's internal and external environment.** For example, language development is generally faster in children whose caregivers speak with them frequently. Similarly, children influence their own environment; a child who is very interested in active play (e.g. sports) is likely to develop motor skills related to this type of play more rapidly than a child whose primary interest is in quiet, creative play.
6. **Certain periods are critical.** Critical periods are defined as points of time when developmental advances occur more readily than they do at other times. For example, the capacity of a child to conform to the expectations of school (e.g. sitting quietly, concentrating on a single subject for long periods) does not generally exist in a two-year-old; most (but not all) children are developmentally prepared for this by the age of five or six years. Caregiver expectations regarding child behaviour or child development can sometimes be out of sync with normal development, so it is helpful to be able to provide information on norms with accuracy.
7. **Growth and development is a dynamic process influenced by many factors.** Development is a continual process, but it is often not smooth. Phases are marked by periods of rapid change and plateaus of relative stability.

The incorporation of developmental norms and expectations into the interaction with and physical exam of children also enhances the ability to conduct a thorough assessment because it is more likely that the child will cooperate; it also supports the establishment of a good relationship with the child and family. A developmental approach to the examination also serves as an opportunity to discuss developmental norms, advances in the child’s development and to provide guidance on coping with developmental changes. Table 1.3: Tips for interacting with children during the health exam below offers tips for a developmental approach to interacting with children.

Table 1.3: Tips for interacting with children during the health exam

	Characteristics	Developmental approach to care
Newborn to 1 year	<ul style="list-style-type: none"> Attends to caregiver Attends to sounds, responds to familiar voice Withdraws, ignores, startles or cries in response to bright lights, painful touch, unpleasant odours, loud noises Level of active response is proportional to the intensity of the aversive stimulation 	<ul style="list-style-type: none"> Assess caregiver’s attentiveness and awareness of the baby’s development. Do as much of the exam as possible with the infant in the caregiver’s lap. Do invasive procedures and things that will make the baby cry LAST (i.e. ears, mouth).
1–2 years	<ul style="list-style-type: none"> Language skills increasing Learning to control inappropriate behaviours (such as biting, hitting and screaming) Can sometimes restrain themselves when told “no” Difficulty controlling themselves when they are tired, hungry or upset, which is when tantrums are likely to occur 	<ul style="list-style-type: none"> Allow child to sit or stand close to the caregiver during exam. Start with the least invasive elements: <ul style="list-style-type: none"> Inspect skin, musculo-skeletal and abdomen Perform neurological exam Listen to heart and lungs Assess Head, Eyes, Ear, Nose, Throat (HEENT)
2–5 years	<ul style="list-style-type: none"> Able to describe a recent experience Knows, or beginning to understand the difference between fantasy and reality Engages in fantasy play May make up fanciful stories Listens to stories Generally shy/wary of adults 	<ul style="list-style-type: none"> Talk to the caregiver initially. Allow child to play in the room while you get the history from the caregiver. Once the history is finished, turn your attention to the child, smile, and address child directly, “Hi and how are you; so what are you playing with over here?” Start exam with least invasive elements, as described above.

5–12 years	<ul style="list-style-type: none"> • Inquisitive, generally trusting of adults • Interested in their body and science • Fairly well-developed sense of humour • Likes games • Wants adult approval 	<ul style="list-style-type: none"> • Include child in the history taking process. Engaged children are generally more cooperative. • Ask child questions; allow caregiver to answer if child remains quiet or seems distressed. • Give child simple explanations of what you are doing and why. • Make a positive comment on particular areas of expertise of the child (i.e. what does the child enjoy doing, what is the child really good at doing?). • If interested, allow them to listen to their heart, abdomen.
13–18 years	<ul style="list-style-type: none"> • Tends to avoid seeking health care; may be intimidated by adult health care settings but embarrassed by paediatric settings • Experiencing puberty; may want privacy from caregiver, may worry about confidentiality; may feel more comfortable with clinician of the same gender • May be idealistic, and critical of adult behaviours and opinions • Desire for autonomy and independence • Both resents and wants adult guidance 	<ul style="list-style-type: none"> • Communication with adolescents can be problematic—silence, one word answers are common; be patient. • Demonstrate tolerance for their ambivalent behaviour. • Recognise the importance of peer relationships and influences. • Recognise that the degree of intimacy with the adolescent may leave them feeling vulnerable. • Be respectful of their struggle for autonomy. • Treat them as an adult — with full explanations and expectation of cooperation. • Provide choices whenever possible — to allow them a sense of autonomy. • Do not ask sensitive questions at the beginning of the interview, this is the time to establish rapport. Wait until the end of the interview to ask “difficult questions” when you have established a trusting relationship. • End the encounter on a positive note, remark on something they have done or are doing that has impressed you. • Encourage them to follow through on the plan that you have discussed. • Let them know that you want them to do well, and that you are interested in finding out if the plan works for them.

Developmental surveillance:

With time, healthcare workers develop an intuitive sense about the general ages at which particular milestones should occur. Experience also brings an appreciation of individual differences in children, families and specific cultural or ethnic groups. However, it is

important to note that many variables can make it difficult to appreciate intuitively all the various developmental skills of any particular child. For example, discrepancy between size and age can result in an inaccurate estimate of the child's development. More specifically, if the child appears much younger than the chronological age, the healthcare worker may tend to evaluate the child by a standard of a younger child. For example, if the child is nine months of age but more closely resembles a four-five month old child, the clinician may not be concerned that the child is unable to sit without support. In this case, the clinician may be missing a problem that requires evaluation and possible intervention.

Developmental surveillance refers to the practice of incorporating an assessment of development as a routine component of every well-child visit.

This type of inconsistency is understandable and common. For this reason, a standard approach to *developmental surveillance* is incorporated into each well-child visit. Surveillance encompasses all primary care activities. Strategies include:

- Caregiver interview
- Child interview
- Observation of child's behaviour
- Observation of child-parent interaction
- Physical examination

Developmental screening is often used interchangeably with *developmental surveillance*; however, in many settings, *developmental screening* refers to a longer, more comprehensive assessment.

Emphasis should be placed on *monitoring development over time*, within the context of the child's overall well-being, rather than viewing development during an isolated testing session. Development among children is exceptionally varied. A two-year-old girl may use full complex sentences, whereas her three-year-old friend relies on three-word directives (e.g., "want milk now") to get what he desires. Both can be normal, but the difference may be striking and may concern the caregiver. The best approach is to keep in mind certain "red flags" related to normal child development; "red flags" refers to specific symptoms of developmental delay that require referral for additional assessment. These are included in the screening tools described below.

Road to Health: Developmental Screening

South Africa's Road to Health booklet was recently revised, as seen in Appendix 2: Road to Health Booklet, and now includes a developmental screening tool that provides a guideline for monitoring the development of children from the age of six weeks through 5-6 years. The tool requires a basic assessment of hearing; vision; gross and fine motor skills; and communication. For each assessment, a question is provided for the healthcare worker to direct to the caregiver. For example, the clinician examining a 14-week-old-child asks the caregiver, "Does your child respond to sounds by stopping sucking, or by blinking or turning his head?" The tool also specifies when and where to refer the child if abnormalities are suspected.

A sample of a more detailed standard developmental surveillance tool is shown in Appendix 4. The tool provides specific milestones arranged by domains (e.g. physical, gross and fine motor, language and hearing, vision, psycho-social and mental health). Using this tool, the healthcare worker can ask the caregiver about specific milestones, observe and examine the child. The developmental surveillance can begin by asking probing, open-ended questions of the caregiver to elicit further information. Examples

are: “Do you have any concerns about your child’s development? Behaviour? Learning?” This can be followed by asking more specific information, according to developmental standards, along with observing and examining the child. Document the results on the form so that progress can be followed over time.

This is an opportunity to share information on developmental progress with the caregiver and with the child as the child ages. It is also an opportunity to introduce anticipatory guidance — that is, information for the caregiver and child about expected changes in development over time and how these changes might impact the child and caregiver. More information on anticipatory guidance is provided later in this module.

Developmental delay and HIV:

It is critical to be aware that developmental delay is common in children with untreated HIV disease. A child of unknown HIV status with developmental delay *should have an HIV test* as part of the evaluation. The new onset of developmental red flags in a child who is known to have HIV is cause for immediate concern; an evaluation for opportunistic infection and/or advancing HIV disease and need to initiate or change HIV treatment is urgently required.

Exercise 4: Developmental evaluation case studies Small group work: participants break into groups of 3 or 4	
Purpose	<ul style="list-style-type: none"> To provide participants with an opportunity to practise developmental assessment through the use of case studies
Duration	30 minutes
Introduction	<ul style="list-style-type: none"> Participants will be asked to divide into groups of three or four people and each will be assigned one of three case studies that appear below. Working within their small groups, participants should compare the child in their case study to the screening tools (Appendix 2: Road to Health Booklet, Table 1.2 and Table 1.3) and respond to the questions. Small group discussions should take about 15 minutes, during which time someone from each group should record their group’s answers on flipchart paper in preparation for the large group discussion.

Exercise 4: Developmental evaluation case studies	
Case Study 1: Nomble	
<p>Nomble is a 10-week-old infant who is feeding and growing normally, is responsive to sound, seems to focus on her mother’s face and is vocal. But her mother expresses concern because Nomble is still not able to support her head well and has to be positioned and supported carefully. She turns her head when lying prone, but is unable to lift her head when placed on her tummy.</p> <ol style="list-style-type: none"> What other questions do you have for Nomble’s mother? What would you look for on the physical examination? What advice and information might you give the caregiver? 	
Case Study 2: Lesedi	
<p>Lesedi is a six-month-old baby who you are seeing for the first time today. He has been cared for by his maternal aunt since birth because his mother died shortly after he was born. There are five other children in the home, along with two other adults. Because Lesedi’s aunt works during the day, he is cared for by the neighbour in the morning and</p>	

by the older children once they return from school. The aunt reports that Lesedi has not received vaccinations yet because she has not had time to bring him to clinic. She does not express any particular worries about Lesedi's growth or development, but her neighbour insisted that she bring Lesedi to the clinic because she thinks something is wrong and that Lesedi seems "slow".

1. What approach would you take with Lesedi's caregiver? What questions would you ask?
2. What would you look for in observing Lesedi and on the physical examination?
3. If your assessment is that there are indications of developmental delay, what might be some of your next steps?

Case Study 3: Kopano

Kopano is a three-year-old boy you are seeing for the first time because he recently moved to the area. He is accompanied by his mother and an infant sibling. His mother expresses concerns about his speech. He is very verbal but it is extremely difficult for people to understand him. Because she spends most of her time with him, his mother has learned to "read" his expressions and non-verbal cues and can generally understand what he is trying to say but others have great difficulty. Moreover, he often does not grasp what others are saying to him.

1. What questions do you have for Kopano's mother?
2. What would you look for in observing Kopano and on the physical examination?
3. Do you think what she has reported is a cause for concern? If so, what might be some of your next steps?



SESSION 1.5: GROWTH MONITORING AND ASSESSMENT



SESSION LEARNING OBJECTIVES

- Discuss rationale for monitoring growth.
- Describe protocol for obtaining child measurements.
- Demonstrate plotting measurements on growth charts.
- Discuss interpretation of growth data.

GROWTH MONITORING

NUTRITION AND GROWTH MONITORING

Growth monitoring is a part of each clinic visit for every child. Growth monitoring, which includes measures of height, weight and head circumference, is critical for the prevention and early identification of growth faltering. Since growth problems often precede a medical diagnosis, growth issues may be indicative of medical problems or disease progression. Growth problems may also alert clinicians to social problems that may otherwise be overlooked (e.g. family dysfunction, caregiver illness or economic barriers to regularly securing adequate food).

Growth faltering (failure to thrive) involves failure to meet expected potential in growth and other aspects of well-being.

An adequate rate of growth is the hallmark of good nutritional status in children; growth problems may be indicative of acute and/or chronic health problems. Growth monitoring provides an opportunity for the healthcare worker to intervene to prevent serious growth problems.

Growth faltering is common in children living with HIV. Provider-initiated HIV testing and counselling is an important part of the evaluation of the child of unknown HIV status with growth faltering. For children known to be HIV-infected, growth faltering may be a sign of disease progression. This may signal a need to initiate or change ART. Given the serious nature of inadequate weight gain in children who are HIV-exposed or HIV-infected, caregivers should be encouraged to request health care promptly if they think their child is losing weight or not gaining weight sufficiently, even if it is not yet time for their child's routine growth monitoring visit.

GROWTH AND GROWTH MONITORING

Growth is a term used to describe the process of growing — the increase of size and development from a simple to a more complex form. Growth is not simply a uniform process of becoming taller or larger; it involves changes in shape and body composition. For example, the majority of brain cells are present by six months of age. By the time the infant is one year of age, the brain has achieved nearly two thirds of its final size, and by two years, four fifths of its final size. The skeleton, by contrast, continues to be formed

until 15-20 years of age — making it vulnerable to factors adversely affecting growth throughout childhood and adolescence. Undernutrition in the first two years of life can result in irreversible damage to a child. This time in a child’s life should be considered the “window of opportunity” to establish good nutrition and avoid irreversible damage.

Growth monitoring is critical for the evaluation of children’s health and nutritional status and is the single most important preventive procedure that healthcare workers can conduct, especially for children living with HIV. Growth monitoring can be carried out regularly at minimal cost, and when implemented, the benefits of monitoring growth are well worth the time and effort.

Anthropometry is the study concerned with the measurements of the proportions, size and weight of the human body.

The interpretation of growth is based on a number of indicators.

Growth Indicator	Description
Weight-for-age (W/A)	<ul style="list-style-type: none"> Universally used and is the easiest indicator to use when the child’s age is known. Reflects body weight relative to the child’s age on a given day W/A screens for underweight for age.
Length/height-for-age	<ul style="list-style-type: none"> Reflects attained growth in height. Screens for stunting, which implies long term inadequate nutrients and calories. Indicates long-term or chronic nutritional problems.
Weight-for-length/height	<ul style="list-style-type: none"> Indicator of weight relative to height. Reliable growth indicator even when age is not known and is an indicator of wasting and overweight/obesity Wasting is usually caused by a recent illness or food shortage, although chronic undernutrition or illness can also cause this condition.
Head circumference (HC)	<ul style="list-style-type: none"> Defined as length around the largest part of the head Provides clues about brain development
Mid-upper arm circumference (MUAC)	<ul style="list-style-type: none"> For a child aged 6-60 months, a length around the middle of the upper arm that is less than 115 mm is a reliable indication of severe acute malnutrition.
Body mass index (BMI) and BMI-for-age	<ul style="list-style-type: none"> Useful to screen for overweight and obesity. BMI-for-age chart and weight-for-length/height chart tend to show very similar results.

KEY STEPS IN GROWTH MONITORING

Each of the key steps in growth monitoring will be discussed in this section:

- Record/confirm the child’s name, sex and date of birth (record new demographic information in the child’s Road to Health booklet).
- Determine the child’s age as of today’s date.
- Make a visual assessment of the child (e.g. does the child appear thin, fat, active, lethargic, anaemic) and observe for signs of marasmus or kwashiorkor.
- Weigh the child.
- Measure the child’s length or height.

- Measure the child’s HC.
- Measure the child’s MUAC. (Discussed later in this Session.)
- Record results on the Road to Health booklet and the head circumference growth charts. Both are available in Appendix 2.
- Evaluate the results.

VISUAL ASSESSMENT³

When a child is undressed for weighing, make a visual assessment of the child. Does the child appear thin, fat, active or lethargic? Is the child bright eyed and attentive? Or does she or he appear ill, with dull hair and eyes? Does the child have signs of anaemia — skin colour seems unusually pale, particularly in the nails, lips and inside of the eyelid. Take note of any clinical signs of severe undernutrition.

It is important to recognise signs of marasmus and kwashiorkor since they require urgent specialised care that may include special feeding regimens, careful monitoring, antibiotics, etc. Regardless of their weight, children with these syndromes should be referred for urgent care.

MARASMUS (NON-OEDEMATOUS MALNUTRITION)

In this form of severe malnutrition, the child is severely wasted and has the appearance of “skin and bones”. The child’s face looks like an old man’s because of loss of facial subcutaneous fat, but the eyes may be alert. The ribs are easily seen. There may be folds of skin on the buttocks and thighs that make it look as if the child is wearing “baggy pants.” Weight-for-age is likely to be very low.

Figure 1.1: Marasmus



Source: WHO (2008)⁴

KWASHIORKOR (OEDEMATOUS MALNUTRITION)

In this form of severe malnutrition, the child's muscles are wasted, but the wasting may not be apparent due to generalised oedema (swelling from excess fluid in the tissues). The child is withdrawn, irritable and obviously ill. The child will not eat. The face is round (because of oedema) and the hair is thin, sparse and sometimes discoloured. The skin has symmetrical discoloured patches, which later cracks and peels off. A child with kwashiorkor will usually be underweight, but the oedema may make the child appear overweight.

MARASMIC KWASHIORKOR

Kwashiorkor and marasmus are distinct conditions, but in communities where both occur, cases of severe undernutrition often have features of both. For example, a child may have severe wasting as seen in marasmus, along with the skin and hair changes or oedema typical in kwashiorkor.

OEDEMA OF BOTH FEET

Oedema of both feet is a sign that a child needs referral, even if other signs of kwashiorkor are not present. The oedema must appear in both feet. (If the swelling is in only one foot, it may just be a sore or infected foot.) To check for oedema, the healthcare worker should grasp the foot with his/her hand and gently press the thumb into the top of foot for a few seconds. The child has oedema if a pit (dent) remains in the foot when the thumb is lifted. A child with oedema of both feet is usually severely underweight, but this may not be obvious because of the weight of the oedema.

Figure 1.2: Oedema of the feet⁵



WHO (2008)

If a child has marasmus, kwashiorkor, or oedema of both feet, make note in the Road to Health booklet. When plotting the child's measurements, indicate on the graphs, near the relevant points, if the child has oedema. Refer the child for specialised care.

MEASURING WEIGHT⁶

There are a few things to consider when weighing a child:

- Handle the child gently so as not to frighten the child.
- Explain what you are doing to the caregiver, including why and how you are taking the weight and how she might assist you.
- Equipment must be maintained in good and accurate working order — ensure scales are calibrated daily and serviced frequently (as per clinic SOP).

Children less than two years of age:

- Until the age of two years, children should ideally be weighed nude, with nappy off, on baby scales. A weight taken without clothing is most accurate.

- Let the caregiver undress the child. The caregiver should hold the child during much of the process, only letting go for the measurement.
- If removing the nappy is not possible, or if the infant will not stay still enough to take an accurate measurement, the caregiver and baby can be weighed together — see the procedure in the next section “Electronic scale”.

Children over two years of age:

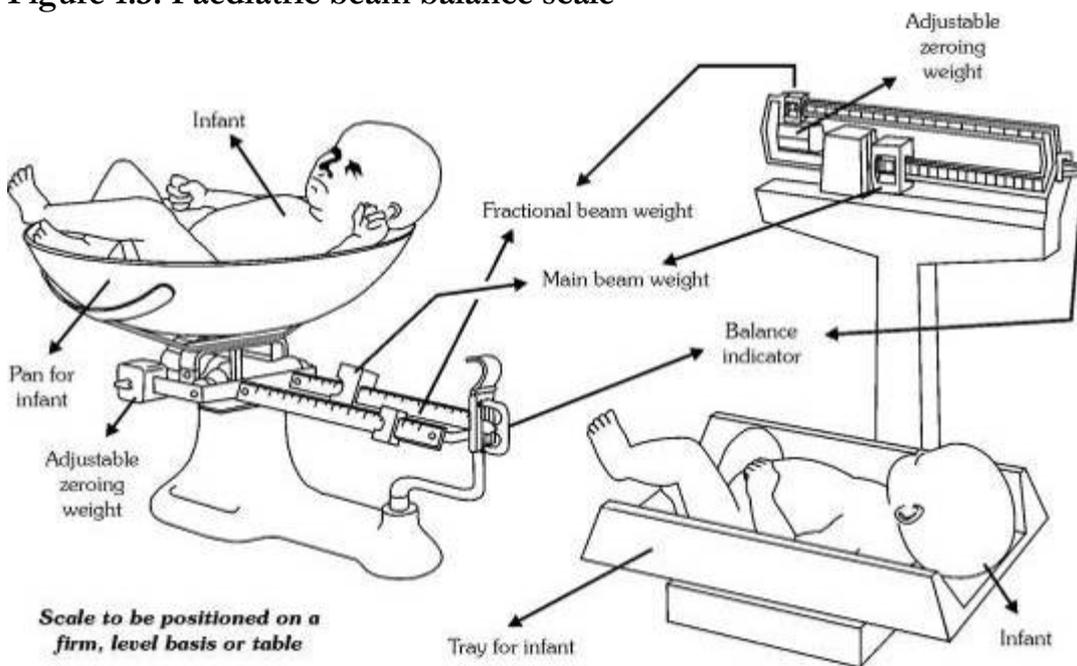
- Children should be weighed in light clothing, without shoes on a standing or sitting scale.
- Disabled children unable to sit or stand should be weighed in light clothing on a hoist scale, if available. If not available the parent and child can be weighed together as per the procedures below.

ELECTRONIC SCALE

An electronic scale can be used in the absence of a paediatric beam scale. The procedures for this include

- Take the weight of the caregiver and child (the child should have minimum clothing, and blanket removed).
- Take the weight of the caregiver.
- “A” (Caregiver + child’s weight) minus “B” (caregiver’s weight) = weight of child

Figure 1.3: Paediatric beam balance scale



WHO (2008)⁷

MEASURING LENGTH AND HEIGHT⁸

Depending on a child's age and ability to stand, measure the child's length or height. A child's length is measured lying down (recumbent). Height is measured standing upright.

- If a child is less than two years old, measure length while the child is lying down.
- If the child is aged two years or older and able to stand, measure standing height.

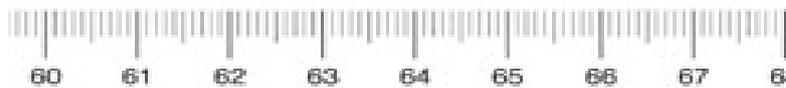
LENGTH

- Use a length board placed on a flat, stable surface as seen in Figure 1.4: Measuring length. Cover the length board with a thin cloth or paper.
- Explain to the caregiver that he or she will need to place the baby on the length board herself and then help to hold the baby's head in place while you take the measurement. Show the caregiver where to stand when placing the baby down, i.e. opposite you, on the side of the length board away from the tape. Also show the caregiver where to place the baby's head (against the fixed headboard) so that he or she can move quickly and surely without distressing the baby.
- When the caregiver understands your instructions and is ready to assist, move quickly before the baby becomes agitated.
- Ask the caregiver to lay the child on his or her back with the head against the fixed headboard, compressing the hair.
- Quickly position the head so that an imaginary vertical line from the ear canal to the lower border of the eye socket is perpendicular to the board. (The child's eyes should be looking straight up.) Ask the caregiver to move behind the headboard and hold the head in this position.
- Check that the child lies straight along the board and does not change position. Shoulders should touch the board, and the spine should not be arched. Ask the caregiver to inform you if the child arches the back or moves out of position.
- Hold down the child's legs with one hand and move the footboard with the other. Apply gentle pressure to the knees to straighten the legs as far as they can go without causing injury. Note: it is not possible to straighten the knees of newborns to the same degree as older children.
- If a child is extremely agitated and both legs cannot be held in position, measure with one leg in position.
- While holding the knees, pull the footboard against the child's feet. The soles of the feet should be flat against the footboard, toes pointing upwards. If the child bends the toes and prevents the footboard from touching the soles, scratch the soles slightly and slide in the footboard quickly when the child straightens the toes.
- Read the measurement, as shown in Figure 1.5: Measuring tape, and record the child's length in centimetres to the last completed 0.1 cm in the chart.
- If a child aged two years or older cannot stand, measure length and subtract 0.7 cm to convert it to height.

Figure 1.4: Measuring length



Figure 1.5: Measuring tape



Source: WHO (2008)⁹

Measuring tape: The numbers and longer lines indicate centimetre markings. The shorter lines indicate millimetres.

HEIGHT

- Ensure that the height board is on level ground (Figure 1.6: Measuring height). Check that shoes, socks and hair decorations have been removed.
- Ask the caregiver to assist you and kneel to get down to the level of the child.
- Help the child to stand on the baseboard with feet slightly apart. The back of the head, shoulder blades, buttocks, calves, and heels should all touch the vertical board. This alignment may be impossible for an obese child, in which case, help the child to stand on the board with one or more contact points touching the board. The chest area should be balanced over the waist, i.e., not leaning back or forward.
- Ask the caregiver to hold the child's knees and ankles to help keep the legs straight and feet flat, with heels and calves touching the vertical board. Ask her to focus the child's attention, soothe the child as needed, and inform you if the child moves out of position.
- Position the child's head so that a horizontal line from the ear canal to the lower border of the eye socket runs parallel to the baseboard. To keep the head in this position, hold the bridge between your thumb and forefinger over the child's chin.
- If necessary, push gently on the tummy to help the child stand to full height.

Figure 1.6: Measuring height



Source: WHO (2008)¹⁰.

- Keeping the head in position, use your other hand to pull down the headboard to rest firmly on top of the head and compress the hair.
- Read the measurement (the last line you can actually see) and record the child's height in centimetres to the last completed 0.1 cm.
- If the child whose height you measured is less than two-years-old, add 0.7 cm to the height and record the result as length.

MEASURING HEAD CIRCUMFERENCE¹¹

It is important to measure head circumference at every visit until 24 months of age. Head circumference is the last measurement to be affected in a malnourished infant. This measure reflects brain size and is used to screen for potential developmental and health problems — including encephalopathy in HIV-infected infants. Refer for assessment of health or developmental risk if head circumference measurements suggest growth faltering or if a child measures above the 3 line or below the -3.

PROCEDURE

- Use a paper measuring tape to avoid stretching as can happen with cloth tape.
- Remove any braids, “plaits”, barrettes or other hair decorations that will interfere with the measurement.
- Allow the infant or child to sit comfortably in the arms or lap of a caregiver.
- Position the tape just above the eyebrows, above the ears, and around the biggest part of the back of the head, as seen in Figure 1.7: Measuring head circumference. The goal is to locate the maximum circumference of the head.
- Pull tape snugly to compress the hair and underlying soft tissues.
- Read measurement is to the nearest 0.1 cm and record.
- Reposition tape and re-measure head circumference. If measurements do not agree within 0.2 cm, then reposition tape and re-measure a third time. Record the average of the two measures in closest agreement.

Figure 1.7: Measuring head circumference



Source: Royal College of Paediatrics and Child Health. (2009)¹²

MEASURING MID-UPPER ARM CIRCUMFERENCE¹³

While not a required part of routine growth monitoring, measuring mid-upper arm circumference can be a reliable guide to identifying severe wasting. Children aged 6-60 months with a MUAC under 115 mm are a much greater risk of death compared to those with a MUAC above 115mm. MUAC is less accurate than weight-for-height for measuring current malnutrition (wasting) and malnutrition over time. However, it is an excellent tool for rapid screening, when applicable.

PROCEDURE

- Determine the mid-point between the left elbow and the left shoulder.
- The arm should be relaxed and hanging at the side of the body. Place the tape measure around the arm.
- Measure the MUAC while ensuring that the tape is neither too tight nor too loose.
- Read the measurement to the nearest 0.1 cm or 1mm from the tape and record.
- If using a 3-colour tape: Green zone means the child is properly nourished; Yellow zone means that the child is at risk of malnutrition; Red zone means that the child is acutely malnourished. Check for clinical signs of kwashiorkor or marasmus if the child is in the yellow or red zone.
- If using a 4-colour tape: Green zone means the child is properly nourished; Yellow zone means that the child is at risk of malnutrition; Orange zone means that the child is moderately malnourished; Red zone means that the child is severely malnourished; clinical signs of kwashiorkor or marasmus may be apparent.

GROWTH CHARTS¹⁴

GROWTH CHARTS —HEAD CIRCUMFERENCE

A chart for recording and plotting head circumference is not included in the Road to Health booklet. Therefore, the chart provided by the WHO is recommended. The HC growth charts from WHO are included at the end of Appendix 2: Road to Health Booklet **Error! No bookmark name given.**, but copies downloaded directly from the WHO website¹⁵ are preferred, as the quality of the copies will be better. Select the appropriate growth chart based on the child's sex and age at the time of visit.

PLOTTING WEIGHT, LENGTH/HEIGHT AND HEAD CIRCUMFERENCE

Plotting is necessary to assess whether the child is growing or gaining weight at an adequate rate. Growth is evaluated at each visit, but it is critical to evaluate the growth data at a specific visit in relation to previous data, as will be discussed later in this section.

The steps to plot weight-for-age, weight-for-length/height and head circumference are in Table 1.4: Plotting growth charts.

Table 1.4: Plotting growth charts

Step 1	Obtain measurement <ul style="list-style-type: none">• Obtain accurate weights, length/height and head circumference. When weighing and measuring children, follow procedures that yield accurate measurements and use equipment that is well maintained.
Step 2	Select the correct growth chart <ul style="list-style-type: none">• Select the appropriate chart based on sex of the child. The weight and length/height growth charts can be found in the Road to Health booklet. Head Circumference can be requested through your clinic manager (or downloaded from the WHO website).
Step 3	Complete the necessary charts <ul style="list-style-type: none">• Ensure the child's Road to Health booklet or other applicable medical chart is completed with the appropriate demographic, social and clinical information.

Step 4	<p>Record measurement and date</p> <ul style="list-style-type: none"> Record today's date, child's exact age today, weight and length/height on page 2 or 3 of the Road to Health booklet. Weight: record the child's weight and today's date in the space corresponding to the child's age in months along the lower horizontal axis near the bottom of the appropriate page in the Road to Health booklet (page 14). Length/height: although there is no dedicated space for it, if it makes it easier to plot (Step 5), you may record the child's length/height and today's date in the margin next to the Age axis on page 15 or the Weight axis on page 16 in the Road to Health booklet. Head circumference: although there is no dedicated space for it, if it makes it easier to plot (Step 5), you may record the child's head circumference and today's date in the margin just below the child's age in weeks/months below the lower horizontal axis of the head circumference-for-age growth chart.
Step 5	<p>Plot the measurement</p> <ul style="list-style-type: none"> Weight and head circumference: <ul style="list-style-type: none"> Find the vertical line that corresponds to the child's age (in week, months or years) using the ages listed along the lower horizontal axis. Use a straight edge ruler to draw a vertical line up from that point. Find the weight or HC measurement on the vertical axis (on the right or left side of the chart). Use a straight edge ruler to draw a horizontal line across from that point until it intersects the vertical line. Make a small dot where the two lines intersect. Weight-for-length/height: <ul style="list-style-type: none"> Find the vertical line that corresponds to the child's length/height in centimetres using the centimetres listed along the lower horizontal axis. Use a straight edge ruler to draw a vertical line up from that point. Find the weight measurement on the vertical axis (on the right or left side of the chart). Use a straight edge ruler to draw a horizontal line across from that point until it intersects the vertical line. Make a small dot where the two lines intersect.
Step 6	<p>Compare</p> <ul style="list-style-type: none"> Compare today's measurement with the measurements from previous visits to identify any major shifts in the child's growth pattern and the need for further assessment.
Step 7	<p>Interpret the plotted measurements</p> <ul style="list-style-type: none"> Children who are well and healthy should gain weight at a predictable rate and follow a path parallel to the 0 line (median). The line labelled "0 line (Median)" in the middle of the growth chart is the median line which is, generally speaking, the average. The other lines (2 or 3 line and the -2 and -3 lines), indicate distance from the average. These lines as well as the median are also referred to as z-score lines. About 95 out of 100 children's measurements will fall between the 2 and -2 lines. The growth curve of a normally growing child will usually follow a z-score line that is roughly parallel to the median. The track may be above or below the median.

Step 8	<p>Evaluating growth</p> <ul style="list-style-type: none"> Any quick change in trend (the child’s curve veers sharply upward or downward from its normal track) should be investigated to determine its cause and remedy any problem. A flat line indicates that the child is not growing. This is called stagnation and should also be investigated. A growth curve that no longer follows the line that the child normally follows, or an inconsistent pattern, may indicate risk. Interpret risk based on the weight status of the child according to the growth chart (see also Table 1.5) and by how sharply the child’s growth pattern line rises or falls on the chart.
---------------	--

INTREPRETING GROWTH CHARTS

Identifying the signs of growth faltering and intervening at an early stage is crucial to ensuring the health of children with HIV. Early weight loss or inadequate rate of growth can be identified by observing the child’s weight, length/height and HC at a single point in time and over time. If any single measurement falls below the – 1 z-score line (whether weight-for-age or weight-for-length/height) should be further assessed and an intervention developed based on a nutrition assessment. In certain cases it is possible that a child may be following the -1 or -2 growth curve. While this child may need increased monitoring, it is possible that as long as this child remains on their growth curve, and continues growing at a steady rate, the child may be developing at an acceptable pace. What is problematic is if a child who has previously been on a higher growth curve shows a decline or flattening of their weight. Children who fall below the -3 line require hospitalisation.

Note that this module does not fully address nutritional assessment and intervention. Detailed information on growth and nutrition is covered in Module 5, including growth and nutrition issues in the context of HIV infection.

Table 1.5: Interpreting points on growth charts

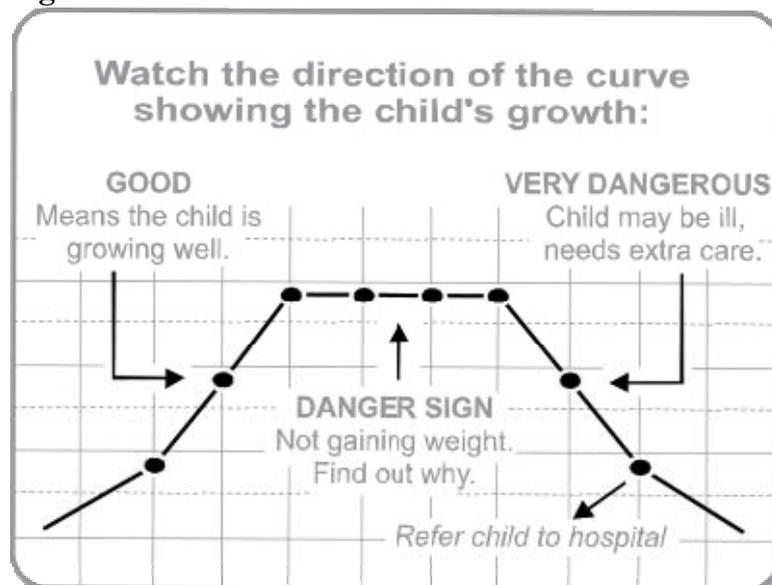
z-score	Growth indicators			
	Weight-for-age	Weight-for length/height	BMI-for age	Head circumference
Above 3	See note 1	Obese	Obese	Macrocephaly
Above 2		Overweight	Overweight	Possible macrocephaly
Above 1		Possible risk of overweight (see note 2)	Possible risk of overweight (see note 2)	
0 (median)				
Below – 1				
Below – 2	Underweight	Wasted	Wasted	Possible microcephaly

Below – 3	Severely underweight (See note 3)	Severely wasted	Severely wasted	Microcephaly
<p>Notes:</p> <ol style="list-style-type: none"> 1. A child whose weight-for-age falls in this range may have a growth problem, but this is better assessed from weight-for-length/height or BMI-for-age. 2. A plotted point above 1 shows possible risk. A trend towards the 2 z-score line shows definite risk. 3. This is referred to as very low weight in IMCI training modules. (Integrated Management of Childhood Illness, In-service training. WHO, Geneva, 1997). <p style="text-align: center;">Measurements in the shaded boxes are in the normal range.</p>				

GROWTH FALTERING

Growth faltering refers to the rate of growth: A flat or falling growth curve in a child is abnormal and indicates growth faltering, even if the child is not underweight. When weight “falters” or the growth curve “flattens” and is no longer parallel to the z-score line, there is a need for clinical and nutritional intervention, shown in **Figure 1.8** and (in the last three of four growth charts) in Figure 1.9.

Figure 1.8: Growth curve indicators



Source: Road to Health booklet (Appendix 2, page 14)

Exercise 5: Growth faltering plotting exercise Large group discussion: participants stay in large group	
Purpose	<ul style="list-style-type: none"> To review plotting on the Road to Health growth chart and to identify growth faltering
Duration	15 minutes
Introduction	<ul style="list-style-type: none"> Participants will need to refer to Appendix 2: Road to Health Booklet and Table 1.4: Plotting growth charts to complete this exercise on growth faltering. Working on their own, participants should plot baby Naledi's growth on the correct Road to Health growth chart. <ul style="list-style-type: none"> Birth weight 2.5kg 2 months 4kg 4 months 5.5kg 6 months 6.7kg 8 months 7kg 10 months 6.8kg Participants will be asked to describe Naledi's growth trend from birth to 10 months of age.



SESSION 1.6: CHILD HEALTH HISTORY



SESSION LEARNING OBJECTIVES

- Demonstrate obtaining the family, birth and child health history.
- Conduct interval history.

CHILD HEALTH HISTORY

It is frequently said, and often true that, 90% of the determination of the diagnosis will come from the history, 7% will come from the physical exam (which should be done to confirm your assessment) and 3% from the diagnostic tests. It is essential that healthcare workers are skilled in the most effective ways to obtain an accurate health history from the caregiver and (for older children) from the child. A unique database of health information created for each child will continue to inform care and treatment over time and will improve the quality and consistency of care.

It may not be possible to review all these areas in the course of a single visit. Based on the presenting issues of the child, the healthcare worker should determine which areas should be covered, given existing time limitations. Collect the highest priority information first, but continue to “fill in” missing information in subsequent visits. The Road to Health booklet is an excellent guide for collection of high-priority information. However, clinicians should not limit themselves to the Road to Health data. Table 1.6, as seen below, covers the additional important information that should be obtained by the healthcare worker.

Table 1.6: Child health history

Contact information		
For the Child <ul style="list-style-type: none"> • Name • Date of Birth 	For the Caregiver <ul style="list-style-type: none"> • Name • Address or directions to the household • Telephone numbers • Relationship to child (parent, step-parent, guardian) 	<ul style="list-style-type: none"> • Other primary caregivers • Employment status, type of work, contact information at work
Medical history		
<ul style="list-style-type: none"> • Neonatal history (pregnancy, delivery, birth weight) • Maternal HIV status, PMTCT • Illnesses, infectious diseases and chronic health conditions • Injuries, hospitalisations, or surgeries 	<ul style="list-style-type: none"> • Medications • Folk remedies and traditional/cultural health practices • Medical history of biological parents • TB contacts 	

<ul style="list-style-type: none"> • Visits to other clinics, healthcare workers, traditional healers • Immunisations 	
Nutrition	
<ul style="list-style-type: none"> • Infant feeding method (breast, bottle, animal milk, mixed feeding); if breastfed, for how long? • Eating habits • Food allergies 	<ul style="list-style-type: none"> • Vitamins and other supplements • Ability to secure adequate food/use of food assistance programs or community organisations for nutrition support
Developmental and behavioural history	
Developmental milestones tick sheet shown in Appendix 4: .	
Review of systems	
<ul style="list-style-type: none"> • General health (Constitutional) • Eyes • Ears, nose, mouth, throat • Cardiovascular • Respiratory • Gastrointestinal • Genitourinary • Musculoskeletal • Skin/breasts 	<ul style="list-style-type: none"> • Neurological • Psychiatric • Endocrine • Haematology/lymphatic • Allergy/immunology • Sleep problems or concerns • Sample medical records form for children shown in Appendix 5.
Family history	
<ul style="list-style-type: none"> • Significant health issues of biological family members, including congenital issues, mental health problems 	<ul style="list-style-type: none"> • History of alcohol/substance abuse in the home • Family/household transitions (birth, death, marriage, divorce, loss of income, move, incarceration)
Social history	
<ul style="list-style-type: none"> • Race/ethnicity • Religion • Primary language spoken at home • Household composition (number of adults and number of children living in home) • Caregivers' relationship status (marriage or other single-partner, multiple partners, single, etc.) 	<ul style="list-style-type: none"> • Caregiver occupation • Caregiver level of education • Caregiver general health • General health of other household members • Child care (other primary caregivers or external child care) • Child's school performance • Child's peer relationships
Environment	
<ul style="list-style-type: none"> • General home environment • Recent travel • Exposure to infectious disease (e.g. TB) • Exposure to smoking, tobacco use, passive smoke 	<ul style="list-style-type: none"> • Exposure to hazards (lack of potable water, excessive dust or other air pollution) • Exposure to violence (in the home, school or neighbourhood) • Exposure to substance abuse

When asking questions, it is important to include open-ended questions, such as those shown in Table 1.7. For example, instead of asking, “Are you breastfeeding?” ask, “Let’s talk about what the baby is eating. Can you tell me about what she takes in a typical day?” The disadvantage of limiting the interview to closed ended question is that it is too easy for the client to respond with a “yes” or “no” or give you the response they think you want to hear. If you ask open-ended questions, you are more likely to get an unbiased response.

Table 1.7: Examples of open-ended questions

Close-ended question	Open-ended equivalent
Did your child pass his exams?	Tell me about any concerns you have regarding your child’s school performance.
Do you take any traditional medicines?	What folk remedies and traditional medicines have you taken in the last year?
Was your child breastfed?	How was your child fed as an infant?
Do you live with your husband and the other two children?	Tell me about who lives in your household.

THE INTERVAL HISTORY

During a first visit to clinic, the healthcare worker should attempt to obtain as much information as feasible about the child’s medical and social history. At subsequent visits, interval histories should be taken. As with interval visits for adults, the interval history provides a summary of events affecting health and well-being since the last visit. However, the interval history for children includes issues that are very specific to paediatric concerns, such as behavioural or developmental concerns.

The interval history generally includes:

- Step 1 Recent illness or injury
- Step 2 Signs or symptoms
- Step 3 Nutrition update
- Step 4 Visits to other healthcare workers or facilities
- Step 5 Hospitalisations or emergency room visits
- Step 6 Update on chronic health problems or allergies
- Step 7 Medications
- Step 8 Immunisations
- Step 9 Caregiver concerns, including growth, behavioural, social or developmental issues
- Step 10 School performance
- Step 11 Recent travel
- Step 12 Changes in the health of the caregiver or other members of the family
- Step 13 Changes or stresses in the family or household (e.g. loss of income, moving, additions to the household, divorce, death)

Exercise 6: History taking
Small group work: participants break into groups of three

Purpose	<ul style="list-style-type: none"> To provide participants with an opportunity to practise taking a child health history
Duration	30 minutes
Introduction	<ul style="list-style-type: none"> Participants will divide into groups of three to practise asking questions to get a complete history. One participant will take the role of the healthcare worker and the other the role of caregiver. The third person will be the observer. The groups will have about 20 minutes for this exercise. The participant taking the role of the healthcare worker should use Table 1.6: Child health history to guide the interview, jotting down the caregiver's responses as might be done in a clinic setting. The observer in the group should track which questions are asked as open-ended questions and which are close-ended questions. The observer may also support the healthcare worker by re-wording or asking new questions to get a more accurate response. Participants in each small group should rotate roles so that everyone has an opportunity to play the healthcare worker. Participants should use for reference Table 1.6: Child health history, and Table 1.7: Examples of open-ended questions.



SESSION 1.7: PAEDIATRIC PRIMARY CARE



SESSION LEARNING OBJECTIVES

- Describe the key elements of the paediatric physical examination, including elements specific to age and development.
- Conduct a developmental assessment.
- Discuss the primary care schedule, including the schedule for immunisation, vitamin A supplementation, deworming and TB screening.

This session draws from the WHO Integrated Management of Childhood Illness for High HIV Settings (2008)¹⁶. It has guidelines for HIV-exposed and -infected children on infant and young child feeding, immunisation, cotrimoxazole prophylaxis, Vitamin A, zinc and other micronutrient supplementation, as well as nutritional support. The WHO material should be used for additional guidance as needed.

OVERVIEW OF THE WELL-CHILD (EPI) VISIT

Well-child visits provide the best opportunity for healthcare workers to monitor ongoing growth and development for children, provide guidance for caregivers and offer preventive care (e.g. immunisations). These visits allow healthcare workers to intervene as early as possible if signs of a health problem arise — before a problem warrants complex intervention. To promote health and prevent illness, all children should be seen in the healthcare facility according to the periodicity schedule shown in Table 1.8 below.

Table 1.8: Periodicity for EPI and well visits, immunisations & vitamin A

Time	EPI and Well Visits	Immunisations	Vitamin A
Birth		X	
1 wk	X		
6 weeks	X	X	X*
10 weeks (2.5 months)	X	X	
14 weeks (3.5 months)	X	X	
6 months	X		
9 months	X	X	
12 months	X		X
18 months	X	X	X
2 years	X		X
2 1-2 years			X

3 years	X		X
3 1-2 years			X
4 years	X		X
4 1-2 years			X
5-7 years (school entry)*	X	X	X (at 5 years)
12-15 years (school leaving)*	X	X	

*Non-breastfeeding infants only

Because the health of mother and child are so closely related, maternal health and nutrition should be assessed concurrently and appropriate referrals for maternal care should be made.

The well-child or Expanded Programme on Immunisation (EPI) visit typically includes the following activities:

INTERVAL HISTORY

- Caregiver concerns, including growth, behavioural, social or developmental issues
- Recent illness or injury
- Signs or symptoms
- Nutrition update
- Visits to other healthcare workers or facilities
- Update on chronic health problems or allergies
- Recent travel
- Changes in the health of the caregiver or other members of the family
- Changes or stresses in the family or household

MEASURE, RECORD, PLOT AND EVALUATE GROWTH

- Weight for age
- Length for age
- Head circumference

ASSESS DEVELOPMENT

- According to the age of child (reviewed in Session 1.4)

ASSESS AND RECORD VITAL SIGNS

- Temperature
- Respiratory rate
- Pulse
- Blood pressure (not included in all visits)

EXAMINE THE FOLLOWING ACCORDING TO MEDICALLY ACCEPTED PROCEDURES

- General appearance (including nutritional status)
- Skin and hair (including scars, burns, bruises, birthmarks)
- Head and neck (including facial features, fontanelles in infants)
- Eyes (including discharge, alignment)
- Ears (including infections, discharge)

- Nose and throat (including discharge, infections)
- Mouth, tongue, palate, gums and teeth (including evidence of caries, lesions, intact palate)
- Lungs and pulmonary system (listen for wheezing, crackle, rhonchi and pleural rub)
- Heart and cardiac system (including presence of murmurs)
- Abdomen and gastrointestinal system (including presence of hernias)
- Genitalia, rectum and urinary system (including presence of testicles (boys) and normal female genitalia)
- Musculoskeletal system (including spine, hips, muscle tone)
- Neurological system (including reflexes, motor coordination, gait)
- Extremities (including range of motion, strength)

PROVIDE EDUCATION AND PREVENTIVE HEALTH CARE

- TB screening
- Immunisations
- Vitamin A
- Deworming
- Health education

PSYCHOSOCIAL ASSESSMENT AND SUPPORT

Psychosocial assessment and support is a crucial element of the care provided to children, their caregivers and families. Although in the context of providing medical and clinical services, the importance of the psychosocial aspects of care might be lost, this element is vital to the overall development and well-being of the child. For example, if a caregiver is depressed or unable to provide adequate food for the child, the health, development and physical prognosis of the child will suffer. Comprehensive care for the child and caregiver will therefore necessarily include a brief assessment of psychosocial functioning in order to give the child the best chance of survival.

Important elements include:

- Level of support – financial, logistical (e.g. transportation), emotional
- Mental health/well-being of caregiver and child
- Observation of interaction between caregiver and child
- Factors preventing appropriate care of child (mental health, substance use, illness, etc.)
- Appropriate behaviours for age of child
- Child’s adjustment to school, peer relationships
- Family conflict, instability or other family stressors
- Impact of stigma and discrimination on care seeking, caring for health/child, accessing support
- Community resources

UNIQUE ASPECTS OF CHILD HEALTH EXAMS BY AGE

It is important to note conditions or special concerns that are unique to each developmental stage. The section titled “Assessment and guidance parameters for children” provides general guidelines for types of assessment that should be conducted at each stage of development, specific recommendations for physical exams, important elements of nutrition that are crucial for children who are still developing, and anticipatory guidance that healthcare workers should provide for caregivers.

Anticipatory guidance refers to developmentally-based counselling techniques that focus on the needs of the child at each stage of life. Anticipatory guidance prepares the caregiver for anticipated physical and behavioural changes and transitions, thereby increasing their preparation and understanding and reducing the potential anxiety associated with what is considered normal.

Clinics generally use a standard ambulatory care form which may be used to document special areas of concern that may arise during a clinic visit. More in-depth information on specific elements of the physical exam by age is provided in Appendix 4.

ASSESSMENT AND GUIDANCE PARAMETERS FOR CHILDREN

Table 1.9: Newborn (0-11 weeks) assessment and guidance parameters¹⁷

Assessment
Alertness
Reactive to visual, auditory, touch stimuli
Congenital abnormalities
Sleeping and eating behaviours
Growth monitoring
Physical exam
Length and weight
Rate, rhythm and heart murmurs
Palpate fontanelles
Back, spine foot deformities
Primitive reflexes, muscle tone
Nutrition
No solid foods; no water; no juice
Breast milk or formula only
Anticipatory guidance*
Feeding issues
Support of feeding decisions
Sleep – baby always placed on back for sleeping
General care of child (crying, bathing, bowel movements, clothing, etc.)
Importance of immunisation
Responsive care giving; assess caregiver’s attentiveness to child
Need for visual, auditory and touch stimulation
Mother’s health and mental state

Table 1.10: Infant (11 weeks-12 months) assessment and guidance parameters¹⁸

Assessment
Growth monitoring
Reactive to visual, auditory and touch stimuli
Speech sounds and language acquisition
Ease of transition to solid foods
Oral health (brush with soft toothbrush and water only)
Physical exam
Primitive reflexes should disappear by 12 months
Length and weight
Heart murmurs
Hip dysplasia
Testes fully descended
Evaluate tone, attentiveness, strength and symmetry of movement
Nutrition
Introduction of solid foods
Importance of varied diet with fruits/vegetables, and sufficient proteins
No honey during first year
Anticipatory guidance
Importance of immunisation
Transition to solid foods (6 months – porridge, 8-11 months – mashed foods)
General care (colic, crying, etc.)
Continuing need for sensory stimulation
Need for consistent boundaries (what they can and cannot do)

Table 1.11: Early childhood (1-4 years) assessment and guidance parameters¹⁹

Assessment
Growth monitoring
Movement and coordination
Language acquisition and clarity
Oral health (soft brush and toothpaste)
Responds to commands
Physical exam
Height and weight
Observe gait, movement, coordination and language
Nutrition
Three meals and two healthy snacks per day
Avoid choke food (nuts, hard candy, etc.)
Limit high fat/sugar foods
Anticipatory guidance
Encourage self feeding
Toilet training
Continuing need for affection/praise and sensory stimulation
Need for consistent discipline
Learning what is appropriate and inappropriate behaviours

Table 1.12: Middle childhood (5-10 years) assessment and guidance parameters²⁰

Assessment
Growth monitoring
Fine and gross motor skills
Language acquisition and clarity
Ability to understand
Oral health
School readiness
Physical exam
Height and weight
Check for early puberty
Examine spine for scoliosis
Nutrition
Three meals and two healthy snacks per day
Limit high fat/sugar foods
Anticipatory guidance
Adjustment to school
Peer relationships
Age appropriate chores
Curiosity about sexuality and body parts are normal at this stage

Table 1.13: Adolescence (11-21 years) assessment and guidance parameters²¹

Assessment
Growth monitoring
Pubertal changes
Oral health
Physical exam
Normal development of genitalia, Tanner staging*
Females: Pelvic exam if clinically warranted, based on sexual activity or specific problems
Males: Examine testes for hernias, masses
Examine spine for scoliosis
Nutrition
Limit high fat/sugar foods
Higher need for protein, iron, and micronutrients during puberty
Anticipatory guidance
Prepare child for puberty
Drugs and alcohol – avoidance, delay, and protection
Sex and sexuality - delay and protection
School transitions
Continuing need for guidance
Acknowledge adolescent’s emerging sense of independence
Importance of peer relationships

*Puberty consists of a series of predictable events and sequence of changes in secondary sexual characteristics. The changes are triggered by increasing levels of sex hormones – testosterone for boys and oestrogen for girls. The age of onset of puberty varies widely – for girls it may begin between the ages of 7-14 years and for boys 9-15. The staging system used most frequently to categorise these changes is referred to as "Tanner stages", and is described in Table 1.16 and Figure 1.10. The first stage in each section represents the pre-pubertal child and the final stage represents the “mature” or adult stage. Note that puberty maybe delayed for a number of reasons, *the most frequent being due to a normal family pattern where puberty simply occurs at a later period and without need for medical intervention.* Chronic illnesses, such as diabetes, asthma and HIV, may also lead to delayed puberty. Malnourishment, problems with the pituitary or thyroid glands, or abnormal chromosomes may also be the cause of delay in sexual development.

Table 1.14: Boys — development of external genitalia²²

Stage 1	Pre-pubertal
Stage 2	Enlargement of scrotum and testes; scrotum skin reddens and changes in texture
Stage 3	Enlargement of penis (length at first); further growth of testes
Stage 4	Increased size of penis with growth in breadth and development of glands; testes and scrotum larger, scrotum skin darker
Stage 5	Adult genitalia

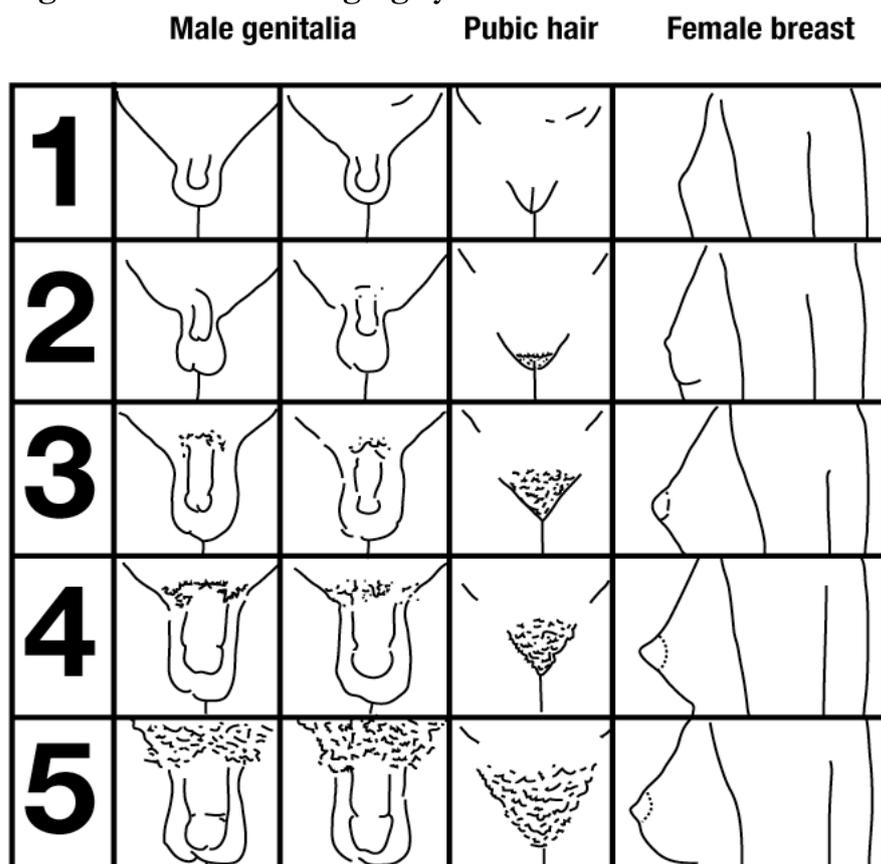
Table 1.15: Girls — breast development²³

Stage 1	Pre-pubertal
Stage 2	Breast bud stage with elevation of breast and papilla; enlargement of areola
Stage 3	Further enlargement of breast and areola; no separation of their contour
Stage 4	Areola and papilla form a secondary mound above level of breast
Stage 5	Mature stage: projection of papilla only, related to recession of areola

Table 1.16: Boys and girls — pubic hair²⁴

Stage 1	Pre-pubertal
Stage 2	Sparse growth of long, slightly pigmented hair, straight or curled, at base of penis or along labia
Stage 3	Darker, coarser and more curled hair, spreading sparsely over junction of pubes
Stage 4	Hair adult in type, but covering smaller area than in adult; no spread to medial surface of thighs
Stage 5	Adult in type and quantity, with horizontal distribution ("feminine")

Figure 1.10: Tanner staging system



Adapted from WHO (2006)²⁵.

IMMUNISATION

Providing immunisations for children has been one of the primary means of reducing infant mortality in developing countries. Caregivers who are educated about the importance of adhering to immunisation schedules are more likely to ensure that their children get immunised on a regular basis. Attending clinic for immunisations may be one of the few times that children, particularly of poor families, come in contact with the health care system. Clinics that conduct immunisations, therefore, should be especially adept at observation and screening for other commonly-occurring illnesses during these well-child visits.

- Immunisations are given in a specific sequence at certain ages. This is known as the immunisation schedule. Never miss a chance to immunise – never turn a child away if an immunisation is needed (even if it means opening a multi-dose vial for just one child).
- The Road to Health booklet should be checked every time the child visits the clinic, and missed immunisations should be given according to schedule.
- Mild illnesses are not a contraindication to immunisation – any child who is well enough to be sent home, is well enough to be immunised. There are few contraindications to immunisation, but many missed opportunities.
- Do not immunise a sick child if the mother seriously objects, but encourage her to bring the child for immunisation on recovery.

- Give doses at least four weeks apart (make follow-up dates with a minimum of four weeks from the previous dose).
- Give an extra dose if in doubt whether a child has had a certain dose or not, as extra doses are not harmful.
- All vaccines listed in the table can be given safely at the same time, **but should not be mixed in the same syringe.**
- Serious adverse events following immunisation are uncommon. All adverse events other than mild systemic symptoms (irritability, fever < 39°C) and minor local reactions (redness/swelling at infection site) should be reported.

The routine immunisation schedule for all children is presented in Table 1.17. HIV-infected and HIV-exposed children should be immunised according to this schedule, including with live vaccines. BCG can be routinely given at birth. If BCG was not given at birth and is being considered in an older child, note that BCG is NOT given to HIV-infected children who are symptomatic. If given at birth, close follow-up of HIV-exposed infants is required to ensure early identification and treatment of any complication from BCG.

Normal reactions to BCG:

- The typical initial reaction to intradermal vaccination is a papule formation that lasts a maximum of 4–6 weeks. This develops into a scar, which is visible in about 40% of children.
- In 1–10% of children who receive BCG, there is oozing, ulceration and lymphadenopathy after vaccination. This is a normal reaction and not a cause for alarm. Lymphadenopathy less than 1.5 cm is not clinically significant.

Abnormal reactions to BCG:

- BCG lymphadenitis: Where lymphadenopathy is significant, or a draining sinus is present, surgical incision or treatment may be indicated. Referral is indicated in these cases.

Table 1.18 shows the catch-up schedule for immunisations if any of the scheduled doses are missed.

Table 1.17: Immunisation schedule

Age of child	Vaccines needed	How
At birth	OPV-0 BCG*	Oral Intradermal injection-right arm
6 weeks	OPV-1 RV-1** DTaP-IPV/Hib 1 (combined) Hep B 1 PCV 1	Oral Oral Injection left thigh Injection right thigh Injection right thigh
10 weeks	DTaP-IPV/Hib 2 (combined) Hep B 2	Injection left thigh Injection right thigh
14 weeks	RV 2 DTaP-IPV/Hib 3 (combined) Hep B 3 PCV 2	Oral Injection left thigh Injection right thigh Injection right thigh

9 months	Measles 1 PCV 3	Injection left thigh Injection right thigh
18 months	DTaP-IPV/Hib 4(combined) Measles 2	Injection left arm Injection right arm
6 years	Td	Injection left arm
12 years	Td	Injection left arm
BCG	Bacillus Calmette-Guérin	
RV	Rotavirus	
Hep B	Hepatitis B	
PCV	Pneumococcal vaccine	
DTP-IPV/Hib	Diphtheria, Tetanus and Pertussis, Inactivated Poliovirus and Haemophilus influenzae type b	
Td	Tetanus and reduced amount of diphtheria: Diftavax	

Table 1.18: Immunisation catch-up schedule

	Age at first dose	Minimum Interval Between Doses			
		Dose 1- Dose 2	Dose 2- Dose 3	Dose 3- Dose 4	Dose 4- Dose 5
BCG ¹ (1 dose only)	As soon as possible after birth.				
OPV not indicated					
RV ²	12 weeks maximum ²	4 weeks			
DTaP-IPV/Hib ³	<12 months of age	4 weeks	4 weeks	15 months	
DTaP-IPV/Hib ³	1-7 years of age	8 weeks (min)	6-12 months		
Hep B ⁴ (3 doses)	Any age	4 weeks (min)	8 weeks (min)		
PCV ⁵ (3 doses)	<12 months of age	8 weeks	6 months		
Measles ⁶ (2 doses)	9 months of age and older	4 wks			
Td/ Tdap ³	7 years of age and older	4-8 weeks	6-12 months	12 months (min)	12 months (min)
<p>1. Bacillus Calmette-Guérin (BCG)—usually given only one time.</p> <ul style="list-style-type: none"> • Give as soon as possible after birth. • If the child is more than 12 months of age, conduct TB test: if negative then administer BCG immunisation; if positive, do not give BCG, refer for care. 					

- Do not administer of HIV-positive and symptomatic.
- 2. Rotavirus (RV):**
 - Rotavirus should not be given after 24 weeks of age.
 - Use 2 dose schedule for Rotarix, give 1st dose no later than 12 weeks of age, allow minimum of 4 weeks before 2nd dose, and do not give 2nd dose after 24 weeks of age. Use 3 dose schedule for Rota Teq, give 1st dose no later than 12 weeks of age, with minimum of 4 weeks between doses, and do not give doses after 32 weeks of age.
 - 3. Diphtheria/Tetanus/Acellular Pertussis (DTaP)-IPV/HIB, Tetanus and Diphtheria toxoids vaccine (Td) and Tetanus and Diphtheria toxoids and Acellular Pertussis vaccine (Tdap):**
 - DTaP doses count toward tetanus doses. A total of 5 doses of tetanus immunisation should be given during childhood.
 - 4. Hepatitis B vaccine (HepB):**
 - Administer the 3-dose series to those not previously vaccinated regardless of age.
 - 5. Pneumococcal vaccine (PCV):**
 - For previously unimmunised children 1-2 yrs of age, a single dose of PCV should be given. For previously unimmunised children with medical conditions 2-5 yrs of age, a single dose of PCV should be given.
 - 6. Measles:**
 - To ensure optimum population immunity, all children should be given a second dose of measles vaccine through routine vaccination and/or supplemental immunisation activities. Although generally administered at school entry (age 4–6 years), the second dose may be given as early as one month following the first dose, depending on the local programmatic and epidemiological situation.

Adapted from: WHO. March 13, 2009²⁶, U.S. National Center for Immunization and Respiratory Diseases²⁷, and South Africa EPI Schedule, 2009.

VITAMIN A SUPPLEMENTATION AND DEWORMING

Studies suggest that vitamin A supplementation twice yearly could reduce child mortality by approximately 25%. An important micronutrient, vitamin A protects and supports cell membranes to help fight infection and increase the activity of white blood cells. A deficiency in vitamin A weakens the immune system of children, leaving them more vulnerable to infection and death. Vitamin A is also important in maintaining healthy vision, and in the development of healthy bone tissue. In addition, therapeutic vitamin A supplements are recommended in children with certain illnesses, as shown in the Appendix 2: Road to Health Booklet.

Routine vitamin A supplementation is provided according to the schedule shown below in Table 1.19.

Table 1.19: Schedule for routine vitamin A supplementation

Target Group	Dosage	Schedule
Non-breastfed infants* 0 to 5 months	50 000 IU	A single dose at the age of 6 weeks
All infants	100 000 IU	A single dose at the age of

6-11 months		between 6 and 9 months (preferably at 9 months when child comes for immunisation)
All children 1-5 years	200 000 IU	A single dose at 12 months and then every 6 months until the age of 5 years (12, 18, 24, 30, 36, 42, 48, 54 and 60 months of age)

* Breast fed infants do not receive vitamin A supplementation before the age of six months.

Additional doses of Vitamin A are given as a supplement for certain diseases according to the guidelines shown on page 9 of the Road to Health booklet, shown in Appendix 2. Supplemental doses should not be administered if a prophylactic dose was given the previous month. The diseases include:

- Persistent diarrhoea/diarrhoea with severe dehydration
- Measles
- Xerophthalmia
- Severe malnutrition

Supplemental vitamin A dosing:

- 2-5 months: 50,000 IU
- 6-11 months: 100,000 IU
- 12-60 months: 200,000 IU

Worms, a primary cause of parasitic disease, are also a major cause of mortality in South Africa. Worms contribute to anaemia and malnutrition among children. If a child's system is infested with worms, it makes them less able to benefit from vitamin A and iron supplementation, which are often already lacking in their diets.

Treating infected children for worms allows them to be more alert, makes them better able to absorb essential nutrients from food and makes them less vulnerable to other common diseases. Deworming improves overall health and contributes to weight gain. Routine deworming is recommended in settings where disease-causing organisms are part of the environment and symptoms and illness related to worms is common. Routine deworming also reduces the helminth burden in the community (due to the reduction of disease-causing organisms in the environment).

In South Africa, routine deworming is recommended according to the following schedule in Figure 1.11.

Figure 1.11: Deworming schedule*

DEWORMING						
TREATMENT SCHEDULE EVERY 6 MONTHS						
Age	Mebendazole	Date given (tick day with x)				Signature
12 months	100mg twice a day (for 3 days)	Day 1	Day 2	Day 3	/ /	
18 months	100mg twice a day (for 3 days)	Day 1	Day 2	Day 3	/ /	
24 months	500mg single dose				/ /	
Dose	At age	Date given	Signature	At age	Date given	Signature
500mg (single dose)	30 months	/ /		48 months	/ /	
	36 months	/ /		54 months	/ /	
	42 months	/ /		60 months	/ /	

*This deworming schedule is located on page 9 of the Road to Health booklet, available in Appendix 2.

Exercise 7: Immunisations, vitamin A and deworming Small group work: participants break into groups of 3 or 4	
Purpose	<ul style="list-style-type: none"> To provide experience making decisions about immunisation administration
Duration	45 minutes
Introduction	<ul style="list-style-type: none"> Participants will be asked to divide into groups of three or four people per group to review one of the case studies below. Using Table 1.17: Immunisation schedule, Table 1.18: Immunisation catch-up schedule, Table 1.19: Schedule for routine vitamin A supplementation participants should answer the questions that follow the case study. Small group discussions should take about 20 minutes, during which time someone from each group should record their group's answers on flipchart paper in preparation for the large group discussion.

Exercise 7: Immunisations, vitamin A and deworming Case studies							
Case Study 1: Evan							
<p>Evan is a 10-month-old infant. His mother has brought him to every scheduled health care visit, but because he was ill, he missed immunisations — his 10 week, 14 week and nine month scheduled immunisations. He received Vitamin A at the age of six months. You look at his record and see that he has received:</p>							
Age	BCG	OPV	RV	DTaP-IPV/Hib	HepB	Measles	PCV
Birth	X	X (0)					
6 weeks		X (1)	X (1)	X (1)	X (1)		X(1)
<ul style="list-style-type: none"> Which immunisations did Evan miss? Which immunisations should be given to him at this visit? When should this child return? What immunisations will he receive at the next visit? Should this child also receive routine vitamin A supplementation and deworming? 							

Case Study 2: Shaynala

Shaynala is a six-year-old girl. She has recently moved to your area. Her mother says there was no clinic where they lived before, so Shaynala did not receive any vaccines, supplements or medicines other than those given at birth. Because she is six years old, she does not need all of the vaccines you would give an infant. Refer to the notes included with Table 1.18: Immunisation catch-up schedule, if needed.

Age	BCG	OPV	RV	DTaP-IPV/Hib	HepB	Measles	PCV
Birth	X	X					

- Which immunisations did Shaynala miss?
- Which immunisations should be given to her at this visit?
- When should this child return?
- What immunisations will she receive at the next visit?
- Should this child also receive routine vitamin A supplementation and deworming?

Case Study 3: Jane

Jane is a three-year-old female. She is one of six children in her family, (her mother has two younger children, as well as three older children). She has only received some of her vaccines, and some of the Vitamin A supplements and deworming medications. Fortunately, her mother has brought you her immunisation booklet, although the Vitamin A supplements and deworming medications were not recorded. Her mother is certain that even if she has received Vitamin A, she definitely has not been given it in the last year. Neither has she been treated for worms within the last year.

Age	BCG	OPV	RV	DTaP-IPV/Hib	HepB	Measles	PCV
Birth	X	X (0)					
6 weeks		X (1)	X	X (1)	X		X
10 weeks							
14 weeks							
9 months						X	X
18 months							

Because she is three years old, she does not need all of the vaccines you would give an infant.

- Which immunisations did Jane miss?
- Which immunisations should be given to her at this visit?
- When should this child return?
- What immunisations will she receive at the next visit?
- Should this child also receive routine vitamin A supplementation and deworming?

IDENTIFYING CHILDREN WITH HIV INFECTION

It is important to identify children that are HIV-infected at an early stage to ensure that they and their families obtain optimal care. The disease progresses more rapidly in children than in adults and therefore children may be the first in the family to fall ill.

Early identification/diagnosis makes it possible to:

- Plan regular follow-up
- Initiate ART when indicated
- Ensure that children receive routine preventive health interventions (e.g. immunisation, growth monitoring and promotion, and Vitamin A supplementation)
- Provide additional preventative measures which can prevent the development of opportunistic infection in HIV-infected children – the **most** important intervention is provision of cotrimoxazole (CTX) prophylaxis
- Identify and treat intercurrent illnesses early and effectively
- Establish whether others in the family are HIV-infected and provide appropriate treatment
- Provide psycho-social support to the family/caregiver through counselling and support
- Facilitate access to social grants, income generation opportunities and other support structures

Constant vigilance is essential in order to ensure that all children living with HIV are identified as early as possible. The possibility of HIV infection should be considered during every contact with the health system, whether at the primary health centre (PHC), district hospital or referral level.

IDENTIFYING CHILDREN FOR PROVIDER-INITIATED HIV TESTING AND COUNSELING:

The following groups of children should be offered HIV testing:

- All HIV-exposed infants
- Children with:
 - Clinical features suggestive of HIV infection
 - Acute illnesses, especially if severe
- All children with the following IMCI classifications: Suspected symptomatic HIV infection or possible HIV infection
- All children diagnosed with TB or who have a history of TB treatment
- Family and social history:
 - Parental request to test the child
 - Father or sibling with HIV infection
 - Death of mother, father or sibling
 - When the mother's HIV status is unknown and her whereabouts are unknown
 - When the child may have been wet-nursed or breastfed by a woman of unknown or positive HIV status
 - When the child may have experienced or been at risk of sexual assault
 - When it is in the best interest of the child where the child is being considered for foster or adoption placement

Healthcare workers should offer HIV testing and counselling to all children at risk for HIV infection as part of *routine* primary paediatric care.

CLINICAL FEATURES OF HIV INFECTION IN CHILDREN

SIGNS AND CONDITIONS COMMON IN HIV-INFECTED CHILDREN BUT UNCOMMON IN HIV-UNINFECTED

- Severe pneumonia
- Severe bacterial infections esp. if recurrent
- Persistent or recurrent oral thrush
- Bilateral painless parotid swelling
- Generalised lymphadenopathy other than inguinal
- Hepatosplenomegaly
- Persistent or recurrent fever
- Neurologic dysfunction
- Herpes zoster – single dermatome
- Persistent generalised dermatitis not responding to treatment

SIGNS AND CONDITIONS COMMON IN HIV-INFECTED CHILDREN BUT ALSO COMMON IN CHILDREN WHO ARE ILL BUT HIV-UNINFECTED

- Anaemia
- Chronic ear infection
- Persistent or recurrent diarrhoea
- Severe pneumonia
- Tuberculosis
- Bronchiectasis
- Failure to thrive
- Marasmus

SIGNS AND CONDITIONS VERY SPECIFIC TO HIV INFECTION

- *Pneumocystis jiroveci* pneumonia (PCP)
- Oesophageal candidiasis
- Extrapulmonary cryptococcosis
- Invasive salmonella infection
- Lymphoid interstitial pneumonitis (LIP)
- Herpes zoster affecting several dermatomes
- Kaposi's sarcoma
- Lymphoma
- Recto-vaginal or recto-vesical fistula

LABORATORY TESTS FOR HIV

Currently available tests include:

- HIV antibody detection tests, including HIV ELISA and HIV rapid antibody.
- HIV viral detection tests, including HIV DNA PCR and HIV RNA PCR. HIV RNA PCR is also known as the “viral load”.

The type of test that should be used for a HIV testing of a child depends upon the child's age and breastfeeding status, as described in the following sections.

CHILDREN LESS THAN 18 MONTHS OF AGE

HIV antibody detection tests cannot distinguish between the mother and the child's antibodies. Maternal HIV antibodies are transferred via the placenta to the child during pregnancy so that all HIV-exposed children (i.e. born to an HIV-infected mother) will be born with HIV antibodies, and will test positive on antibody detection tests. These antibodies can remain in the child's blood for up to 18 months.

If antibodies to HIV are found in children less than 18 months of age, the child is **HIV-EXPOSED** and a viral detection test such as an HIV DNA PCR is required to establish the infection status of the child. The viral detection test currently used is the **HIV DNA PCR**, which detects HIV genes in human cells. It is highly sensitive (98.8%) and specific (99.4%) at six weeks of age, and detects virtually all children who were infected during pregnancy (in-utero), labour and delivery.

The DNA PCR for an HIV-exposed but uninfected child will be negative and the DNA PCR for an HIV-exposed who has become infected will be positive. A positive DNA PCR is highly accurate in determining the HIV infection status of an infant; however, all positive DNA PCR tests should be confirmed. Currently, the recommended confirmatory viral detection assay is a baseline viral load (VL) (also known as HIV RNA PCR test). A VL above 10 000 copies/mL (> 4 log) is regarded as confirmation of HIV infection. If the VL is not > 4 log, additional viral detection tests are indicated.

Initiation of ART should not be delayed while awaiting the result of the confirmatory test.

A negative antibody detection test excludes HIV infection *if* the child was last breastfed six or more weeks before the test *and* the child has no clinical signs of HIV infection. However antibody tests should only be used in children less than 18 months of age in order to determine whether or not the infant is HIV-exposed, e.g. if the child is abandoned or the mother is not available.

CHILDREN OLDER THAN 18 MONTHS OF AGE

In children above 18 months of age, HIV antibody tests can be used to diagnose or exclude HIV infection.

- If the rapid test is negative, the child is not infected provided:
 - There are no clinical features of HIV; *and*
 - Breastfeeding ceased more than six weeks before the test was done.
- If the rapid test is positive, a second, different rapid test is used for confirmation. If the 2nd rapid test is positive, the child is infected and requires HIV care, including assessment for possible lifelong ART.
- If the 2nd rapid test is negative, an HIV ELISA test should be submitted as a tie-breaker to establish the child's HIV status.

HIV-EXPOSED INFANTS

An HIV-exposed child is defined as a child born to a mother living with HIV until HIV exposure stops (six weeks after the complete cessation of breast feeding) and HIV infection can be excluded. HIV-exposure status should be determined before birth as part of the PMTCT programme – where the mother’s status is not known, this should be determined after birth.

Every HIV-exposed infant requires an HIV DNA PCR test at six weeks of age, or earlier if the child is ill or has symptoms suggestive of HIV infection. A confirmatory viral detection assay to confirm the positive DNA PCR test is required. If the DNA PCR is positive and the VL confirms HIV infection, the child should be started on ART.

HIV-uninfected breastfed infants must receive an age appropriate HIV test six weeks or more after stopping breastfeeding or if clinical features of HIV infection develop during breastfeeding. An age appropriate test refers to an HIV test that determines HIV status rather than HIV exposure i.e. a viral detection test in children younger than 18 months and an antibody detection test in children 18 months of age and older. HIV-exposed infants who are DNA PCR negative should have a confirmatory rapid test at 18 months of age.

ENSURING THAT ALL HIV-EXPOSED INFANTS ARE TESTED FOR HIV INFECTION

Early infant diagnosis is vitally important and is closely linked to well baby care, particularly the Expanded Programme on Immunisation. **Every contact with the health care service** should be used to ensure that every child’s HIV-exposure status is known and documented on the Road to Health booklet.

Six-week immunisation visit

The optimum time for DNA PCR testing of HIV-exposed infants is at six weeks of age, coinciding with the six-week immunisation visit. Staff at immunisation clinics should offer HIV testing to the mother if her status is unknown and should ensure that HIV-exposed infants are tested for HIV using DNA PCR. Appropriate responses based on the mother’s HIV status are shown in Table 1.20.

Remember that consent to test the child can be taken from the primary caregiver of the child. (Consent is discussed later in this section).

CTX prophylaxis for all HIV-exposed infants must also begin at six weeks of age.

Table 1.20: HIV testing at six week visit

Mother’s HIV Status	Action
• HIV-infected	▪ Infant DNA PCR test
• HIV-uninfected (antenatal test)	▪ Maternal rapid antibody test
• Unknown HIV status	▪ Maternal rapid test ▪ If mother declines to be tested, request consent for infant rapid HIV test

10 WEEK IMMUNISATION VISIT

The next EPI visit is at ten weeks of age when the DNA PCR result should be available. Arrange for an earlier visit if the results are available, as the highest risk of infant death is between two and three months of age. Systems to trace DNA PCR results and infants that default on their visits and to fast-track positive DNA PCR results to mother-infant pairs should be in place.

- If the DNA PCR is positive, a viral load must be sent immediately and the family should be prepared to begin lifelong ARV therapy.
- If the DNA PCR test is negative and the child is not breastfeeding, the infant is not infected.
- If the DNA PCR test is negative, but the child is breastfeeding then repeat HIV testing will be required six weeks after breastfeeding has stopped OR sooner if the child develops clinical features suggestive of HIV infection. The repeat HIV test will be a DNA PCR if the child is less than 18 months of age and an HIV rapid-antibody test if the child is 18 months of age or older.
- Remember that all children who have are tested using DNA PCR test should also have an HIV antibody test at 18 months of age.

BREASTFED CHILDREN

Postnatal transmission via breast milk can occur at any time during breastfeeding. If the breastfed infant tests DNA PCR positive at any age then she or he should start HIV treatment. The positive DNA PCR should be confirmed with a viral load test.

HIV infection can only be excluded by a negative DNA PCR test six weeks after breastfeeding has stopped. Depending on the age of the child, a viral detection or antibody detection test to assess for postnatal transmission of HIV should only be done six weeks after breastfeeding has stopped.

All breastfed, HIV-exposed children should receive:

- A DNA PCR test at six weeks of age AND
- A rapid test at 18 months of age, or
- An age-appropriate HIV test six weeks after breastfeeding has stopped.

Follow the HIV testing algorithms, Figure 1.12 and Figure 1.13.

SICK CHILDREN OR CHILDREN WITH CLINICAL FEATURES OF HIV INFECTION

Children of any age presenting with clinical features suggestive of HIV infection require an HIV test. The HIV results for sick children should be fast-tracked, particularly in young infants who have high morbidity and mortality rates unless they access early ART.

Symptomatic, HIV-exposed infants aged less than six weeks of age should have a DNA PCR test performed. If the DNA PCR is positive, the infant is HIV-infected and requires urgent referral for a confirmatory viral detection test and ART initiation. If the DNA PCR is negative, repeat at six weeks of age.

ABANDONED CHILDREN

- The HIV status of abandoned infants less than 72 hours old should be established as soon as possible. An HIV rapid test should be used to establish whether the child is HIV-exposed, and if the test is positive, the child should be start nevirapine prophylaxis immediately, as per the Guidelines for the Management of HIV in

Children, 2nd Edition, 2010.. If a rapid test result cannot be obtained within one to two hours, treatment with nevirapine should be commenced and HIV antibody testing should be performed as soon as possible. If the infant tests negative, nevirapine should be discontinued.

- It is also important to establish the HIV status of older children who have been abandoned so that the child can receive appropriate prophylaxis and treatment.

Remember that counselling and consent from parents or primary caregivers is required before testing young children.

HIV TESTING OF CHILDREN

HIV testing of any child MAY take place:

- If it is in the best interest of the child and if a person legally capable of providing informed consent provides such consent. The primary caregiver of the child is able to give consent for testing regardless of parental whereabouts.

HIV testing of a child may NOT take place if:

- It is not in the best interest of the child and no caregiver consent has been given
- HIV testing without consent may occur when the test is necessary in order to establish whether:
 - A health worker may have contracted HIV due to contact in the course of a medical procedure involving contact with any substance from the child's body that may transmit HIV; OR
 - Any other person may have contracted HIV due to contact with any substance from the child's body that may transmit HIV, provided the test has been authorised by a court

CONSENT FOR HIV-TEST ON A CHILD

Consent may given by the:	IF:
Child	Child is 12 years of age or older OR Under the age of 12 years and is of sufficient maturity to understand the benefits, risks and social implications of such a test.
Parent or caregiver	Child is under the age of 12 years and is not of sufficient maturity to understand the benefits, risks and social implications of such a test.
Designated child protection organisation arranging the placement of the child	Child is under the age of 12 years and is not of sufficient maturity to understand the benefits, risks and social implications of such a test.
Superintendent or person in charge of a hospital	The child is under the age of 12 year and is not of sufficient maturity to understand the benefits, risks and social implications of such a test; AND The child has no parent or caregiver and there is no designated child protection organisation arranging the placement of the child.
Children's court	Consent in terms of paragraph is unreasonably withheld; OR

	The child or the parent or caregiver of the child is incapable of giving consent.
--	---

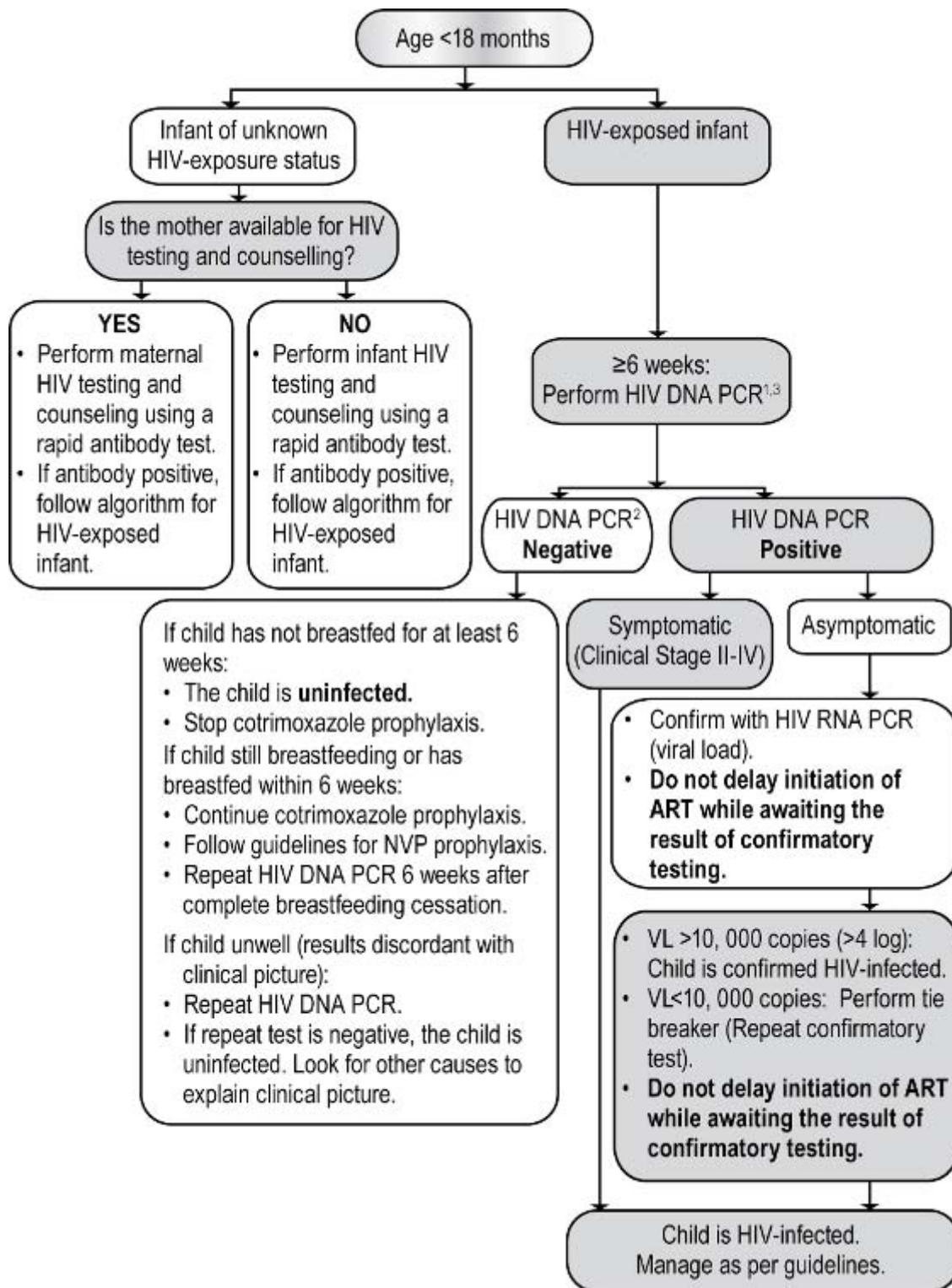
HIV-TESTING FOR FOSTER CARE OR ADOPTION PURPOSE

If HIV-testing of a child is done for foster care or adoption purpose, the state must pay the cost of such tests where circumstances permit. A High Court or Children’s Court may consent to the medical treatment or a surgical operation on a child in all instances where another person that may give consent.

PRE- AND POST-TEST COUNSELLING

A child must receive age-appropriate pre- and post-test counselling by a trained person, regardless of whether the child is able to provide consent in terms of the Child Care Act. Where the child is not legally able to provide informed consent, the person providing such consent must also receive appropriate pre- and post-test counselling. More information on HIV pre- and post-test counselling and information on follow-up of HIV-exposed infants is provided in Module 3.

Figure 1.12: HIV testing algorithm for children <18 months

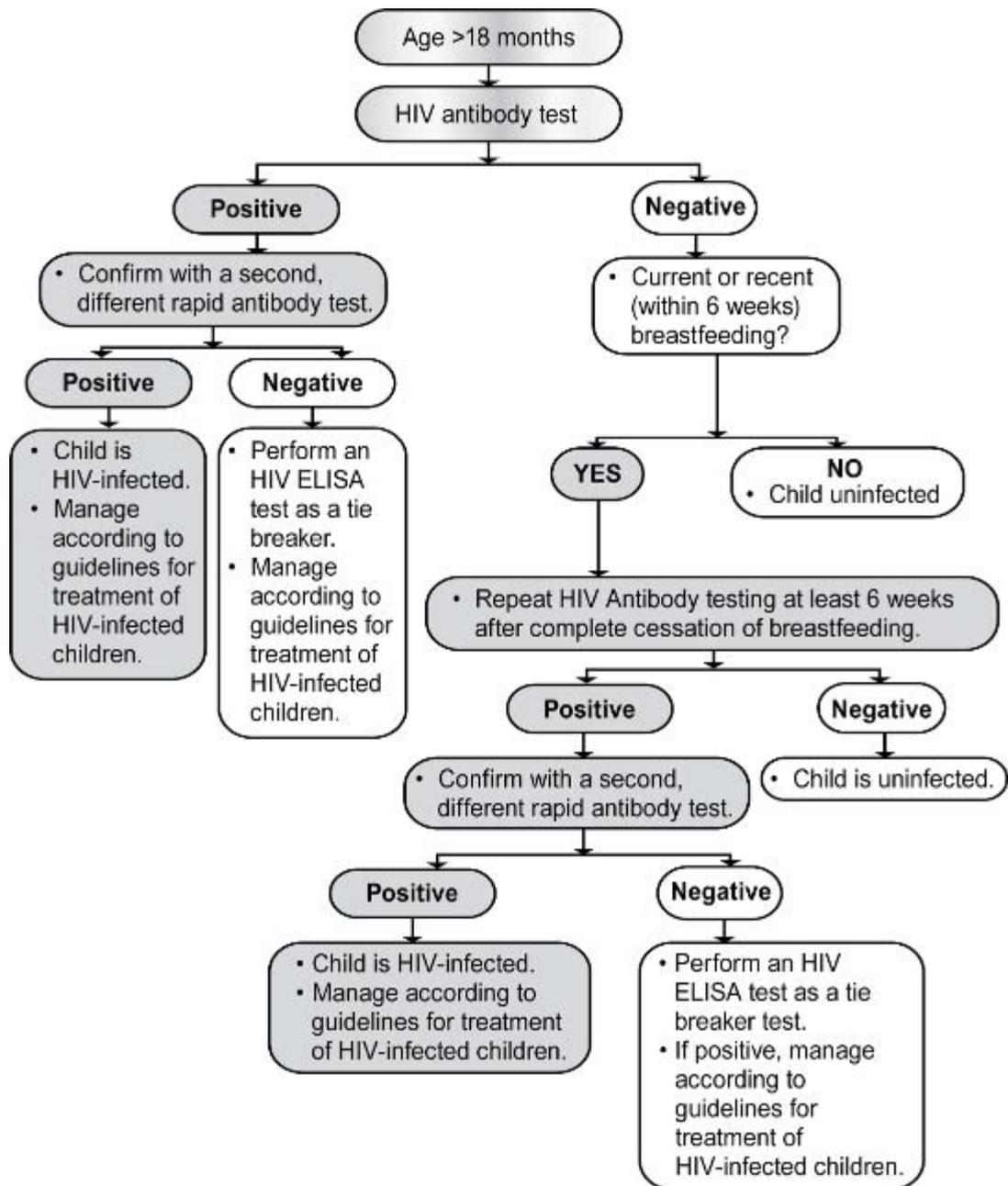


1. The HIV DNA PCR can be done before 6 weeks of age if presenting with symptoms suggestive of HIV.

2. If a child presents with symptoms suggestive of HIV, repeat the HIV test regardless of prior negative test results (i.e. test result not fitting the clinical picture).

3. If HIV DNA PCR testing is not available, provide HIV antibody testing 6 weeks after complete cessation of breastfeeding. If the child is less than 18 months of age at time of antibody testing, the child should be re-tested at 18 months of age or older.

Figure 1.13: HIV testing algorithm for children >18 months



TUBERCULOSIS SCREENING

In South Africa, tuberculosis is among the ten leading causes of death and, along with Nigeria, has the highest number of TB cases on the continent. The high levels of HIV in the country have added to the TB disease burden in the country with estimates indicating that persons living with HIV represent almost 75% of those who have TB.

TB is caused by inhaling *Mycobacterium tuberculosis* (*M. tuberculosis*) bacilli. These droplets are mainly produced by adolescent and adult TB patients with cavities in their lungs. Children less than 10 years of age rarely develop lung cavities and therefore rarely spread the TB organism to others. If infection is successfully established, a primary focus forms in the lung, then bacilli spread to the lymph nodes and later via the lymph and blood to organs throughout the body.

- A majority of infections are contained, both at the site of the primary focus and the extrapulmonary sites where the disseminated bacilli might have established themselves. Childhood TB can be pulmonary and/or extrapulmonary.
- In young children, particularly those aged less than two years, progression of the primary focus and extrapulmonary sites are particularly likely to occur.
- By adolescence disseminated TB is less common — adolescent progression to adult-type pulmonary TB is much more frequent.

- **TB exposure:** A child comes into close contact with an infectious TB patient. The child may have a positive tuberculin skin test (TST), but a positive TST is not necessary to prove exposure.
- **TB infection:** The child inhales the aerosol droplet containing the TB organism. TB infection is usually indicated by a positive TST; however, there are limitations to the test. Children with *M. tuberculosis* infection, but without active disease, are not ill and do not have symptoms suspicious of TB.
- **TB disease:** A small percentage of children who inhale the TB organism develop TB disease and become ill; certain groups are at far greater risk than others, including very young children and those with immune system abnormalities (e.g. from HIV, medications or severe malnutrition).

The best way to prevent children from infection with the TB organism is to diagnose and treat adult and adolescent TB disease as early as possible so that the risk of exposure to TB is low. Nonetheless, current conditions indicate that children are at risk for TB exposure, so it is important to understand and implement the national guidelines for screening and preventive treatment. Following recent TB exposure (close contact with a new TB case), TB disease can be prevented by providing preventive therapy to young and vulnerable children who do not have TB disease, but are at high risk to develop TB disease.

Note regarding BCG vaccination: BCG is a live, weakened form of the cow TB organism (*M. bovis*). BCG is routinely given to South African infants at birth. BCG is important because it provides partial protection against severe forms of TB in children (TB meningitis and miliary TB). Children are vulnerable to TB disease despite routine BCG vaccination.

BCG is given at birth to all infants, irrespective of HIV exposure. However, there should be close follow-up of infants known to be born to a mother living with HIV

infection who receive BCG at birth in order to provide early identification and treatment of any BCG complication.

The risk of developing TB disease following infection with *M. tuberculosis* is mainly determined by three factors:

- *Age of the child:* the risk of developing TB disease is highest in children less than three years of age and again in adolescence.
- *Time since exposure/infection:* most children who develop TB do so within the first year after exposure/infection.
- *Immune status of the child:* negative influences on the child's immune status increase the risk of developing TB; these include HIV infection, severe malnutrition and medicine such as corticosteroids that suppress the immune system. For all children, the interval history should routinely include a question regarding possible close contact with a TB index case. The standard review of symptoms should determine whether or not the child has any symptoms that could be TB-related. If history or suspicious clinical findings indicate TB possible exposure or infection, a TST is performed. Note that children can develop TB more than once.

HISTORY AND PHYSICAL EXAMINATION

- Has the child had close contact with someone diagnosed with tuberculosis? (If the child has a known close contact with someone with infectious TB, follow the algorithm shown in Figure 1.15: Screening and management of tuberculosis exposure, which is discussed later in this section).
- Has the child or any household contact with TB symptoms (e.g. cough for more than two weeks, weight loss, fever, night sweats)?
- Does the child have any symptoms?
 - The symptoms associated with TB disease are often fairly non-specific and may overlap with other chronic diseases, especially other HIV-related conditions. Most common are cough, weight faltering and fever. The usual standard is that these symptoms have been present for at least two weeks, and have not improved with standard interventions (e.g. antibiotics, nutritional supplements).
- There are no specific features on clinical examination that can confirm TB. Weight faltering, especially after implementing nutritional interventions, is a good indicator of chronic disease in children, of which TB may be the cause. (Diagnosis of TB is further discussed later in this section.)
 - Some signs, although uncommon, are highly suggestive of extrapulmonary TB (TB outside the lungs). Many other abnormalities can indicate extrapulmonary TB, including those consistent with meningitis, pleural effusion, ascites and a non-painful enlarged joint. A painless, enlarged mass of matted lymph nodes in the neck, without a visible local cause on the scalp and which does not respond to a course of antibiotics, is highly suggestive of TB cervical adenitis.

Suspect TB if the child has:

- Contact with an adult pulmonary tuberculosis source case — often the first indication of childhood tuberculosis. If the child is the index case, then the mother or caregiver may be the TB source case.
- Fever for more than a week.
- A chronic, unremitting cough (for more than two weeks).

- Ongoing weight loss or poor weight gain (crossing percentiles on the Road-to-Health Chart).
- Loss of playfulness.

EVALUATION FOR TB DISEASE

Any child with a history of TB exposure or with a positive TST, or who is symptomatic, must be evaluated for TB disease. It can be a challenge to establish a confirmed TB diagnosis in children; however, in a great number of children, it is not very difficult to establish an accurate presumptive diagnosis, even in the absence of sophisticated tests. Preventive therapy should not be given if TB disease has not been ruled out.

TST:

The TST should be administered in the event of a known close contact with a person with active TB disease or if suspicious clinical findings indicate a possible infection. The Mantoux test is the preferred TST in South Africa. It measures the delayed hypersensitivity response to purified protein derivative (PPD), also known as tuberculin. The TST is performed by injecting 0.1 ml of PPD intradermally on the inside of the left forearm. It should be read after 48-72 hours. See Figure 1.14: Steps to placing and reading the TST for step-by-step instructions for TST placement and evaluation. **Note that:**

- A *positive TST* does not indicate active disease; it only indicates infection with *M. tuberculosis*.
- A *negative TST* does not rule out TB infection. For example, children who are malnourished, children with HIV infection or other immunosuppressive conditions, and children on medications which cause immunosuppression (such as corticosteroids) may have a “false negative” TST. The result may also be falsely negative in very young children, children with miliary TB or children with a very recent TB contact.

Gastric washings and/or induced sputum for culture of *M. tuberculosis*:

For sputum induction two puffs of inhaled bronchodilator are given using a spacer followed 10 minutes later by 5 ml hypertonic saline (5% saline) via a nebuliser. It should only be performed in centres where staff received adequate training to perform this procedure safely. Gastric aspirates are safe and easy to perform, although it is best performed in hospitalised patients early in the morning after an overnight fast. The probability of obtaining a positive TB culture improves when more than one sample is taken; try to obtain at least two samples. Culture positive specimens should also undergo drug susceptibility testing. Also culture other body fluids or tissue (e.g. fine needle aspiration of lymph nodes), if available.

Chest x-ray (CXR)

CXR changes are often non-specific. Therefore TB disease should not be diagnosed from the chest x-ray alone — the whole clinical picture should be taken into account. The most common radiological signs of TB in children are:

- Increased density in the hilar region due to enlarged hilar lymph nodes; and/or a broad mediastinum due to enlarged mediastinal lymph nodes.
- Compression of the airways due to diseased lymph nodes; partial occlusion may cause a ball-valve effect with segmental or lobar hyperinflation, complete airway occlusion may cause collapse of a lung segment or lobe.
- Child TB can involve the lung parenchyma directly, as a complication of airway involvement, or due to dissemination and miliary disease

- Isolated pleural effusions usually occur in children older than five years of age.

Note that in children with HIV, the CXR is useful but the presentation may overlap with other HIV-related lung diseases e.g. Lymphoid Interstitial Pneumonitis (LIP).

Sputum smear

TB in children is usually sputum smear-negative, because lung cavities are rare and the collection of adequate sputum samples is difficult. However, this is not true for children greater than eight years of age. The sputum smear remains a valuable test to perform in any child who is able to produce a sputum specimen.

Culture

If facilities are available routine culture of child TB suspects are indicated. TB culture is of particular value in complicated cases or when there is a concern regarding drug resistance. If the child is able to provide a sputum specimen (usually older than eight years) this should be sent for AFB (acid fast bacilli) staining and culture. In children who are unable to expectorate spontaneously gastric aspirates and/or sputum induction offer alternatives.

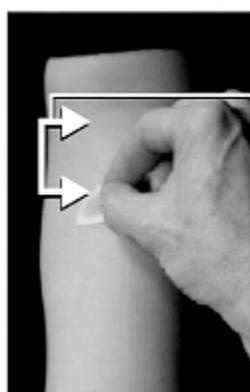
TUBERCULIN SKIN TEST

Figure 1.14: Steps to placing and reading the TST

1 Administration

For each patient, conduct a risk assessment that takes into consideration recent exposure, clinical conditions that increase risk for TB disease if infected, and the program's capacity to deliver treatment for latent TB infection to determine if the skin test should be administered.

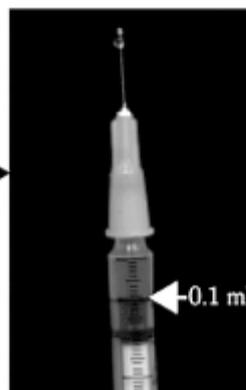
1 Locate and clean injection site



2 to 4 inches below elbow joint

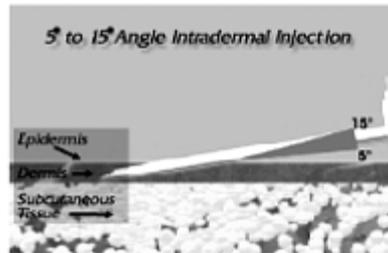
- Place forearm palm side up on a firm, well-lit surface
- Select an area free of barriers (e.g., scars, sores) to placing and reading
- Clean the area with an alcohol swab

2 Prepare syringe

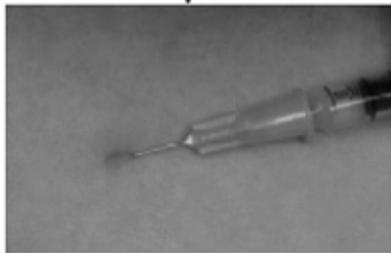


- Check expiration date on vial and ensure vial contains tuberculin (5 TU per 0.1 ml)
- Use a single-dose tuberculin syringe with a ¼- to ½-inch, 27-gauge needle with a short bevel
- Fill the syringe with 0.1 ml of tuberculin

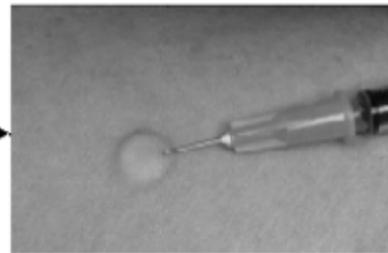
3 Inject tuberculin



- Insert slowly, bevel up, at a 5- to 15-degree angle

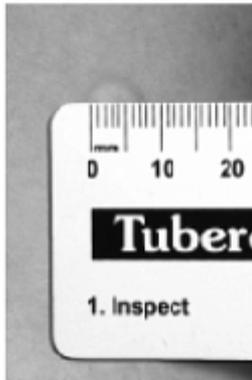


- Needle bevel can be seen just below skin surface



- After injection, a tense, pale wheal should appear over the needle

4 Check skin test



- Wheal should be 6 to 10 mm in diameter. If not, repeat test at a site at least 2 inches away from original site

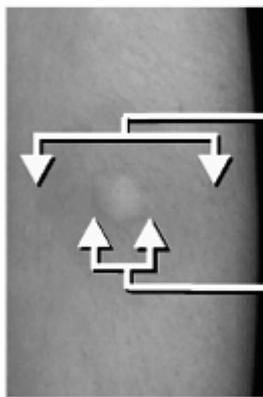
5 Record information

- Record all the information required for documentation by your institution (e.g., date and time of test administration, injection site location, lot number of tuberculin)

2 Reading

The skin test should be read between 48 and 72 hours after administration. A patient who does not return within 72 hours will probably need to be rescheduled for another skin test.

1 Inspect site



- Visually inspect site under good light

Erythema (reddening of the skin) – do not measure

Induration (hard, dense, raised formation)

2 Palpate induration



- Use fingertips to find margins of induration

3 Mark induration



- Use fingertip as a guide for marking widest edges of induration across forearm

4 Measure induration (not erythema)



- Place "0" ruler line inside left dot edge
- Read ruler line inside right dot edge (use lower measurement if between two gradations on mm scale)

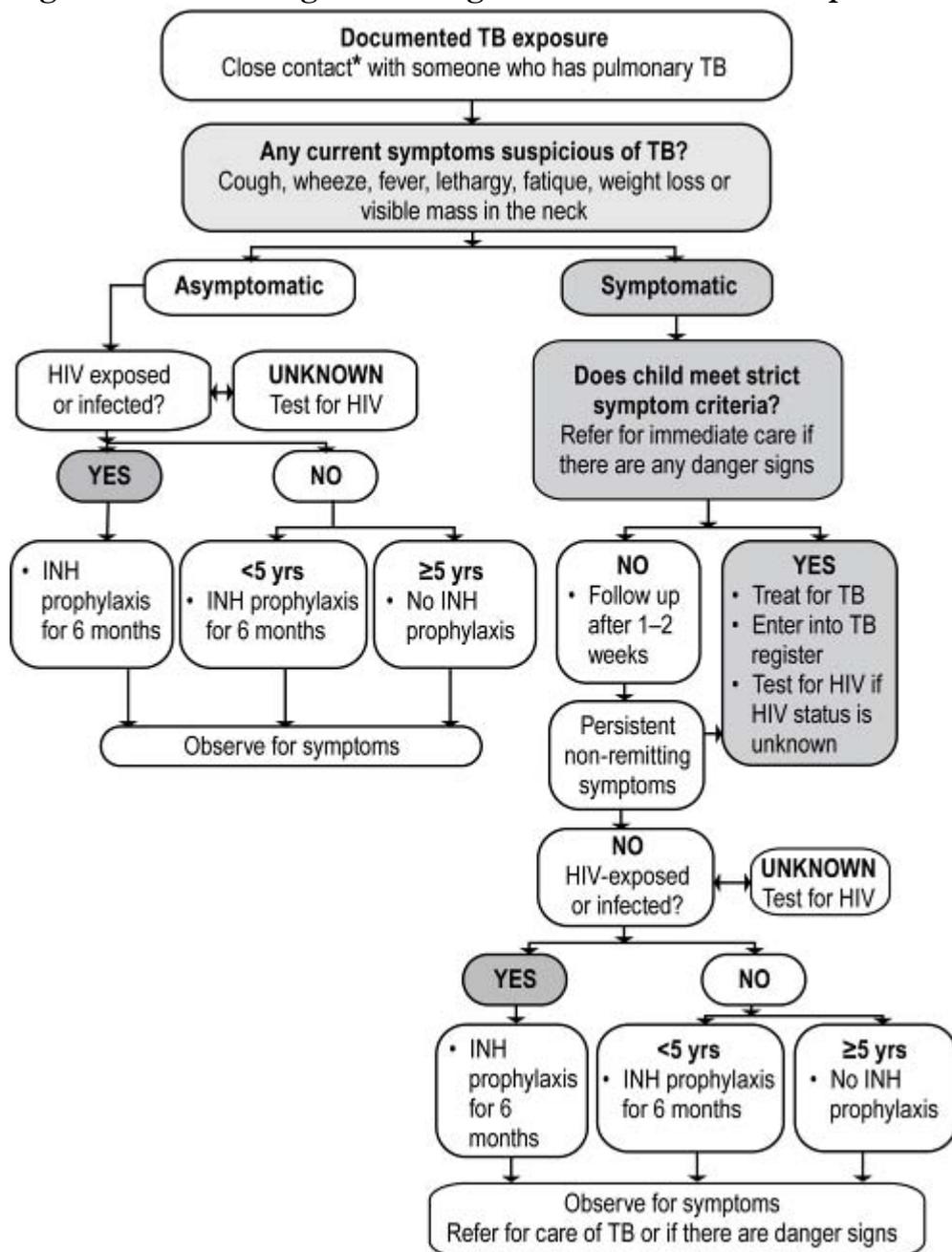
5 Record measurement of induration in mm

- If no induration, record as 0 mm
- Do not record as "positive" or "negative"
- Only record measurement in mm

MANAGEMENT OF TB EXPOSURE

If a child is exposed to TB or has a (new) positive TST, the child should be assessed for signs and symptoms of TB disease, as described below. If TB disease is not diagnosed, then the child should be assessed for possible preventive therapy with Isoniazid (INH), as discussed in the next section. See Figure 1.15: Screening and management of tuberculosis exposure below.

Figure 1.15: Screening and management of tuberculosis exposure



Children exposed to an index case with poor response to TB treatment or known multidrug-resistant (MDR)-TB should be discussed with the expert MDR centre in the Province. Close contacts of MDR TB clients should receive careful clinical follow-up for a period of at least two years. If TB disease develops, prompt initiation of treatment with a regimen designed to treat MDR TB is recommended.

Typically, any infant who screens positive for TB infection should undergo further diagnostic evaluation with chest X-ray (CXR), TST, sputum culture or gastric aspirate for AFB, and lymph node fine needle aspiration or biopsy (in the case of a neck mass) to aid in diagnosis. However, many sites do not have this capability, and even if they did, there are many challenges to making a diagnosis of TB in infants, such as:

- CXRs can be difficult to interpret;
- Infants cannot cough up sputum;
- Gastric aspirates are not as reliable as in older children;
- TST may be falsely negative due to either:
 - infant's age
 - severe malnutrition
 - HIV infection,
 - disseminated (miliary) TB or TB meningitis, or
 - TB exposure occurred within the past two to three months.

Given the challenges of obtaining and interpreting TST, CXR, sputum cultures and gastric aspirates, especially in infants, the criteria below, in Table 1.21, were developed to define paediatric TB cases

The *South Africa National Guidelines* provide practical, simplified diagnostic criteria as follows:

Table 1.21: Defining cases of TB

<p>In the absence of bacteriologic confirmation, diagnosis depends on a combination of clinical features:</p> <ul style="list-style-type: none"> • Contact with an adult pulmonary tuberculosis source case • Fever for more than a week • A chronic unremitting cough (for more than two weeks) • Ongoing weight loss or poor weight gain (crossing percentiles on the Road to Health booklet) • Loss of playfulness <p>Remember: Because of these diagnostic challenges, it is most important to take a careful history and have a low threshold for treatment.</p>

<p>Danger signs requiring urgent hospital referral:</p> <ul style="list-style-type: none"> • Severe respiratory distress (TB pneumonia with/without bacterial super infection) • Severe wheezing not responding to bronchodilators (signs of severe airway compression) • Headache (especially if accompanied by vomiting), irritability, drowsiness, neck stiffness and convulsions (signs of TB meningitis) • Enlarged liver and spleen (signs of disseminated TB) • Breathlessness and peripheral oedema (signs of pericardial effusion) • Distended abdomen with ascites (signs of abdominal TB) • Acute angulation (bending) of the spine (sign of TB of the spine)
--

PREVENTIVE THERAPY WITH INH

In cases where the child does not have TB disease, but may be at high risk for developing TB, preventive therapy is recommended. Preventive therapy is isoniazid (INH) mono-

therapy for six months (see dose recommendations in Table 1.22: Isoniazid preventive therapy below).

Although preventive TB therapy is not given as directly observed therapy (DOT), poor adherence is a serious concern. Caregivers must be adequately counselled to explain why the medicine is given and to encourage good adherence. Parents and caregivers should also be counselled to recognise the symptoms of TB disease, such as a persistent non-remitting cough or fever, unusual fatigue or lethargy and/or weight loss, which should prompt them to bring the child back to the clinic for further evaluation.

Table 1.22: Isoniazid preventive therapy

Who should receive isoniazid preventive therapy*?	
<p>After exclusion of TB disease, INH prophylaxis* should be given to:</p> <ul style="list-style-type: none"> • All children under the age of five years who are in close contact with a pulmonary TB case <p>OR</p> <ul style="list-style-type: none"> • All HIV-infected children of any age • Active TB disease has been ruled out • All children under five years with a positive TST (Mantoux 10mm or greater) <p>*If the source case is resistant to INH, rifampicin (10-15 mg/kg daily) prophylaxis should be given for 4 months.</p>	
Dosage	
Body weight (kg)	Isoniazid 100mg tablet** Target: 10-15mg/kg/day
2-3.4 kg	¼ tablet
3.4-6.9 kg	½ tablet
7-9.9 kg	1 tablet
10-14.9 kg	1 ¼ tablet
15-19.9 kg	1 ½ tablet
20-24.9 kg	2 tablets
25 – 29.9 kg	2 ½ tablets
Greater than 30	3 tablets
<p>*If the source case has INH-resistant TB, the child should receive rifampicin (10-15 mg/kg in place of INH daily for four months. **Crush the tablet and dissolve in water or multi-vitamin syrup</p>	

Note: Infants exposed to an index case with poor response to TB treatment or known multidrug-resistant (MDR) TB should be discussed with the expert MDR centre in the Province. Close contacts of MDR TB clients should receive careful clinical follow-up for a period of at least two years. If TB disease develops, prompt initiation of treatment with a regimen designed to treat MDR TB is recommended.

Note: TB prophylaxis or treatment does not protect the infant against subsequent exposure/infection. Therefore high-risk infants (as defined above) should receive preventive therapy after each episode of documented TB exposure, unless the infant is currently receiving TB prophylaxis or treatment.

Note: A mother with active TB on medications should be encouraged to breastfeed (unless otherwise contra-indicated). TB drugs are secreted in breast milk, but the concentrations are very low and do not affect the baby. The drug levels in breast milk are too low to protect the baby and therefore the baby must receive INH preventive therapy as indicated.

TREATMENT FOR CHILDREN WITH TB DISEASE

- Uncomplicated intra-thoracic TB and cervical TB adenitis should be treated in the primary health care facility (clinic).
- Children are treated using the same principles as adults. The DOTS Expansion and Enhancement Strategy is applicable to all clients with TB, including children.
- When a young child is diagnosed with any form of TB, close family or household members should be carefully questioned for symptoms suggestive of TB, as one of them may have been the source case that infected the child. If a source case is identified, other children in the house, or who may have been exposed to the index case, should also be evaluated for TB.
- Children diagnosed with TB disease should have provider-initiated HIV testing and counselling.
- All children treated for TB disease must be recorded in the TB register and should be reported to the NTCP as part of the routine quarterly cohort reports. It is particularly important to document the age of the child in the register, because children are reported to the NTCP in two age groups:
 - Children 0-4 years (up to four years and 11 months)
 - Children 5-14 years
- A feasible way to document treatment response in a child with sputum smear-negative TB is to use a combination of weight gain and improvement of presenting symptoms. For children with smear-positive disease (who are usually more than eight years of age), the same outcome definitions apply as for adults. HIV test results should also be recorded.
- Apart from TB treatment, parents or caregivers should receive advice on an adequate diet for the child.

Important things to do for a child diagnosed with TB:

- Ask about and evaluate other children or adults in the house with suspected TB in the same house.
- Notify and complete the TB Register
- Record diagnosis and treatment in the Road to Health booklet.
- Monitor growth carefully.
- Provide nutritional counselling and consider referral for nutritional support.
- Exclude HIV infection.
- Refer HIV-infected children to the local HIV clinic.

Malnourished children should be provided with appropriate nutritional supplements and referred for nutritional rehabilitation.

Table 1.23: Overview: Paediatric TB Treatment

Clinical situation	Treatment regimen
Children eight years of age and younger with uncomplicated drug sensitive TB	<ul style="list-style-type: none"> Treat with Regimen 3 (South Africa guidelines for treatment of TB). <ul style="list-style-type: none"> 3 drugs (RHZ*) during the 2 month intensive phase of treatment; and 2 drugs (RH) in the 4 month continuation phase. <p>*R – Rifampicin, H – Isoniazid; Z – Pyrazinamide <i>Note that Regimen 1 is also used in children with extensive lung disease.</i></p>
Children greater than eight years of age who are sputum smear-positive or have a cavity visible on chest x-ray	<ul style="list-style-type: none"> Treat in the same way as a newly diagnosed smear-positive adult. This is Regimen 1, which includes 4 drugs: <ul style="list-style-type: none"> RHZE** in the intensive phase (2 months); and 2 drugs (RH) in the continuation phase (4 months) E – Ethambutol Note that Regimen 2 is used in children over 8 years of age who have been previously treated for TB. Treatment includes RHZE for 3 month intensive phase, Streptomycin for the first two months of the initial phase, and RH and E for the continuation phase. For regimen 3, treatment is five times per week for all patients.

Table 1.24: Regimen 1

Regimen 1: : Treatment of new cases of TB in adults and in children <u>8 years of age and older</u>					
Pre-treatment body weight	Two months initial phase given FIVE times a week	Four months continuation phase			
		Given FIVE times a week		Given THREE times a week	
	RHZE (150,75,400,275)	RH (150,75)	RH (300,150)	RH (150,150)**	RH (300,150)
30-37 kg	2 tabs	2 tabs		2 tabs	
38-54 kg	3 tabs	3 tabs		3 tabs	
55-70 kg	4 tabs		2 tabs		3 tabs

Table 1.25: Regimen 3

Regimen 3: Treatment of uncomplicated TB in children under 8 years of age		
Body weight	Intensive Phase (2 months) Directly Observed Treatment (DOT) given 7 days a week	Continuation phase (4 months) Directly Observed Treatment (DOT) given 7 days a week
	RHZ* 60,30,150	RH 60,30
2-2.9 kg	½ tab	½ tab
3-5.9 kg	1 tab	1 tab
6-8.9 kg	1½ tabs	1½ tab
9-11.9 kg	2 tabs	2 tabs
12-14.9 kg	2½ tabs	2½ tabs
15-19.9 kg	3 tabs	3 tabs
20-24.9 kg	4 tabs	4 tabs
25-29.9 kg	5 tabs	5 tabs
30-35.9 kg	6 tabs	6 tabs

*R – Rifampicin, H – Isoniazid; Z – Pyrazinamide

TB IN HIV-INFECTED CHILDREN

HIV-infected children experience an increased risk of TB disease. They are more likely to be exposed to TB, if living with biological parent(s) because HIV-infected parents are more likely to have TB and expose the child.

The risk of developing TB disease following TB exposure and infection is greatly increased in HIV-infected children because of decreased immunity to TB.

HIV-infected children may develop multiple episodes of TB. A past history of TB disease does not exclude a new episode of TB disease.

Diagnosis of TB disease is more complex in children with HIV infection.

- HIV-infected children often have other lung disease related to HIV; co-infection with more than one organism is common. As a result of multiple lung infections, many children develop bronchiectasis and chronic lung disease. These diagnoses are often difficult to distinguish from one another. In addition, there may be concurrent infections; the presence of one diagnosis does not exclude other causes of illness.
- The symptoms and signs of TB and those of other HIV-related lung disease may be indistinguishable. Symptoms such as chronic cough, weight loss, lymphadenopathy and fever are common with other HIV-related lung diseases.
- The TST may be falsely negative. The radiological changes, though often similar to those found in HIV-uninfected children, may be atypical.
- The differential diagnosis of pulmonary disease is much broader, including bacterial pneumonia, viral pneumonia, fungal infections, PCP, pulmonary lymphoma or Kaposi's sarcoma.
- Lymphoid interstitial pneumonitis is difficult to distinguish from miliary TB

The diagnostic approach in HIV-infected children is essentially the same for HIV-uninfected children. If possible, every effort should be made to try to establish a

bacteriological diagnosis (AFB smear and culture). If the diagnosis is unclear and the clinical situation is not urgent, the child should be treated with antibiotics for 5-7 days, followed by repeat CXR in two weeks, before committing to TB treatment.

Exercise 8: Paediatrics 1-2-3 interactive game	
Purpose	<ul style="list-style-type: none"> To help participants review the content of the module by: <ul style="list-style-type: none"> Presenting basic information on general paediatric care in an easy and enjoyable way Allowing participants the opportunity to demonstrate what they know and to learn from each other. Giving the participants a chance to get to know each other.
Duration	60 minutes
Introduction	<ul style="list-style-type: none"> Participants will be divided into four or five teams. Working within their teams, participants will take about 20 minutes to work through all questions (all categories) and agree on the correct answers. Now the competition begins! To begin play, the first team chooses a category and picks a question from that category. The team reads the question aloud and gives the answer. The team has 10 seconds to answer. If correct, the team (or the trainer) writes a tick (✓) in the corresponding cell in the scoreboard A team may only answer one question per category. If incorrect, the next team gets to answer that question or another question of its choice. Once a question has been answered correctly, no other team may use it. Teams take turns. The first team to correctly answer one question from all five categories is the winner.

SCOREBOARD FOR EXERCISE

Category	Team A	Team B	Team C	Team D
1. General paediatrics				
2. Child development				
3. Growth monitoring				
4. Tuberculosis screening				
5. General primary care				

For each correct response, place a tick (✓) in the corresponding cell.

QUESTIONS AND ANSWERS FOR EXERCISE 8: PAEDIATRIC 1-2-3 INTERACTIVE GAME

CATEGORY 1: GENERAL PAEDIATRICS

Question	Answer(s)
1. Which of the following concepts are consistent with the family-centred approach to paediatric care?	<ul style="list-style-type: none"> A. One healthcare worker is responsible for the whole family B. The health of the child depends on the health of the caregiver(s). C. Mutual information sharing and shared decision making D. Child must consent for all treatment E. Child participation in care in a manner appropriate for age and development
2. Uses for the Road to Health booklet include which of the following?	<ul style="list-style-type: none"> A. Growth monitoring B. Caregiver guidance and teaching C. Developmental Screening D. HIV testing information E. Hospital admissions
3. Which of the following are common characteristics of all of the major causes of death in children under the age of 5 in South Africa?	<ul style="list-style-type: none"> A. Preventable B. Associated with poverty C. Often exacerbated by malnutrition D. A and B E. A, B and C
4. What are important interventions to decrease under-5 mortality?	<ul style="list-style-type: none"> A. Safe water B. Improved road safety C. Prevention of mother-to-child transmission of HIV D. Food security E. More healthcare workers
5. Which of the following statements about child development are true?	<ul style="list-style-type: none"> A. Development is orderly and sequential. B. If the first-borne child walks at the age of 11 months, the younger sibling will start to walk at about the same time. C. The pace of development is not influenced by health or environment. D. The pace of development is specific for each child. E. HIV infection often causes developmental delay in untreated children.

CATEGORY II: CHILD DEVELOPMENT

Question	Answer(s)
6. Which of the following findings would you expect in a child at the age of 6 weeks?	A. Rolls back to stomach B. Vision: fixates on human face; may follow object C. Hearing: startles to sound D. Thumb-finger grasp (can pick up small object)
7. Which of the following findings would you expect in a child at the age of 3 months?	A. Increased head control; less head lag when pulled to sitting position B. Rolls back to stomach C. Watches person, follows moving object D. Social smile
8. Which of the following findings would you expect in a child at the age of 8 months?	A. Says a few words B. Feeds self with spoon C. Sits unsupported D. Babbles E. Pulls to stand
9. Which of the following findings would you expect in a child at the age of 18 months?	A. Grasps a bean-sized object w/ finger and thumb B. Walks independently C. Speaks in sentences D. Knows a few words
10. Which of the following findings would you expect in a child at the age of 36 months?	A. Knows age and sex B. Dresses self independently (including buttons, shoes) C. Knows full name D. Writes name

CATEGORY III: GROWTH MONITORING

Question	Answer(s)
11. Which of the following statements are true?	A. Weight for length/height is a good indicator for wasting and obesity B. Body mass index is used to screen for stunting. C. Head circumference does not need to be measured after the age of 6 months D. Growth is normal ONLY when it is close to the median line on the growth chart.
12. Define growth faltering	
13. Which growth indicator should be used to determine if a child is at risk for being overweight?	
14. Which of the following statements are true?	A. Early weight loss or an inadequate rate of growth can only be determined by observing a child's growth over time. B. A flat growth line is normal as long as the child is eating well C. If a single growth measurement falls below the -1 z-score line, assessment and intervention is needed. D. A child whose growth is below the -3 line requires

	hospitalisation.
15. Describe at least 2 physical characteristics of a child with marasmus.	

CATEGORY IV: TB SCREENING

Question	Answer(s)
16. Name 3 ways to help reduce the incidence of TB disease in children.	
17. Explain the difference between TB exposure and TB infection.	
18. A child with a history of TB exposure or with confirmed TB infection (positive TST) is regarded as a TB case in the presence of 2 or more of well defined symptoms suggestive of TB disease. Name these symptoms.	
12. Which of the following children should receive INH preventive therapy?	<p>A. A two-year old child with a cough and fever.</p> <p>B. A six year old child with a positive TST and no signs or symptoms of TB disease.</p> <p>C. A 6-year old HIV-infected child with a positive TST and no signs or symptoms of TB disease.</p> <p>D. An asymptomatic 3-year old child with a negative TST whose mother was recently diagnosed with sputum-positive TB disease.</p>

CATEGORY V: PAEDIATRIC PRIMARY CARE

Question	Answer(s)
19. Name 4 important components of the well-child (EPI) visit.	
20. Which of the following statements are true?	<p>A. Mild illnesses are not a contraindication to immunisation.</p> <p>B. Give doses of the same vaccine at least 8 weeks apart.</p> <p>C. If you are unsure whether a child had a certain immunisation or not, do not give it.</p> <p>D. Breastfed infants receive their first dose of Vitamin A between 6 and 9 months of age.</p>
21. Name 2 diseases that require supplemental doses of vitamin A.	
22. In which of the following cases should you consider provider-	<p>A. A 10- month old child who is unable to sit without support.</p> <p>B. A 2 month old with growth faltering</p>

initiated HIV testing and counselling?	C. A sexually active 15-year old child. D. A 12 month old child whose mother is HIV-infected. E. A 6-month old child whose mother died of unknown causes.
23. Name 3 specifics of the assessment and/or anticipatory guidance for adolescent children.	

SUMMARY OF KEY POINTS



MODULE 1 KEY POINTS

- The under-5 mortality rate (69 of every 1,000 children did not live to their fifth birthday in 2008) suggests that although there have been significant improvements in maternal and paediatric healthcare over the past two decades, there is still much work to do to keep children alive and healthy. The majority of deaths in early childhood are a result of preventable causes.
- Approximately 57% of deaths in children less than five years of age are related to HIV.
- Children have unique anatomic, physiologic, immunologic, developmental and psychological attributes that affect the healthcare worker's approach to assessment, care and treatment.
- Unlike adults, key aspects of paediatric care include monitoring of growth and development.
- Children are dependent upon adults, yet have a right to participate in their care at a level that is appropriate to their development.
- Both the child and the family benefit when healthcare workers engage and collaborate with children and their caregivers to share information and make clinical decisions.
- South Africa's Road to Health booklet is an important tool for collecting and evaluating critical health-related data for a child over time.
- Clinicians who have little or no experience caring for children are often anxious about providing paediatric care. This is reasonable and justifiable, since children are not simply miniature adults. However, knowledge and skills for providing paediatric health care can be learned and confidence developed.
- Successes and failures in outcomes of paediatric care ultimately depend on the child's environment. On a "macro" level, society must do more to value its most important yet most vulnerable citizens. On a "micro" level, children must receive treatment within the context of their families.
- The family-centred approach to care acknowledges that the best health outcomes occur when clinicians recognise that the family is central to supporting the health of the child. A healthy, engaged and involved family is the best environment for the child. The approach also provides support and reduces barriers to health care for the entire family.
- Effective assessment of children requires an approach that considers the child's

age and development.

- Consideration for child development and the incorporation of developmental principles into communication with children and into the physical examination of children makes the process more effective. These principles also help the healthcare worker to build a relationship with child and to help the child develop the necessary confidence and skills to participate in and assume a growing responsibility for his own health and health care.
- Additionally, routine performance of and attention to a developmental assessment is a critical part of the assessment of a child. Routine assessment is referred to as “developmental surveillance”; it is critical to early recognition of abnormalities. Attention to developmental progress also informs discussion with caregivers on how best to support a child’s development and how to assess any perceived abnormalities.
- Developmental delay is common in children with untreated HIV disease. A child of unknown HIV status with developmental delay should have an HIV test as part of the evaluation. Developmental delay in a child known to have HIV is cause for concern and evaluation for opportunistic infection and/or advancing disease and need to initiate or change HIV treatment.
- Growth is a sensitive indicator of child health. Adequate monitoring includes measurement of weight, length/height, head circumference (in young children) and BMI; plotting of measurements; and evaluation of the child’s growth curves at each visit and over time.
- Comprehensive, high quality growth monitoring and evaluation leads to early recognition of growth problems.
- Early recognition and evaluation of growth problems allows for interventions to be implemented before the problem progresses.
- Growth faltering is common in children living with HIV. Provider-initiated HIV testing and counselling is an important part of the evaluation of the child of unknown HIV status with growth faltering. For children known to be HIV-infected, growth faltering may be a sign of disease progression. This may signal a need to initiate or change ART.
- The child health and family history is an important part of the database in child health and informs the analysis of other data from the physical examination, laboratory reports, etc.
- Follow-up health visits start with an interval history—a summary of events affecting the child’s health and well-being since the last visit.
- The physical exam includes measuring and plotting growth, a developmental assessment, recording vital signs and findings on physical exam according to medically accepted procedures.
- It is important to identify children that are HIV-infected at an early stage to ensure that they and their families obtain optimal care. The disease progresses more rapidly in children than in adults and therefore children may be the first in the family to fall ill.
- Constant vigilance is essential in order to ensure that all children with HIV infection are identified as early as possible. The possibility of HIV infection should be considered during every contact with the health system, whether at PHC, district hospital or referral level. It is obligatory to identify all children with possible HIV-infection as part of routine primary care.
- At routine EPI visits screen for TB, provide vitamin A supplementation and

deworm. Vitamin A supplementation is provided every six months from the age of six months to five years (with the addition of a dose at six weeks for non-breastfed children). Deworm every six months starting from one year of age.

- Children — especially very young children and children who are immunosuppressed — are at high risk for TB infection and TB disease. Careful screening and evaluation is a critical element of care. Young children (under five years of age) and all children living with HIV who are exposed to an active TB case should receive TB prophylaxis according to national guidelines.
- HIV-infected and HIV-exposed children should be immunised according to the routine national immunisation schedule. Most missed immunisations should be given at the next clinic visit and booster doses re-scheduled based on the immunisation catch up schedule.
- The EPI visit is also an important time to provide anticipatory guidance, including infant and young child feeding information, counselling and support and (if applicable) advice on the administration of medications to children.



APPENDIX I: LEADING CAUSES OF DEATH AMONG SOUTH AFRICAN CHILDREN



MRC POLICY BRIEF

No. 3, December 2003



What are the leading causes of death among South African children?

Debbie Bradshaw,
David Bourne,
Nadine Nannan

Burden of Disease Research Unit, Medical Research Council,
PO Box 10970, Tygerberg, 7505, South Africa.
Tel. +27 (0)21 938 0327. <http://www.mrc.ac.za/bod/bod.htm>

Investing in the health and wellbeing of the children of South Africa is an investment in the future development of our country. South Africa still has a relatively youthful population with a third of the population under 15 years of age¹, although we are in the midst of demographic transition. The health of these children needs to be a priority, a principle adopted through the ratification of the 1990 United Nations Convention of the Rights of the Child.

The level of mortality is a fundamental indicator of child health and understanding the causes of death of children provides insight as to how it can be reduced. The lack of reliable vital statistics has created a void when it comes to these

The Medical Research Council published the Initial Burden of Disease Estimates for South Africa, 2000 in March 2003^{1,2}. This was the first attempt to derive consistent and coherent estimates of all causes of death from a range of data sources and models. A major finding of the study was the quadruple burden of disease experienced in South Africa resulting from the combination of the pre-transitional causes related to underdevelopment, the emerging chronic diseases, the injury burden and HIV/AIDS. This policy brief examines the causes of mortality among children in more detail.

indicators, but the recent burden of disease study has made use of available data from the emerging health information system to estimate the levels and causes¹.

The 1998 Demographic and Health Survey⁴ found that the Infant Mortality Rate was 45 per 1000 live births for the preceding 10 years. This overall figure is lower than the WHO 'Health for All' target of 50 per 1000 births, but does conceal the variations between population groups, according to socio-economic status or region. The survey also highlighted the wide racial and socio-economic status inequalities in child mortality. It also conceals the reversal in the downward trend that occurred during the 1990's. This has

largely been ascribed to the impact of the HIV/AIDS epidemic. Furthermore, the level of mortality has not given any insight into the causes of mortality.

The South African National Burden of Disease Study (NBD)

Since the disease burden in South Africa is undergoing rapid change due to the spread of HIV/AIDS⁵, the usual burden of disease approach was considered inappropriate and a modelling approach calibrated to empirical data was adopted. An adapted version of the 1990



Global Burden of Disease (GBD) list of causes of death⁶⁷ was developed for the South African National Burden of Disease study. The total number of deaths, as well as the age-specific population was calculated using the ASSA2000 model of the Actuarial Society of South Africa⁶⁸. Empirical estimates from surveys and vital registration of the level of childhood and adult mortality were used in the model for the period prior to the AIDS epidemic. Ill-defined causes within a disease category were reallocated proportionally by age and sex to specified causes within that category. Cause of death information processed by the Department of Home Affairs was used to estimate the overall proportion of deaths due to injuries by age and sex. Finally the UNISA/MRC national injury mortality surveillance system (NIMSS)⁶⁹ was used to estimate the profile of deaths arising from injury. The estimates are hence a synthesis derived by analysis of a variety of often incomplete data sources. Full details of the methodology appear in the complete report¹. Variations of prevalence at a subnational level are not reflected in this study.

The NBD study estimated just over half a million deaths of which 106 000 were of children under the age of 5 years and a further 78000 were children aged 5-14 years. In general, young babies are much more vulnerable than older. In addition, the cause of death patterns in the different age groups are very different.

Infant and Under-5 mortality

The NBD study estimates that by the year 2000, the Infant Mortality Rate had risen to 60 per 1000 live births and the Under-5 mortality rate had risen to 95 per 1000. This deterioration in child health occurred despite the introduction of free health care and nutrition programmes and was attributable to paediatric AIDS, commensurate with the high prevalence of HIV observed among pregnant women.

The top twenty causes for children under the age of 5 are shown in Table 1 and by age and sex in Figures 1 and 2. HIV/AIDS is the leading cause of death among young children and accounts for 40% of the deaths in 2000. Although the percentage of deaths due to HIV/AIDS is higher in the 1-4 year age group, the largest number of deaths occurs in the under-one age group. Low birth weight, diarrhoea, lower respiratory infections and protein energy malnutrition account for a further 30% of the childhood deaths. A large number of these deaths are preventable through the delivery of the standard conventional primary health care package approach. Birth defects, particularly of the heart and neural tubes also are among the top ranking infant deaths. Protein-energy malnutrition begins to show in the 1-4 age group. There is little gender difference in mortality among the under-fives.

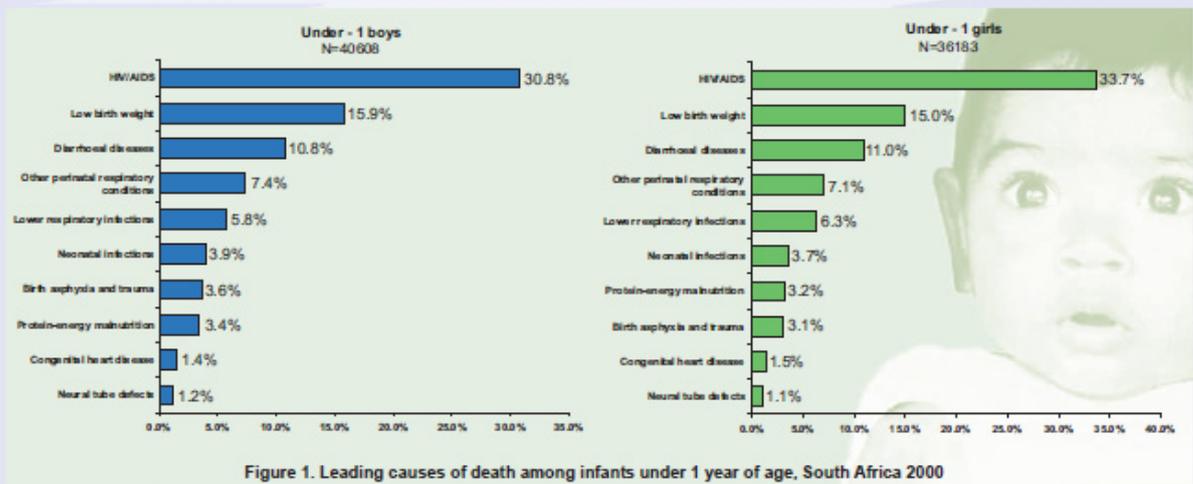
Projections indicate that without effective prevention of mother-to-child

Table 1: Top twenty specific causes of death in children under 5 years, South Africa 2000

Rank	Cause of death	Deaths	%
1	HIV/AIDS	42749	40.3
2	Low birth weight	11876	11.2
3	Diarrhoeal diseases	10786	10.2
4	Lower respiratory infections	6110	5.8
5	Protein-energy malnutrition	4564	4.3
6	Neonatal infections	2920	2.8
7	Birth asphyxia and trauma	2584	2.4
8	Congenital heart disease	1238	1.2
9	Road traffic accidents	1219	1.1
10	Bacterial meningitis	1141	1.1
11	Fires	1102	1.0
12	Neural tube defects	1019	1.0
13	Septicaemia	980	0.9
14	Tuberculosis	743	0.7
15	Homicide/violence	654	0.6
16	Drowning	532	0.5
17	Cot death	491	0.5
18	Down syndrome and other chromosomal	445	0.4
19	Congenital disorders of GIT	379	0.4
20	Congenital syphilis	257	0.2
	All causes	106070	

transmission (PMTCT), the child mortality rate is likely to have continued to rise in subsequent years¹⁰. This pattern, however, can be expected to change as the epidemic matures and as the roll-out of PMTCT takes effect, reducing the number of infected babies.

Most of the other causes of death of infants and toddlers are associated with poor socio-economic conditions. The 2001 census reveals extensive variations in living conditions. Over two thirds of households have formal homes, 16% are informal and 14% are traditional. Access to clean water and basic sanitation is important from a health perspective. The census shows that the majority of households do have access to piped water (84.5%) – whether it is in the home, the yard or a public facility. However, the Eastern Cape has a much lower proportion with only 62.4% of households having access to piped water. The Eastern Cape also had a very high proportion of households without any toilet facilities (30%). Nationally, 13.6% of households have no toilet facility, also a health hazard. Just over half the households have regular refuse removal services. The high levels of poverty and unemployment are clearly



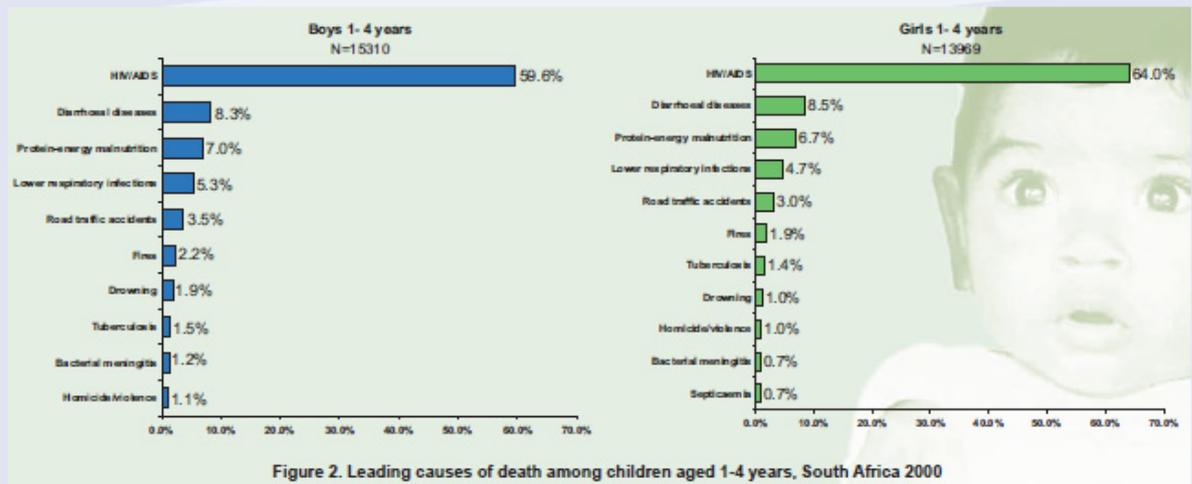


Figure 2. Leading causes of death among children aged 1-4 years, South Africa 2000

fundamental issues that bear on child health, also indicated by the estimated 4564 deaths from protein-energy malnutrition (Kwashiorkor). Many of these deaths can be prevented. Reducing poverty, meeting basic needs and adopting a comprehensive primary health care approach with renewed vigour must be high on the agenda in the next few years.

Older children 5-14 years

As children get older, external causes of death (eg. road traffic injuries and drowning) rise in importance. This is particularly noticeable among boys who die in greater numbers than girls. This pattern becomes particularly marked among the 10-14 year age group, where road traffic accidents is the leading cause of death. Homicide and suicide feature in the top causes

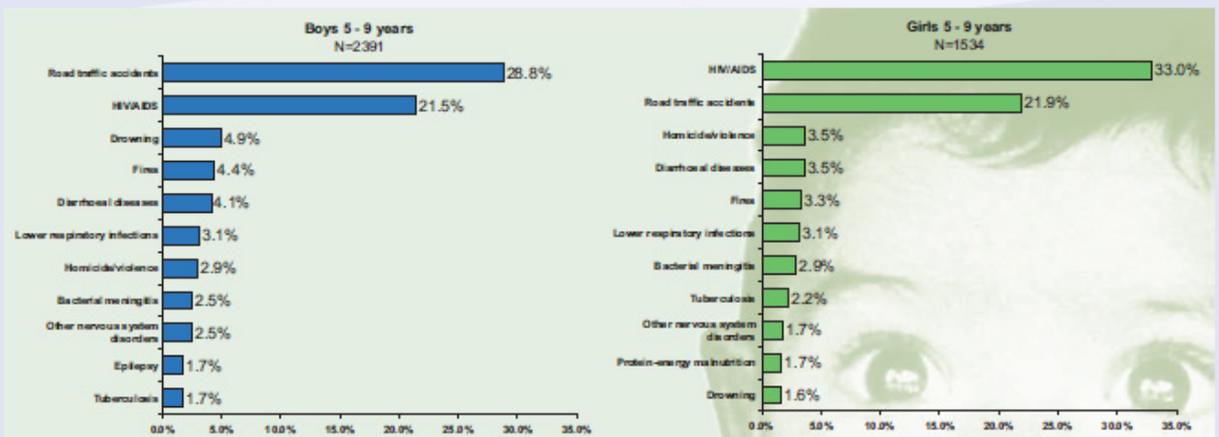


Figure 3. Leading cause of death among children aged 5-9 years, South Africa 2000

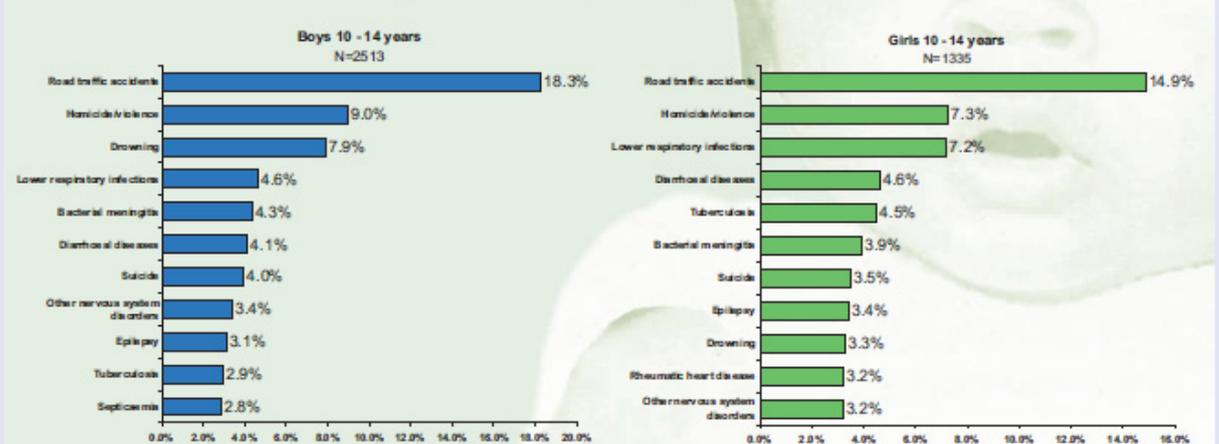


Figure 4. Leading Causes of death among children aged 10-14 years, South Africa 2000

Policy Implications

The mortality data indicates that many of the child deaths occurring in South Africa are preventable. We have identified three broad areas that will require differing approaches for intervention:

- The prevention of mother-to-child transmission of HIV, even at its current efficacy, is the single most effective intervention to reduce mortality among under-5-year olds, eclipsing all other interventions for other causes of death combined.
- Although dominated by the rise of HIV/AIDS, the classic infectious diseases such as diarrhoea, respiratory infections and malnutrition are still important causes of mortality. Environment and development initiatives such as access to sufficient quantities of safe water, sanitation, reductions in exposure to indoor smoke, improved personal and domestic hygiene as well as comprehensive primary health care will go a long way to preventing these diseases. Poverty reduction initiatives are also important in this regard.
- Road traffic accidents and violence, which includes homicide and suicide is another group of high mortality conditions that will require dedicated interventions.

The data presented in this policy brief represent an average for the whole country and do not highlight the inequalities in health care and outcomes that exist in different parts of the country. Detailed investigation of these inequalities will, however, require more comprehensive information systems than are currently available, and are beyond the scope of this policy brief.

of death in these ages and among the 10-14 year age group, homicide is the second leading cause of death. HIV/AIDS is no longer a leading cause of death, in this age group, although other infectious diseases make up a large proportion of the remaining top causes.

Acknowledgements

This research work has been partially supported by a grant from UNICEF. The modeling of the HIV/AIDS epidemic was carried out at the Centre for Actuarial Research at the University of Cape Town.

The Impact of Adult Mortality on Child Mortality

In recent years, mortality among young adults, and in particular young women, has increased dramatically as a result of HIV/AIDS. Such mortality and also the illness preceeding it, has a devastating effect on children leading to increased morbidity, mortality and orphanhood. One of the most important results of the roll-out of anti-retroviral therapy among the general population will be the extension of the lives of AIDS sick parents leading to a dramatic decline in the number of orphans. ¹¹

References

1. Bradshaw D, Groenewald P, Laubscher R, Nannan N, Nojilana B, Norman R, Pieterse D, Schneider M. *Initial Burden of Disease Estimates for South Africa, 2000*. Cape Town: South African Medical Research Council, 2003. <http://www.mrc.ac.za/bod/bod.htm>
2. Bradshaw D, Groenewald P, Laubscher R, Nannan N, Nojilana B, Norman R, Pieterse D, Schneider M, Dorrington RE, Bourne D, Johnson L, Timaeus I. Initial burden of disease estimates for South Africa, 2000. *South African Medical Journal*; 92: 618-623.
3. Statistics South Africa. *Census 2001: Census in brief*. Pretoria: Statistics South Africa, 2003. <http://www.statssa.gov.za>
4. Department of Health, Medical Research Council, Macro International. *South Africa Demographic and Health Survey 1998*. Full report. Pretoria: Department of Health, 2002.
5. Bradshaw D, Schneider M, Dorrington R, Bourne D, Laubscher R 2002. South African cause of death profile in transition – 1996 and future trends. *South African Medical Journal*; 92: 618-623.
6. Murray CJ, Lopez AD. *The Global Burden of Disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*. Vol. 1, Global Burden of Disease and Injury series. Boston: Harvard School of Public Health, 1996.
7. Murray CJ, Lopez AD. *Global Health Statistics*. Vol. 2, Global Burden of Disease and Injury Series. Boston: Harvard School of Public Health, 1995.
8. Actuarial Society of South Africa. *AIDS and demographic model*. ASSA 2000. <http://www.assa.org.za>
9. Burrows S, Bowman B, Matzopoulos R, Van Niekerk A, eds. *A profile of fatal injuries in South Africa 2000: Second annual report of the National Injury Mortality Surveillance System (NIMSS) 2000*. Cape Town: MRC/UNISA Crime, Violence and Injury Lead Programme Technical Report. 2001.
10. Dorrington RE, Bradshaw D, Budlender D. *HIV/AIDS profile in the provinces of South Africa: Indicators for 2002*. Cape Town: MRC and UCT, 2002. <http://www.commerce.uct.ac.za/care>
11. Bradshaw D, Johnson L, Schneider H, Bourne D, Dorrington R. *Orphans of the HIV/AIDS epidemic – the time to act is now*. MRC Policy Brief No 2. Cape Town: Medical Research Council, 2002.



APPENDIX 2: ROAD TO HEALTH BOOKLET



The following pages are from the Road to Health booklet. Growth charts for head circumference appear after the booklet.

IMPORTANT: Always bring this booklet when you visit any health clinic, doctor or hospital and present on school entry

ROAD TO HEALTH BOYS

CHILD'S NAME: _____

DATE OF BIRTH: DD/MM/YYYY _____

GENDER: _____

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 in a public or private health facility. The booklet is not a legal document and 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												
Age	Date	Growth (IMCI) (page 14)	PMTCT/ HIV status (IMCI) (page 7&8)	TB status (IMCI)	Feeding (EBF/EF/ mixed feeding for first 6 months)	Remember to check the following. Tick if done, and record details on the relevant page					Date of next visit	
						Immunisations (page 6)	Vitamin A (page 9)	Deworming (page 10)	Development (page 13)	Oral Health (page 19)		
3 days												
6 wks												
10 wks												
14 wks												
4 mths												
5 mths												
6 mths												
7 mths												
8 mths												
9 mths												
10 mths												

Age	Date	Growth (IMCI) (page 14)	PMTCT/ HIV status (IMCI) (page 7&8)	TB status (IMCI)	Feeding (EBF/EFV/ mixed feeding for first 6 months)	Immunisations (page 6)	Vitamin A (page 9)	Deworming (page 10)	Development (page 13)	Oral Health (page 19)	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:	<input type="text"/>
Mother's ID number:	<input type="text"/>
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) <input type="text"/>	Reason(s) for death(s):
Number alive now <input type="text"/>	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? <input type="checkbox"/> Yes <input type="checkbox"/> No	Does the mother need additional support to care for the child? (Specify) <input type="checkbox"/> Yes <input type="checkbox"/> No
Any disability present (including birth defects?) (Specify) <input type="checkbox"/> Yes <input type="checkbox"/> No	Other: (Specify)

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: <input type="checkbox"/> Exclusive breast <input type="checkbox"/> 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

Name and surname:			ID number: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 15px; height: 15px;"></td> </tr> </table>																						
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

PMTCT/HIV INFORMATION (Only detach page when child is taken to school)		
Child's first name and surname:		
Child's ID Number:	<input type="text"/>	
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	<input type="text"/> Positive	<input type="text"/> Negative <input type="text"/> To be done
When did mother have the test?	<input type="checkbox"/> Before pregnancy	<input type="checkbox"/> During pregnancy <input type="checkbox"/> At delivery
Is the mother on life-long ART?	<input type="text"/> Yes	<input type="text"/> No
If yes, duration of life-long ART at time of delivery	<input type="checkbox"/> < 4 weeks	<input type="checkbox"/> > 4 weeks <input type="checkbox"/> Before pregnancy
Document ARVs the mother received:		
Did the mother receive infant feeding counseling?	<input type="text"/> Yes	<input type="text"/> No
Decision about infant feeding	<input type="checkbox"/> Exclusive breast	<input type="checkbox"/> Exclusive formula
Did the infant receive Nevirapine in the first 3 days of life?	<input type="text"/> Yes	<input type="text"/> No
All HIV exposed infants should receive Nevirapine for 6 weeks		
Has the mother disclosed to anyone in the household?	<input type="text"/> Yes	<input type="text"/> No
Has the mother's partner been tested?	<input type="text"/> Yes	<input type="text"/> 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 $\geq 6/52$		

ROAD TO HEALTH

Fill in this section if infant is HIV exposed		
6 week visit		
What feeds has the infant received?	<input type="checkbox"/> Exclusive breast	<input type="checkbox"/> Exclusive formula <input type="checkbox"/> Mixed feeding
HIV PCR test done?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date: ___/___/___ dd mm yyyy
Cotrimoxazole started?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Infant feeding discussed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Has child received Nevirapine?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes: <input type="checkbox"/> Stop now <input type="checkbox"/> Continue
Stop Nevirapine if the mother is on life-long ART or the child has stopped breastfeeding. If not, continue until breastfeeding stops		
10 week visit, or earlier if ill		
PCR result	<input type="checkbox"/> Positive <input type="checkbox"/> Negative	
Post test counseling done?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Referred for ART?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Stop Nevirapine if PCR is positive
Cotrimoxazole given?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Has child received Nevirapine?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes: <input type="checkbox"/> Stop now <input type="checkbox"/> 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	<input type="checkbox"/> Positive <input type="checkbox"/> Negative	Date: ___/___/___ dd mm yyyy
Post test counseling done?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Referred for ART	<input type="checkbox"/> Yes <input type="checkbox"/> No	Stop Nevirapine if PCR is positive
Cotrimoxazole given?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Has child received Nevirapine?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes: <input type="checkbox"/> Stop now <input type="checkbox"/> 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	/ /		54 mths	/ /		
	36 mths	/ /		60 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	/ /					

ROAD TO HEALTH

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 sucking, 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.



ROAD TO HEALTH

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.

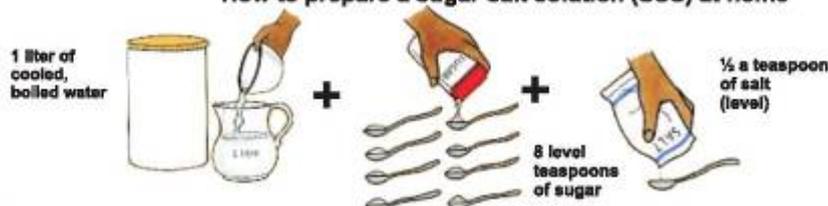
Encourage feeding during illness

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



ROAD TO HEALTH

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. Remember that tea interferes with the absorption of iron;

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.

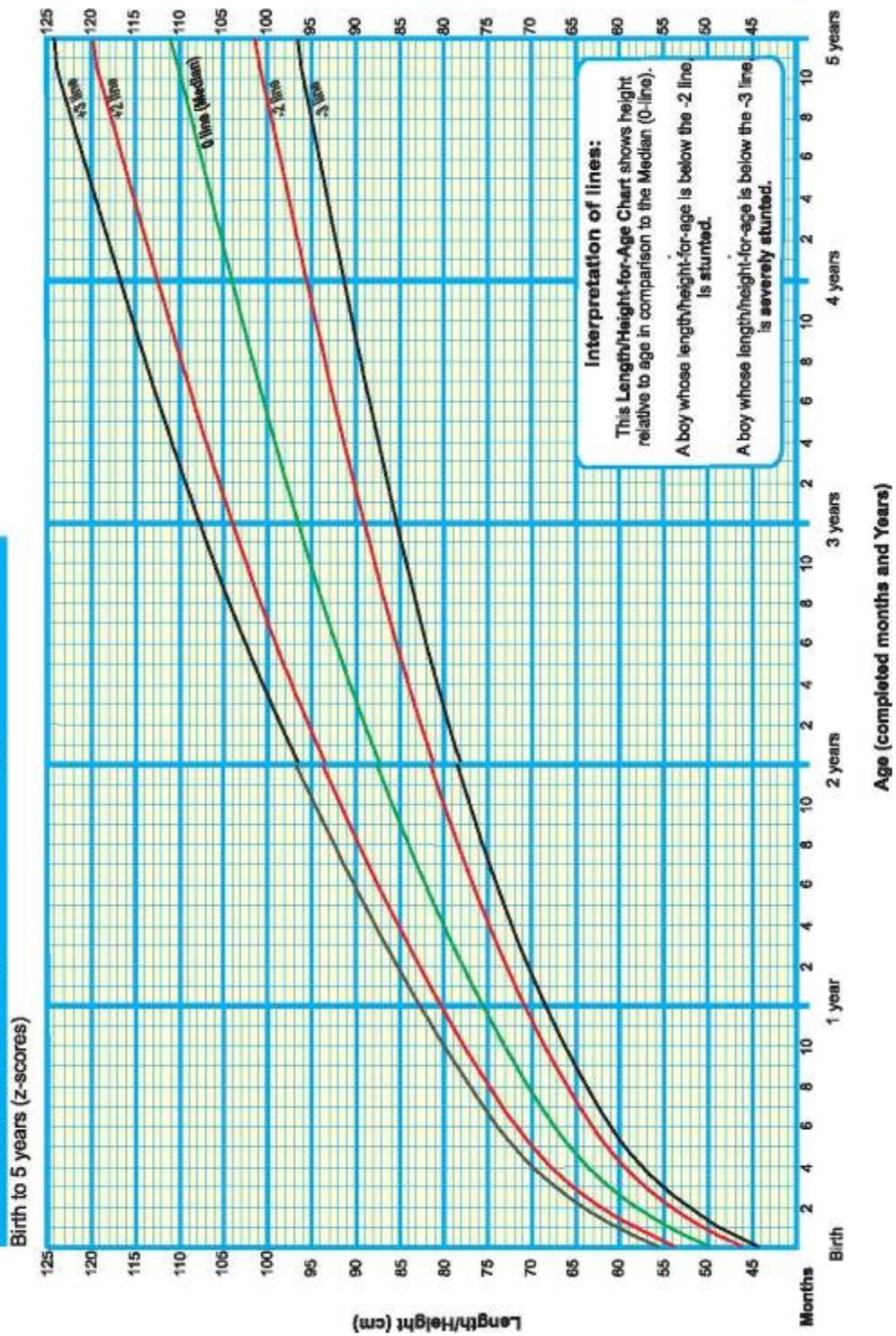


Communicate: Encourage your child to talk and answer your child's questions. Teach your child stories, songs and games.

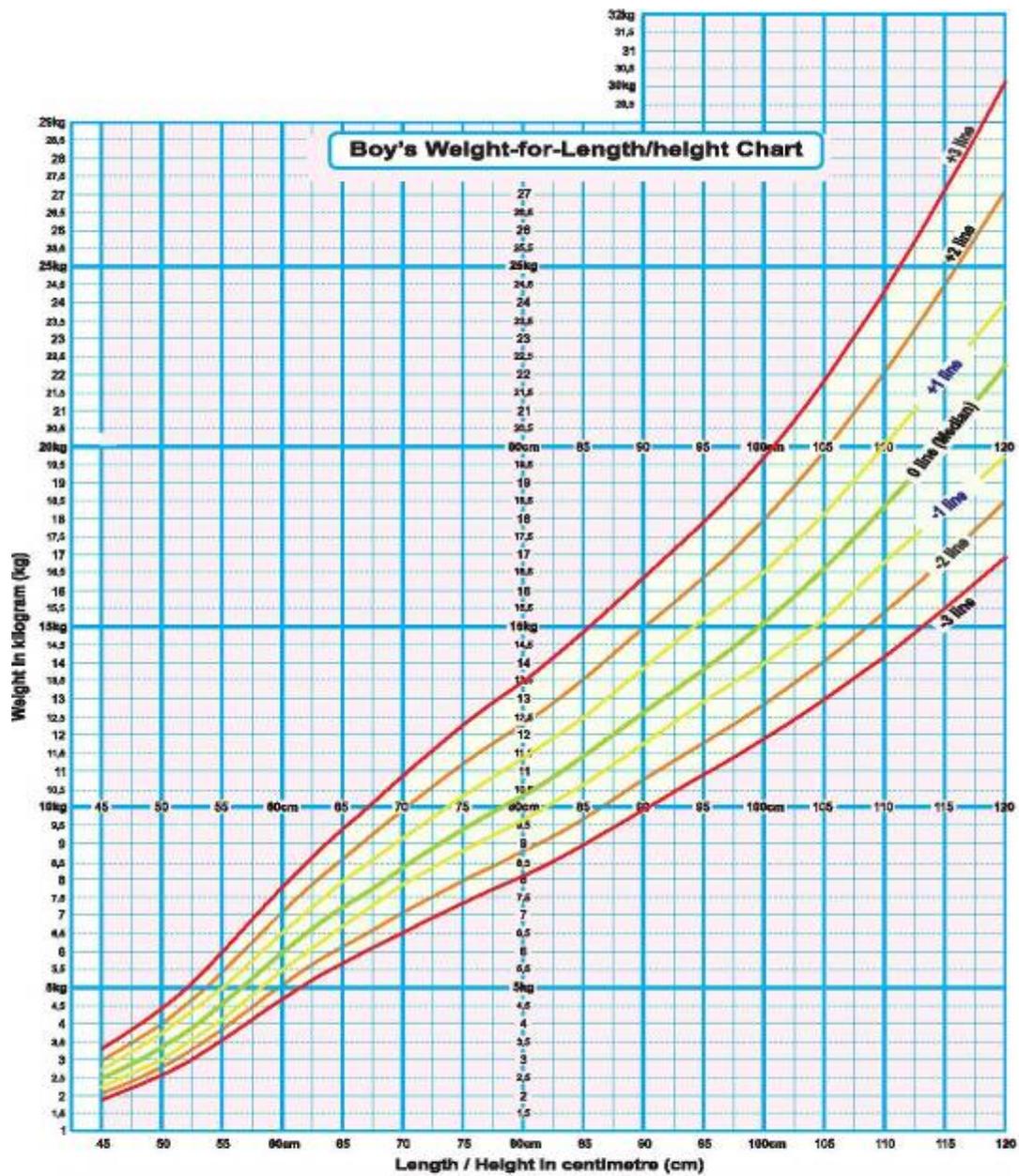
DEVELOPMENTAL SCREENING			
	VISION AND ADAPTIVE	HEARING AND COMMUNICATION	MOTOR DEVELOPMENT
ALWAYS ASK	Can your child see?	Can your child hear and communicate as other children?	Does your child do the same things as other children of the same age?
14 weeks	Baby follows close objects with eyes	Baby responds 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 play 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 finger to feed
3 years	Sees small shapes clearly at 6 metres	Child speaks in simple 3 words sentences	Child runs well and climbs on things
5-6 years: School readiness	No problem with vision, uses 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 mental 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.		

ROAD TO HEALTH

Length/height -for-age BOYS



The Girls Length/height-for-age Chart can be found on immediately following this Road to Health booklet.



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.

The Girls Weight-for-Height Chart can be found on immediately following this Road to Health booklet.

MID-UPPER ARM CIRCUMFERENCE (MUAC) (Every 3 months)							
Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC
<p>< 11cm indicates severe acute malnutrition (REFER urgently) 11.0 - 12.5 cm indicates moderate acute malnutrition (Manage as in IMCI guidelines)</p>							
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:			

ROAD TO HEALTH

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

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Take your child to the nearest clinic when any of these danger signs occur:



Vomiting everything



Unable to drink or breastfeed



Child lethargic or unconscious



Convulsions



Cough and breathing rate more than 60 breaths per minute



Diarrhoea with sunken eyes or sunken fontanelle



Child under 2 months and:

- Is not feeding
- Has a fever

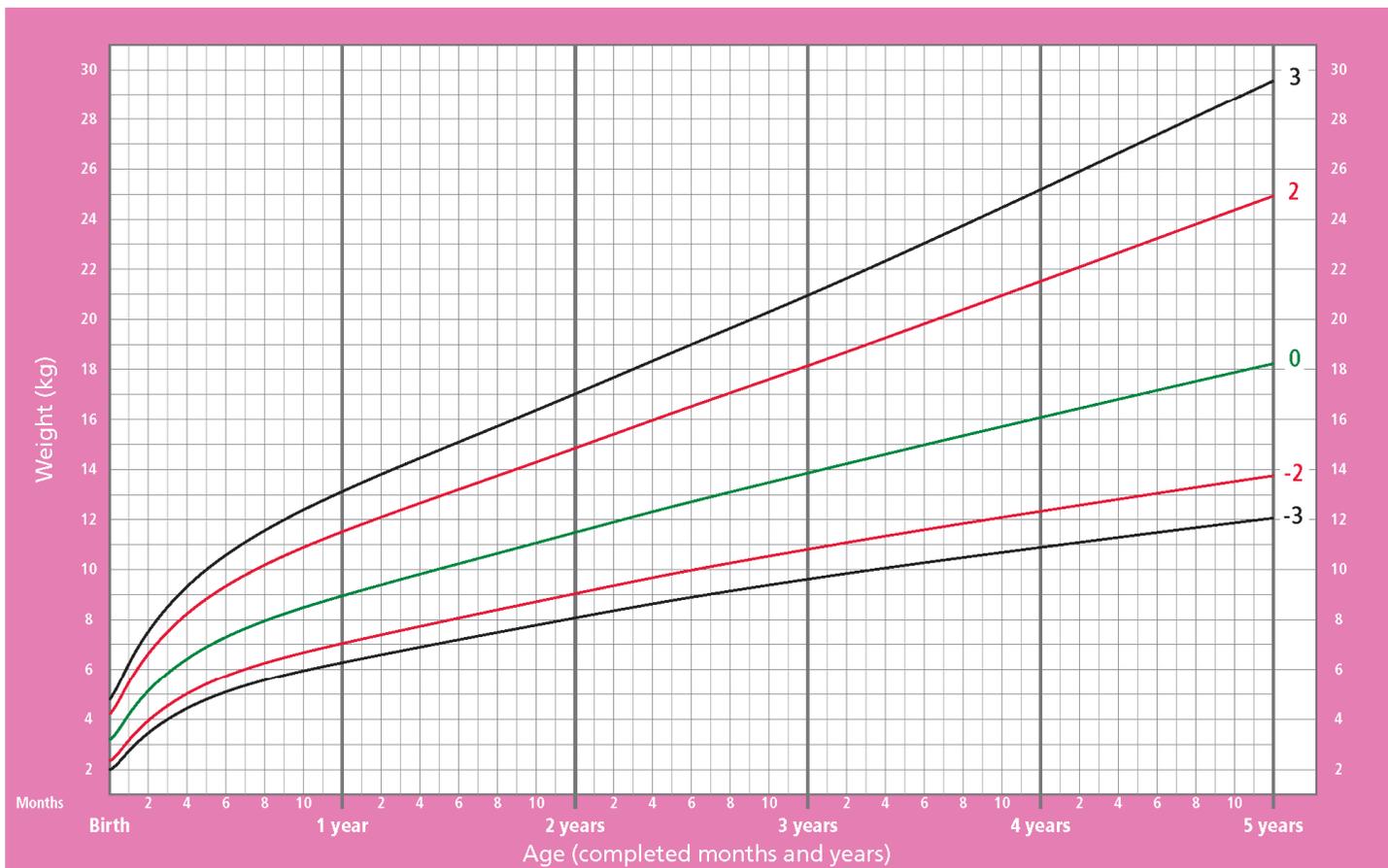


Chest indrawing



Weight-for-age GIRLS

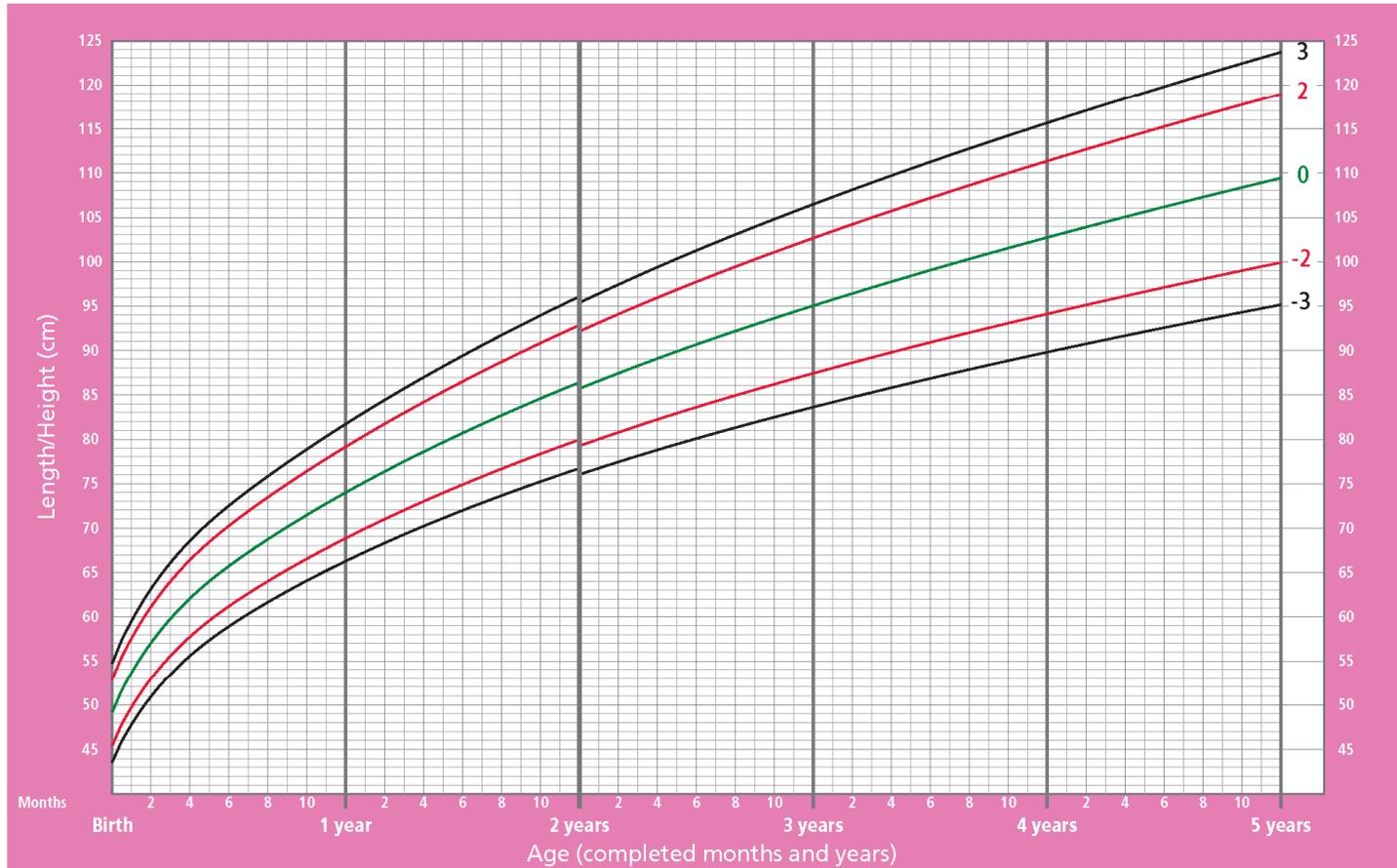
Birth to 5 years (z-scores)



WHO Child Growth Standards

Length/height-for-age GIRLS

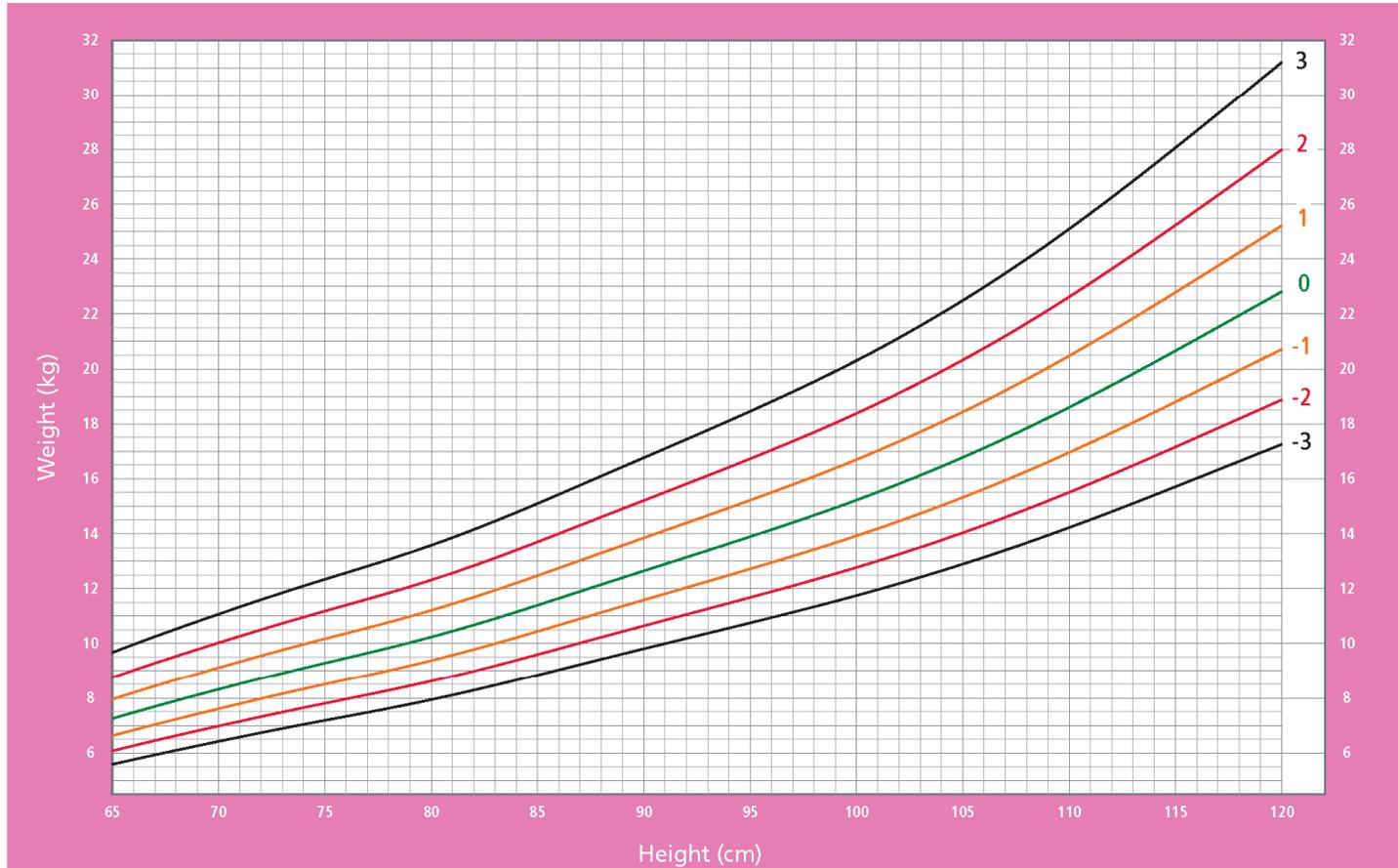
Birth to 5 years (z-scores)



WHO Child Growth Standards

Weight-for-Height GIRLS

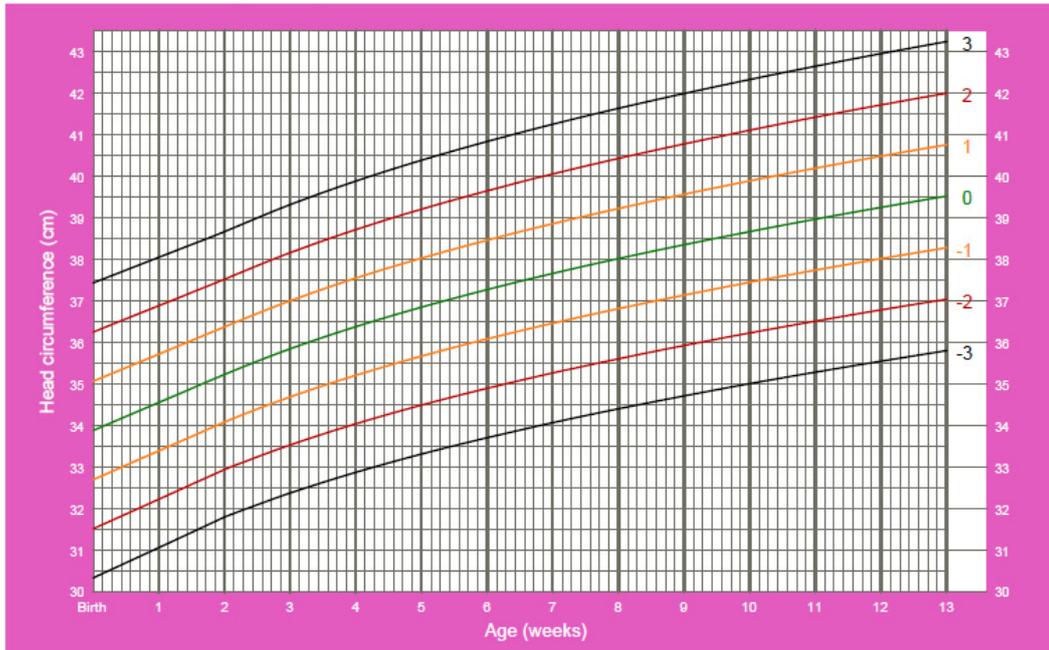
2 to 5 years (z-scores)



WHO Child Growth Standards

Head circumference-for-age GIRLS

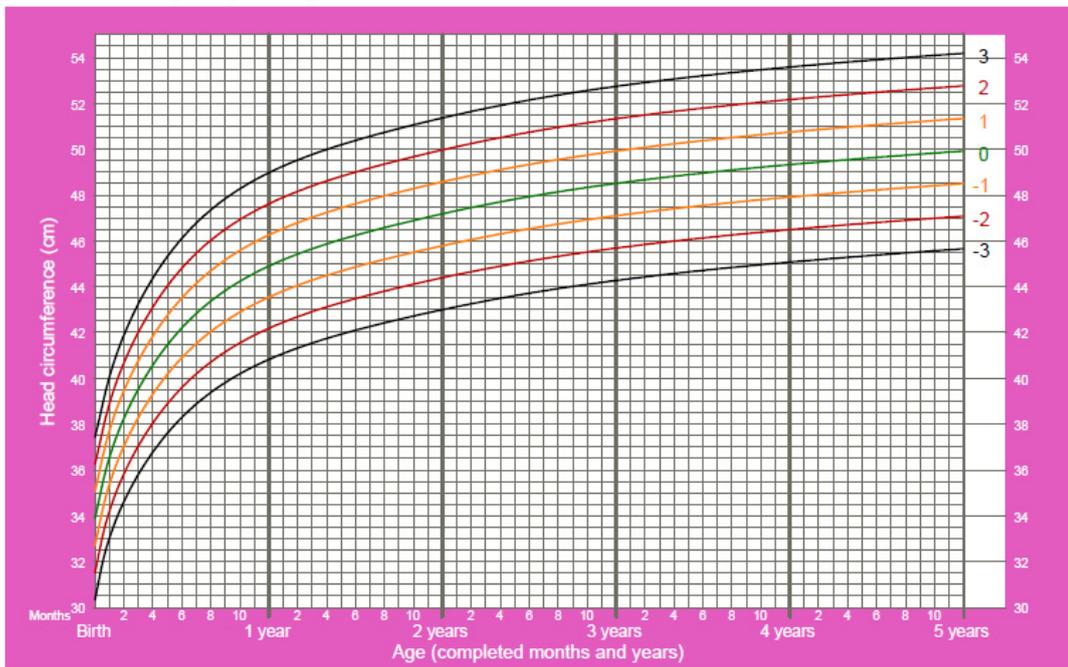
Birth to 13 weeks (z-scores)



WHO Child Growth Standards

Head circumference-for-age GIRLS

Birth to 5 years (z-scores)

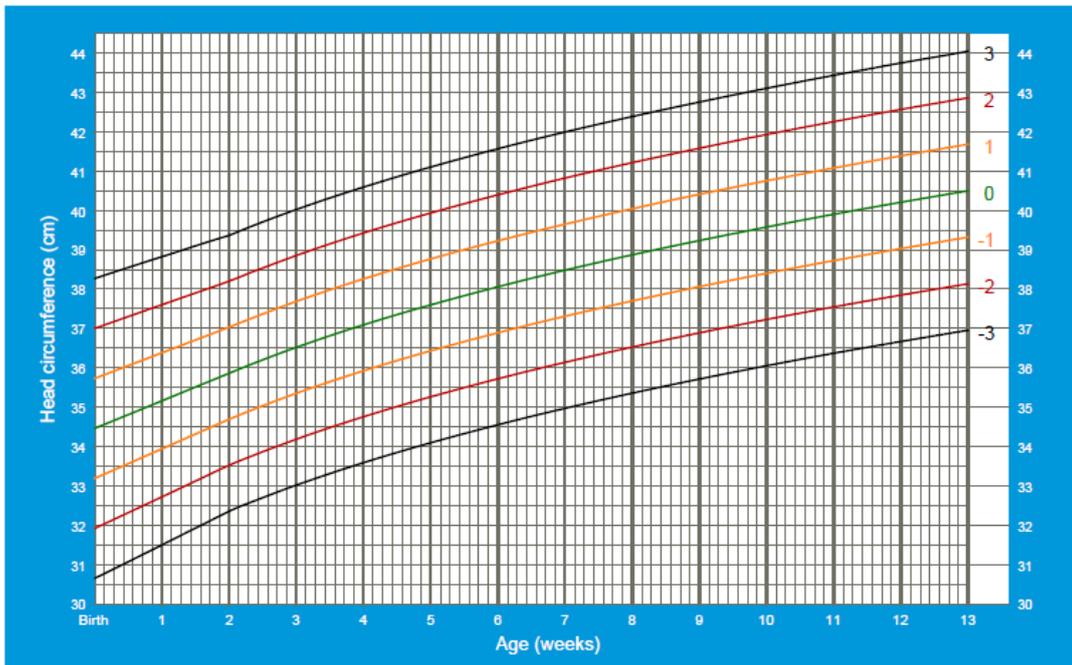


WHO Child Growth Standards

Available from: http://www.who.int/childgrowth/standards/chts_hcfa_girls_z/en/index.html

Head circumference-for-age BOYS

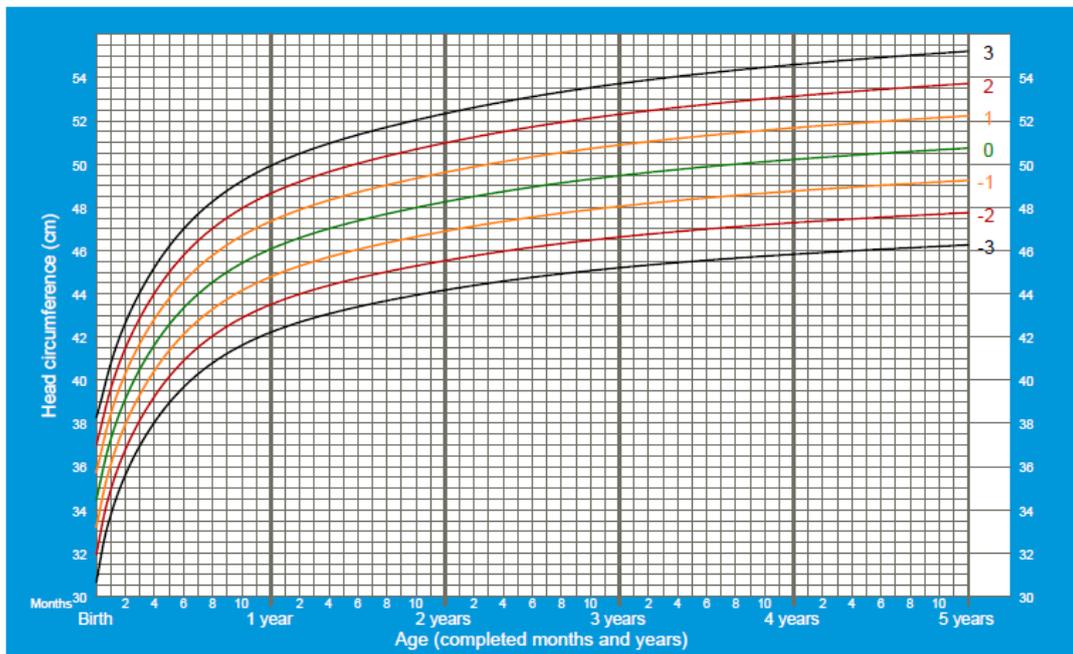
Birth to 13 weeks (z-scores)



WHO Child Growth Standards

Head circumference-for-age BOYS

Birth to 5 years (z-scores)



WHO Child Growth Standards

Available from: http://www.who.int/childgrowth/standards/chts_hcfa_boys_z/en/index.html



APPENDIX 3: NORMAL VITAL SIGNS IN CHILDREN BY AGE



Age	HR Beats/min	RR Breaths/min	BP* Systolic	BP* Diastolic
< 1 day	93-154	40-60	67	41
1-2 day	91-159	40-60	67-74	41-43
3-6 day	91-166	40-60	71-76	42-47
1-3 week	107-182	40-60	65-103	52-71
1-2 months	121-179	23-39	84-106	51-69
3-5 months	106-186	23-39	86-111	53-69
6-11 months	109-169	23-39	93-112	53-73
1-2 years	89-151	22-31	99-109	57-65
3-4 years	73-137	40-27	100-111	61-71
5-7 years	65-133	18-24	103-116	65-76
8-11 years	62-130	17-22	108-124	71-83
12-15 years	60-119	14-21	116-135	75-86
15-18 years	60-120	13-21	125-140	79-89

* Blood pressure should be done with the correct size cuff.



APPENDIX 4: DEVELOPMENTAL MILESTONES SCREENING TOOL



Developmental Milestone Red Flag Screening for Primary Health Care

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
6 Weeks	Poor hearing	Does your child get frightened by loud sounds?		Refer
		Does your baby move or turn his head when you talk to him?		
	Poor vision	Have you noticed a white spot on your child's eyes?	Refer	
		Is your baby looking at your face during feeding?		
	Floppy	Does your baby try to lift his head up when you hold your baby against your shoulder?		Refer
	Deformities present	Are there any body parts that look different than other children's?		
Health Care Worker should undress and examine baby for any deformities				
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature: Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer. Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
3 months	No visual fixation or following	Does the baby follow you when you move? /Follow a toy with his eyes?		Refer
		Does your baby look at you during feeding?		Refer
		Have you noticed a white spot on your baby's eyes?	Refer	
	Poor hearing	Does your baby respond to sounds by turning, blinking or stop sucking?		Refer
	Asymmetry of tone or movement	Does your child prefer to use one side (left or right) more than the other?		
		Is the child moving his arms more than his legs or vice versa?		
	Floppy/stiff	Do you struggle to change your baby's nappy, because the legs are stiff?		
		Is the baby reminding you of a rag doll or a new born baby?		
	Consistent fistng	Does your child open his hands to take your finger or a rattle?		
	Unable to turn or lift head	Is the baby able to turn his head sideways when lying on his tummy?		
		Is the baby able to lift his head when lying on his tummy?		Refer
	Failure to smile	Does your baby smile when you talk or play with him?		Refer
Poor sucking and swallowing	Does your baby struggle with feeding e.g. struggle to suck the nipple/dummy?			
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature:	
			Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer.

Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No	
6 months	Floppiness and poor head control	Can your baby sit if you hold his hands or put pillows around him?		Refer	
		Is the baby able to lift his head with his upper body when pulled to sit?			
	Baby is not rolling	Does your baby roll over from his tummy to his back and vice versa?			
	Asymmetrical movements e.g. Failure to use both hands	Does your baby help to hold his bottle or the breast with both hands?			
		Does your baby pick up and play with a rattle or another toy? Both hands		Refer	
		Does your child lift his both feet and play with them with both hands?		Refer	
	Squint or blindness	Are you worried about your child's vision? Squint?		Refer	
		Does the baby follow an object from one side to another?		Refer	
	Hearing: Failure to turn to sound	Does your baby turn his head to sounds?			Refer
		Does your baby babble to get attention?			
Poor response to people	Does your baby cries differently when he is hungry, tired or sick?			Refer	
	Does the baby laugh out loud?				
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature:		
			Date:		

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer.

Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
9 months	Unable to sit	Is your baby able to sit without support?		
		Is your baby to lean forward and sit up again without falling over?		
	Not developing the crawling position	Can your baby roll over from his back or sides to his stomach?		Refer
		Is your baby standing on his hands and knees, swaying forwards and backwards?		
	Hand preference	Does your child mostly use one hand?		
		Is your child able to bring both hands together in the middle of the body?		
		Can your baby pass a toy from one hand to the other?		Refer
	Fisting	Do you struggle to open your baby's hands to clean them or to cut the nails?		
		Does your child reach out and pick up a toy with any given hand?		
	Squint or blindness	Are you worried about your child's vision? Squint?		Refer
		Does the baby follow an object from one side to another?		Refer
	Hearing and speech	Does your baby stop and turn when you call his name?		Refer
		Does your baby babble using different sounds like "dadada" or "bababa"?		Refer
	Persistence of primitive reflexes	Evaluate the Grasp reflex and the Routing reflex: Is it present?		
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Date:	
			Signature:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer.

Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
12 months	Unable to bear weight on legs	If you hold your child, feet touching the ground: Is your child standing?		
		Does your child carry an equal amount of weight on both legs?		
	Not yet crawling and pulling to stand	Is your child crawling?		
		Does your child crawl to a chair and then pull himself up to standing?		
	Abnormal grasp	Can your child hold a block or a stone in each hand at the same time?		
		Can your child pick up a button or a small stone from the floor?		
	Failure to respond to sound	Do you have a very quiet child?		
		Does your baby imitate sounds and babbles “ma-ma-ma”?		
		Does your child start to understand the meaning of some words? “No” “Bye”		
	Feeding: Unable to start with solids independently	Does your child struggle to swallow mashed solids?		
Is your child able to pick up firm cooked food and eat it? Cooked carrots, chip				
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature:	
			Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer. Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
15 months	Unable to bear weight on legs	If you hold your child, feet touching the ground: Is your child standing?		
		Does your child carry an equal amount of weight on both legs?		
	Not yet walking	Is your child walking forward if held by one hand?		
		Is your child able to give a few steps independently (even if it is unsure)?		
	Struggle to change between positions	If your child is sitting on the floor, does he turn to reach toys behind him?		
		Can your child sit down unaided from standing?		
	Abnormal grasp	Are you worried about how your child's hands look?		
		Is your child able to release a toy (an object) if you ask him to?		
		Can your child hold a toy and play with it with the other hand?		
	Abnormal posture: floppy/spastic	Are you worried that your child doesn't look like other children the same age?		
		Do you think your child struggle to move freely? Legs scissoring, arms stiff		
		Do you think your child is floppy, reminding you of a rag doll?		
	Failure to respond to sound	Do you have a very quite child?		
		Does your child turn to the sound when you talk to him if he did not see you?		
Not yet talking	Is your child saying at least 3 words with meaning?			
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature: Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer.

Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No	
18 months	Failure to walk	Is your child able to walk (even if it is with a broad base)?		Refer	
	Struggle to change between positions	Can your child squat and stand up again?			
		Is your child able to walk, and then stop to bend over to pick something up?			
	Poor vision	Are you worried about your child's vision?	Refer		
	No pincer grip (Unable to pick up small objects)	Is your child able to pick up a button between the thumb and another finger?			Refer
		Is your child able to put a lid on a plastic container (e.g. lunchbox)?			
	Abnormal posture: floppy/spastic	Are you worried that your child doesn't look like other children the same age?			
		Do you think your child struggle to move freely? Legs scissoring, arms stiff			
		Do you think your child is floppy, reminding you of a rag doll?			
	Poor hearing	Does your child have any problem with hearing?	Refer		
	Inability to understand simple commands	Does your child respond to a simple command like "Don't touch it!"?			Refer
		Does your child understand what "up" and "down" or "under" means?			
	Not yet talking	Is your child able to say 5 different words with meaning?			Refer
		Does your child use one word sentences? (2 or more word sentences are good)			
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature:		
			Date:		

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer.

Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
24 months (2years)	Unable to understand simple commands	Does your child respond to a simple command like “Don’t touch it!”?		
		Does your child understand what “up” and “down” or “under” means?		
	Cognition (learning) not developing	Do you sometimes worry that your child is not learning new things?		
		Can your child point to at least 5 body parts if you ask him to?		
	Not yet talking	Is your child using 2 word sentences e.g. “Mommy bottle”?		
		Does your child ask for food, drink or his favourite toy?		
	Poor gross motor coordination	Has your child started running? (If not running ask if the child is walking)		
		Can your child throw and catch a big ball? (thrown directly to the child)		
	Poor fine motor development *Tell mother to stimulate and reassess at next visit	Can your child open a wrapped sweetie with little help? (Not using teeth)		
		Does your child scabble with crayons on paper?		*
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature:	
			Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer. Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
36 months (3years)	Using only single words (or not yet talking)	Was your child previously able to speak but can no longer do so?		
		Is your child using 3 word sentences e.g. "Mommy give bottle"?		
		Is your child able to have a simple conversation with you?		
	Cognition (learning) developing slowly	Do you sometimes worry that your child is not learning new things?		
		Does your child know his own name, gender and age (use finger to indicate age)		
	Ataxia (HCW must assess) Failure of muscle coordination resulting in irregular and jerky movements	Are you worried about the way your child move?		
		Is your child moving like someone that drank too much?		
	Poor fine motor development	Can your child open a wrapped sweetie with little help? (Not using teeth)		
		Can your child draw a man with 4 parts?		
	Poor gross motor coordination	Can your child walk on a straight line forwards and backwards?		
		Can your child throw and catch a big ball? (thrown directly to the child)		
	Child still completely dependent	Does your child start to help with his own dressing?		
Can your child eat with a spoon on his own?				
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature:	
			Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer. Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
48 months (4years)	Speech difficult to understand because of poor articulation or omission or substitution of consonants	Was your child previously able to speak but can no longer do so?		
		Do you and /or other people struggle to hear or understand your child?		
		Can your child say his own name, gender and age?		
	Poor fine motor development — + / ○	Can your child draw the basic shapes? (See pictures on the left)		
		Can your child draw a man with 8 parts?		
	Poor gross motor development	Can your child run comfortably?		
		Can your child play a clapping game crossing one hand to the opposite side?		
	Cognition (learning) developing slowly	Do you sometimes worry that your child is not learning new things?		
		Does your child often just sit doing nothing, not interest in any play?		
		Can your child concentrate on one activity for 5-10 minutes?		
	No interest in play	Is your child sitting in the house and not playing with his friends		
		Does your child play with children much younger than him/her?	Refer to OT	
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature:	
			Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer. Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist.

Name of child: _____ Date of Birth: _____ File no: _____ Clinic: _____

Age group	Developmental Milestones Red Flags	Questions to ask the mother/care giver	Yes	No
60 months (5years)	Speech difficult to understand because of poor articulation or omission or substitution of consonants	Is your child speaking fluently?		
		Can your child ask and answer relevant questions?		
		Is the child able to name basic body parts?		
	Poor fine motor development — + / ○	Able to colour in fairly neatly between the lines of a picture		
		Can your child draw the basic shapes? (See pictures on the left)		
		Can your child draw a man with all basic parts and clothes		
	Poor gross motor development	Able to catch and throw a ball?		
		Is your child clumsy? (constantly having mishaps)		
		Able to march		
	Cognition (learning) developing slowly	Do you sometimes worry that your child is not learning new things?		
		Does your child sometimes just sit doing nothing, not interest in any play?		
		Can your child concentrate on one activity for 5-10 minutes?		
	Emotional immaturity	Are you worried that your child is not ready to go to school?	Refer to OT	
		Does your child cry easily, have emotional outbursts when there is no reason?		
Comments:		Referred to: ART clinic, Doctor, Speech Therapist, Occupational Therapist, Physiotherapist, Eye care service	Signature: Date:	

These developmental milestones and the lack thereof represents the RED FLAGS of child development. The age linked to the milestones leave some leeway for the slow developer. Refer if indicated in grey box or if all grey boxes representing a Red Flag are ticked: Do provider initiated counselling and testing for HIV. The child should immediately be referred to a doctor for a comprehensive neurological assessment and referred as indicated by the clinical picture. Refer according to RTHC and/or refer to an Occupational Therapist



APPENDIX 5: SAMPLE MEDICAL RECORDS FORM FOR CHILDREN



CHILDREN 0 - 12 YEARS AMBULATORY CARE

PROVINCIAL ADMINISTRATION: WESTERN CAPE DEPARTMENT OF HEALTH

FOLDER NUMBER: _____ ALLERGIC TO: _____

SERVICE: _____

1. Personal details

Name: _____ Residential address: _____

Date of birth: _____

Religion: _____

Contact telephone nr: _____

Sex: Male Female

Language preference: _____ Interpreter: Yes No

2. Next of kin

Surname: _____ Nickname: _____

Relationship: _____

Residential address: _____

Contact telephone number: Home: _____ Work: _____

3. Referred by (Service)

4. Social status: Both parents Single parent Foster care Interim care Chronological placement amongst siblings _____

5. Family history (Tick where applicable)

Epilepsy TB Asthma Porphyria Mental illness Diabetes

Cardiovascular Hypertension Genetic Hearing defect Eye conditions

Habits hazardous to health: Yes No Other: _____

6. Medic Alert: Yes No Type of reaction: _____

7. Obstetrical history:

7.1 Place of delivery Home BBA* MOU* Hospital

7.2 Name of MOU/Hospital: _____

7.3 Antenatal: Maternal disease _____

7.4 Labour: Gestation (weeks) _____

Type of delivery: _____ Birth mass: _____

Apgar: _____ Problems: _____

7.5 Postnatal: Baby- Resuscitation Yes No Incubator / Kangaroo care Yes No

Jaundice Yes No Naso gastric / Intravenous Yes No

*BBA = Born before arrival

*MOU = Maternal Obstetric Unit

8. Feeding

Breast fed Yes No How long? _____

Bottle Yes No Formula _____

Start with solids: _____

Current diet/feeding / Special diet: _____

Adequate Inadequate

9. Current medication: _____

10. Medical history / Infective diseases: _____

11. Surgical history: _____

12. Accidents: _____

History obtained from _____ Relationship _____

Done by: _____

Signature and designation: _____ Date: _____

13. Immunisation

Pre-school card available Yes No

	VACCINE	BATCH NR	SITE	DATE ADMINISTERED	RETURN DATE	SIGNATURE & DESIGNATION
Primary schedule	BCG		Right arm			
	Polio 0		Oral			
	Polio 1		Oral			
	DTP 1		Left thigh			
	Hib 1		Left thigh			
	Hep B 1		Right thigh			
	Polio 2		Oral			
	DTP 2		Left thigh			
	Hib 2		Left thigh			
	Hep B 2		Right thigh			
	Polio 3		Oral			
	DTP 3		Left thigh			
	Hib 3		Left thigh			
	Hep B 3		Right thigh			
Boosters	Measles 1		Right thigh			
	Polio 4		Oral			
	DTP 4		Left arm			
	Measles 2		Right arm			
	Polio 5		Oral			
	DT1		Left arm			
	BCG Repeat		Right arm			
	Other ()					
	Other ()					

VITAMIN A					
Date administered	Signature & designation	Date administered	Signature & designation	Date administered	Signature & designation

ASSESSMENT : FIRST VISIT

GENERAL STATUS		APPEARS NORMAL	APPEARS ABNORMAL	REMARKS	APPEARS NORMAL	APPEARS ABNORMAL	REMARKS
a) Cared for	Good	Poor			Appropriate for age	Difficulty	
b) General appearance	Healthy	Sick			Good	Dysphagia	
c) Features	Normal	Abnormal			Good	Poor	
d) Head : Shape	Symmetrical	Asymmetrical			Normal	Increased/Decreased	
: Skull	Normal	Abnormal					
: Fontanels	Appropriately open/closed for age	Inappropriately open/closed for age					
e) Head control	Appropriate for age	Poor					
f) Neck : Swelling	No	Yes					
Rigidity	No	Yes					
g) Abdomen	Normal	Abnormal					
h) Umbilicus	Clean/cord separated	Infected/hernia					
i) Glands	Normal	Enlarged					
PHYSIOLOGICAL STATUS							
a) Respiratory status:							
- Chest shape	Normal	Abnormal					
- Movement	Symmetrical	Asymmetrical					
- Character of respiration	Regular	Irregular					
- Lungs sounds	Easy	Some difficulty					
- Cough	Clear	Noisy					
- Circulation status	Absent	Present					
b) Circulation status							
- Perfusion	Adequate	Poor					
- Pulse: All extremities	Present	Absent					
: Rhythm	Regular	Irregular					
: Volume	Strong	Weak					
- Extremities	Warm	Cold L/R					
- Oedema	No	Yes					
c) Fluid balance status							
- Skin turgidity	Normal	Loss of turgidity					
- Fontanelles	Normal	Sunken					
- Eyes	Normal	Sunken					
- Hydration	Adequately hydrated	Dehydrated					
- Vomiting	No	Yes					
- Diarrhoea	No	Yes					
STATUS OF SPECIAL SENSES (NB: Record Glasses)							
a) Ears	Well formed	Deformed					
discharge	Absent	Present L/R					
auditory perception	Satisfactory	Poor/Deaf					
b) Eyes	Normal	Abnormal					
sclera	Clear	Pale					
discharge	Absent	Present L/R					
vision	Satisfactory	Poor/Blind					
c) Nose	Appears normal	Mishapen					
nostrils	Patent	Blocked					
discharge	Absent	Present					
d) Taste perception	Satisfactory	Impaired					
e) Touch perception	Satisfactory	Impaired					
COMMUNICATION STATUS							
a) Speech	Appropriate for age	Delayed					
b) Language perception	Good	Poor					
c) Cry	Normal	Abnormal					
ELIMINATION STATUS							
a) Anus	Normal	Abnormal					
b) Bowel habits	Regular	Changed					
c) Bowel control	Appropriate for age	Inappropriate for age					
stoma	Absent	Present					

	APPEARS NORMAL	APPEARS ABNORMAL	REMARKS	APPEARS NORMAL	APPEARS ABNORMAL	REMARKS
NEUROLOGICAL AND EMOTIONAL STATUS						
a) Pupils	Equal/Reading	Poor				
b) State of consciousness	Alert	Drowsiness/Unconscious				d) Micturition
c) Orientation	Dis orientated	Dis orientated				e) Urinary output
d) Understanding	Quick to understand	Understands poorly				f) Bladder control
e) Emotional	Cheerful	Withdrawn				stoma
f) Reaction on approach	Calm	Tense				
	Positive	Negative				
MUSCULO-SKELETAL STATUS						
a) Limbs	Well formed	Deformed				a) Female : breast
b) Joint movement	Normal	Limited				: vulva
c) Muscle tone	Normal	Poor				: discharge
d) Reflexes	Normal	Absent				: menarche
e) Spine	Normal	Abnormal				: penis
f) Ability to move	Appropriate for age	Immobile				: testes
g) Gait/movement	Balanced/	Unbalanced/				: discharge
	Co-ordinated	Unco-ordinated				: urethral meatus
						Present
						Enlarged L/R
						Normal
						No
						Appropriate for age
						Inappropriate for age
						Undescended L/R
						No
						Yes
						Hypospadias/Epiospadias
STATUS OF SKIN AND APPENDAGES						
a) Skin integrity	Intact	Broken areas/lesions				
b) Skin feels	Warm	Cold				
c) Skin Colour	Normal	Abnormal				
d) Pressure sores	No	Yes				
e) Scars	No	Yes				
f) Bruises	No	Yes				
g) Rash	No	Yes				
STATUS OF PHYSICAL REST AND COMFORT						
c) Sleep pattern	Normal for age	Restless				
c) Pain	No	Yes				
NUTRITIONAL AND ORAL STATUS						
e) Mouth cavity	Symmetrical	Asymmetrical				
hard palate	Intact	Cleft, unilateral/bilateral				
mouth	Clean	Dirty				
mucosa	Clean	Lesions				
pharynx	Clear	Lesions				
teeth	Appropriate for age	Absent/Carios				
MEDICATION (Current medication inclusive traditional medicine - specify)						

Code L = Left
R = Right

Assessment:

Done by (Block letters) :

Signature and Designation :

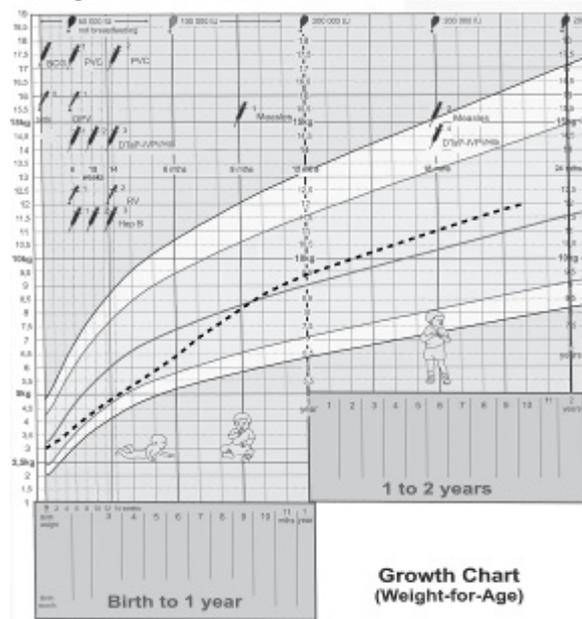
Date



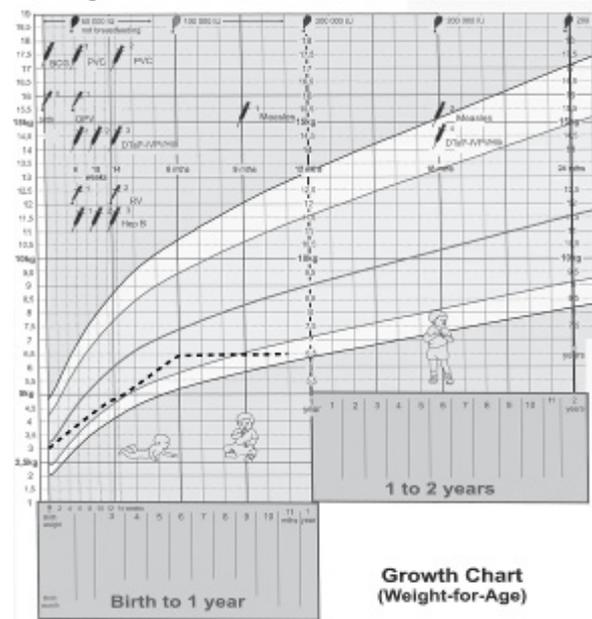
APPENDIX 6: GROWTH CURVE CHARTS WITHOUT LABELS



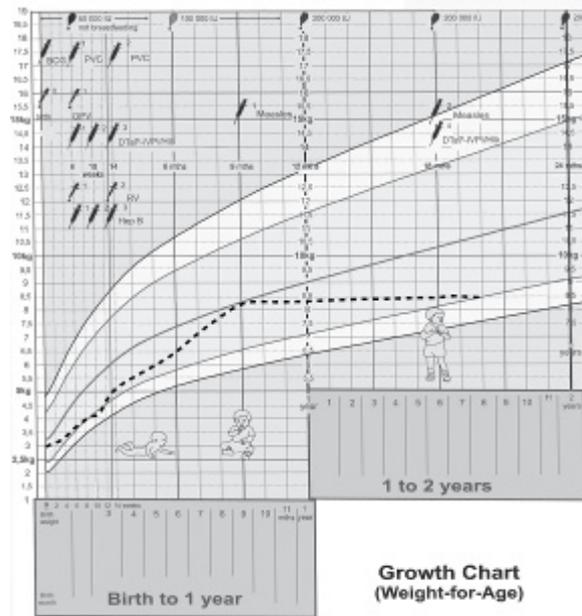
1st figure



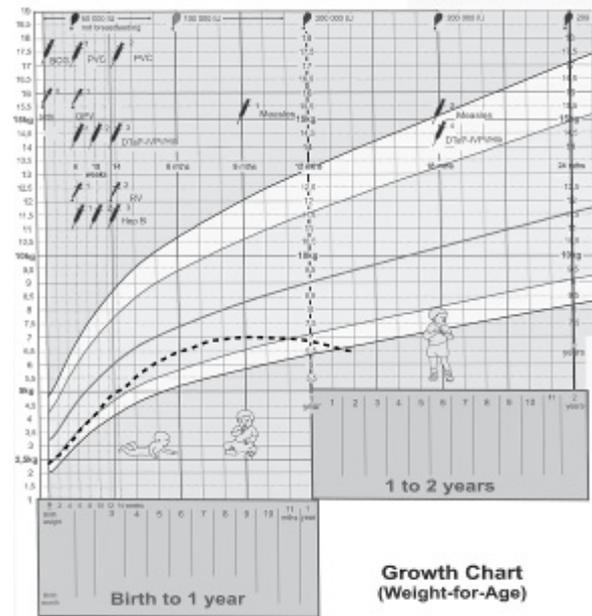
2nd figure



3rd figure



4th figure





APPENDIX 7: GRANT FOR CARING FOR A YOUNG CHILD (CHILD SUPPORT GRANT)



GRANT FOR CARING FOR A YOUNG CHILD (CHILD SUPPORT GRANT)

DESCRIPTION:	<p>If you are the person responsible for looking after a child (you are the child's primary caregiver) and the child is younger than 15 years old, you can get a monthly payment from the government called a Child Support Grant.</p>  <p>A primary caregiver can be a parent, grandparent, or anyone who is mainly responsible for looking after the child.</p> <p>However, you cannot get this grant if:</p> <ul style="list-style-type: none">• You have been paid to look after the child• You are not the child's primary caregiver• Someone is already getting a grant for the child• You represent an institution which takes care of the child <p>If you are not the parent of the child, then you have to get the consent of the child's parent, guardian or custodian to get this grant.</p> <p>You and the child must both be South African citizens. You must also both be living in South Africa when you apply. You cannot get this grant for more than 10 children.</p> <p>Only people whose financial situation is below a certain level can get the grant. The test to decide whether you qualify is called a means test. The means test at the moment says that you can get the grant if:</p> <ul style="list-style-type: none">• You are single and earn R28 800.00 per year or R2400.00 per month.• You are married and earn a combined salary of R57 600 per year or R4800.00 per month. The amount changes every year, but in 2009 the child support grant is R240.00 a month. Currently you can only get the grant for children younger than 15.
INSTRUCTIONS:	You can apply for the child support grant by filling in an application form at your nearest District Welfare office or counter service point of a District Office. You do not

need to pay anything to make the application.

Your application form will be completed in the presence of an officer of SASSA (South African Social Security Agency). When your application is completed you will be given a receipt. The receipt must be kept as proof of your application. You will also need to show certain documents and provide some information, including:

- Your South African identity document (ID), which must be bar-coded.
- The child's birth certificate, which must have an ID number.
- Your salary slip, bank statements for three months, or pension slips, and any other proof of income.
- If you are unemployed, your Unemployment Insurance Fund (UIF) card ('blue book') or a discharge certificate from your previous employer.
- If you are not the child's parent or guardian, a written note of permission from the parent or guardian that you should take care of the child.
- If you are not the child's parent or guardian, information about how you have tried to get the parents to pay maintenance.
- Information that shows that you are the child's primary caregiver.

If you cannot go to make the application yourself, a friend or family member can bring a letter from you and a doctor's note saying why you can't visit the office yourself. A home visit may then be arranged.

When you make the application, you should say how you would like the money to be paid. The money can be paid out in cash on specific days at a Pay Point, or you can get the money paid electronically into your bank account.

Remember that normal bank charges apply to any money going in and out of your bank account. You can decide to change the payment method at any time by filling in a form at a Welfare office, but the change will only happen a month later.

It will take about thirty working days for your application to be processed and checked and either approved or refused. If your application is refused, you will get a letter explaining why it has been refused and how you can appeal.

If it is approved, you will start getting payments within three months. The payments will be backdated to the day you applied for the grant. You can find out what has happened to your application and when you can expect payment by telephoning the free South African Social

	<p>Security Agency telephone number 0800 601 011.</p> <p>Payments will stop if you die, if the child dies, when the child becomes too old, or if someone else starts looking after the child, or if your circumstances change in any other way so that you don't qualify for the grant anymore. Your grant will be reviewed from time to time to check this. You must also inform the Department of any changes in your or your child's circumstances.</p> <p>GENERAL ENQUIRIES: National Department of Social Development South African Social Security Agency (SASSA) Toll-free help line: 0800 601 011 for information on:</p> <ul style="list-style-type: none"> • Pay-out dates. • Qualifying rules for all government grants. • District office addresses and contact numbers. • For help with what has happened to your application. • How you can also report any fraud or corruption.
PROVIDED AT:	These facility categories: <ul style="list-style-type: none"> • Social Development District Offices
PROVIDED BY: GOVERNMENT BODY:	Department of Social Development (The Government of South Africa)



RESOURCES FOR FURTHER INFORMATION



Abrahams, K. (2006). *Child Death Review Project: Children Count – Abantwana Babalulekile*. Children's Institute, University of Cape Town, <http://web.uct.ac.za/depts/ci>

Alliance for Children's Entitlement to Social Security (ACCESS). *Rights for Children: Services for children 0 - 8 years*. Available at: <http://www.access.org.za/>

Bourne, L. T. (2007). *South African paediatric food-based dietary guidelines*. *Maternal & Child Nutrition*. 3(4): 227-229

Bright Futures. *A national health promotion initiative dedicated to the principle that every child deserves to be healthy and that health involves a trusting relationship between the health professional, the child, the family, and the community as partners in health practice*. <http://www.brightfutures.org/>

Budlender D, Proudlock P & Jamieson L (2008). *Developing social policy for children in the context of HIV/AIDS: A South African Case Study* Children's Institute and University of Cape Town. <http://www.ci.org.za/depts/ci/enews/April2009/developing.html>

CDC (2004). *Interactive Core Curriculum on Tuberculosis: What the clinician should know*. Available at: <http://www.cdc.gov/tb/webcourses/corecurr/index.htm>

Children's Rights Centre. CRC Publications : <http://www.childrensrightscentre.co.za/site/awdep.asp?depnum=20723>

Developmental Behavioral Pediatrics Online. A site aimed at professionals interested in child development and behavior, especially in the medical setting. <http://www.dbped.org/>

Eastern Cape Department of Health (2007). *Clarification on the Expanded Programme on Immunisation-SA (EPI-SA)*. http://www.ecdoh.gov.za/files/dynamic_pdf/03112009234241.pdf

Grantham-McGregor, S; Cheung, Y; Cueto, S; et al. (2007): Child development in developing countries 1: Developmental potential in the first 5 years for children in developing countries, *The Lancet*, Volume 369, Issue 9555, Pages 60-70

Kidz Positive. *Support for the daily needs of children and families affected of HIV/AIDS in Southern Africa*. <http://www.kidzpositive.org/>

National Children's Bureau (NCB). An organization that advances the well-being of all children and young people across every aspect of their lives. <http://www.ncb.org.uk/>

Online Physical Exam Teaching Assistant: A Pediatric Companion (2006). An on-line video demonstrations of physical and developmental examination in different age groups <http://opeta.medinfo.ufl.edu/pediatric/>

Perinatal Education Programme (2008). *Mother and Baby Friendly Care: A learning programme for professionals*. Available at: <http://www.scribd.com/doc/11980328/Mother-and-Baby-Friendly-Care-Free-online-edition>

UNICEF, December 2008. *The State of the World's Children 2009, Maternal and Newborn Health*. UNICEF: New York. Available at: <http://www.unicef.org/sowc09/docs/SOWC09-FullReport-EN.pdf>

UNICEF South Africa. General resources available at: <http://www.unicef.org/southafrica/index.html>

UNICEF South Africa. Early Learning and Development: Ideas for Parents and Caregivers. Available at: http://www.unicef.org/southafrica/SAF_resources_ecdposter.pdf

UNICEF South Africa. Child Protection: Key Systems and Legislation. Available at: http://www.unicef.org/southafrica/SAF_resources_violenceleaflet.pdf

UNICEF South Africa (2008). Parental/Primary Caregiver Capacity Building Training Package/ Available at: http://www.unicef.org/southafrica/SAF_resouces_parental.pdf

UNICEF South Africa (2005). *National Integrated Plan for Early Childhood Development in South Africa 2005-2010*. from http://www.unicef.org/southafrica/SAF_resources_nip.pdf

World Health Organization (2004). *CHRONIC CARE: General Principles of Good Chronic Care*. Retrieved May 22, 2009: <http://www.who.int/hiv/pub/imai/generalprinciples082004.pdf>

WHO (2009). *Recommendations for Routine Immunization – Summary Tables* from http://www.who.int/immunization/policy/immunization_tables/en/

WHO (2009). *Child Growth Standards – Documentation* from <http://www.who.int/childgrowth/standards/en/>

WHO Nutrition resources: <http://www.who.int/topics/nutrition/en/>

WHO (1999). *A Critical Link: Interventions for Physical Growth and Psychological Development* from http://whqlibdoc.who.int/hq/2009/WHO_FCH_CAH_09.02_eng.pdf

WHO (2008). *Training Course on Child Growth Assessment: Interpreting Growth Indicators*. Available at: http://www.who.int/childgrowth/training/module_c_interpreting_indicators.pdf

WHO (2009). *Model Chapter: Infant and Young Child Feeding for Medical Students and other Health Professionals* from
http://whqlibdoc.who.int/publications/2009/9789241597494_eng.pdf

WHO/UNICEF (2009). *Joint Statement on Home visits for newborn care*.
http://whqlibdoc.who.int/hq/2009/WHO_FCH_CAH_09.02_eng.pdf

WHO Annex: *Recommendations for Child Feeding and Care for Development*



REFERENCES

- 1 South Africa (2008) Countdown to 2015, Maternal, Newborn & Child survival.
- 2 Institute for Family-centered Care. (2010). <http://www.familycenteredcare.org/>
- 3 WHO. (2008). Training Course on Child Growth Assessment. Geneva, WHO. Available at: <http://www.who.int/childgrowth/training/en/>
- 4 Ibid.
- 5 Ibid.
- 6 Ibid.
- 7 Ibid.
- 8 Ibid.
- 9 Ibid.
- 10 Ibid.
- 11 WHO. (2008). *Training Course on Child Growth Assessment*. Geneva, WHO. Available at: <http://www.who.int/childgrowth/training/en/>
- 12 Royal College of Paediatrics and Child Health. (2009). *Measuring and Plotting using the new UK-WHO Growth Charts*. Available at: http://www.rcpch.ac.uk/Research/Growth_Charts_Education_Training_Resources
- 13 WHO (2009). *Joint Statement: WHO Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children*. http://whqlibdoc.who.int/publications/2009/9789241598163_eng.pdf
- 14 WHO. (2008). *Training Course on Child Growth Assessment*. Geneva, WHO. Available at: <http://www.who.int/childgrowth/training/en/>
- 15 WHO. (2010). *Child Growth Standards*. Available at: http://www.who.int/childgrowth/standards/chts_hcfa_boys_z/en/index.html
- 16 WHO. (2008). *IMCI chart booklet for high HIV settings*. Available at: http://www.who.int/child_adolescent_health/documents/9789241597388/en/index.html
- 17 Child Growth Foundation (2008). Puberty & Tanner Stages. The Child Growth Foundation.
- 18 Ibid.
- 19 Ibid.
- 20 Ibid.
- 21 Ibid.
- 22 Ibid.
- 23 Ibid.
- 24 Ibid.
- 25 WHO (2006). *Antiretroviral Therapy for HIV Infection in Adults and Adolescents: Recommendations for a public health approach*.
- 26 WHO (2009). Table 2: Recommended Routine Immunizations for Children - Summary of WHO Position Papers. Available at: http://www.who.int/immunization/policy/Immunization_routine_table2.pdf
- 27 U.S. National Center for Immunization and Respiratory Diseases at <http://www.cdc.gov/vaccines> Department of Health and Human Services Centers

for Disease Control and Prevention (2009). Available at:
<http://www.cdc.gov/vaccines/recs/scheduler/catchup.htm>

For inquiries regarding this manual, please contact:



STELLENBOSCH UNIVERSITY,
FACULTY OF HEALTH SCIENCES

3rd Floor, Waterside Place, South Gate,
Tyger Waterfront, Carl Cronje Drive, Bellville, Western Cape 7530

T: +27 21 918 4376 **F:** +27 21 918 4389 **Toll Free:** 0800 050 050

Website: www.sun.ac.za/southtosouth