INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)

A HANDBOOK FOR HEALTH PROFESSIONALS

November 2005

FOREWORD

The concept of the Integrated Management of Childhood Illness strategy arose out of the realisation in the early 1990's that, particularly in developing communities, there was a persistent and unacceptably high mortality rate in the under 5-year age group. The World Health Organisation (WHO) had previously developed programmes focusing on the management of acute respiratory infection (ARI) and of Diarrhoeal Disease (CDD). In spite of these interventions it was projected that there would be no substantial reduction in the number of deaths of these young children well into the 21st century, unless a significantly different approach were to be used,

The principal causes of childhood deaths were identified as pneumonia, diarrhoeal disease, measles, malaria, malnutrition and perinatal problems. It became apparent that in many instances the seriously ill child was not suffering from an isolated problem but rather a combination of two or more of these common diseases. This overlap means that a single diagnosis may not be possible nor appropriate and treatment may call for multifaceted therapy covering each of the conditions identified. An integrated approach would therefore have to replace the hitherto vertical programmes. Moreover, the nutritional status of every ill child would need to be assessed, as sub-optimal nutrition is a common contributing factor to the severity of the illness. Missed opportunities to ensure completion of the immunisation schedule need to be eliminated by integrating this into the process.

Initially IMCI training material did not include HIV/AIDS. It was assumed that the problem would be identified by the child presenting with repeated respiratory and diarrhoeal infections. As in subsequent years the AIDS epidemic has changed the disease profile dramatically, this problem had to be included in the integrated process.

Since children with potentially fatal illnesses are often brought to first-level health facilities such as clinics, health centres or outpatient departments of hospitals, improved care is needed at this level. For this reason WHO and the United Nations Children's Fund (UNICEF) developed guidelines for the integrated management of childhood illness (IMCI) for the care of children at first-level health facilities. To complement these guidelines, WHO also developed a manual for the referral care of sick children called *Management of the child with a serious infection or severe malnutrition: Guidelines for care at the first referral level in developing countries.* The objectives are both, to reduce death and the frequency and severity of illness and disability, and to work towards improved care of the child at every level thus contributing to optimal growth and development.

Frequent reference is made to the *Guidelines for the Management of HIV-infected Children* throughout the texts that follow. As a large proportion of the children of this country is affected or infected by the HIV epidemic all health care providers caring for children need to be familiar with this South African publication.

The IMCI strategy comprises three Components:

Clinical or Case Management

Health System

Household and Community

The clinical component aims at improving the skills of health workers managing children at first-level. Guidelines for this component are contained in this handbook. They combine improved management of the most important causes of childhood deaths with aspects of nutrition, immunisation, and other important factors influencing child health, including maternal health. The IMCI Case Management course for nurses and doctors usually extends over 11 days using seven modules. This handbook is an abridged version of these modules.

When applied correctly, IMCI:

- Promotes the accurate identification of childhood illnesses at first contact level.
- Ensures appropriate combined treatment of all major illnesses,
- Strengthens (i) the care of the sick child at home by counselling the mother and (ii) the provision of preventive services measures,
- Speeds up the referral of severely ill children and
- Aims to improve the quality of care of sick children at the first referral level.

The guidelines are based on expert clinical opinion and research results. In addition, in each country they are carefully adapted to cover those conditions that are locally important and for which effective treatment and/or preventive practices have been identified. IMCI uses a minimum of clinical signs to assess and classify illness: these signs are accurately defined in this handbook.

There is set of country-specific charts for the case management of sick children aged from 1 week up to 5 years. The charts are presented in the format of a chart booklet and wall charts, and are described in this handbook. They attempt to explain as simply as possible what needs to be done in a first-level health facility by all professional nurses and doctors.
All nine provinces are now using one SA generic version,, with minor variations in Kwa Zulu Natal. Apart from being the first country to include HIV/AIDS, wheezing and various other innovations have also been introduced to the case management. Measles on the other hand has become a rarity and hence less attention will be devoted to this disease in future training courses. A great deal of attention has been given to infant feeding and associated counselling in relation to HIV Mother to Child Transmission.

The *Health System Component* deals with improvements necessary to support the case management, such as drug supply, patient transfer and health information data. In this way it strengthens the functions of the first level facility in general and not only as pertains to sick children.

The *Household and Community Component* is the third component and addresses key practices, which underlie the nurturing of children in the home and community. The main aim of this component is to develop an environment in the home and in the community, which is conducive to optimal wellbeing of the child.

Training

As the majority of patients at first-level are attended to by professional nurses, the primary focus of training is thus the nurse. The 11-day Case Management training course is guided by a course director and provided by facilitators and a clinical instructor. Participants seldom exceed 16 – 20 in number. Two facilitators take care of one of two sub-groups, endeavouring to maintain a facilitator to participant ratio of 1:4. The facilitators have undergone the Case Management course as well as a further 5-day instruction to equip them to guide the participants through the clinical aspects as well as theory. The clinical instructor ensures that the participants learn signs of severe pathology of children in a hospital ward. Approximately 30% of the total duration is devoted to clinical instruction.

The Role of the Doctor

There are numerous roles for the doctor in the implementation and practice of IMCI. It is important to recognize that the strategy is not confined to the nurses' domain. The strategy has the potential to improve not only the health care of children but the health system as a whole can also benefit appreciably by collaborating with other interventions and programmes.

Thus the doctor can:

- Support the recognition of the strategy by the medical profession in general and more specifically at their place of work
- Promote an awareness of the integrated management at referral level
- Assist with the practice of the integrated management at first level
- Serve as clinical instructor on Case Management courses
- Aid the monitoring and evaluation process
- Encourage or participate in operational or other types of research related to the strategy
- Assist with pre-service training at tertiary level

CHAPTER 1

THE INTEGRATED CASE MANAGEMENT PROCESS

Integrated case management relies on case detection using simple clinical signs and empirical treatment. As few clinical signs as possible are used. The signs are based on expert clinical opinion and research results, and strike a careful balance between *sensitivity* and *specificity* (see Box 1). The treatments are developed according to action-oriented classifications rather than exact diagnosis. They cover the most likely diseases represented by each classification.

The IMCI process can be used by doctors and nurses who see sick infants and children aged from 1 week up to five years. It is designed for use at a first-level facility such as a clinic, a health centre or an out-patient department of a hospital. It presents the basic minimum that needs to be done to manage sick children appropriately.

The IMCI guidelines describe how to care for a child who is brought to a clinic with an illness, or for a scheduled follow-up visit to check the child's progress. The child that is brought for a routine visit to the well-child clinic is not covered by the IMCI case management. Instructions are given for a full assessment of a sick child for (i) general danger signs (or possible bacterial infection in a young infant), (ii) common illnesses including HIV/AIDS, (iii) malnutrition and anaemia, and (iv) other problems. In addition to treatment protocols, the guidelines also address counseling the mother, health promotion and prevention of illness.

Box 1:

Sensitivity and _Specificity_ [2]

Sensitivity and *specificity* measure the diagnostic performance of a clinical sign compared with that of the gold standard, which by definition has a sensitivity of 100% and a specificity of 100%.

Sensitivity measures the proportion or percentage of those with the disease who are correctly identified by the sign. In other words, it measures how sensitive the sign is in detecting the disease. (Sensitivity = true positives / [true positives + false negatives])

Specificity measures the proportion of those without the disease who are correctly called free of the disease by using the sign. (Specificity = true negatives / [true negatives + false positives])

[1] Riegelman RK and Hirsch RP. *Studying a Study and Testing a Test: How to Read the Health Science Literature,* 3rd ed. Boston, Little, Brown and Company, 1996.

The integrated case management is based on the following principles:

- The most common causes of under-5 morbidity and mortality are addressed
- Assessment and classification is based on an algorithmic colour coded format
- A triage process identifies patients according to the severity of the illness
- Essential treatment is prescribed
- Counseling of the mother is of fundamental necessity
- Promotive care forms part of the management

This handbook will help you to learn to use the IMCI guidelines in order to interview mothers, accurately recognize evidence based clinical signs, choose appropriate treatments, and provide counseling and preventive care. The complete IMCI case management process involves the following steps:

- **Assessment** of the child by checking first for danger signs (or possible bacterial infection in a young infant), asking questions about common conditions, examining the child, and checking nutrition and immunization status. Assessment includes checking the child for health problems other than those covered by the routine integrated process.

  In the IMCI assessment process an absolute minimum number of symptoms and signs is used. These signs have been validated by extensive research. As a medical practitioner it is difficult to accept that one can confine oneself to this limited process in order to come to a working 'diagnosis'. One needs to remind oneself, however, that in most instances one is not making a *definitive* diagnosis but that IMCI presents the minimum that is required for appropriate care of the sick child at first level.

- **Classification** of the illness(-es) using a colour-coded triage system. Because many children have more than one condition, each illness is classified according to whether it requires:

  -urgent pre-referral treatment and referral (red), or
  -specific medical treatment and advice (yellow), or
  -simple advice on home management (green).

  Classification is distinct from diagnosis as in some instances it covers a group of illnesses for management purposes.

- Specific treatment is then **identified** for each of the classifications. Thus pre-referral treatment is given before the patient is transferred. If a child needs treatment at home, an integrated treatment plan is developed for the child, including giving the first dose of drugs in the clinic. Any immunizations due at the time are given to the child.

- Practical **treatment** instructions are given to the mother, including teaching her how to give oral drugs, how to feed and give fluids during illness, and how to treat local infections at home. She is also advised to return for a follow-up visit

on a specific date and taught how to recognize signs that indicate that the child should return immediately to the health facility. For certain patients more than one follow-up visit may be necessary. For instance the HIV-infected child will have to be seen at least at monthly intervals, whether symptomatic or whether on antiretroviral treatment or not.

From the above it will be apparent that medication is kept to a minimum. Placebos, such as cough mixtures are avoided so that the over-dependence on a bottle of medicine can be counter-acted. The use of antibiotics is limited to specific indications.

- Feeding assessment, including breastfeeding practices where appropriate, is followed by **counseling** the mother to solve any feeding problems identified. She is then counseled about her own health and possible social problems. It is particularly necessary to establish whether any members of the household have tuberculosis and/or AIDS.

- When a child is brought back to the clinic as requested, **follow-up care** is given and, if necessary, the child is reassessed for new problems. These follow-up visits are valuable to assess whether treatment has been effective. Moreover, it demonstrates to the mother that we are interested in the child.

The case management process is presented in two different sections: one for children age 2 months up to five years, and one for children age 1 week up to 2 months. As the profile and features of illnesses in a young infant differ appreciably from those in the older infant and child, the two groups are dealt with in separate sections, but the same integrated approach is used. Moreover, the IMCI case management makes no provision for the neonate during the first week of life, as the problems presenting during the first seven days of life are largely perinatal. In South Africa these problems are very well covered by the Perinatal Education Programme.

For the purposes of the IMCI case management *1 week up to 2 months* includes infants who have completed seven days but does not include those who has completed 2 months. The latter are included in the *2 months up to 5 years*. Here again a child that has turned 5 years of age is not included in the IMCI case management. This arbitrary decision has had to be made for practical purposes as children over the age of 5 years differ in the disease profile and treatment.

Case management can only be effective to the extent that families bring their sick children to a trained health worker for care in a timely way. If a family waits to bring a child to a clinic until the child is extremely sick, or takes the child to an untrained provider, the child is more likely to die from the illness. Therefore, an important part of the case management process is to teach families when to seek care for a sick child. Furthermore, this issue needs to be addressed in the Household and Community Component mentioned previously. The ultimate aim is for whole community to become aware of those symptoms and signs of severe disease that call for immediate attention by a health professional.

What is not routinely included in the IMCI case management?

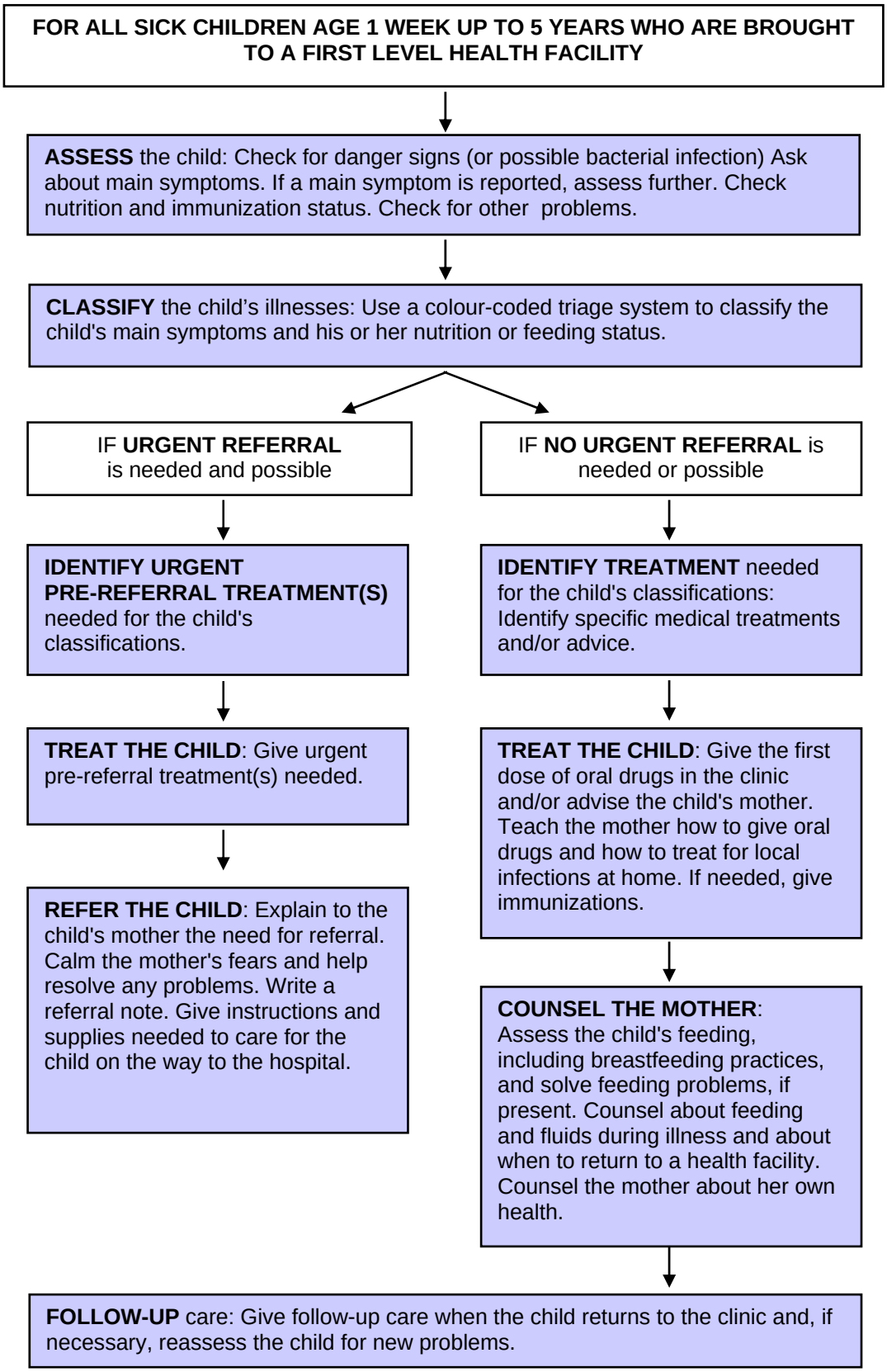
The IMCI guidelines address most, but not all, of the major reasons for which a sick child is brought to a clinic. For instance no provision is made for skin problems. The Standard Treatment Guidelines in the EDL publication deal with all problems likely to be encountered at first contact level.

A child returning with chronic problems or less common illnesses may require special care, which is not described in this handbook.
Special arrangements may have to be made for scheduling visits for chronic problems, including HIV and AIDS. (See the HIV *Guidelines*) The IMCI guidelines also do not describe the management of trauma or other acute emergencies due to accidents or injuries.

Summary:

- IMCI deals with common and serious illnesses affecting under-5 year old children.
- IMCI uses a minimum of clinical signs: these signs are evidence based.
- In IMCI diagnosis is replace by classification of groups of problems.
- Triage is an important element of IMCVI case management.
- Trauma and surgical problems are not covered by IMCI.
- For the management of problems not covered by IMCI see *Standard Treatment Guidelines in the SA EDL* publication.
- For the ongoing/chronic care of the HIV-exposed or –infected child see the *Guidelines for the Management of HIV-infected Children.*

SUMMARY OF THE INTEGRATED CASE MANAGEMENT PROCESS



THE IMCI CHART BOOKLET
AND
RECORDING FORMS

You will be given an IMCI chart booklet, which contains all the basic information for the integrated case management, viz. assessment, classification, treatment and counseling. It covers all the main problems arranged in algorithms according to the colour-coded triage process.

The Child Age 2 Months up to 5 Years

Danger Signs

Cough and Difficult Breathing

Diarrhoea

Fever

Ear Problem

Malnutrition and Anaemia

Feeding Assessment

HIV and AIDS

Immunisation status

Assess other problems

Treatment to be given in the clinic only

Treatment to be given at home

Follow-up care

Counseling the mother

The Sick Young Infant Age 1 Week up to 2 months

Possible Bacterial Infection

Diarrhoea

Feeding problem or low weight

Immunisation

Assess other problems

Treatment to be given in the clinic only

Treatment to be given at home

Breastfeeding technique

Follow-up care

Weight for Age Chart (birth to 3 years)

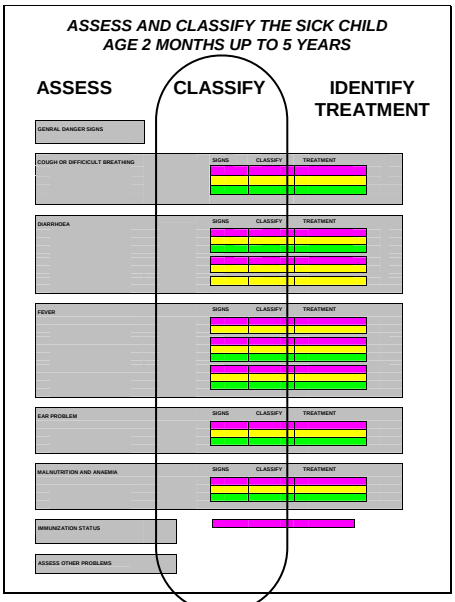
Recording Forms

There are two distinct recording forms, viz. one for the sick young infant 1 week up to 2 months and the other for the child age 2 months up to 5 years. (See below)

The forms are designed to conform to the case management process of assessment, classification and identification of treatment. The reverse side is intended for details of the treatment plan: when folded over, the ‘Identify

Treatment‘ should correspond to the schema provided for the treatment plan on the reverse side.

The purpose of the recording forms is twofold: It assists the student to become familiar with the integrated case management process during training. It is also commonly used in an enlarged laminated format by IMCI practitioners as a reference.



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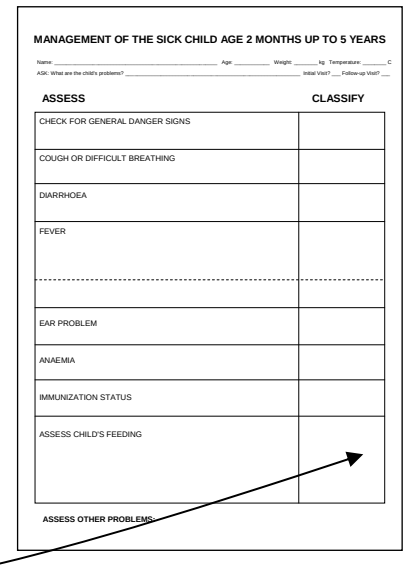

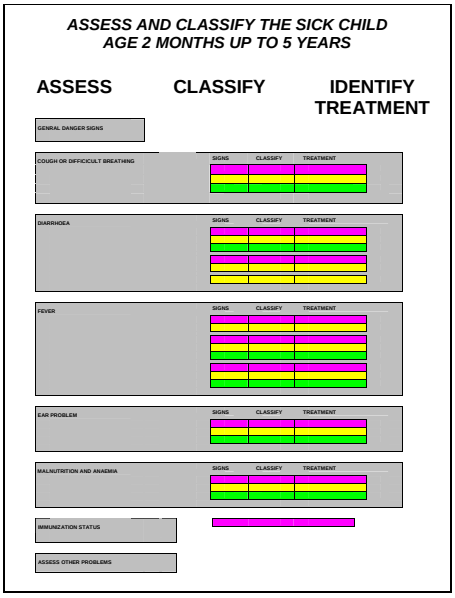

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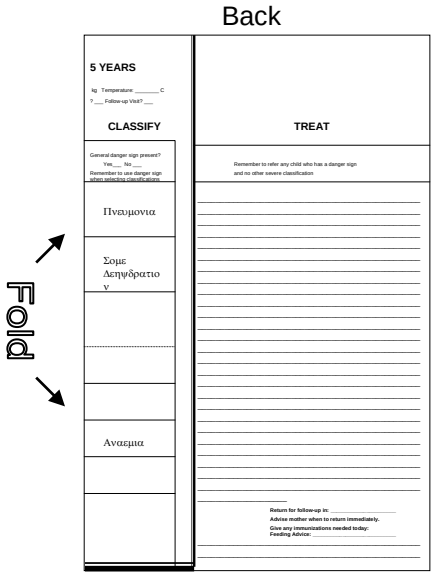


CHAPTER 2

General Danger Signs

A set of four general danger signs has been established to identify those children with a life-threatening condition at the outset of the assessment. They are clearly marked as such in the chart booklet and on the Recording Form (for the child 2 months up to 5 years).

It is important that reception clerks and those health workers, who deal with patients as they enter the facility, are familiar with these danger signs. Early identification of the seriously ill child for immediate attention is an essential step in the triage process.

CHECK FOR GENERAL DANGER SIGNS	
ASK: Is the child able to drink or breastfeed? Does the child vomit everything? Has the child had convulsions during this illness?	LOOK: Is the child lethargic or unconscious?
A child with any general danger sign requires urgent attention: complete the assessment, start pre-referral treatment and refer urgently. If the child is lethargic or unconscious, test for low blood sugar, then treat or prevent.	

If the child has any general danger sign, the assessment must be completed rapidly and pre-referral treatment commenced before transfer.

It is difficult to think of a child with any type of acute illness, which is likely to cause imminent death that would not present with at least one of these general danger signs.
In order to ensure that there is a clear understanding of what is meant by these signs, the following ‘definitions’ have been produced:

Is the child able to drink or breastfeed?

A child with this danger sign is unable to suck or swallow when offered a drink or the breast.
It is important to ensure that the mother understands the question clearly. If there is any uncertainty, offer the child a drink cautiously or encourage the mother to offer a breastfeed and observe whether the child is able to swallow at all.
If the child’s nose appears to be blocked clear this with a few drops of saline and then attempt to feed the child again.
NB It is dangerous to put fluids into the mouth of an unconscious child, as the fluid may be aspirated into the lungs.

Does the child vomit everything?

If the child is unable to hold anything down he has the sign ‘vomits everything’. If the child vomits several times but holds down some of the fluid, the sign is *not* present.
Mothers frequently complain that their child vomits everything, but on careful questioning, (e.g. How many of the feeds that you have given to-day were vomited up?) one may find that in fact some feeds are not entirely returned. If in doubt, offer the child some fluid: if the sign is present it will be vomited up shortly.

Has the child had convulsions during *this* illness?

It is essential that the mother understands exactly what is meant by ‘convulsions’ (fits, spasms). There are sure to be equivalent words in the vernacular, with which health professionals should be familiar. Convulsions in infancy and early childhood are at times not associated with muscle spasms or jerking, but merely generalised muscle stiffness. Convulsions are almost always accompanied by loss of consciousness and no, or poor and irregular, respiratory efforts. In most instances the convulsing child does not breathe effectively and thus becomes cyanosed during the seizure.
If the child has had convulsions during a previous illness or has epilepsy, but has not had a convulsion during this illness the sign is *not* present.

Is the child lethargic or unconscious?

(If there is a problem of cough or difficult breathing, it is preferable for you to count the respiratory rate before you try to waken or stimulate the child to elicit this sign.)

A lethargic child is not awake and alert when he should be. The child is drowsy and appears to take no interest in what is going on around him. He responds to stimuli for a short time only and then drops off to sleep again. The unconscious child does not respond to any stimulus. Shaking the child or clapping of hands has no effect on him.

Case History

Busi is a 5-month old infant brought by the mother for a problem of cough and high fever for 2 days. This is the first visit to the clinic. Busi's temperature was recorded as 38,7º and she weighs 5,3 kg.

The health worker asks the mother whether Busi can drink and swallow. She says Busi has been drinking reluctantly since this morning. Busi does not vomit. On asking about convulsions the mother replies that Busi was very stiff and stopped breathing for a while late last night. On looking at Busi the health worker notices that she is very drowsy and is not at all interested in her surroundings, even after the mother tries to wake her fully. While the health worker is looking at her, Busi becomes stiff, stops breathing and becomes blue around the mouth. She notices small bubbles of saliva appearing at the mouth.

The health worker calls for a colleague to bring an ampoule of diazepam, a small syringe and a naso-gastric catheter. She turns Busi on her side, clears the airway by suctioning and gives her oxygen. Diazepam 0,5ml is then given by catheter into the rectum and flushed out of the catheter with a few mls of saline. The blood sugar level is checked, as the health worker is very aware of hypoglycaemia as a possible cause of some of the problems.

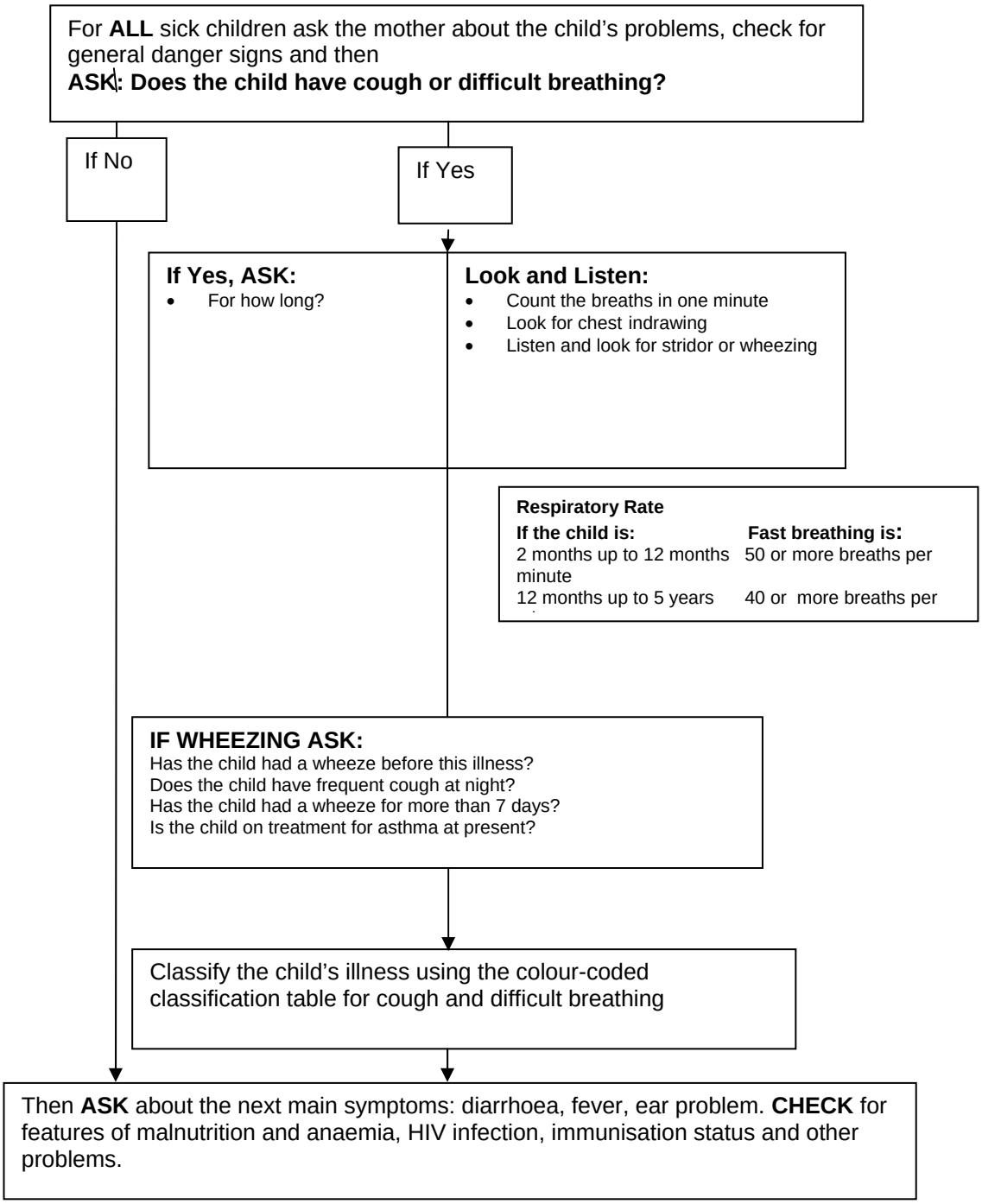
The convulsion stops very soon and the health worker completes the full assessment quickly but finds no other positive signs. No other treatment is found to be necessary as the blood sugar level is found to be 4mmol/L. Because there are General Danger Signs Busi is then prepared for urgent referral.

Summary:

- Every member of staff of a first contact level facility ought to know these Danger Signs and should be able to recognise them.
- Recognition of Danger Signs and responding appropriately saves lives.

CHAPTER 3

COUGH OR DIFFICULT BREATHING



NB Pneumonia is the commonest cause of death of children in our hospitals.

Introductory remarks

Illnesses of the respiratory tract are very common and remain one of the foremost causes of death of the young child. Needless to say, cough and dyspnoea (i.e. difficult breathing) are by far the most prominent presenting symptoms.

The challenge for health care providers is to distinguish between life-threatening respiratory conditions and viral upper respiratory infections, such as the common cold and 'flu'.

Difficult breathing in children is often due to wheezing, which in turn is caused by a narrowing of the small airways. Asthma and a viral infection of the bronchioles, the smallest of the airways, are the two most common culprits of this distressing symptom. Stridor is a less common cause of difficult breathing; as it is caused by an obstruction at or near the larynx. (See below for details.)

Assessment of the Child with Cough or Difficult Breathing

If the mother confirms that the child does have a cough or difficult breathing, one needs to establish what her understanding is of the latter in particular.
If the answer is in the negative, one then goes on to the next symptom, diarrhoea, as suggested by the above diagram. There is then no need to go into the cough section, unless you hear that the child is coughing.
At times one becomes aware of the child's cough, even though the mother did not acknowledge it; obviously one would then have to assess for this symptom.

Duration of the Cough

The duration of the cough is important as any child that has been coughing for 2 weeks or more must be considered to be suffering from a chronic condition. In particular tuberculosis must be ruled out. However, asthma, lymphoid interstitial pneumonitis and whooping cough amongst others, might also give a cough lasting many weeks.

Count the Breaths in one Minute

Unfortunately it usually is a junior member of the health team who is given the duty to count the breath rate. This may thereby give the impression that it is not a truly vital observation. However, this is one of the most important observations to be undertaken as will become apparent below. It is important to count the rate for a full minute as children frequently breathe at an irregular rate.

It is advisable *not to undress* the child until after the count, as he must be calm at the time.

Cut-off rates have been established for the different age groups. *For the young child aged 2 up to 12 months fast breathing is set at 50 breaths or more per minute, whilst for the child 12 months up to 5 years it is 40 breaths or more per minute. For the young infant 1 week up to 2 months, fast breathing is 60 breaths or more per minute.*

Chest Indrawing

This sign indicates respiratory distress – it replaces intercostal recession. The latter has been found to be less accurate, as excessive soft tissue on the chest wall makes it difficult to see recession. On the other hand the very thin child tends to have recession even when breathing normally.
Chest indrawing is the retraction of the lower chest wall on inspiration.
Occasional indrawing, particularly while breastfeeding, should not be considered as a positive sign of chest indrawing. If you are in doubt as to whether indrawing is actually present change the position of the child: lying horizontally on the mother's lap, may show the sign more distinctly. If you are still in doubt as to whether indrawing is present, do not consider this as chest indrawing.

Stridor

As mentioned previously, stridor is usually caused by an obstruction at the level of the larynx. It is due to inflammatory swelling of the glottis or vocal cords, which interferes with the flow of air into the lower airways. It usually is high pitched in nature. A more low pitched stridor is likely to be due to swelling of the glottis, epiglottis or in the upper trachea.
Stridor is always heard on inspiration and may become inspiratory <u>and</u> expiratory when there is severe obstruction. Any form of stridor must always be regarded as a sign of serious pathology at first level.

Wheezing

When there is oedema of the lining of the bronchioles, such as in bronchiolitis or asthma, a whistling musical sound is produced. As these small airways tend to open during inspiration the problem occurs mainly on breathing out when the little tubes become narrow.
Wheezing is therefore heard on expiration and it is best heard at the mouth of the child.

<u>Stridor</u> is heard during <u>in</u>spiration
<u>Wheezing</u> is heard on <u>ex</u>piration

These are the only observations required for cough and difficult breathing. At first level there is no need for further examination.

Classify for Cough and Difficult Breathing

Once the above symptoms and signs have been elicited, classification of this problem follows. As mentioned in the previous chapter, the problem is classified according to its severity.
The algorithm below is a replica of the one on page 2 of the chart booklet. To use the classification it is important to commence in the Signs Box on the left of the top (red) row. If any *one* of the signs referred to is present, the problem is classified in that row. In this way the most serious of the three classifications will be assigned to the presenting problem. Thus if there is a general danger sign and/or chest indrawing and/or a stridor, the classification is SEVERE PNEUMONIA OR VERY SEVERE DISEASE.

If none of the three signs is present one moves to the middle (yellow) row, where the only sign is fast breathing. PNEUMONIA is the classification when fast breathing has been identified.

If the child does not have any of the above signs one moves to the bottom (green) row, where the classification is Cough or Cold.

The boxes on the right of the algorithm will be seen to identify the treatment for each of the classifications. These are discussed in some detail below. Wheezing is classified separately as it may be present in any one of the above classifications, but does not influence the triage process. Moreover, it requires specific management.

• Any general danger sign or • Chest indrawing or • Stridor in calm	**SEVERE PNEUMONIA OR VERY SEVERE DISEASE**	➢ **Give first dose of ceftriaxone IM. (p. 12)** ➢ **Give 1st dose cotrimoxazole (p. 8)** ➢ **Give oxygen (p. 13)** ➢ **If stridor: give nebulised adrenaline (p. 12)** ➢ **Test for low blood sugar, then treat or prevent (p. 13)** ➢ **Keep child warm, and refer URGENTLY**
• Fast breathing	**PNEUMONIA**	➢ Give amoxycillin for 5 days (p. 8) If HIV-infected or exposed also give co-trimoxazole for 5 days (p. 8) ➢ Soothe the throat and relieve the cough (p. 11) ➢ If coughing for more than 2 weeks, do a tuberculin test and refer for possible TB or asthma ➢ Advise mother when to return immediately (p. 21) ➢ Follow-up in 2 days
• No signs of pneumonia or very severe disease	**COUGH OR COLD**	➢ Soothe the throat and relieve cough (p. 11) ➢ If coughing for more than 2 weeks, do a tuberculin test and refer for possible TB or asthma ➢ Advise mother when to return immediately (p. 21) ➢ Follow up in 5 days if not improving

'Yes' to any question	**RECURRENT WHEEZE**	**Give salbutamol and prednisone if referring for a severe classification** Give salbutamol via spacer for 5 days (p. 9) Give oral prednisone 5 - 10 days (p. 9) Refer non urgently for assessment
All other children with wheeze	**WHEEZE (FIRST EPISODE)**	**Give salbutamol if referring for a severe classification** Give salbutamol via a spacer for 5 days (p. 9) Follow-up in 5 days if still wheezing

Severe Pneumonia or Very Severe Disease

This classification covers a wide range of illnesses, for which one will be tempted to make a more definitive diagnosis. Lobar pneumonia, extensive bronchopneumonia, congestive cardiac failure, severe metabolic acidosis or asthma are some of the possibilities. As it may be difficult to distinguish one from the other it is essential to commence with treatment for the most likely of these illnesses, viz. severe pneumonia. The child with any one of these conditions would need to be admitted urgently for intensive treatment and further investigation.
It is important to remember that one of the main causes of severe pneumonia in infants is Pneumocystis jiroveci (Carinii) pneumonia. (PCP) The patient is desperately sick with severe tachypnoea and cyanosis at times.

During further assessment you may find that the rapid breathing was in fact due to dehydration and metabolic acidosis. This would obviously require additional treatment.

Management
Dosage schedules and procedural advice can be found on the appropriate pages of the chart booklet.
An antibiotic[1] is given parenterally (unless the child is quite capable of swallowing and is not desperately ill) because the most likely cause of the problem is a severe respiratory infection. Cotrimoxazole in therapeutic doses is given one needs to suspect that one is dealing with Pneumocystis pneumonia. Appropriate management must be instituted even before the HIV status of the infant has been established.
Nebulised adrenaline is given to the child with stridor.
Oxygen, blood sugar level and temperature control are managed as outlined in Chapter 2, General Danger Signs.
For the wheezing child the relevant algorithm below needs to be consulted.
Urgent referral should be arranged as soon as the full assessment has been completed.

Pneumonia

Once it has been established that there is nothing in the assessment that warrants the classification of SEVERE PNEUMONIA OR VERY SEVERE DISEASE one moves to the middle (yellow) row.
Rapid breathing is the only sign that determines the classification of PNEUMONIA. Health workers may wish to listen for crackles in order to make a diagnosis of pneumonia. However, in infants and young children it is an unreliable sign: crackles may be audible when the problem is not pneumonia and, more commonly, crackles are not audible in the presence of appreciable lung infection, particularly in infants.

[1] The choice of antibiotics prescribed in the IMCI treatment guidelines is based on wide consultation throughout the country.

The cut-off rates for fast breathing are given above. See below for further management if there is associated wheezing.

Management
The antibiotic of choice is amoxycillin given orally three times daily for 5 days. In place of cough mixtures the mother is counselled on the use of good home 'remedies', such as breastmilk or warm water, possibly with added syrup or honey and some lemon drops.[2] It is a reflex action initiated by the warm fluid at the lower end of the oesophagus, which relieves the cough. Harmful practices, such as herbal smoke inhalation, must be actively discouraged.

The child should be seen for a follow-up assessment after 2 days. (See Chapter 11 and C/B p 23)
A very important aspect of the management is the advice to the mother to be on the look out for certain features that should cause her to bring the child back immediately. (See Chapter 11 and C/B p 21)

Cough or Cold

Although the majority of patients presenting with cough have a viral upper respiratory infection, one cannot jump to that conclusion. One must always first rule out very severe disease or severe pneumonia. If the child is wheezing the appropriate algorithm must also be consulted.

Management
Once again, if the cough has been present for more than 14 days referral for investigation for tuberculosis is necessary after a tuberculin test has been done.
If the child is no better after five days she should return for a follow-up assessment.
No medicinal treatment is prescribed but careful counselling of the mother should convince her that the recommended home care, will be of greater benefit to her child than a bottle of medicine. Although mothers are not taught to count the breaths they can usually recognize fast breathing. However, it is important that the mother is well informed regarding the features indicating the need to return immediately. This will empower her to decide on the severity of the illness. If the child is not breathing fast and is otherwise well, she is wasting her time and money by going to the clinic.

Tuberculosis
Although there is no IMCI classification for tuberculosis at this time, all health care providers need to be very aware of the fact that it has become a very common problem again. It is difficult to make a definite diagnosis of TB in under 5 year olds.
The following combination of features is strongly indicative of TB:

[2] IMCI treatment guidelines, as indeed also the SA Essential Drug List, do not include any cough mixtures. This is based on the fact that these preparations have few if any beneficial effects, other than placebo, and may actually impair expulsion of unwanted secretions.

- contact with a sputum-positive person
- loss of weight
- cough and
- fever.

A tuberculin test must be done and the child referred for chest X-ray and anti-TB treatment.

Classification for Wheeze

Four questions need to be answered:

- Has the child had a wheeze before this illness?
- Does the child frequently cough at night?
- Has the child had this episode of wheezing for more than 7 days?
- Is the child on treatment for asthma at present?

A 'yes' to any *one* of the four questions requires the classification of RECURRENT WHEEZE. All other wheezing attacks will be regarded as WHEEZE (FIRST EPISODE).

Management

If a child has a severe bronchospasm he will almost certainly demonstrate several of the features, which required a classification of SEVERE PNEUMONIA OR VERY SEVERE DISEASE. For instance he will have chest indrawing and/or he is lethargic and/or unable to drink. He will have received the treatment outlined above for that classification and in addition requires salbutamol and prednisone. Salbutamol is given using a nebuliser or a Measured Dose Inhaler (MDI) with a spacer. Where no spacer is available, one needs to prepare one using a plastic cool-drink bottle. (See C/B p 9) Prednisone is given orally or by naso-gastric tube according to the dosage schedule. (C/B p9)

If the child with Recurrent Wheeze does not have a severe classification, he receives the salbutamol for 7 -10 days and prednisone for 3 days and is referred non-urgently for assessment.

Where the child has been classified Wheeze (First Episode) salbutamol from an MDI is given three times daily for 7–10 days. A follow-up assessment is necessary should he still be wheezing after 5 days. Again the mother needs to be counselled when to return immediately.

Asthma

For primary level purposes the child with a recurrent wheeze needs to be considered as suffering from asthma. The ongoing management of this child is particularly important, as every effort must be made to prevent the child from becoming a chronic asthmatic in later life. If regular attendance at a specialised asthma clinic is not feasible, detailed management must be prescribed by someone with specific expertise. Attendance at sessions for children with chronic problems is strongly recommended for the implementation of the prescribed management.

Case History

Thembi aged 15 months has a problem of cough and fever for 3 days.
Her weight is 10,5 kg and her temperature is 38.7ºC.
She takes her feeds reluctantly but has not vomited. She appears to be fully aware of her surroundings. There is no history of any convulsions with this illness. She does not have stridor and there is no chest indrawing. The respiratory rate is 48 per minute. The health worker clearly heard a wheeze when Thembi breathed out.

The health worker has excluded the classification for SEVERE PNEUMONIA OR VERY SEVERE DISEASE. She now classifies for i. PNEUMONIA and ii. WHEEZE (FIRST EPISODE)) as the answer to all 4 questions is negative -- in the appropriate algorithm. The treatment prescribed is: salbutamol inhalation 4 times a day, using an MDI with a spacer.

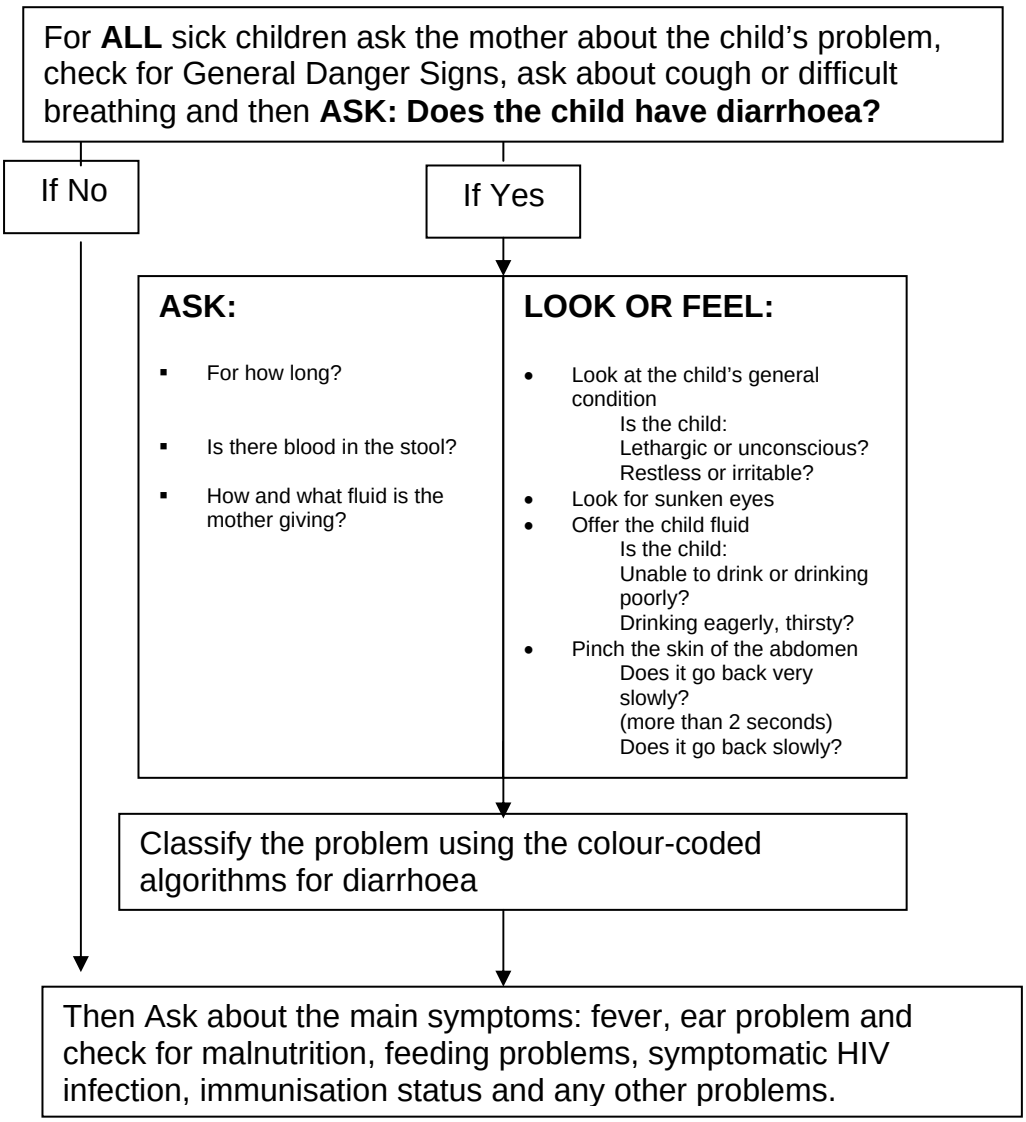
The mother is counselled on how to bring the temperature down when Thembi is feverish and she is asked to bring her back for a follow-up assessment after 2 days. She is also advised to observe for the features for which she would need to bring Thembi back immediately. Before the mother leaves the clinic the health worker makes quite sure that the mother understands clearly how and when to give the 3 medications. (NB This is one of the rare situations when more than 2 medications are prescribed.)

Summary:

- Pneumonia is the commonest killer of children in hospital.
- Many of these deaths are due to pneumocystis, which could easily be prevented by prophylactic cotrimoxazole.
- Counting the respiratory rate accurately is a very important procedure.
- Mothers can readily learn to distinguish between a mild upper respiratory infection and a lower respiratory problem.
- Prescribing antibiotics for an (viral) upper respiratory infection is bad practice.
- Recurrent wheeze calls for an assessment by someone with expertise in this field.

CHAPTER 4

DIARRHOEA



Diarrhoea is the second most common cause of death of children in our hospitals. Most of these children die of dehydration!

Initial Approach to the Problem of Diarrhoea

Diarrhoea occurs when the stools are unusually watery. The number of stools normally varies considerably from one infant to the next and, at times, from day to day. It varies with the diet and the age of the child. Moreover, the diet of the mother may affect the stool frequency of a breastfed infant. Thus the consistency is far more important than the frequency but, needless to say, frequent watery stools are the most harmful situation, as it is the loss of fluid,

which leads to dehydration. Generally mothers are quite familiar with the normal consistency and number of her infant's stools.
Health workers need to be familiar with the local words for diarrhoea; commonly there are several expressions even within any one community.

Diarrhoea is possibly the most common symptom of children under the age of 2 years. It may be caused by an infection of the gut – gastro-enteritis – or an infection of another system. Laxatives taken by a mother who is breastfeeding may cause her infant to have diarrhoea. In some communities enemas and/or laxatives are administered as a panacea for almost any ailment, resulting in diarrhoea, particularly if a highly irritant substance is used.

Diarrhoea is also a common side effect of antiretroviral drugs. If the child is on antiretroviral therapy you will need to consider whether this might be the cause. The *Guidelines for the Management of HIV-infected Children* Appendix 5 p 132 will give you an indication how to grade the severity and what action to take. If in doubt consult an expert.

Types of Diarrhoea

Acute Diarrhoea is defined as loose stools of less than 14 days duration. The most serious of these is cholera, which occurs in epidemics and affects communities deprived of good sanitation and water supply. Death may occur within a day or two of onset due to excessive loss of water.
Most bouts of diarrhoea are caused by contaminated feeds, particularly if bottle feeds are given. Contact with other infants and young children, who are infected, is also a common cause of gastro-enteritis.
Generally there is no point in attempting to find a causative organism of the diarrhoea at primary level. Nor is there any indication for antibiotics or anti-diarrhoeal mixtures except if cholera is suspected. Medications tend to interfere with the natural healing process and may lead to prolongation of the illness.

When the problem of diarrhoea has lasted more than 14 days it is referred to as *Persistent Diarrhoea.* This interferes with the normal digestion and absorption of nutrients and results in excessive loss of potassium and other essential electrolytes. Malnutrition, rather than dehydration, is a more common consequence of this type of diarrhoea. However, a child with persistent diarrhoea who has some dehydration should be referred for further attention. As the gut mucosa takes time to recover from the insult, weight loss is regained over a period of weeks rather than days.

> Children with Symptomatic HIV Infection commonly present with repeated bouts of acute diarrhoea; some of these may become persistent.

Dysentery occurs when there is blood in the stool, which at times is accompanied by mucus. In most instances in South Africa the causative organism is S*higella.* It is recommended that these children are treated with an appropriate antibiotic. Infants under the age of 12 months with dysentery

are at risk of dying: referral of these patients to hospital is strongly recommended.

Assessment of a Child with Diarrhoea

In the assessment of a child with diarrhoea there are a few simple but important steps to follow:

Does the child have diarrhoea?

This is the question that every mother bringing a sick child to the clinic must be asked. At times the presenting problems, such as a danger sign, may overshadow other symptoms such as diarrhoea, particularly if they have been present for some time. On the other hand, as mentioned previously, a complaint of 'diarrhoea' may be based on more frequent but not particularly loose stools. In these cases the mother merely needs to be reassured.

How long has the child had diarrhoea?

This question differentiates acute – less than 14 days – from persistent diarrhoea, which is 14 days or more.
Has there been a previous episode of persistent diarrhoea during the past 3 months?

Is there blood in the stool?

The answer to this question is positive even if there is mere blood-streaking of the stool.

How much and what fluid is the mother giving?

The purpose of this question is twofold:

i) To establish whether the mother has administered oral rehydration fluids, she needs to be praised, even though some guidance may be necessary as to the quantity and quality of the fluid used.

ii) On the other hand inadvisable treatment, such as enemas or questionable oral mixtures, may have been given, which need to be discouraged. However, this information has no bearing on the classification.

The next step is to assess the state of hydration of *every* child with diarrhoea by eliciting the following signs:

Assess the General Condition

Is the child lethargic? This will already have been established when assessing for General Danger Signs. The child has the sign *restless or irritable* if he is

restless or irritable all the time, apart from settling momentarily when feeding. This is more than the fearful cry of the child, who can be consoled.

Are the child's eyes sunken?

Sunken eyes is a common sign in dehydrated children.
If there is any uncertainty whether the eyes are sunken, the mother should be consulted, as to whether in her opinion the eyes look unusual.
The sign is positive even when the eyes are sunken in a very thin, marasmic child.

Offer the child fluid

One needs to observe carefully how the child drinks when the mother offers him some water in a cup. He is *not able to drink* if he is unable to take the water into his mouth and swallow it. (See General Danger Signs above)
A child is *drinking poorly* if he is weak and cannot drink but swallows when water is put into his mouth.
A child has the sign *drinking eagerly, thirsty* if it is obvious that he wants to drink. He may reach for the cup or cry when it is taken away.

Pinch the skin of the abdomen

For this procedure the child must be lying flat on his back, either on the mother's lap or on an examination couch with the arms at his side and not above his head. Locate a point midway between the umbilicus and the side of the abdomen. Lift a skin-fold with the underlying fatty tissue between the thumb and the index finger for one second. Note that the skin-fold should be in the longitudinal and not the transverse plane of the body. Closely observe how long it takes for the fold to return. It may return *very slowly*, taking 2 seconds or more. It may return *slowly* (< 2 seconds) and remain visible with slight tenting for a short time. On the other hand it may return *immediately*.
Note: In a marasmic child the skin pinch may go back slowly or even very slowly out of proportion to the state of hydration. In an obese or oedematous child the skin pinch may go back immediately, even in the presence of dehydration. Although the skin pinch is less reliable in these children it must still be used for purposes of classification.

Classification of Diarrhoea

- Every child with diarrhoea must be classified for ***dehydration*** first.
- Also classify for ***persistent diarrhoea*** if the child has had diarrhoea for 14 days or more
- Then classify for ***dysentery*** if there is blood in the stool

Principles of Management

NB

It has been shown that zinc plays an important role in the management of children with diarrhoeal disease. Recovery is more rapid and serious dehydration is less common. Thus all children with diarrhoea should be given zinc for 2 weeks.

1. ***Fluid replacement*** is essential for all children with diarrhoea as dehydration is the main cause of death. Whenever possible oral fluids should be given. On the other hand if the child has severe dehydration and is shocked there must be no hesitation to start intravenous fluids.

   Oral fluids:

   i) Electrolyte solution prepared from the Oral Rehydration Salts (ORS) sachets should be given for *fluid replacement*, where any signs of dehydration have been found. Mixing instructions are given on the sachet.

   ii) Sugar Salt Solution (SSS) is made up with 8 level teaspoons of sugar and ½ teaspoon of salt in 1 litre of clean water. This preparation is used to *maintain hydration*. However, there is no harm in giving this to dehydrated patients while waiting for ORS. Food-based fluids, such as water used for cooking samp, rice, potatoes etc, are also strongly recommended.

2. ***Continue feeding*****:** It is customary to withhold food from children who have diarrhoea. This is unfortunate as the child needs to continue to have food in order to prevent loss of weight. One of the reasons for withholding feeds from these children is the common experience that soon after a feed the child passes a stool. This is due to the normal gastro-colic reflex. Once this has been explained that this is a normal phenomenon and that all that needs to be done is to replace the fluids, mothers tend to accept this advice. It has been shown that when feeding has been continued the child recovers more rapidly. The diet needs to be bland and preferably contain those foods, which the child likes.

3. ***When to return****:* Details of this important aspect of the management can be found in the Chart Booklet p.21. Suffice it to say here that, if there is no improvement in the diarrhoea after 2 days the child must be seen again. If there is any deterioration at home, such as severe vomiting, there is a need to return to the clinic immediately.

Classify Dehydration

From the algorithm below you will see that there are 3 levels of classification for dehydration.

- Severe dehydration
- Some dehydration and
- No visible dehydration

Two of the following signs: - Lethargic or unconscious - Sunken eyes - Not able to drink or drinking poorly	**SEVERE DEHYDRATION**
Two of the following signs - Restless, irritable - Sunken eyes - Drinks eagerly, thirsty - Skin pinch goes back slowly	**SOME DEHYDRATION**
Not enough signs to classify as severe or some dehydration	**NO VISIBLE DEHYDRATION**

SEVERE DEHYDRATION

Two of the following signs warrant this classification: lethargic or unconscious, sunken eyes, not able to drink or drinking poorly, skin pinch goes back very slowly.

Management:

A child with this classification obviously requires urgent rehydration. Plan C (CB p15) outlines the fluid replacement in detail. Whenever possible fluid should be given intravenously using Ringer's Lactate. (If not available use Normal Saline.) Oral fluids can be given while the infusion is being set up, provided the child is able to drink. Where the intravenous route has failed, intra-osseous fluids should be given if the child is desperately ill. (See *Management of the child with a serious infection or severe malnutrition: Guidelines for care at the first referral level in developing countries* for details of the technique*.)* Ringer's Lactate 20 ml/kg is given rapidly during the first 30 minutes before referral. This should be repeated twice if the radial pulse is weak. Thereafter 20ml/kg is given every hour during referral. (See table below.)

If the intravenous approach is not feasible, due to lack of equipment or i.v. fluid, the naso-gastric route must be used and fluids given at a rate of 20ml/kg/hour. However, this is inadvisable if there is any abdominal distension. If the child vomits, the fluids should be given more slowly.

The marasmic child that is thought to be dehydrated, should preferably not be given intravenous fluid, as the myocardium can easily be overloaded. If there is delay in getting the child into hospital and there is strong evidence that the child is dehydrated in addition to the marasmus, he should be given a bolus of intravenous fluids 10ml/kg over 30 minutes while commencing with oral or naso-gastric tube feeds.

Table Rehydration of the child with Severe Dehydration

Use Ringer's lactate. If unavailable use Normal saline

Within the first half hour:	**Plan for the next 5 hours**
Rapidly give 20ml/kg before referral **Repeat** this amount twice if radial pulse is weak	**More slowly** give 20ml/kg every hour during referral. Regulate drip rate and function when in transit

Exception**:**

Another severe classification

e.g. suspected meningitis, severe malnutrition

- Too much IV fluid is dangerous in very sick children. Treatment should be supervised very closely in hospital.
- Set up a drip for severe dehydration, but give Ringers Lactate **only 10 ml per kilogram over one hour.**
- Then give sips of ORS while awaiting urgent referral.

- The child must be reassessed every hour while awaiting transfer. Increase the rate if there is no apparent improvement. Also give ORS (+/- 5ml/kg/hr) as soon as the child can drink.
- After 3 hours, if there has been delay in the transfer, reassess the state of hydration fully and reclassify and choose the appropriate plan as described below.
- Transfer to a facility with laboratory facilities is strongly recommended even though the hydration may have improved considerably. This is to correct any electrolyte imbalance and to ensure that there is no relapse.
- If the mother refuses transfer of the child, observe the child for no less than 6 hours after full rehydration.

SOME DEHYDRATION

If two or more of the signs required for the classification of Severe Dehydration were not found, the next step is to look for two or more of the following signs for the classification of Some Dehydration, viz. restless, irritable; sunken eyes; drinks eagerly, thirsty; skin pinch goes back slowly. Any two of these signs warrant a classification of Some Dehydration. If the child has one sign in the top row and one in the middle row it should be classified as Some Dehydration.

Management

As this child is only moderately dehydrated intravenous fluids are not recommended. Oral rehydration using the ORS sachets should be given over a period of 4 hours calculating the total quantity according to the schedule below. (Plan B CB p 14) The weight is used in preference to the age.

AGE	**Up to 4 months**	**4 months up to 12 months**	**12 months up to 2 years**	**2 years up to 5 years**
WEIGHT	<6kg	6 - <10kg	10 - <12kg	12 – 19kg
In ml	200 – 450	450 -800	800 - 960	960 -1600

It is important that the mother is shown how to give the fluid using a cup:

- Give small sips frequently
- If the child vomits, wait for a short while before commencing at a slower pace. If possible warm the fluid a little.
- Continue to breastfeed whenever the child wants
- If the child wants more fluid than is indicated, give more.
- Zinc must be started and continued for 2 weeks

After 4 hours the hydration status is re-assessed and classified again. This will determine which Plan is to be used:

i) no change => Plan B;
ii) no signs to warrant classifying dehydration => Plan A;
iii) deterioration showing two signs of Severe Dehydration => Plan C

If the mother has to leave before the treatment has been completed, but the child is showing improvement

- she will need to understand fully how to complete the rehydration at home.
- she needs to know how to prepare both the ORS and SSS. (See above)
- she needs to be counselled on the 3 rules for further treatment at home
- there may be a need to refer if the conditions at home are unsuitable.

NO VISIBLE DEHYDRATION

If there are insufficient signs to classify for either of the foregoing classifications of dehydration one must bear in mind that some degree of sub-clinical dehydration occurs in every patient that has diarrhoea.

Management
The aim of management here is to *prevent* dehydration and to maintain good nutrition.
SSS or home-based fluids are the recommended fluids to use. (See Plan A CB p14)
Counsel the mother on extra fluids

- Breastfeed frequently and for longer at each feed
- For exclusively breastfed infants give SSS as extra fluid
- For not exclusively breastfed infants give any of the recommended oral fluids, including home based cereals. (See above)
- Give ORS for those children completing Plan B at home and those that cannot return to the clinic immediately if the diarrhoea gets worse at home.
- How much extra fluid to give to the child, eg.
  Up to 2 years: 50 – 100ml after each loose stool
  Over 2 years: 100 – 200ml after each loose stool
- Stop the extra fluids once the diarrhoea has stopped

Continue feeding the child (See above)
When to return (See above)

Classify Persistent Diarrhoea

Children who have had diarrhoea for 14 days or more classify either for Severe Persistent Diarrhoea or Persistent Diarrhoea.

• Dehydration present	**SEVERE PERSISTENT DIARRHOEA**	➢ **Start treatment for dehydration** ➢ **Refer URGENTLY** ➢ **Give frequent sips of ORS on the way** ➢ **Give additional dose Vitamin A (p.16)**
• No visible dehydration	**PERSISTENT DIARRHOEA**	➢ Counsel the mother about feeding (p. 18 – 19) ➢ Give additional dose Vitamin A (p. 16) ➢ Consider symptomatic HIV infection (p. 7) ➢ Advise the mother when to return immediately (p.21) ➢ Follow-up in 5 days

SEVERE PERSISTENT DIARRHOEA

If the child has severe or some dehydration with persistent diarrhoea it warrants a classification of SEVERE PERSISTENT DIARRHOEA. The fact that the child has become dehydrated suggests that he has a severe form of the problem in addition to the nutritional deprivation incurred during the preceding weeks. He requires hospitalisation for treatment and investigation.

Management
The fluid loss needs to be corrected but one needs to proceed with caution when attempting to correct the hydration, as it may not have developed acutely. Even greater caution will have to be exercised if there is marasmus, suspected meningitis or severe pneumonia.

PERSISTENT DIARRHOEA

Persistent Diarrhoea is the classification for the child with persistent diarrhoea with no dehydration.

Management
The mainstay of treatment is dietary regulation. (CB p 18)

- If the child is still breastfed, feeds should be increased in frequency and duration
- If other milk feeds are being given, these should be replaced with breastmilk where possible, provided the mother is not HIV positive
- If the child is not breastfed feeds should be replaced with fermented milk products, such as sour milk or yoghurt
- Where that is not feasible, half the milk feeds should be replaced with nutritious semisolid food, such as mashed fruit and /or vegetables
- In addition the age-appropriate feeding recommendations should be given in small frequent meals throughout the day (See CB p 18)
- Avoid very sweet foods or drink

- Give an extra dose of vitamin A
- Give zinc for 2 weeks
- Follow-up in 5 days
- Ensure that the mother knows when to return immediately
- Consider for Symptomatic HIV Infection

Classify Dysentery

This is a simple classification largely based on the child's age

• Dehydration present or • Age less than 12 months	**SEVERE DYSENTERY**	➢ **Refer URGENTLY**
• Age 12 months or more and • No dehydration	**DYSENTERY**	➢ Treat for 5 days with nalidixic acid (p. 8) ➢ Advise when to return immediately (p.21) ➢ Follow-up in 2 days

SEVERE DYSENTERY

Any child with dysentery under the age of 12 months or with any degree of dehydration should be classified as Severe Dysentery.

Management
Transfer to a hospital for treatment, as the mortality in this age group is high.

DYSENTERY

This classification applies to any child 12 months or older with no other relevant signs.

Management
- Ciprofloxacin is given for 5 days
- The child should be seen again as follow-up after 2 days
- Ensure that the mother is familiar with the signs indicating immediate return to the clinic.

Case History

Mano is 20 months of age. The mother complains that he has had diarrhoea for 3 weeks. He weighs 9.5 kg and his temperature is 36.8ºC. His grandmother has given him an herbal enema at least twice a week since the diarrhoea started. There is no blood in the stool. He has not vomited but he has lost his appetite.
When the health worker looks for General Danger Signs she finds Mano to be alert and she is told that he has not had any convulsions.

Mano is not coughing. The health worker assesses Mano for diarrhoea and she thinks that his eyes are somewhat sunken. (The mother agrees with this observation.) He is not restless or irritable and drinks normally when offered some water. The skin pinch goes back immediately. The health worker classifies the hydration as NO VISIBLE DEHYDRATION. She then assesses and classifies him for persistent diarrhoea, as the problem has been present for more than 14 days. As he has no visible dehydration she classifies this as PERSISTENT DIARRHOEA.

She then completes the integrated assessment of Mano.

Management

The main focus of the health worker's management is on counselling the mother. She aims at achieving the mother's understanding and co-operation on the following points:

- The herbal mixture needs to be replaced with home-based fluids, and sour porridge, mashed fruit and vegetables. The availability of the age-appropriate foods is discussed and these are given as frequent small meals throughout the day. (CB p18, 19)
- The mother agrees to bring him back after 5 days and understands that he should be brought back *immediately* if he becomes worse, is unable to take feeds, has blood in the stool or starts to vomit. (CB p 21)
- Mano is given vitamin A 200 000 units in the clinic.
- Mano is also given zinc for 2 weeks.
- The health worker also notes that Persistent Diarrhoea is a common problem of HIV-infected children. It would be important to enquire from the mother whether there have been previous episodes. This would then be of importance when considering for Symptomatic HIV Infection.

  (See Chapter 7)

Summary

- Diarrhoea is a common cause of death.
- Death is usually due to dehydration.
- In the management fluid replacement and ongoing feeding are most important.
- Persistent diarrhoea is serious if the child is dehydrated.
- Dysentery is dangerous if the child is under 1 year and/or if the child is dehydrated.
- All children with diarrhoea should be given zinc for 2 weeks.

CHAPTER 5

FEVER

For ALL sick children ask the mother about the child's problem, check for General Danger Signs, ask about cough or difficult breathing, diarrhoea and then ask: **DOES THE CHILD HAVE FEVER?**

IF NO

IF YES

Is there a history of fever, **or** is the child hot to touch **or** is the recorded temperature 37.5º C or above?

If Yes, Then Decide the malaria risk:

Malaria risk means: the child lives in a malaria zone or visited a malaria zone in the previous month. If in doubt, consider it a malaria risk.

ASK ABOUT THE FEVER :	***LOOK AND FEEL:***
For how long?	Look or feel for: • Stiff neck • Bulging fontanelle • Runny nose • Other causes of fever

Do a rapid malaria test if there is a malaria risk

Consider measles if:

Generalised rash with either:

- Runny nose or
- Red eyes or
- Cough

See optional chart

Classify the child's illness according to the Fever algorithms

The ASK about the next main symptom, ear problem, check for malnutrition and anaemia, symptomatic HIV infection, immunisation status and for any other problems.

Initial Approach

The first objective when assessing a child with fever is to identify whether the child has meningitis or a similar serious bacterial infection. Thereafter the issue of malaria needs to be addressed. In the past measles was a very important contributor to the under-5 morbidity and mortality. This has changed dramatically during the past decade as a result of an aggressive immunisation campaign. As can be seen from the above figure, measles is relegated to an optional chart and only considered if the child has a generalised morbilliform rash, together with at least one of the features mentioned. (See below)

The child with fever that has lasted more than 7 days requires a different approach. HIV and AIDS and some opportunistic infections need to be considered. Mostly these patients have to be referred for further investigation.

Meningitis

This is an infection of the meninges and the cerebro-spinal fluid may be bacterial or viral. Bacterial, or purulent, meningitis may be a rapidly progressive illness resulting in severe brain damage or death within a few hours of onset. It presents with fever, headache and possibly any one of the General Danger Signs. At times the typical signs of meningitis appear only after a day or two. An associated feature in the early stages of meningococcal meningitis is a generalised petechial or purpuric rash. This illness tends to be epidemic in nature. Furthermore, it is more prevalent in the Western Cape than in other parts of South Africa.
Haemophilus influenzae and Pneumococcus are the other common bacteria causing purulent meningitis. As all young children should now be routinely immunised against *Haemophilus influenzae* it is anticipated that there will be less illnesses caused by this organism in infants and young children. However, meningitis caused by these bacteria is a serious illness, albeit not quite as aggressive as meningococcal meningitis.

> In early infancy these infections are particularly difficult to identify, as the signs of meningitis appear late and at times only after considerable brain damage has occurred.

High, unexplained fever in a young infant, particularly if associated with any General Danger Sign, must be considered to be caused by meningitis until proved otherwise by means of a lumbar puncture.
Treatment is with the recommended antibiotic in high doses. Appropriate therapy for convulsions or loss of consciousness needs to be initiated, should these be present.
Viral meningitis presents with features similar to those outlined above, but tends to be milder. However, as it is clinically indistinguishable from the bacterial variety, the child must be referred for further investigation, viz. a lumbar puncture at the very least.

Tuberculous meningitis needs to be considered, especially in an HIV-infected child. Usually the onset is more insidious with fever and gradual loss of consciousness. The prognosis is considerably worse in those children where loss of consciousness has developed.
Cryptococcal meningitis, one of the Opportunistic Infections, is generally a less acute infection presenting with mild clinical features. (See *Guidelines for the Management of HIV-infected Children p.* 62)

Influenza ('Flu'): Viral Upper Respiratory Infection

Influenza, or 'flu' as it is commonly called, is probably the most common cause of fever. It is caused by a virus and is usually accompanied by an upper respiratory infection or common cold. It is more common during winter and usually affects several members of the household. The infection is spread by droplets from the mouth or nose when speaking, coughing or sneezing. The virus may also be spread by the hands of the infected individual. Spread of the infection in day-care centres is almost unavoidable, but nevertheless precautions should be taken. At times the symptoms and signs of influenza are the prodrome of a more serious illness, such as measles.
It is important for the mother to know that the illness is self-limiting and that the fever tends to settle within 2 to 3 days. The child must be seen in follow-up should this not be the case.
The clinical features are those of respiratory infection: a blocked, runny nose causes irritability and interferes with restful sleep. There is a dry cough, which becomes productive after 3 days or so. Some patients, particularly infants and small children, may develop a wheeze, which is a sign of bronchiolitis.
The illness lasts approximately a week and serious complications are uncommon. Otitis media or, more rarely, pneumonia may occur. Mothers must be alerted to this possibility and counselled accordingly. (See Counselling chapter)
Management is symptomatic: if the blocked nose is troublesome, it can be cleared by instilling saline drops. A dry cough responds well to a warm drink, as mentioned previously. Paracetamol can be given for the fever for not more than 2 days, as it should have settled by then. Antibiotics are not indicated and in fact may be harmful. There is no evidence that complications, such as pneumonia, can be prevented by giving antibiotics prophylactically.

Malaria

Malaria is one of the world's most common killers. It is particularly prevalent in tropical or subtropical regions. The malaria areas in South Africa are in the northern part of Kwazulu Natal, in the lowveld of the Mpumalanga and Limpopo Provinces, bordering on and including the Kruger National Park. However, due to increasing social mobility one may encounter patients with malaria in any of the provinces. It is caused by parasites called plasmodia, which are spread by a particular type of mosquito. There are four types of plasmodia but the only serious one encountered in South Africa is *Plasmodium falciparum.*

Fever is the most important and often the only sign. At the onset of the illness there may be shivering and vomiting, followed by profuse sweating as the temperature drops. The fever may be present continuously or appear intermittently. In some children, who have developed a degree of immunity, anaemia may be the only feature.
Signs of malaria often overlap with those of other illnesses; for instance the child may have a cough and fast breathing, as in pneumonia, and will thus require treatment for both. Similarly there may be diarrhoea with dehydration, requiring rehydration in addition to the antimalarial drug.

In areas of high malaria prevalence, it becomes a prominent cause of childhood mortality. A child with uncomplicated malaria may rapidly deteriorate into severe cerebral malaria requiring urgent and intensive treatment.

In South Africa children with definite or suspected malaria should be admitted to hospital, unless they live in an area of high prevalence, where health workers and communities are familiar with out-patient management.

Measles

This viral infection has fortunately become a rarity in South Africa due to mass immunisation campaigns. Due to incomplete vaccination coverage there have been several outbreaks of measles in provinces during 2004.
Previously it was one of the foremost killers of infants and children, affecting children aged 9 months to 3 years predominantly. During the first six months maternal antibodies should protect the child. However, due to failure of seroconversion in some young mothers there has been no or insufficient transfer of antibodies. Similarly, it is anticipated that it will be the school-going child that may be susceptible, if there had been no seroconversion at the time of immunisation.
The measles virus affects predominantly the mucous membranes of the respiratory and upper alimentary tracts and conjunctiva.

Fever and a generalised rash are the main signs of measles. It is highly contagious, particularly during the prodrome when the child has fever and features of an upper respiratory infection. There is an additional diagnostic sign at this stage: Koplik spots, which are small white salt-grain-like spots with a slightly inflamed base on the buccal mucosa opposite the premolars. It is only on the fourth or fifth day that the rash makes its appearance, starting behind the ears and gradually progressing on to the face, neck and eventually the whole body. There are deep red, maculo-papular patches varying in shape and size. There is no itch. The rash fades in the same order and tends to leave pigmented patches in its wake, which may remain for several weeks. Red eyes and a dry cough are almost always present throughout the first week of the illness.

Complications of measles are said to occur in some 30% of patients. The most common are:

- Diarrhoea, at times persistent or dysentery

- Pneumonia
- Laryngo-tracheo-bronchitis with stridor and risk of airway obstruction
- Mouth ulcers
- Corneal ulceration
- Otitis media
- Malnutrition, as a result of fever, diarrhoea, mouth ulcers and/or loss of appetite

There is always an associated immune suppression for some weeks following an attack of measles with a risk of developing other infections.

Management
One of the most important aspects of the management is feeding of the child during and for some time after the illness until the appetite has returned and the weight regained.
Paracetamol is given for the fever. Antibiotics are only given for any of the complications caused by bacteria, such as pneumonia or acute ear infection. The child must be observed closely for complications and receive appropriate treatment for these. An additional dose of vitamin A should be given to all children with measles.
Needless to say, vaccination of unimmunised contact children needs to be embarked upon. Moreover, the provincial EPI co-ordinator must be informed. Blood and urine samples need to be sent for verification of the diagnosis.

Other Illnesses Associated With Fever

Whenever fever has lasted for more than a week the child needs to be referred for further investigation and treatment. Although the following illnesses usually cause fever of longer duration, they may also present as an acute illness.

HIV and AIDS may present with prolonged fever in the early stages.

Urinary tract infection (UTI): frequency, often in small quantities, mild urinary incontinence, and dysuria may be due to UTI. On the other hand the infection may be quite asymtomatic or present as pyrexia of unknown origin (PUO). At first level the most convenient way to decide whether the fever is due to UTI is to use Dipstix® to look for white or pus cells.

Tuberculosis: This is a very common condition increasing in prevalence in many communities throughout South Africa. The AIDS epidemic is partly to blame for this. There is a need to be constantly on the look out for features of TB; fever, cough and loss of weight are the most common.

Typhoid Fever: In this illness fever is slowly progressive over a week or so and may reach 39ºC or more. The child will be drowsy and lethargic and headache may be a troublesome symptom. Diarrhoea or constipation may occur. Although typhoid is more common in older children it may occur in young children. A respiratory infection often accompanies typhoid fever.

Bone, Joint or Soft Tissue Infection: The intense pain caused by this type of infection usually makes the source of the fever fairly obvious. In the young patient it may be difficult to find the exact site of the infection. Urgent pre-referral antibiotics are essential to avoid chronic complications.

ASSESSMENT OF THE CHILD WITH FEVER

Page 4 of the chart booklet shows that there are two separate sections for the assessment and classification for fever: the upper box is devoted to meningitis and other causes of fever, whilst the lower is devoted to the child with a malaria risk. As measles has now become a rarity amongst children under the age of 5 years in South Africa, it is dealt with on an optional page at the end of the Chart Booklet (p 40). Nevertheless, because of occasional outbreaks of measles it is important to be particularly alert to the prodromal features, viz. fever, red eyes, dry cough, coryza and Koplik spots.

Does the child have a fever?

It is very important that this is determined for every sick child; the question put to the mother is whether the child has been hot during this illness. (Again it is important to know the local terms for fever.) Although the temperature should have been taken and recorded on entry into the clinic, always feel for fever on the abdomen and in the axillae. Any temperature above 37.5ºC is regarded as fever. If there is no history and there are no signs of fever one moves on to ear problems. Thus the sign is positive if there is a recent history of fever, the child feels hot and/or the temperature is >37.5° C

Decide the child's malaria risk

There are two aspects to this:

- Does the child live in a malaria area?
- If not, has the child visited a malaria area within the past month?

The northern part of Kwazulu Natal, the lowveld of Mpumalanga and Limpopo procinces, the Kruger National Park and Mozambique are malaria zones. The summer months present a higher risk of malaria than during the dry seasons.

A visit by the child to the malaria zone during the month preceding the onset of this illness puts the child at risk of this disease.

Duration of the fever
If present for 7 days or more, has it been present every day?

The fever of most of the common viral illnesses tends to cease within a week. If the fever has persisted for longer, one needs to consider the problems mentioned above.

Look and/or feel for a stiff neck

A stiff neck is strongly suggestive of meningitis.

Observing the child while speaking to the mother may show that the child is able to turn his head from side to side or to bend his neck forward. If he can do this he does not have a stiff neck. One then has to attract the child's attention and encourage him to look down at his feet. If his chin can touch the chest he does not have stiff neck. Failing this one should allow the child to lie flat and by placing the hands on either side of the head and neck, carefully raise the head and bend the neck. A child with neck stiffness resists this and may show pain. However, the absence of a stiff neck does not necessarily mean that the child does not have meningitis.

Feel for a bulging fontanelle

Where the fontanelle is still 2 cms or more open it is important to look and feel for a bulging fontanelle with the child in the erect sitting position. Normally there is a slight dip over the fontanelle. If it is full or bulging above the level of the skull it should be visible. In any case it is necessary to feel for bulging by bringing the flat of the hand forward over the fontanelle from the occiput. The child needs to be calm as crying or struggling may cause the fontanelle to bulge.

Look for a runny nose

A runny nose suggests that the child may have a common cold. It is also a very common feature of measles. On the other hand it is almost unknown to have a runny nose with malaria.

Look for other causes of fever

Pneumonia and dysentery are likely causes of fever. Infected lymph glands from septic sores are a further common cause of fever. Also see above for the list of other causes of fever.

• Any general danger sign or • Stiff neck or bulging fontanelle and • Malaria test: any result or not done	**SUSPECTED SEVERE MALARIA**	➢ **Treat for Malaria (p. 9)** ➢ **Treat for SUSPECTED MENINGITIS** ➢ **Test for low blood sugar, then treat or prevent (p. 13)** ➢ **Give one dose of paracetamol for high fever (p. 10)** ➢ **Refer URGENTLY**
• Malaria test positive	**MALARIA**	
• Malaria test not done, And SEVERE PNEUMONIA or PNEUMONIA • No other adequate cause of fever found	**SUSPECTED MALARIA**	➢ **If age less than 12 months, Refer URGENTLY** ➢ **Follow local guideline for suspected malaria (p. 9)** ➢ Give paracetamol for high fever (p. 10) ➢ Advise mother when to return immediately (p. 21) ➢ If fever has been for more than 7 days, **refer** ➢ Follow-up in 2 days if fever persists

• Malaria test negative
or
• Malaria test not done and
  • A cold with runny nose, or
  • Other adequate cause of fever found
	FEVER - OTHER CAUSE	➢ Give paracetamol for high fever (p. 10)
		➢ Treat for other causes
		➢ Advise mother when to return immediately (p. 21)
		➢ Follow-up in 2 days if fever persists
		➢ If fever is present daily for more than 7 days, **refer**

CLASSIFICATION OF FEVER

No Malaria Risk

There are only two possible classifications: Suspected Meningitis or Fever Other Cause.

Suspected Meningitis

This Classification is applied to the child with any General Danger Sign ***or*** with a stiff neck or bulging fontanelle. Conditions included in this classification are diseases such as septicaemia and other very severe infections. However, as features of meningitis do not appear for a day or two after the onset of the illness, the child needs to be considered to have bacterial meningitis

Management

Arrangements must be made for urgent transfer to hospital.
An intramuscular antibiotic (e.g. ceftriaxone) is called for when the child is obviously seriously ill. As there may be associated hypoglycaemia the blood sugar level needs to be tested and corrective or preventive treatment commenced. Paracetamol syrup is given when the temperature is above 38ºC and the child is able to swallow. The unconscious child should receive oxygen, the airway must be kept clear and the blood sugar level checked.

Fever Other Cause

This is the classification for all children with no malaria risk who do not have suspected meningitis.

Management

The appropriate treatment for the child with any other cause that has been identified must be commenced. Paracetamol is given for high fever.

Where no cause has been identified the mother is carefully counselled regarding features, such as vomiting, refusal to drink or take feeds, that should urge her to return to the clinic immediately. Moreover, if there is no improvement after 2 days the child should be seen again.
One will need to check for TB with a tuberculin test, if the fever has been present for a week or more.

Malaria Risk Present

Here there are four possible classifications, to some extent depending on the availability of the rapid malaria test: Suspected Severe Malaria, Malaria, Suspected Malaria and Fever Other Cause.

Suspected Severe Malaria

This is the classification for those where a classification of Suspected Meningitis has already been made, regardless of the rapid malaria test. Even in the face of a negative test, the child must be considered to have severe malaria.

Management
Antimalarial medication, co-artemether, will need to be instituted immediately *in addition* to the treatment outlined above, including urgent referral. The choice of the drug depends on the sensitivity of the pathogen in the province.

Malaria

This is the obvious classification when the rapid malaria test is positive.

Management
Referral to hospital is recommended if the child is under the age of 12 months. This should probably apply also to older children outside the malaria zone. Antimalarial treatment with co-artemether should be given as well as paracetamol for high fever. All children not admitted to hospital must be seen in follow-up after 2 days. It is imperative that the mother must undertake to complete the co-artemether tablets, if these have been prescribed. She must also understand that if the child's condition gets worse, he refuses to take feeds or vomits everything she must bring him back immediately.
All confirmed cases of malaria must be notified.

Suspected Malaria

This classification is for those patients, who have no evidence of any other infection, and where the rapid malaria test is not available. An adequate cause for fever would be more than just a runny nose. Obvious acute tonsillitis, with swollen cervical lymph nodes, or a soft tissue infection or abscess would be examples of an 'adequate cause' accounting for fever. If the child has been classified as PNEUMOMIA it does not rule out malaria: children with malaria not infrequently have rapid respiration and should thus receive treatment for both illnesses.

Management
The child must be referred for malaria testing if readily accessible. Children under the age of 12 months should be referred. Paracetamol is given for high fever. If the child is being treated for another infection, it is important that the child comes back for re-assessment after 2 days. Furthermore the mother must know when to bring the child back immediately.
If no other cause for the fever has been found, commence treatment for malaria according to local guidelines.

Fever Other Cause
In this instance the rapid malaria test is negative or not available and there is evidence of another infection, which could account for the fever, influenza or those mentioned above.

Management
This child is not given anti-malarial treatment but managed for the other infection, including paracetamol for high fever. Should the fever still be present after 2 days the child must be seen again in follow-up. The mother must also be counselled when to bring the child back immediately.
If the fever has been present for more than 7 days a tuberculin test must be done in an attempt to rule out TB.

<u>Case Histories</u>

1. Themba is an 18 months old boy brought to the clinic with fever and diarrhoea. His temperature was recorded as 37.2º C and his weight as 11.8 kg. This was his first time to be seen for this complaint.
The health worker asks whether Themba has been drinking and was told that there was no problem. She is also told that he has not vomited more than twice yesterday. He has not had any convulsions.
When the health worker looks at Themba she finds him to be lethargic and difficult to rouse.
Themba is not coughing. He has had diarrhoea since yesterday. There is no blood staining of his stool. The mother is giving him sugar water to drink, but since this morning he has been reluctant to take any fluids.
Themba drinks water offered by the health worker very slowly. He is not restless or irritable. She thinks that his eyes are a little sunken and the mother agrees that they don't look normal. The skin pinch goes back slowly.
She classifies for SEVERE DEHYDRATION and asks a colleague to prepare for intravenous rehydration and to arrange for Themba to be referred to hospital.
The health worker then assesses Themba for fever. She has found out that there is no malaria risk in his case. The mother tells her that he has had a high fever for 2 days. She feels Themba's body and finds it to be very hot. She then checks the temperature and sees that it is 38.8º C.
She looks and feels for a stiff neck but finds that he can let his chin touch his chest quite easily. The fontanelle is closed. There is no runny nose.
In view of the danger sign she classifies for SUSPECTED MENINGITIS, even though there was no other sign of meningitis.

She gives Themba an injection of ceftriaxone IM and 5ml of paracetamol, which he takes very reluctantly. Before starting the intravenous infusion she checks his blood sugar level and finds it to be 4.5mmol.

2. A 4 year old girl, Lerato, is brought to the clinic with a problem of fever for 3 days. She has a temperature of 38.2º C and weighs 17.5 kg. The health worker sees that she is wide awake and the mother says that she has had no convulsions, she does not vomit and is drinking normally. She has not been seen for this illness before.
Lerato does not have a cough and no diarrhoea.
When assessing her for fever the health worker is told that the family lives in Sebokeng. However, they did visit Tonga near the Kruger Park about 2 weeks ago and thus the health worker decides that there is a malaria risk.
When she looks and feels for a stiff neck, she finds this to be normal. There is no runny nose, rash or any other obvious cause for the fever.
As there is no General Danger Sign and nothing to suggest meningitis she classifies for FEVER OTHER CAUSE.
There is no rapid malaria test available at the clinic.
When classifying for malaria she has not recorded any signs warranting a classification of SUSPECTED SEVERE MALARIA. As there is no rapid malaria test available the health worker classifies SUSPECTED MALARIA.
She counsels the mother regarding the likelihood of this being malaria and sees that the mother understands well. She then arranges for Lerato to be admitted at the Sebokeng Hospital for further investigation.

➢ Treat for Malaria

- Give the current malaria treatment recommended for your area. See the Malaria Treatment Guidelines.
- If you suspect malaria but cannot test or treat, refer urgently
- Record and notify malaria cases

In all provinces combination therapy must be used. In Kwa Zulu Natal and Limpopo Province use Co-artemether. Elsewhere use provincial guidelines

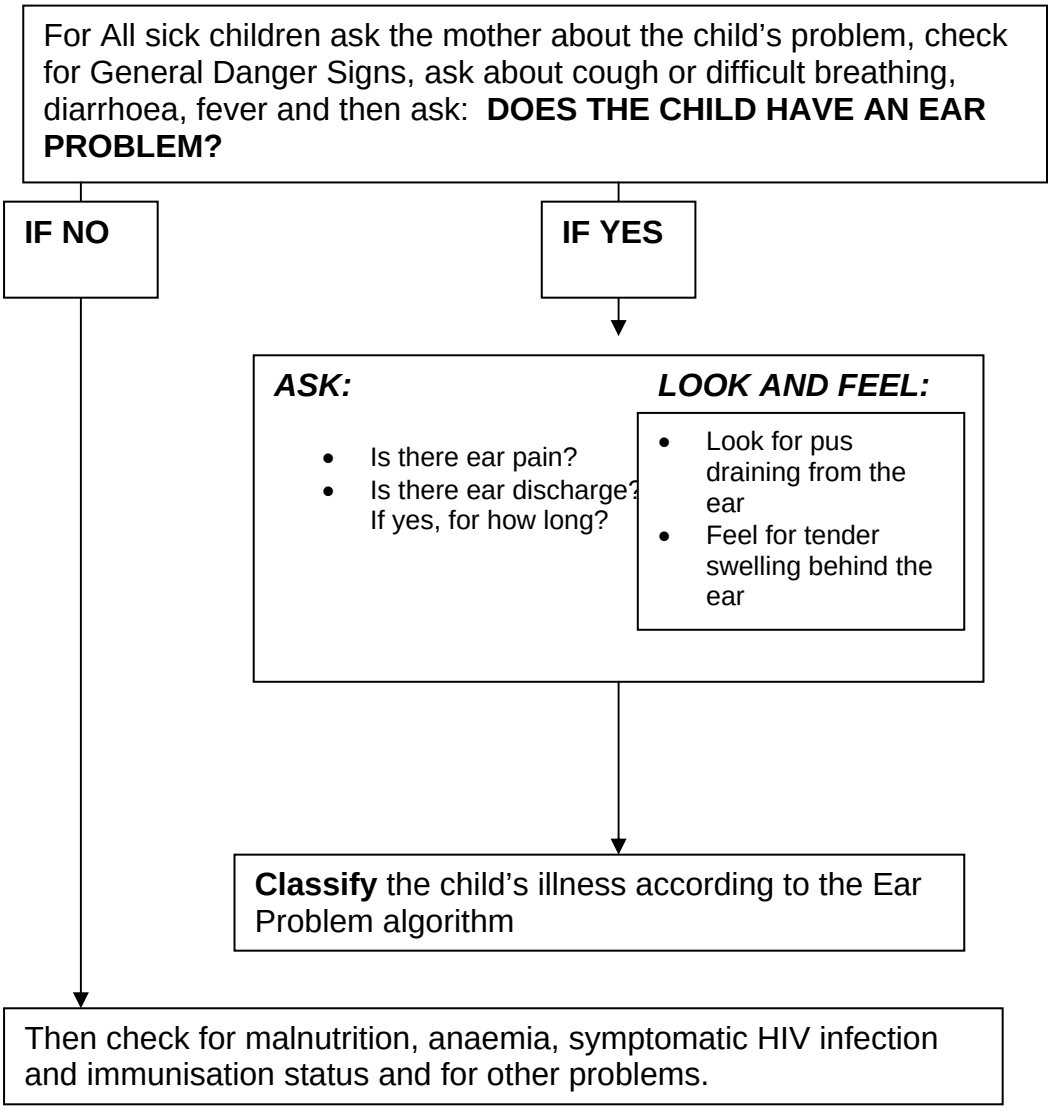
Artemether + Lumefantrine (Co-Artemether)

- **Refer URGENTLY if child unable to swallow, or under one year of age**
- **Treat only test-confirmed malaria. Refer if unable to test**
- Watch mother give the first dose of Co-Artemether in the clinic and observe for one hour**.** If the child vomits within an hour repeat the dose
- Second dose should be taken at home 8 hours later. Then twice daily for two more days
- Give Co-Artemether with food

Weight (age)	CO-ARTEMETHER TABLET	
	Day 1: First dose and repeat this after 8 hours	**Days 2 and 3: take dose twice daily**
10 – 15 kg (1-5 years)	1 tablet	1 tab twice a day
15 - 25 kg	2 tablets	2 tabs twice a day

CHAPTER 6

EAR PROBLEMS



Otitis Media (middle ear infection)

The usual problem related to the ear is pain. The most common cause of earache is an infection in the middle ear i.e. otitis media. Infection here commonly is preceded by an upper respiratory infection, which may have blocked the Eustachian tube, thus preventing fluid drainage from the middle ear. Once this obstruction has cleared there often is spontaneous improvement. On the other hand, more pronounced infection may lead to rupture of the ear drum and pus draining from the ear. Again this may heal spontaneously, especially if the Eustachian tubes are patent again. However in a certain percentage of children this does not occur, particularly in the presence of pharyngeal congestion and lowered immune status. This then leads to chronic otitis media, which may have further unpleasant complications, such as:

- Deafness
- Mastoiditis
- Cholesteatoma
- Brain abscess and meningitis

In view of the above-mentioned serious complications, every effort must be made to manage chronic ear infection effectively.

Is there Ear Pain?

At times it is difficult to establish if the child actually has pain. Mothers tend to interpret the child's touching the ear as earache, especially if it is associated with crying. In fact it is very difficult for infants and young children to localise pain to the ear as it is deep-seated and not necessarily referred to the pinna. It is advisable to ask the mother if there is an ear *problem*, rather than asking whether there is *pain in the ear*. Only if she says that there is a problem one can then ask what her observations are that lead her to that conclusion. On the other hand it must be understood that acute otitis media may be an asymptomatic problem.
Characteristically the infant or young child with ear pain cries inconsolably and /or wakes up crying at night with no identifiable cause.

Is there pus draining from the ear?
If yes, for how long?

Purulent discharge from the ear clearly indicates that the ear-drum has ruptured to allow the pus to drain. If it is of short duration one may obtain the history that from the moment that the pus appeared the child was free of pain. When asking the mother these questions one must make sure that she understands what is meant by this. At times some tears have run into the ear and the mother misinterprets this as discharge. The duration of the discharge is important in differentiating acute from chronic ear infection:
Ear discharge for *less than 2 weeks* is regarded as acute ear infection,
whereas
Ear discharge for *more than 2 weeks* is regarded as chronic ear infection

Look for pus draining from the ear. Naked eye inspection of the ear is sufficient for this part of the assessment. Otoscopic examination adds little information for the majority of first level health workers; it is a procedure that requires a great deal of practice and skill.

Feel for tender swelling behind the ear

When the ear infection has extended to the mastoid bone it presents as a tender swelling behind the ear. This is not a mobile swelling and is very tender. It must be distinguished from lymphadenitis: here one can usually feel the individual gland, unless it has reached the stage of abscess formation, when it may be more difficult to differentiate from mastoiditis. However, one will almost always find septic scalp sores, which are the actual cause of the lymphadenitis. As the mastoid bone is poorly developed in infants and young children, the swelling of mastoiditis may present above the pinna.

CLASSIFICATION OF EAR PROBLEM

From the figure below – which is a replica of page 5 of the chart booklet -- it can be seen that there are four classifications:

- MASTOIDITIS
- ACUTE EAR INFECTION
- CHRONIC EAR INFECTION
- NO EAR INFECTION

Mastoiditis

As mentioned previously, this is an advanced stage of infection of the mastoid bone, which requires urgent intervention.

Management
Pre-referral treatment consists of parenteral antibiotic and paracetamol to relieve the pain.
Extensive surgery will almost certainly have to be undertaken at the referral centre.

Acute Ear Infection

This classification is based on obvious pain in the ear or ear discharge for less than 14 days. There may be associated fever and, in the older child the mother may volunteer that there has been some hearing loss. (Neither of the latter two features are necessary for the classification.)

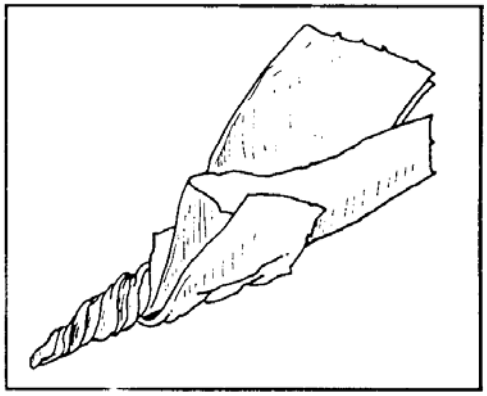
Management
Amoxycillin orally for 5 days is the treatment of choice. If there is pain, the child must receive paracetamol. If there is ear discharge, the mother will have to learn how to dry the ear by wicking. (See below for details of the technique)

The child needs to be seen again after 5 days if either the pain or discharge persist. All children with acute ear infection should be seen after 14 days, to ensure that the problem has resolved. Obviously if the discharge persists beyond 2 weeks the problem now becomes one of chronic ear infection.

Chronic Ear Infection

This has already been referred to above. It is a potentially serious problem, which requires a careful plan of action. The factors contributing to the chronicity are in the first place inadequate drainage through the Eustachian tube. A multiplicity of organisms subsequently result in superinfection, which becomes increasingly more difficult to combat. Tuberculous chronic ear infection is a further possibility, but cannot readily be identified at primary level.
As recurrent ear infection is a feature of HIV-infection we always need to ask if there has been previous episode of chronic ear discharge.

Management
Careful drying the ear by wicking is the first and most essential step. This needs to be carried out 3 – 4 times daily and should be followed immediately by instilling an available ear drop preparation, e.g. acetic acid. The use of commercially available cotton ear buds should be discouraged vigorously. Amoxycillin is given for 5 days.
The child must be seen after 2 weeks and referred to hospital if there is no improvement. If the ear is no longer discharging, the mother must be alerted to possible hearing loss, which again requires referral.
One needs to remember that chronic ear discharge is one of the eight features of symptomatic HIV infection.



No Ear Infection

This rather curious classification is reserved for those children where the mother felt that her child has some ear problem, but this was not confirmed during the assessment. One way to deal with this situation is to ask whether there was a recent onset where the child wakes at night or cannot fall asleep because of apparent pain. In this case one should accept that this an acute ear infection.

Procedure for Wicking the Ear

This procedure has been found to be more effective and more readily carried out at home than dry mopping.
A wick is made of a piece of firm paper, which is tightly folded into the shape of a dart with the pointed end twisted, so that it can be inserted into the auditory canal. A narrow strip of old material will serve the purpose equally well. The wick is left in the ear until it is soaked and then replaced with a dry wick repeatedly until the ear is dry.
Needles to say, the soaked wick needs to be discarded – preferably burned.

Case History

A mother brings her 3-year old daughter, Ntombi, to the clinic with a story of the child crying throughout last night. Ntombi keeps rubbing the right side of her head.

She has a recorded temperature of 37.8º C and a weight of 16.0 kg.

Ntombi has not vomited and she is drinking well. She has not had any convulsions and is fully aware of her surroundings. She is not coughing and has no diarrhoea.

The health worker assesses Ntombi for fever. Her mother says she felt feverish last night. There is no malaria risk. There is no neck stiffness but she has a runny nose. The health worker classifies the fever as FEVER OTHER CAUSE.

She assesses Ntombi for ear problem. There is no history of ear discharge at any time.

The health worker cannot see any discharge from either of the ears and does not feel any tender swelling behind the ears.

She classifies the problem as ACUTE EAR INFECTION and gives Ntombi amoxycillin syrup 10 ml three times a day for 5 days. The mother learns how to administer the medicine by giving Ntombi the first dose herself under the guidance of the health worker. She is also given paracetamol 5ml at the clinic and the mother is advised to continue with this 3 times a day for 2 days if necessary. Should the pain persist after 5 days Ntombi should be seen again in follow-up.

The health worker also takes pains to ensure that Ntombi's mother knows the features of when to bring her back to the clinic immediately.

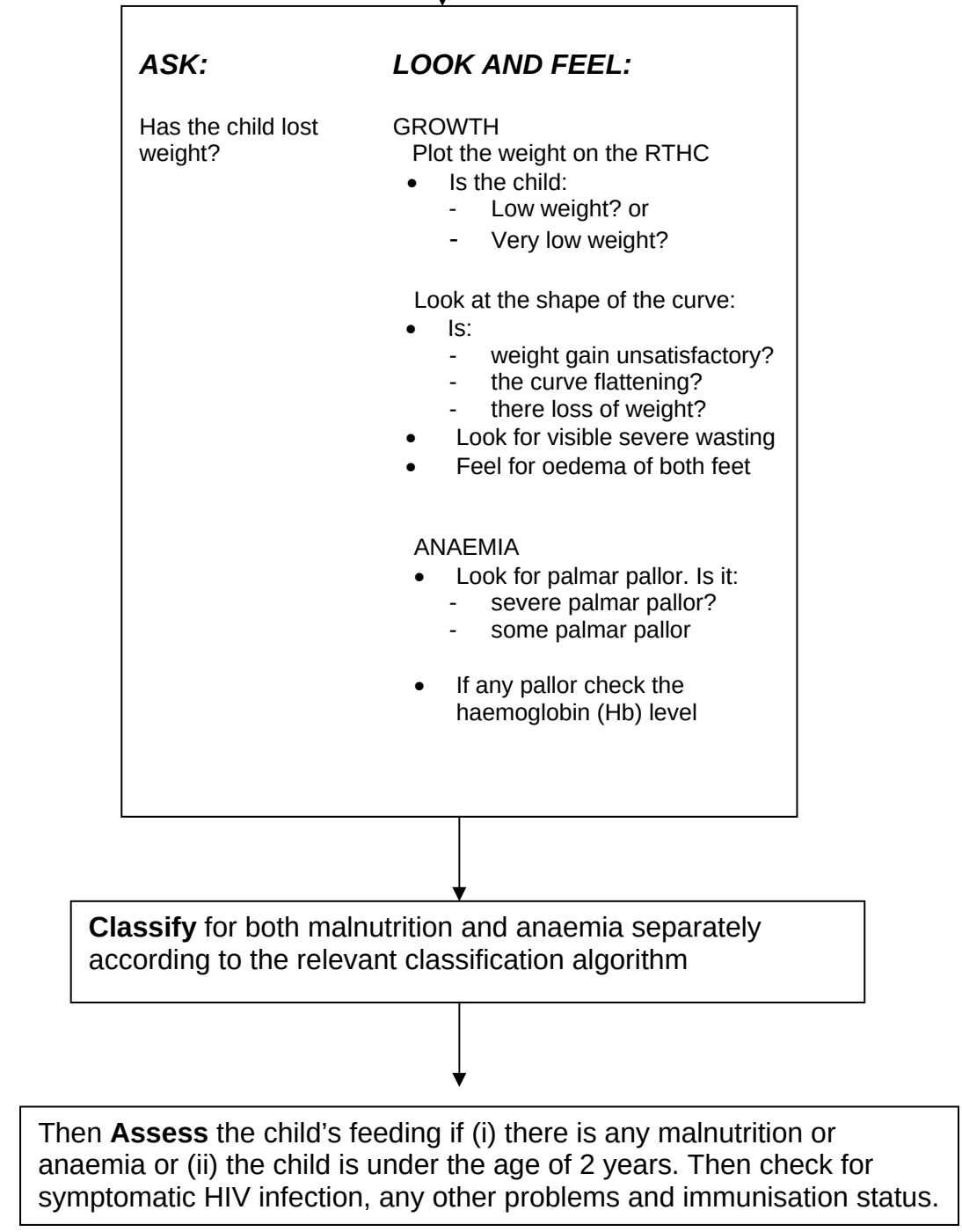
Summary

- Ear problems are common in children.
- Most of acute ear infections improve rapidly on treatment
- Chronic ear infection is a potentially serious condition as it may extend to the mastoid bone and/or penetrate into the skull.
- Ineffective treatment of the child with chronic ear infection often results in deafness – a serious disability.

CHAPTER 7

MALNUTRITION AND ANAEMIA

For **All** sick children ask the mother about the child's problem, check for General Danger Signs, ask about cough or difficult breathing, diarrhoea, fever ear problem and then: **CHECK FOR MALNUTRITION AND ANAEMIA**



Classify for both malnutrition and anaemia separately according to the relevant classification algorithm

Then **Assess** the child's feeding if (i) there is any malnutrition or anaemia or (ii) the child is under the age of 2 years. Then check for symptomatic HIV infection, any other problems and immunisation status.

Introductory Remarks

As malnutrition, including iron and/or vitamin A deficiency, affects more than 25% of under-5 year olds, it is obviously a very important problem, which has to be dealt with at every level of health care. Moreover, more than 70% of under 5-year olds that die in South African hospitals have some degree of malnutrition.

The great majority of malnourished children do not present with overt clinical features of nutritional deficiency and are easily missed unless a careful assessment is carried out on every child. Sub-clinical forms of malnutrition contribute to the severity of many of the common childhood diseases. In this way it also affects the morbidity and mortality of infants and children.

It is regrettable that breastfeeding has been replaced by a wide variety of commercial products, which are often well beyond the means of the lower income group. Over and above that is the lack of the necessary equipment, commodities and understanding for the appropriate preparation of feeds, which often results in under-nutrition and/or gut infections.

It be stressed that many of the childhood illnesses affect the child's nutritional status. Fever and other factors raising the metabolic rate, poor appetite, as well as diarrhoea and vomiting contribute to this process. This then obligates all health care providers to ensure that the child receives an extra meal a day at home during no less than one week of the recovery phase.

HIV-infection and Nutrition

- Many HIV+ve mothers do not breastfeed their babies, depriving them of the best nutrients
- The disease often causes diarrhoea and poor appetite and may interfere with absorption of nutrients from the gut.
- If the mother has developed AIDS, she may not be able to provide the child with adequate food.
- The onset of AIDS can be postponed by maintaining the child's nutrition optimally
- Weight gain is a very good early indicator of the well-being of the HIV-infected child, as well as an indicator of response to antiretroviral therapy.

Also see the *Guidelines for the Management of HIV-infected Children* Section 5

The child's capacity to learn is also impaired by under-nutrition — in the severe forms, such as kwashiorkor, it may in fact lead to a permanently reduced intellectual capacity.
It is for these reasons that the identification of the malnourished child is of utmost importance. Not infrequently improving the nutritional status may be the only, but nevertheless very important, component of the management of some ill children.

IMCI does not classify specifically for vitamin and mineral deficiencies apart form iron deficiency anaemia, but nevertheless recognises these as potentially serious problems. The deficiencies are discussed in some detail on pp 58 et seq.

PROTEIN ENERGY MALNUTRITION

There are several forms of this deficiency:

- Stunting
- Underweight
- Marasmus
- Kwashiorkor
- Marasmic kwashiorkor

Stunting – inadequate growth -- is probably the most common form of malnutrition. As it requires the measurement of the length or height of the child it is also the one that is least commonly identified. Although it may be associated with *Underweight,* the two are not necessarily found in combination. The child with either of these conditions may readily thought to be adequately nourished, as a round face and healthy looking hair can be deceptive.
The classification applied to these moderate forms of malnutrition is NOT GROWING WELL.

Marasmus is the term applied to the child that is of very low eight and is obviously very thin, with little or no subcutaneous fat and muscle tissue.

Kwashiorkor is one of the most severe forms of malnutrition where there is oedema, mainly of the limbs and face, associated with breakdown of the skin resulting in ulceration, commonly in skin folds and on the buttocks and perineum. Characteristically the hair is sparse, reddish and with loss of curl. The extremities are cold and the body temperature at times is subnormal. The child is apathetic with a very poor appetite.

Marasmic Kwashiorkor is a combination of the above two and must be considered to have the worst prognosis.
Kwashiorkor, Marasmus and Marasmic Kwashiokor are all classified as SEVERE MALNUTRITION

ANAEMIA

Anaemia is clinically characterised by pallor, which is best identified by varying degrees of paleness of the palm of the hand. Inspection of the oral mucosa or conjuntiva was thought to be more effective, but it has been adequately demonstrated that the palm is more accurate. It is of note that anaemia, i.e. lack of haemoglobin in the red corpuscles and/or low number of red cells, becomes clinically apparent when there is considerable deficiency of these. Lack of dietary iron is the most common cause of anaemia but intestinal

parasites, notably hookworm infestation and bilharzia, must be considered in endemic areas.
Malaria, which destroys red cells, is the most common cause of anaemia in regions where this is a problem. However, deficiency of iron and other haematinics is an important contributing factor.
Anaemia is also one of the side effects of antiretroviral drugs. See *Guidelines for the Management of the HIV-infected Child*

ASSESSMENT OF THE CHILD FOR MALNUTRITION AND ANAEMIA

This is the one of the problems for which **All** children are assessed, regardless of the presenting problem.

Has the child lost weight?

It has been shown that the history of loss of weight is of significant value. In many communities it is customary to observe the child for increase in growth by tying a waist or wrist-band on to the child. This and other observations have been helpful in this regard.

Plot the weight on the RTHC and Look at the shape of the curve

Also see Growth Monitoring at the end of the Chapter.

From what has been said above it becomes obvious that the weight of the child is of considerable importance. The health worker is advised to compare the recorded weight with the child's overall appearance; errors in weighing the child and reading the scale may lead to erroneous weights being recorded. If in doubt, the health worker should check the weight of the patient personally.
It is the progressive weight gain that is the best indicator of the nutrition and the physical development of the child. This is best assessed by studying the child's *weight curve* on the weight-for-age section of the Road to Health Chart (RTHC). Clearly, regular clinic attendance and accurate charting are essential if this record is to be any value.
Correct plotting of the weight is crucial in the assessment of the nutritional status and then making the following observations:

- establish whether it is appropriate for the age of the child or is it *low weight,* i.e. below the 3rd centile, or *very low weight,* i.e. below 60% of the 50th centile.
- look at the shape of the curve to see whether it:
  - follows the centile curves = satisfactory weight gain
  - moves away from the centile curves = unsatisfactory weight gain
  - has become flat = no or very poor weight gain
  - is dropping, possibly crossing a centile line = loss of weight

Look for visible severe wasting

This sign is positive if the child has no or very little subcutaneous fat and muscle. Wasting is particularly obvious on the upper arm and the thighs and buttocks, where the skin hangs in loose folds. ‘Baggy pants’ appearance has been appropriately applied to the latter. The width of the abdomen exceeds that of the hips when viewed from behind. The bony prominences of the shoulder are clearly visible in these children due to wasting of the muscles. This is a sign of severe malnutrition calling for immediate referral for in-patient management.

Feel for oedema of both feet

Oedema is an essential sign of kwashiorkor. Although this is not the only cause of oedema in a child, for the purpose of managing children at first level, oedema requires that the child is referred. Investigations for other causes can be carried out at hospital level when deemed necessary.
Oedema is best elicited on the dorsum of the foot. It is necessary to exert moderate pressure for +/- 3 seconds on both feet and look for a dent in the tissues, where fluid has been displaced by the pressure.
In the child with kwashiorkor several of the other features mentioned above will be present.

Look for palmar pallor

Pallor of the palm is an unusual paleness of the skin of the palm of the hand. The hand should be held open from the side and the fingers held back gently. Avoid overextending the fingers as this will squeeze the blood from the capillaries.
Paleness in the centre with pink in the periphery is considered as *some pallor*, whereas a very pale or white palm is considered as *severe pallor*. The former corresponds roughly to a haemoglobin level of 6 – 9g/dl and the latter a level below 6g/dl. It is recommended that where pallor has been identified the haemoglobin level is estimated.

CLASSIFICATION OF NUTRITIONAL STATUS

All children must be classified for malnutrition **and** anaemia

There are 3 classifications for the nutritional status:

- SEVERE MALNUTRITION
- NOT GROWING WELL
- GROWING WELL

and a further three for anaemia:

- SEVERE ANAEMIA
- ANAEMIA
- NO ANAEMIA

Feeding assessment has to be done for

- all children classified as NOT GROWING WELL and/or as ANAEMIA
- all children under the age of 2 years

SEVERE MALNUTRITION

This classification is applied whenever the child has *very low weight,* i.e. below the 60% of the 50th centile line **or** *visible severe wasting* **or** *oedema of both feet.* The child requires immediate referral to a hospital. Pre-referral treatment consists of:

- checking the blood sugar level and treating for, or prevention of hypoglycaemia (See CB page 13 for details.)
- an extra dose of vitamin A 50 000 – 200 000IU depending on the age
- keeping the child warm

Each one of these items is vitally important as the mortality of these children is very high, particularly during the first few days after admission.

NOT GROWING WELL

This classification is based on any evidence of inadequate weight gain:

- Weight below the 3rd centile
- Weight curve shows flattening, weight loss or unsatisfactory weight gain
- The mother reports weight loss.

This child shows evidence of malnutrition of a moderate degree, which needs to be corrected at home. Management consists of:

1) Formal feeding assessment to establish the type of feeding problem/s (See chapter 10)
2) Counselling the mother on measures addressing the feeding problems and the appropriate dietary intervention (CB p18,19)
3) Giving routine vitamin A where indicated
4) Giving Mebendazole to children in endemic areas (CB p16)
5) Arranging a follow-up visit within 14 days unless there is a feeding problem, in which case follow-up within 5 days
6) Referring the child non-urgently if there is associated persistent diarrhoea
7) Ensuring that the mother is fully aware of when to bring the child back immediately

The health worker must bear this classification in mind when considering symptomatic HIV infection.

GROWING WELL

In this case there is no evidence of loss of weight and the weight curve is satisfactory.
If the child is under 2 years a feeding assessment is required to forestall any problems. Appropriate counselling must be given where there are overt problems. These children should be seen in follow-up after 5 days.
Mebendazole and routine vitamin A are given where indicated.

SEVERE ANAEMIA

This classification applies when the palms of the child are very pale or even white and/or the haemoglobin is less than 6g/dl.
Management
The child must be transferred urgently and kept warm while in transit.

ANAEMIA

If the palms of the child are pale only in the centre with a pink margin, or the haemoglobin level is between 6 – 9g/dl one classifies as ANAEMIA.
Management
A course of iron medication is commenced. (CB p 10) The mother must understand fully that it will take 2 months of this treatment to restore the iron stores in the body. Counselling regarding dietary regulation to include foods rich in iron (CB p18). A follow-up visit within 14 days must be arranged.

NO ANAEMIA

One can assume that the child is not anaemic if there is no palmar pallor. However, it is advisable to counsel the mother to ensure that the child gets a diet rich in iron. (CB p 18)

GROWTH MONITORING

All health workers dealing with children must familiarise themselves with the weight-for-age section of the RTHC. (See Annexure) The birth month and subsequent months must be entered in the appropriate space for every year on the chart.
The weight of the child is plotted in the correct column on the faint line in the *middle* of the age-appropriate space.
As mentioned previously, the weight record of the child is all important, when assessing the nutritional status. In the light of that it seems imperative that the worker assigned to weighing and recording the weight on the RTHC is a person, who has the necessary expertise for this task. If accurate plotting of the weight presents a problem for this person, it may be preferable for the health care provider, who is managing the child, to plot the weight.

Determine weight for age.

This is done using the Road to Health Chart (RTHC). Look at the RTHC. The left hand axis (vertical axis) represents the weight axis. As you will see, weight is represented in kilograms both on the left and right hand margins, starting at 0kg. The 2.5kg line is highlighted. Weight is written at 0.5kg intervals (the dotted line), with the 1kg intervals (solid lines) exactly one centimetre apart The child should be weighed naked or with minimal clothing (e.g.vest and nappy). The accuracy of weighing and plotting on the growth graphs should always be checked by a second health worker for every 10th-20th child. The weighing scale used should be **zeroed daily** and **calibrated weekly** with standard 1.5 and 10kg weights.

The bottom axis (horizontal axis) is the age axis. In the 1st 3 years, each year of life has one space (column) per month. Each month is represented by a block in which the health worker has to write the appropriate months. The *first block* is outlined in bold. In this block you should write the birth month and year e.g. August 2002, if the child was born in August – there is enough space for the month and year. The health worker issuing the RTHC should write down the months on the entire chart. In addition write down the birth month and year, and the year every time it changes e.g, August 2002 (birth month), followed by September, October, November, December, January 2003, February, March. April, May, June, July, August 2003, September etc.

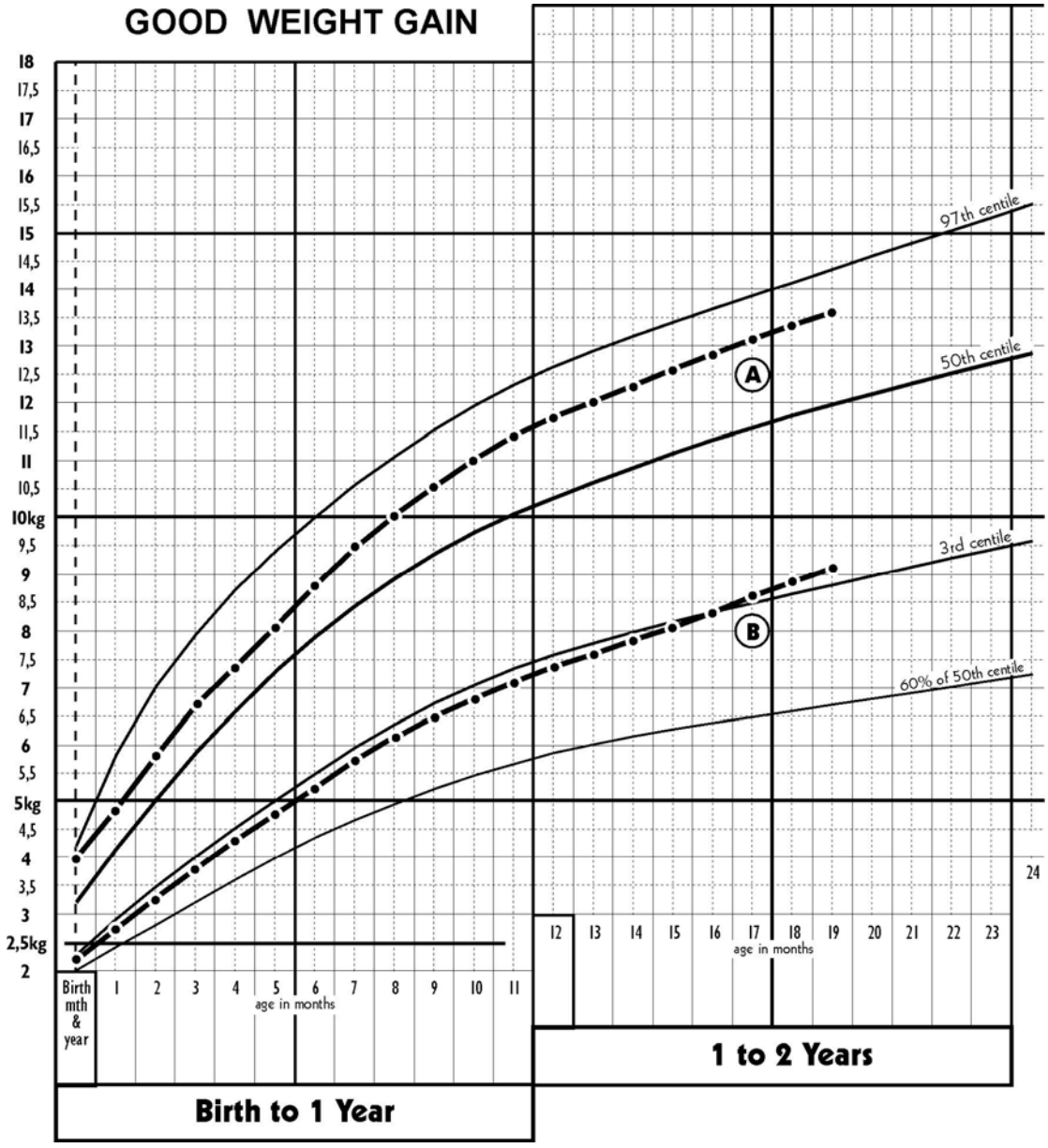
The four solid lines on the growth monitoring graph are called centiles. There are 4 centiles: 97th, 50th, 3rd and the marasmus line (60% of the 50th). Look at the curves on your RTHC and identify the lines, which are the 97th centile, the 50th centile, the 3rd centile, and the marasmus line (60% of expected weight). You will now learn what the centiles mean: Let us say that 1000 children have been divided into groups, according to their age in months and weighed. The average weight within each group is calculated, plotted, and then linked, the linking line will represent the 50th centile reference curve (bold curve on the graph). The actual weights of the children will scatter around the 50th centile, with more weights near to it rather than far above or below it. The 97th and 3rd

centile represent the upper and lower reference curves. This means that if the weights of 100 children are plotted in the graph, the weights of 3 healthy children will fall above the 97th centile, and the weights of 3 healthy children will fall below the 3rd centile. All the other healthy children should fall between the 3rd and 97th centile, and most will fall near the 50th centile. If a child's weight does fall above the 97th centile or below the 3rd centile it does not necessarily mean that the child is overweight or underweight or sick. But rather the direction of the child's growth is important (this is discussed in the section below). However, if a child's weight is near or below the 4th line (60% of the 50th centile), this means that the child weighs 60% of the average weight for his age, and the child is likely to be seriously malnourished.

Weight for age compares the child's weight with that of other children the same age. To plot the weight, follow the directions below:

A dotted line halves each month (birth to 3 years). The 3-5 year chart is also marked in monthly columns, but the space is narrowed, without the dotted line.
The birth weight should be plotted on the bold dotted line in the birth column. Growth monitoring in the first year of life should occur monthly. Therefore, plot the child's weight each month on the dotted line of each successive month column, nearest the child's age.
If the child comes to the clinic every two weeks for monitoring, and needs weighing every two weeks, then you will have to also plot the weight on the solid line. The distance between the dotted line and the solid line represents two weeks.

The weight you measure today is plotted on the graph representing the expected weights of normal children of that age. A normal child can be smaller or larger than most children of the same age, but will usually grow at a speed in proportion to his size. This is why children usually follow the curves of the graph on the RTHC. The growth chart below shows weight gain for two babies of the same age but with different weights; both of these children are growing well.



Because only 3 healthy children out of 100 healthy children will fall under the 3rd centile, any child under the 3rd centile needs to be monitored. 97 children should fall above the 3rd centile. Therfore, to be on the safe side, and make sure that children are correctly monitored in IMCI, **low weight** is used to describe a child whose weight is below the third centile.

The marasmus line represents 60% of the expected weight (i.e. 60% of the 50th centile) for a child of that age. For example, the average weight of children at the age of 12 months is about 10 kg. If a child weighs less than 6 kg (i.e. 60% of 10 kg) at 12 months, he will fall below the marasmus line and is definitely malnourished. A child whose weight falls below this line is described as **very low weight**.

So in summary:
To determine weight for age using the RTHC:

1. Weigh the child if not already weighed today. Use an accurate scale that is set at zero. The child should wear light clothing. Ask the mother to help remove any coat, jersey, shoes and nappy.
2. Calculate the child's age in months.
3. The birth month and all subsequent months should already be in the RTHC. If not, write the birth month in the first box, and then **all** subsequent months along the bottom of the RTHC (if this has not already been done).
4. The birth weight should already be plotted on the RTHC. If it has not been plotted, plot the **birth weight** on the graph on the dotted line above the birth month

Then plot the weight for age for today:

1. Look at the left-hand axis to locate the line going across showing the child's weight.
2. Look at the bottom axis of the chart to locate the dotted line going upwards from the current month. This line shows the child's age in months.
3. Find the point on the chart where the line for the child's weight meets the line for the child's age.
4. Always plot the weight on the dotted line in the middle of the month column, unless the child has returned after two weeks.
5. Decide if the point is <u>above</u>, <u>on</u>, or <u>below</u> the 3rd centile curve.

In order to complete the assessment of weight for age, determine where the weight falls on the growth chart as follows:

- If the point is <u>above or on the 3rd centile curve</u>, the child is <u>normal</u> weight for age.

- If the point is <u>below the 3rd centile curve</u>, the child is low weight for age.

- If the child's weight falls <u>below the 60% of expected weight curve</u> (marasmus line), the child is very low weight.

Always compare the appearance of the child with the recorded weight. If the recorded weight is well below the 3rd centile, expect to see a small, malnourished child. If the recorded weight does not match the appearance of the child, check the scale and weigh again.

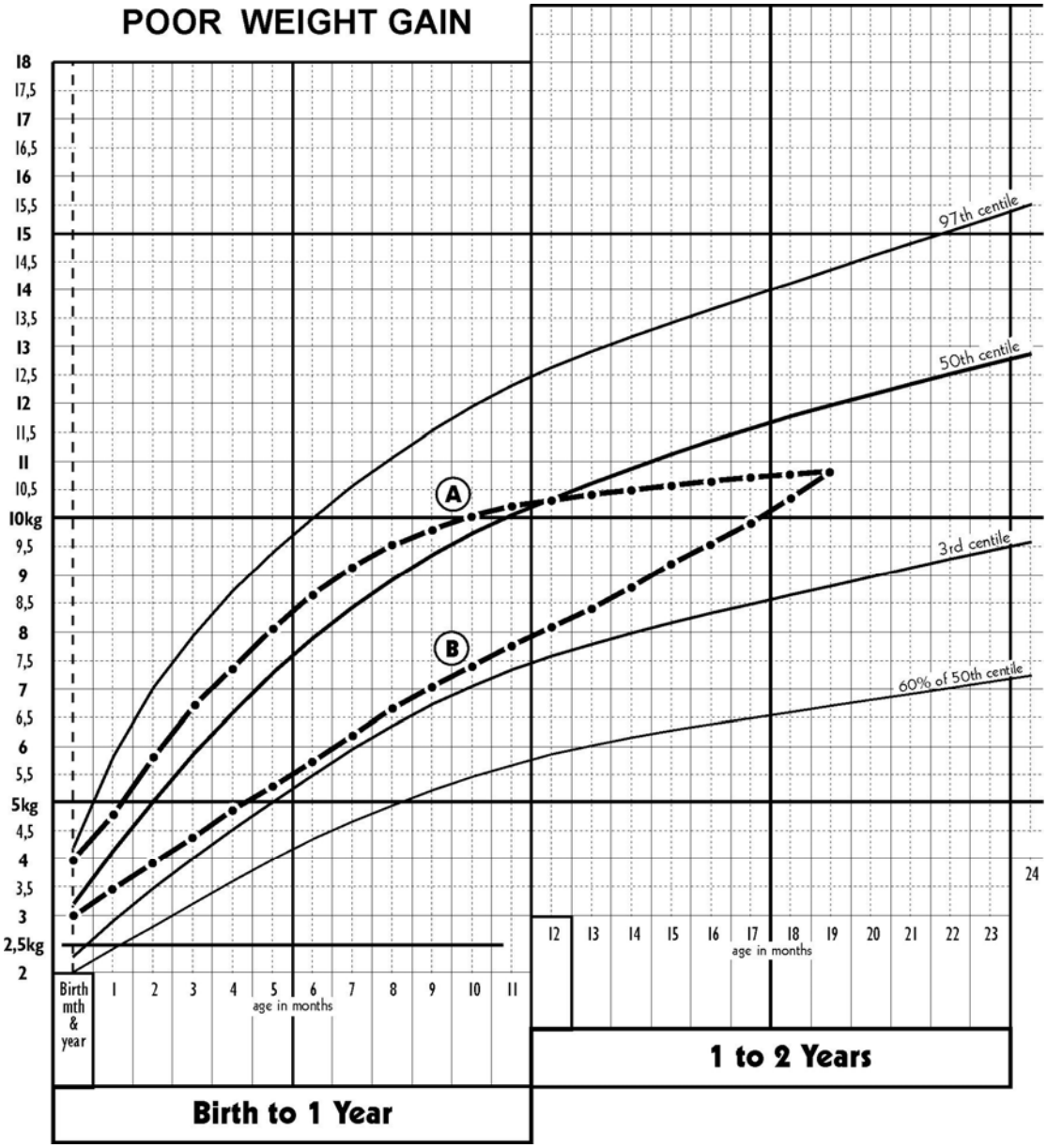
LOOK: at the shape of the curve

A single weight measurement on the chart does not give enough information to assess growth. The shape of the curve is more important than the centile the child falls on today. For example, a child could have lost weight and still not be low weight at this visit. Poor or unsatisfactory weight gain is a serious sign and is just as important as low weight for age. Any child where there is

poor weight gain needs careful monitoring. This poor weight gain may be due to feeding problems or an underlying disease like TB or HIV/AIDS.

Look at the shape of the weight curve that has been plotted on the growth chart from previous visits:

- If the weight follows the curves on the growth chart, the child is gaining weight.
- If the curve is **flattening,** weight gain is unsatisfactory.
- If the curve is **dropping** (going downwards), weight gain is unsatisfactory.



These curves show the same weight for two children. One of the children is growing well (child B) but the other child (child A) has poor weight gain. The child with poor weight gain is **not** below the third centile, and has gained some weight since the last visit. The shape of the curve shows that the weight gain is less than would be expected over this period. This may be because this child has had a recent illness or a feeding problem.

Child A needs a feeding assessment and mother should be given appropriate feeding advice. Poor weight gain may indicate a serious illness such as symptomatic HIV infection. See the child at least every 2 weeks. If the weight gain does not improve with nutritional advice, refer for investigation. Do not wait until the weight falls below the third centile to refer a child.

Vitamin and Mineral Deficiencies

"These deficiencies are a hindrance to mental and physical development."

The great majority of deficiencies amongst children in this country are sub-clinical. However, awareness of the features of mild clinical deficiencies, brings to light a substantial number. The best example of this is the common occurrence of moderate iron deficiency anaemia, which regrettably is missed very often. Apart from the physical aspect, iron deficiency is responsible for intellectual impairment.
Vitamin A sub-clinical deficiency amongst under 6-year olds is said to be 33%. This is known to make the child more vulnerable to severe infection and in this way contributes to under-5 mortality.

Nutritional characteristics of HIV-infected children include multiple micronutrient deficiencies: Low serum levels of zinc and selenium, vitamins A, E, B6, B12 and C are prevalent. Clinical features range from extreme forms of marasmus to low weight or height for age. Infections, such as TB, often make an appreciable contribution to the poor nutritional state.

Management

- Diet:

Balanced diets, such as those in the Chart Booklet both for children in general and also for the HIV-infected children, contain adequate micronutrients. Lists for foods rich in iron and vitamin A can be found on page 18.

- Fortification

In South Africa maize products and flour are fortified with: Vitamins A, most of vitamins B, Folic acid, iron and zinc. Table salt is iodised.

- Supplementation

Vitamin A is given regularly according to the schedule below

- Disease control

As worm infestation contributes to nutrient deficiencies anthelmintics are given to all under-5's every 6 months

- Education

Informing communities about the kinds of foods that are essential elements of the daily diet and encouraging producing these at their homes.

Age	Vitamin A dose
Non breastfed infants (0-5 months)	A single dose of 50 000IU at 6 weeks
All infants: 6 - 11 months	A single dose of 100 000 IU at age 6 months or up to 11 months
All children 12 - 60 months	A single dose of 200 000 IU at 12 months, then a dose of 200 000 IU every 6 months until 60 months

CHAPTER 8

HIV INFECTION

A copy of the *Guidelines for the Management of HIV-infected Children* should be available to each health care provider at PHC and first referral level. Please consult this manual throughout the study of this chapter.

Initially HIV/AIDS was not included in the IMCI protocols as it does not readily lend itself to the IMCI format. Furthermore, the main symptoms and signs of symptomatic HIV infection are already part of the main problems included in the IMCI process. As it becomes an increasingly more common disease, also among young children, it has been incorporated into the case management of every child. (CB p 7) However, it does not readily lend itself to triage.
As can be seen from the chart booklet, the first step is to determine whether there is clinical evidence of *symptomatic HIV- infection*. The second step is to attempt to establish the child's *HIV status*, based on the availability of a positive HIV test.
The classification of symptomatic HIV infection is based on the presence of at least three of eight features. These have been validated as indicators of symptomatic HIV infection by means of extensive research in Kwa Zulu Natal.

For ALL sick children ask the mother about the child's problem, check for General Danger Signs, ask about cough or difficult breathing, diarrhoea, fever, and ear problem, then check for malnutrition and anaemia, and then consider HIV/AIDS

Now proceed to assess for SUSPECTED SYMPTOMATIC HIV:

Ask, Look and Feel for Features of Symptomatic HIV infection:

- Is there *Pneumonia* now?
- Has the child *ear discharge* now **or** in the past?
- Is there *low weight* for age?
- Has *weight gain* been unsatisfactory?
- Is there *persistent diarrhoea* now **or** in the past 3 months?
- Are *lymph glands* enlarged in 2 or more of the following sites: neck, axilla or groin?
- Is there *oral thrush*?
- It there *parotid gland* enlargement?
- Hepatomegaly

However, there are many other features, which are also used for staging the disease. The Interim revised WHO Clinical Staging for infants and children can be found in Appendix 1. of the *Guidelines*.
The nutritional state of the child to a considerable extent determines the onset

HIV-infection and Nutrition

- Many HIV+ve mothers do not breastfeed their babies, depriving them of the best nutrients
- The disease often causes diarrhoea and poor appetite and may interfere with absorption of nutrients from the gut.
- If the mother has developed AIDS, she may not be able to provide the child with adequate food.
- The onset of AIDS can be postponed by maintaining the child's nutrition optimally
- Weight gain is a very good early indicator of the well-being of the HIV-infected child, as well as an indicator of response to antiretroviral therapy.

Also see the *Guidelines for the Management of HIV-infected Children* Section 5

Nine Features of Symptomatic HIV-infection

These are outlined in the box above

Assessment process for symptomatic HIV-infection

The assessment process thus far will have shown already whether any of the first 5 of the above features are present. The child must then be examined for the presence of the remaining 4 signs.

Enlarged lymph glands

Careful palpation for enlarged lymph nodes must be carried out using the finger tips. The anterior and posterior triangle of the neck and the apex of the axilla, as well as the part of the axilla against the chest wall, need to be examined. Both inguinal regions are then palpated; this seldom presents any difficulty, as the glands may well be visible.
Enlarged glands in at least two of the three *sites* – but for example not including both axillae – are considered as a positive feature.

Oral thrush

The presence of *any* patches of thrush is significant. In the past it was thought that thrush was significant only if it extended to the back of the mouth, but this has been disproved.
Thrush has the appearance of milk curds -- irregular white patches -- on any part of the oral mucosa, including the tongue. The patches are not easily wiped away. In severe cases the patches coalesce to form thick, white plaques.

Parotid enlargement

Either or both of the two parotid glands may be enlarged. The enlargement is readily detectable by looking at the child from the front and from the side. The gland is not painful or tender to touch but is firm and has a distinct margin.

Hepatomegaly

Normally in children the liver may be palpable just below the costal margin, but it should not be firm nor tender. In the HIV-infected child the liver is commonly found to be 2 – 3 cm enlarged and moderately firm.

Classification for Suspected Symptomatic HIV-Infection

SUSPECTED SYMPTOMATIC HIV

Any child that has three or more of the eight features present should be regarded as SUSPECTED SYMPTOMATIC HIV. The mother needs to be informed regarding the basis on which this classification was made. If the serological test is not available, this could be carried out with the appropriate pre-test counselling.
The management of the child largely depends on the symptoms and complications that have been identified. Counselling on feeding is outlined on page 19 of the chart booklet. Palliative and terminal care are detailed in Sections 8 and 9 of the *Guidelines*.
Co-trimoxazole must be given on a long-term basis for the prevention of PCP.
The child needs to be referred non-urgently for assessment of eligibility for ARV therapy, if this can not be done locally.
The mother needs to be counselled on her own health.
Monthly follow-up is advisable as the children are liable to develop further manifestations of the infection. (See CB p 26).

It is well known that these children will gradually deteriorate, exhibiting increasing severity of some of the symptoms, such as thrush and persistent diarrhoea. See Follow-up below

SYMPTOMATIC HIV UNLIKELY

If only two or less of the eight features are present symptomatic HIV infection is very unlikely. However, the mother needs to be advised to return if any of the features do appear. Moreover, measures aimed at preventing HIV and other sexually transmitted infections must be discussed with the mother. (See CB p 22)

• Three or more features present	**SUSPECTED SYMPTOMATIC HIV**	➢ Offer PCR* testing for the child, if status unknown ➢ Start co-trimoxazole prophylaxis (p. 8) ➢ Also give amoxycillin if classified as pneumonia (p.8) ➢ Treat for oral thrush (p. 11) ➢ Counsel the mother (p. 22) ➢ Follow-up in 14 days
• Two or less features present	**SYMPTOMATIC HIV UNLIKELY**	➢ Counsel mother about her health ➢ Offer HIV test for the mother

CLASSIFICATION OF THE HIV STATUS

• Positive PCR* in child age 6 weeks or more or positive ELISA if more than 18 months	**HIV INFECTION**
• Mother +ve, and child not tested or • Child ELISA positive under 18 months	**POSSIBLE HIV INFECTION**
• Mother +ve, and • Negative test in non-breastfed child	**HIV NEGATIVE**

*PCR=HIV DNA PCR

The classification for the HIV status is based on the HIV blood test of mother and child. An increasing number of mothers are prepared to reveal their HIV status provided the consultation takes place in privacy. If she does not wish to reveal her status one could ask whether she had a blood test antenatally and what the outcome was of that. Routine antenatal screening has to date not included HIV. This will change in future but it will *always* have to be preceded by pre-test counseling. However, it is important to note that HIV-infection is transmitted to only one out of every four babies born to HIV-positive mothers. Transmission occurs during pregnancy, at the time of birth or through breastmilk.

(See discussion on infant feeding options below)

HIV testing of Children

Both the Elisa test, as well as the rapid HIV test, detect HIV antibodies. The tests do not distinguish between maternal and infant antibodies. Maternal antibodies may remain in the baby's circulation up to 18 months. A negative test at the age of 12 or 18 months means that the child is not HIV-infected, provided the mother is no longer breastfeeding. If she is still breastfeeding the test would need to be repeated 6 weeks after cessation of breastfeeding. A positive test at 18 months of a non breastfed infant indicates that the HIV antibodies are generated by the child, i.e. the child is HIV-infected.

The HIV DNA PCR (Polymerase chain reaction) detects viral material in the circulation and is a definitive test for infants 6 weeks after birth. The test has now become more widely available. If the test done at 6 weeks is positive it means that the infant is HIV-infected. Cotrimoxazole, as a prophylactic measure, will need to be commenced forthwith. If negative and the baby is exclusively *not* breastfed, there is no need for cotrimoxazole. If breastfed, the test will need to be repeated +/- 6 weeks after breastfeeding has been stopped.

HIV INFECTION

This classification is based on a positive test as discussed above. Management needs to include prophylactic co-trimoxazole to prevent Pneumocystis pneumonia. If the child does develop pneumonia treatment must include amoxycillin *and* co-trimoxazole. (CB p. 7)
In the absence of an acute infection the child should be referred non-urgently for eligibility for ARV therapy. (See below) If the assessment for symptomatic infection does not reveal *clinical* evidence of infection (see above) the management will focus on the follow-up. (See below)

POSSIBLE HIV INFECTION

In this case the mother is HIV positive. The child may be HIV positive but as he is under 18 months we cannot determine his HIV status unless a PCR is available.

Management includes arrangements for the child to be tested once he is 18 months old. It will also depend on the outcome of the assessment for symptomatic HIV infection. It certainly includes co-trimoxazole and a follow-up at monthly intervals until the status can be confirmed.

HIV negative

In this instance the child's test has remained negative whilst the mother's is positive and is not breastfeeding.

CARE OF THE CHILD OF THE HIV-INFECTED MOTHER

Some initial considerations

The risk of mother to child HIV transmission (MTCT) is +/- 25%. However, the risk is increased if the mother has a high viral load, such as after a recent re-infection. The risk is increased further if while breastfeeding the mother has cracked or bleeding nipples or some other breast condition. On the other hand if the infant is *exclusively* breastfed the risk of transmission is appreciably lower. Mixed feeding, that is breastfeeds with occasional replacement feeds, is again a risk factor, presumably because the gut mucosa becomes more permeable to the virus due to inflammatory reaction of the gut to the artificial feeds.

If the mother is on antiretroviral therapy (ART) she is likely to have a low viral load, decreasing the risk of MTCT. To date there is no evidence that ART transmission through breastmilk is of risk to the infant.

NB All children of HIV-infected mothers must be kept on cotrimoxazole prophylaxis, unless proved to be not HIV-infected.

Feeding Options

Research has demonstrated that exclusive breastfeeding or exclusive replacement feeding are the safest options regarding MTCT. As mentioned above, mixed feeding is the worst option. Exclusive replacement feeding precludes MTCT but it does put the infant at risk of infections. This risk is appreciably higher if conditions for preparation of feeds are sub-optimal.
It has been established that where the mother is of a socio-economic standard where she can afford all that exclusive replacement feeding demands, this then becomes a feasible option. One must be certain, however, that she fully understands the implications of this step, so that she does not feel tempted to give occasional breastfeeds when she has run out of replacement milk or when it is inconvenient to prepare a feed. The conditions for optimal replacement feeding should satisfy accessibility of feeds, feasibility of complying, feeds are affordable, sustainable and safe.
The infant on replacement feeds is more likely to become infected; diarrhoeal disease, respiratory and ear infections are more common, thereby increasing the infant mortality rate, particularly where the optimal conditions are not met.
The process is also outlined on pages 18 and 19 of the chart booklet. This schedule also provides feeding recommendations for the child up to 2 years.

Management and Follow-up Care of the HIV-infected Child

- This will depend on whether the child is symptomatic or not.
- Symptomatic children need to be considered for ART and receive specific treatment for these symptoms.

- The asymptomatic child needs to be seen at monthly intervals to be assessed for features of HIV disease.
- All children require supportive treatment – in particular nutritional assessment and supplementation.
- Treatment for any infections should be in line with IMCI protocol.
- All clinicians need to be on the alert for signs of Tuberculosis – a common associated disease.
- All children of an HIV-infected mother need to be seen at least at monthly intervals. The uninfected child of an HIV-infected mother has an increased risk of morbidity and mortality because of the mother's illness. Clearly this does not apply to those mothers who are on ART and have responded well.

Continuity and Function of Care Units

- PHC units stage children to assess eligibility for ART
- Possible candidates for ART are then referred to the closest accredited unit.
- Patients are then re-evaluated for their eligibility for ART
- If found not to be eligible the patient is referred back to PHC for ongoing management and re-evaluation at regular intervals.
- At PHC level every effort must be made to maintain the health and nutrition of the child.
- As soon as the disease has been found to have progressed, referral for ART must take place immediately.
- Patients on ART are followed up by the treatment unit for at least 6 months; thereafter the child may be referred back to PHC facility for further care.
- Ongoing care for children on ART includes:
  - Monitoring treatment adherence
  - Providing the necessary ARV on a monthly basis
  - Referral for laboratory investigations and re-assessment as required
  - Assessment for drug side effects or other complications
  - Routine care for immunisation and weight monitoring
  - Management of intercurrent infections
  - Counselling and support of the parents/caregivers
  - Arranging for palliative care where appropriate with the support of NGOs.
- The child's home is an important unit that must not be overlooked. Home visits by or together with a social worker must be encouraged.

Palliative Care for Children with SUSPECTED SYMPTOMATIC HIV or HIV INFECTION (CB p 26, *Guidelines* Section 8)

This stage of the management of these children is particularly important for medical practitioners. Details of this are outlined in the chart booklet. Pain relief is of particular note, as this tends to be neglected in children. (See CB p 10 *Guidelines* pp 68 – 72) Paracetamol must be given regularly, not only

when there is an apparent need. If that is insufficient codeine phosphate must be given. Eventually one may be called upon to prescribe morphine.
At some point during the illness the child is unlikely to benefit from referral. It is at this point, where we as doctors need to intervene and discuss the matter frankly with the parents, obviously being very sensitive to their feelings.

Terminal Care for Children with AIDS
This is closely related to the above, when a decision has been made that management at referral level is not in anyone's interest.
It is important to stress that one is not abandoning the management and one must avoid saying that "nothing more can be done". Pain relief, care of sores, counseling and referral to a church or other home based care groups should be the important considerations.

Antiretroviral Therapy

Please consult the *Guidelines* Section10
The next few paragraphs provide background information about antiretroviral drugs for children. This information is provided as general information for you, as you may come across children who are being treated with antiretrovirals or who require treatment with antiretrovirals. Use the IMCI chart booklet to treat common infections, such as pneumonia, diarrhoea, fever, malnutrition and ear problems, in children receiving antiretrovirals.
If you suspect TB in children receiving antiretrovirals, refer the child to an experienced health professional working in the HIV centre / unit. Children with TB need special care.

- Antiretroviral treatment (ART) in children with symptomatic HIV infection decreases morbidity and mortality and improves the quality of life.
- *The decision to treat with antiretrovirals should be taken by experienced health professionals on the basis of the criteria listed below.*
- ART is initiated at accredited sites where the necessary resources and expertise are available. Ideally this should include a doctor supported by a team including primary health care nurses, registered nurses, occupational therapists, pharmacists, social workers, and community counsellors.
- Patients on ART are followed up at the accredited sites for the first 6 months or so. Further follow-up needs to be carried out at peripheral facilities, which are more accessible to the patient.
- All patients on ART need periodic laboratory tests, which will be prescribed by the accredited site.
- As the service expands, it is likely that primary health care facilities and smaller hospitals will play an active role in the provision of ARVs. Tertiary care centres will become referral centres for complicated cases and/or ongoing research.
- Hence, health care staff at all levels of care need to start learning about antiretroviral use in children.

- Parents should understand that this is life-long therapy, the prognosis of the condition, the side effects of the medicines and their mode of action.
- Antiretrovirals are not given to all children with HIV INFECTION or SUSPECTED SYMPTOMATIC HIV. Children must satisfy *clinical* AND *social* criteria before being accepted for treatment.

➢ *Eligibility for ART*

a) Clinical Criteria

1. Recurrent hospitalisation (> 2 admissions per year) for HIV-related complications (such as persistent diarrhoea with dehydration / malnutrition or PCP), OR
2. Prolonged (> 4 weeks) hospitalisation for HIV OR
3. The patient satisfies the WHO Stage III or Stage IV disease (See below) OR
4. CD4 percentage <20% if under 18 months or <15% if 18 months or older.

b) Social criteria **–**

The child should have at least one caregiver or support person who is able to administer the medication. This caregiver may be a parent or another regular caregiver such as neighbour, aunt, older sibling. Orphans and children in difficult circumstances should not be discriminated against. For these children, care should be taken to find someone who would be able to supervise and support them. Preferably a second person should be identified and suitably informed in case the primary caregiver is indisposed or away for some or other reason.

➢ *Treatment of mothers / caregivers*

Ask about other members of the family. Mothers/family members/caregivers who satisfy the WHO criteria for ARV treatment should be referred to appropriate health workers / facilities so that they can also be provided with treatment.

Antiretroviral Drug Choices for Children
(1st line)

	6 months up to 3 years	Over 3years and >10 kg
1st Line	Stavudine (d4T) Lamivudine (3TC) Kaletra®	Stavudine (d4T) Lamivudine (3TC) Efavirenz
2nd Line	Zidovudine (AZT) Didanosine (ddI) Nevirapine/ Efavirenz*	Zidovudine (AZT) Didanosine (ddI) Kaletra®

*Efavirence if age >3 years, nevirapine if < 3yrs

- *Monitoring and follow up*

Children on antiretroviral therapy need regular follow-up. The follow-up is usually started at the HIV-centre / unit. Continued follow-up can occur at primary health care clinics, with referral to hospitals, as needed.

- Before starting antiretroviral treatment, take bloods: CD4 count, viral load, Full Blood Count (FBC), ALT, Lipase, and Urea and Electrolytes. These should be repeated after 1 month of treatment – if normal they can be checked 6 monthly thereafter.
- Initially follow-up the child monthly to provide support and counselling and ensure adherence (compliance). Adherence ART is crucial. If the child does not comply with the therapy, he may develop resistance to the drugs making them ineffective. This monthly follow-up can be provided at a primary health care facility. During each follow-up, do a full assessment, including,
  - check for cough / difficult breathing, diarrhoea, fever, ear problem, malnutrition and anaemia
  - check for opportunistic infections
  - check weight and weight gain
  - assess feeding
  - check for oral thrush and mouth sores
  - if any history of diarrhoea, check for nappy rash
  - provide cotrimoxazole prophylaxis
  - provide counselling and support in general, and on feeding and antiretrovirals
  - side effects of antiretrovirals

See pp.131,132 of the *Guidelines* for side effects/adverse events and grading thereof.

Chapter 9

The Sick Young Infant (1 week up to 2 months)

The Integrated Approach

The assessment and classification of the sick young infant follows the same sequence as that of the older infant and child. There are a few minor differences, however:

- Danger signs are not identified separately, but included in the features of possible infection
- Every sick young infant is assessed for only two major problems, viz. possible infection and diarrhoea, followed by feeding and growth assessment and management.

Assessment for Possible Bacterial Infection

As the defence mechanisms in the young infant are not well developed yet, there is a considerable risk of infection. This is a particular problem in the case of the pre-term baby. As the ways of expressing illness are very limited there we need to be particularly vigilant to recognise these signs. Furthermore all mothers need to be counselled to be on the look-out for features of serious illness. For instance, the young infant with septic meningitis is unlikely to have neck stiffness until there is appreciable brain damage. Similarly he may have pneumonia without coughing. Therefore we, as well as the mother, always need to be on the lookout for the signs if possible infection listed in the box below.

ASK:	***LOOK, LISTEN AND FEEL***
• Has the infant had convulsions? • Has the infant had attacks when he stops breathing (ie apnoea)or becomes blue	• Is the infant convulsing now? • Count the breaths in one minute. Repeat the count if more than 60/minute • Look for severe chest indrawing • Look for nasal flaring • Listen for grunting • Look and feel for a bulging fontanelle • Look at the umbilicus: is it red or discharging pus? Does the redness extend to the skin surrounding the umbilicus? • Measure the temperature and feel for fever **or** low body temperature • Look for skin pustules. Are there many or severe pustules? • Look for pus draining from the ear • Are the eyelids swollen and filled with pus? • Is the infant lethargic or unconscious? • Look at the movements: are they less than normal? • Look for jaundice: ask if it is getting worse.

Please look at the algorithm on page 27 of the chart booklet while working through this section.

Convulsions now or during this illness

Convulsions at this young age may be very difficult to recognise: generalised stiffening of the muscles is more common than the typical jerking movement of a fit. Jerking movements are seldom seen in a neonate. The stiffening of all the muscles (hypertonia) the infant is unable to breathe. Often this is only noticed when the baby has become cyanosed. Occasionally some twitching of the facial muscles and the fingers is seen at times, particularly when seizures occur in quick succession.

It is important to distinguish convulsions from the spasms of neonatal tetanus. This is a rare but fatal illness unless recognised early. Tetanic spasms occur in a conscious infant and are brought on by a noise, sudden light or touching the baby. All muscles go into spasm including

Apnoea is a situation where breathing stops for a while. Young infants tend to breathe in a very irregular rhythm, often with pauses of no breathing for a few seconds. This should *not* be referred to as apnoea. However, if the baby stops breathing and becomes cyanosed, one must then consider this as apnoea. At times apnoea is the only sign of a seizure in very young infants. Usually this is accompanied by generalised muscle spasm. This should not be confused with neonatal tetanus. (See above)

Lethargic or unconscious

This was already described in Chapter 2 as one of the General Danger Signs. Even lethargy or loss of consciousness may be difficult to recognise as such, as the young infant tends to sleep most of the time. However, any type of stimulus, be it touch, sound or light, should elicit some response from the infant, even when asleep. The lethargic or unconscious young infant is likely to show some floppiness or generalised hypotonia.

Irritability / Not feeding or feeding poorly

This is in stark contrast to the above, as the infant cries inconsolably, at times not even settling during a feed.

Bulging fontanelle

This sign is best elicited with the infant in the upright position and not crying. Normally the fontanelle is either flat or slightly lower than the surrounding tissue. One may observe some pulsation.
Bulging of the fontanelle is best felt by bringing the cupped hand forward from the occipital region allowing the ulnar border of the hand to touch and move over the scalp.

Fast breathing

Fast breathing in this age group is 60 breaths or more per minute. As the respiratory rate may be irregular, the count should be repeated if it is 60 or over.

Severe chest indrawing

The thoracic cage of the young infant tends to be pliable, showing some mild chest indrawing when breathing normally. To be of significance chest indrawing should be severe. At times indrawing is more pronounced in the sternal region rather than along the lower chest wall.

Nasal flaring and/or grunting

Nasal flaring is a widening of the nostrils when breathing in.
Grunting is a short sound heard on expiration. It may be soft but at times it can be heard on entering the room where the infant is lying.

Fever or hypothermia

As in the older child, the temperature should be taken with a thermometer in the axilla for two minutes: the normal temperature should not be above 37.5ºC. (In the young infant one has to ensure that the thermometer bulb is not protruding out of the axilla at the back.) For every infant one should feel for the temperature in the axilla for fever and on the extremities for hypothermia, *regardless of the recorded temperature.* Hypothermia (i.e. less than 35.5ºC) may be due to excessive exposure or it could be a sign of severe bacterial infection.

Inflamed or purulent umbilicus

Separation of the necrotic cord stump is normally associated with a minimal amount of slightly offensive secretions. This may be accompanied by some redness of the umbilical rim. However, if there is a frank purulent discharge

and/or the redness has extended from the rim onto the skin surrounding the umbilicus it must be regarded as a very important sign of sepsis.

Pus draining from the eye or ear

Purulent discharge from the eye/s is significant, especially if there is associated inflammation of the eye-lids (blepharitis). The swelling of the lids may so severe that they form bags of pus. In the newborn this must be regarded as ophthalmia neonatorum, which can lead to blindness unless treated vigorously.
Discharge from the eyes not associated with blepharitis, especially if confined to one eye, need not be treated in such a serious light.
Pus draining from the ear is a very uncommon finding in this age group, but must be regarded as serious if it is seen.

Many or severe skin pustules

Skin pustules are a common finding in the young infant. One needs to look at the entire body and the limbs to establish the extent of the rash. When there are many, say more than 5 or 6, and especially if the pustules are more than 3 – 4 mm in diameter, it needs to be considered as a sign of serious infection.

Jaundice

The normal, physiological, jaundice of the newborn wanes and usually clears within the first week of life. If jaundice continues into the second or third week of life, particularly if it becomes more intense it must be regarded as serious. It may be the only sign of low-grade septicaemia or liver pathology is the likely cause.

CLASSIFICATION OF POSSIBLE BACTERIAL INFECTION

There are only four possible classifications:

- Possible serious bacterial infection
- Local infection and
- No bacterial infection
- Possible HIV infection where the mother has a positive HIV test.

Where the mother has a positive HIV test there should be two classifications.

Possible Serious Bacterial Infection

The algorithm (CB p 27) shows that the presence of any one of the above signs must lead to the classification of Possible Serious Bacterial Infection. Amongst other possibilities the infection may be severe pneumonia, septicaemia, meningitis or a combination of these. At first level it is not feasible, nor necessary to make the distinction between these. Although the

majority of infections are bacterial in nature, viral infections do occur, but are not easily distinguished from bacterial infections.

Management
Urgent referral is indicated for most of these infants.
To a certain extent pre-referral treatment must be adjusted to the presenting features.

- The convulsing infant must be given diazepam per rectum (CB p 12)
- Oxygen must be given to infants with rapid respiration, severe chest indrawing, nasal flaring, grunting, lethargy or loss of consciousness. (CB p13)
- Ceftriaxone IM is given to all infants with this classification (CB p 32)
- Cotrimoxazole is given to all young infants with any of the respiratory signs (CB p 8)
- Test and treat for hypoglycaemia (CB p 13)
- Preserve body heat, or restore, where indicated, by skin to skin contact with the mother
- Encourage breastfeeding where appropriate

Local Infection
This classification applies to infants with:

i) mild or moderate discharge from one or both eyes or
ii) inflammation confined to the rim of the umbilicus with no purulent discharge or
iii) few skin pustules.

Management
Erythromycin is given orally for five days (CB p 32). Treatment is given for the local infection as outlined on page 33 of the chart booklet.
All these infants should be seen within 2 days in follow-up. The mother must have a clear understanding of the features that would require her to bring the infant back immediately.

No Infection
Needless to say that if none of the above signs is present the infant has no infection. The integrated assessment follows the usual pattern, not forgetting the feeding assessment.
The mother's health should then be addressed.

Possible HIV Infection
Should there be evidence of the mother having a positive HIV test, this classification should be recorded in addition to any one of the above classifications.

Management
A full assessment for symptomatic HIV infection needs to be carried out. (CB p 7)

DIARRHOEA IN THE SICK YOUNG INFANT

The normal stools of a young infant tend to be unformed and at times quite liquid. At times it thus becomes difficult to differentiate a normal from a diarrhoeal stool. However, the information obtained from the mother should indicate whether the number of stools has increased and/or the consistency has become more watery. It is important to make a firm decision whether there is diarrhoea or not because the young infant may become dehydrated quite rapidly.

ASK:	***LOOK and FEEL***
Has the infant got diarrhoea? If yes: • For how long? • Is there blood in the stool?	• Look at the general condition: is the infant: - lethargic or conscious? - restless and irritable? • Look at the eyes: are the eyes sunken? • Pinch the skin of the abdomen Does it go back very slowly (longer than 2 seconds)? slowly? immediately?

Assessment and Classification for Hydration

The young infant with diarrhoea is assessed and classified in the same manner as the older child but fewer signs are used. (See the algorithm CB p 28)

SEVERE DEHYDRATION
Any 2 of the following signs:
- Lethargic or unconscious
- Sunken eyes
- Skin pinch goes back very slowly

SOME DEHYDRATION
Any 2 of the following signs:
- Restless and irritable
- Sunken eyes
- Skin pinch goes back slowly

NO VISIBLE DEHYDRATION
- Not enough signs to classify as some or severe dehydration

Management
The management of the sick young infant with diarrhoea does not differ from the one already discussed in Chapter 4. It is important to observe any infant on Plan C very carefully as overhydration may occur very rapidly.
The young infant with no visible dehydration needs to be followed up after 2 days. Exclusively breastfed young infants should be given very frequent and long breastfeeds and SSS is the only oral rehydration fluid given.

Assessment and Classification for Severe Persistent Diarrhoea

All young infants with persistent diarrhoea must be regarded as ‘severe’, as they will have had the problem for a great portion of their life. They will need referral and to be kept warm on the way.

Possible Serious Abdominal Problem

This classification applies to all young infants with blood in the stool. Dysentery is uncommon at this age and other serious problems, possibly requiring surgical intervention, may give rise to blood in the stool. Referral is essential and again the infant needs to be kept warm on the way.

CHECK FOR FEEDING PROBLEMS AND GROWTH

Feeding options for the mother known to be HIV positive should have been discussed with the mother during the antenatal period. If this was not done it must be discussed immediately after birth. As the choice requires careful thought the mother should not be rushed into making a decision. (See Feeding Choices in chapter 8).

As several HIV-infected mothers choose to give replacement feeds rather than breastfeeding this section deals with these two issues separately.

THE BREASTFED YOUNG INFANT

ASK:

- How are you feeding your baby?
- How is the feeding going?
- How many times do you breasfeed in 24 hours?
- Does your baby get any other food or drink?
  - If yes, how often?
  - What do you use to feed your baby

-

LOOK:

- Plot the weight on the RTHC and determine the weight for age.
- Look for the shape of the curve: is the baby gaining weight?
- Look for thrush in the mouth

ASSESS A BREASTFEED IF THE INFANT:
Has any difficulty feeding OR
Is feeding less than 8 times in 24 hours OR
Is taking any other feeds OR
Is low weight for age AND
Has no indications for urgent referral

THEN
If the baby has not been fed in the last hour:
Observe the breastfeed for 4 minutes.
If the infant has fed during the past hour ask the mother if she can wait and tell you when the infant is willing to feed again.

Check attachment. Look for :
- Chin touching the breast
- Mouth wide open
- Lower lip turned outwards
- More areola visible above than below areola

Then decide: No attachment at all or
Not well attached or
Good attachment

Is the infant suckling effectively, with slow deep sucks, pausing occasionally?
If not suckling effectively, look for blocked nose, thrush or mouth ulcers.
Then decide: Not suckling at all
Not suckling well
Suckling well

Assessment of a Breastfed Infant if:

- There is any difficulty with feeding or
- The infant feeds less than 8 times in 24 hours or
- Any other fluids or foods are offered or
- The weight is low for age or
- There is no indication for urgent referral

A breastfeed should be observed for 4 minutes to identify any problems with the technique.

Check for good attachment:

- Chin touching breast
- Mouth wide open
- Lower lip turned outward
- More areola visible above than below the mouth

(All these signs should be present if the attachment is good.)

Is the infant able to attach?

no attachment at all *not well attached* *good attachment*

Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)?

Good attachment is all important for successful breastfeeding; poor attachment causes the mother discomfort and pain. This in turn interferes with the physiological processes responsible for lactation and the let-down of the breastmilk. If the infant cannot be satisfied by the breastmilk he obtains, he will demand feeds at short frequent intervals and sucks in a frustrated manner, 'fighting at the breast'. This causes the mother anxiety and results in further interference with what is meant to be a pleasurable experience.

Good Positioning is also important to avoid tiring both the mother and the baby. Recommend to the mother to hold the infant

- with the head and body straight
- facing the breast with the nose opposite her nipple
- with the infant's body close to her
- supporting the whole body not just the head and neck

CLASSIFICATION OF BREASTFEEDING PROBLEMS (CB p 29)

Not Able To Feed

If the infant is unable to feed or is not attached at all or not suckling at all the problem must be classified as Possible Serious Infection. In all probability the problem already has been identified earlier. There are, however, problems related specifically to feeding rather than to the general condition of the infant.

Management

In view of the potentially serious nature of the problem treatment must focus on the possible infection: Ceftriaxone IM is given and the blood sugar level is tested and appropriate treatment commenced. Refer immediately and keep warm during transfer.

Feeding Problem or Poor Growth

Any **one** of the following features warrants this classification:

- Not well attached to the breast
- Not suckling effectively
- Less than 8 feeds during 24 hours
- Other feeds are given
- Oral thrush
- Blocked nose

If the weight for age is low or weight gain has been unsatisfactory the problem is classified as Poor Growth.

Management
Any problems related to breastfeeding or giving additional feeds should be addressed by counseling, sensitive to the circumstances of the mother. Nystatin is the drug of choice for thrush. Saline drops are used for a blocked nose. Suctioning should be avoided as it is likely to damage the nasal mucosa.

The mother and her infant should be seen again within 2 days to assess progress.

For Poor Growth the mother needs counseling regarding frequent and long breastfeeds throughout the day and night. It must be stressed that complementary feeds at this early stage is likely to present problems, such as infection. A follow-up visit after a week should be arranged.

No Feeding problem

If there is good weight gain and no feeding problems have been identified the mother should be complimented and encouraged to continue as she has done. Appropriate home care of young infants should be discussed with her.

FEEDING PROBLEMS OF THE INFANT NOT RECEIVING BREASTFEEDS**:** Alternate Chart for the HIV positive mother, who has chosen not to breastfeed (CB p 30)

ASSESSMENT

ASK:	***LOOK, LISTEN,FEEL:***
• How is feeding going*? • What milk are you giving? • How many times during the day and night? • How much is given at each feed? • How are you preparing the milk? - Let mother demonstrate or explain how a feed is prepared, and how it is given to the baby • Are you giving any breastmilk at all? • What foods and fluids in addition to replacement milk are given? • How is the milk being given? Cup or bottle? • How are you cleaning the utensils?	• Plot the weight on the RTHC to determine the weight for age. • Look at the shape of the curve Is the child growing well? • Look for white patches in the mouth (thrush).

CLASSIFICATION OF FEEDING PROBLEMS

Based on the findings from the above assessment the following classifications are made:

Not Able to Feed

The signs used for this classification and the management are the same as for the breastfed infant above.

Feeding Problem or Poor Growth

Any **one** of the following features warrants this classification:

- Mother has concerns about feeding
- Feeds incorrectly or unhygienically prepared
- Breastfeeding not fully excluded, when the mother opted for exclusive replacement feeds
- Oral thrush
- Blocked nose
- Low weight for age
- Weight gain unsatisfactory

The following factors could be responsible for the feeding problem or poor growth:

- Milk incorrectly or unhygienically prepared
- Insufficient replacement feeds
- Mixed breastfeeding and replacement feeds
- Using a feeding bottle rather than a cup

Management

As a first step it is important to ensure that the mother has disclosed her HIV status. Without disclosure it will be impossible to get the full support of the family.
The guidelines for the preparation and giving of replacement feeds must be explained to the mother in detail. (See below) Any concerns of the mother or relatives regarding exclusive replacement feeds needs to be addressed.
Considerable support for the mother is often called for, as she may well be tempted to give occasional breastfeeds, especially at night. She and the family may need to be reminded that 'mixed' feeding exposes the infant to the greatest risk of Mother-to-Child Transmission of HIV. Any additional feeds given to the infant should be withdrawn gradually.
Treatment for thrush and blocked nose and follow-up are as for the breastfed infant above.
If there is low weight for age and no or unsatisfactory weight gain consider whether any of the above factors could be responsible and address these individually.
A follow-up visit after 7 days is recommended.

No Feeding Problem

Where none of the above features have been identified the mother is complimented on the care she has taken. Good home care and continued hygienic preparation of feeds are reinforced.

➢ Safe Preparation of Formula Milk

Details of this can be found on page 38 of the chart booklet. One needs to emphasise repeatedly that unless these instructions are followed meticulously there is a great risk of infection.

SPECIAL RISK FACTORS OF THE YOUNG INFANT

If the young infant has any of the risk factors listed below special attention is called for:

- The mother has died
- Premature or low birth weight
- Asphyxia at birth
- Not breastfed
- Mother is a young adolescent
- Mother is known to be HIV positive
- Severe socio-economic deprivation
- Severe birth defect

This infant is at **high risk**.

- If there is more than one factor present the infant is at **very high risk**.
- Take special care to ensure there are no feeding problems and the child is gaining weight.
- Arrange appropriate regular follow-up with the mother.
- Refer to social worker where indicated.
- Refer for birth registration where necessary.
- Refer to an appropriate support group if possible
- Refer for child support grant

CHECK THE INFANT'S IMMUNISATION STATUS

The immunisation schedule can be found in chart booklet on page 34. Note that the infant with symptomatic HIV infection should not be given BCG.
All previously missed doses should be given at this visit to overcome the problem of missed opportunities:

- Include sick babies, if they are not to be transferred
- Immunise even in the absence of a RTHC – issue a new one if need be
- Advise the mother when to return for the next dose

ASSESS OTHER PROBLEMS and ADDRESS THE MOTHER'S HEALTH NEEDS

The mother may have come to the clinic for reasons other than the problems dealt with thus far. These must be identified and dealt with according to one's previous experience.

CHAPTER 10

ASSESSMENT OF FEEDING PROBLEMS and COUNSELING SKILLS

Feeding problems in the infant and young child are often the precursor of malnutrition. It is essential that this assessment is carried out for *every child under the age of two years*, **and all** children who have been identified with *any nutritional deficiency* during the nutrition assessment as outlined in previous chapters. In other words all children are included except the well nourished over the age of 2 years.

Assess the Child's Feeding if:

- Not Growing Well or Anaemia
- under 2 years of age

Ask questions about the child's usual feeding, and feeding during this illness. Compare the mother's answers to the ***Feeding Recommendations*** for the child's age. (p. 18) If mother is HIV positive, see the special feeding recommendations and advice. (p.19)

ASK:

- How are you feeding your child?
- Are you breastfeeding?
  - How many times during the day?
  - Do you also breastfeed at night?
- Are you giving any other milk?
  - What type of milk is it?
  - What do you use to give the milk?
  - How many times a day?
  - How much other milk each time?
- What other food or fluids are you giving the child?
  - How often do you feed him?
  - What do you use to give other fluids?
- How has the feeding changed during this illness?

If the child is not growing well, ASK:

- How large are the servings?
- Does the child receive his own serving?
- Who feeds the child and how?

Using good communication skills, these questions will help you to find out about the child's usual feeding and feeding during this illness.
The first question 'How are you feeding your child?' is an open question.
Open questions allow the mother to answer in her own words.
Listen carefully to what mother is telling you.
Accept what she says even if she is not feeding her child correctly.

You may need to probe and get a little more information. You may not need to ask all the questions if you have all the information from your open question; otherwise ask the relevant questions. Note that certain questions are only asked if the child is classified as NOT GROWING WELL. For these children, take the extra time to ask about serving size and active feeding.
Listen for correct feeding practices as well as those that need to be changed.
Look at the feeding recommendations in the chart booklet as you listen to the mother. If an answer is unclear, ask another question. For example, if the mother says that servings are "large enough," you could ask, "When the child has eaten, does he still want more?"

Praise mother for what she is doing correctly.

Counseling the Mother About Feeding Problems

- When you identify a feeding problem, find out the **reasons** for the mother deciding to feed her child in this way. To do this you need the mother's confidence. Most mothers are trying their best to feed correctly. They might be getting advice and comment from many different people.

➢ Counselling skills

Listening and Learning skills

- ➢ Use helpful non-verbal behaviour
- ➢ Ask open-ended questions
- ➢ Use response and gestures that show interest
- ➢ Reflect back what the mother says
- ➢ Avoid judging words

Confidence Building skills

- ➢ Accept what a mother says, how she thinks and feels
- ➢ Recognise and praise what the mother is doing right
- ➢ Give practical help
- ➢ Give little relevant information at one time
- ➢ Use simple language
- ➢ Make suggestions rather than commands

Some reasons for the feeding problem may be:

- She may not know the correct way to feed the child, and just needs information to improve the feeding.
- There may be no food at home so she is unable to give additional feeds.
- There may be particular reasons why she thinks that she is doing the best for her child. For example, she may believe that she does not have enough breastmilk to satisfy her baby; or the grandmother may say that traditional remedies are important to protect the child.

Counseling means that we must listen and learn from the mother and then give relevant information. It is important to respect her dignity and to build up her self-confidence. Skills to achieve this are listed in the above box.

Before giving any information or advice to the mother we need to listen to her and thus gather information which is essential for counseling. In the following Exercise you will be asked to discuss these points in groups.

Examples of Feeding Problems

Below is a list of feeding problems and the information that needs to be given to mothers to address these problems.

- **Difficulty with exclusive breastfeeding or breastfeeding**

The mother may mention that breastfeeding is uncomfortable for her, or that she does not have enough milk and the baby cries all the time and seems hungry. If so,

you will need to assess breastfeeding as described in the YOUNG INFANT chapter. You may help with the infant's positioning and attachment. There may be cracked or sore nipples as a result of poor positioning. How to manage these breastfeeding problems is described in Chapter 9. Counsel the mother that breastmilk alone is the best for the baby for the first six months. It contains all the important nutrients in a form, which makes them readily absorbed. Furthermore it also contains substances, which protect the baby against common infections.

We have learnt to check and improve positioning and attachment in Chapter 9. If the mother has a breast condition, such as engorgement, sore nipples, or a breast infection, she may need referral to a specially trained breastfeeding counsellor. This could be a health worker or a lay counsellor who has been trained in the WHO/UNICEF *Breastfeeding Counselling: A Training Course* or someone experienced in managing breastfeeding.

If the mother reports difficulty with breastfeeding, assess breastfeeding (Chart Booklet p. 30)

- Identify the reason for the mother's concern and manage any difficulties encountered
- If needed, show correct positioning and attachment.
- Build up the mother's confidence. Adviser her that frequent feeds improve lactation.

o **Child less than 6 months old is taking other milk or foods**

There is a common belief that breastmilk alone is not enough for the baby for the first 6 months. These beliefs are often influenced by commercial advertising. As a result family pressure may result in the mother giving infant formula feeds. Counsel the mother as above.

If a child under 6 months old is receiving food or fluids other than breastmilk, the goal is to gradually change back to more or exclusive breastfeeding. Suggest giving more frequent, longer breastfeeds, day and night. The mother needs to know that it is the hind-milk which is particularly high in fat content and therefore more satisfying for the baby. As breastfeeding increases, the mother should gradually reduce other milk or food. Since this is an important change in the child's feeding, be sure to ask the mother to return for follow-up in 5 days.

If the child is less than 6 months old and is taking other milk or foods:

- Build up the mother's confidence that she can produce all the milk that the child needs. Water and other milk feeds are not necessary.
- If she has stopped breastfeeding refer her to a breastfeeding counsellor to help with relactation.
- Suggest giving more frequent and longer breastfeeds, day and night and gradually reducing other milk or foods.

If she has started complementary feeds

- Encourage her to give milk feeds first
- If the infant is 4 – 6 months advise her to continue to give 1- 2 nutritious complementary feeds per day.

In some cases, changing to more or exclusive breastfeeding may be impossible – for example if the mother never breastfed, or if she must be away from her child for long periods, or if she will not breastfeed for personal reasons. Explain to her how to correctly prepare breastmilk substitutes and use it within an hour to avoid spoilage.

- **Early introduction of complementary feeds**

Starting complementary feeds early is very common, and often on the instruction of a health worker or relative. Until recently our IMCI guidelines have said that complementary feeds can be commenced between 4 – 6 months if the child was hungry and showed an interest in complementary feeds. Recent evidence suggests that breast-feeding exclusively till 6 months is better.

- **Giving water to breastfed baby**

Many families believe that water is important for the breastfed baby, especially in hot climates. However, foremilk quenches the baby's thirst. So there is no need to give any water to breastfed babies, even in hot climates.

- **Using a feeding bottle**

Feeding bottles are very common especially in urban areas. 'Solids' such as commercial infant cereal are also given in bottles through an enlarged teat. Feeding bottles are often dirty, and germs easily grow in them. Fluids tend to be left in them and soon become spoiled or sour. The child may drink the spoiled fluid and become ill. Also, sucking from a bottle may interfere with the child's desire to breastfeed. Counsel the mother to exclusively breastfeed and to use a cup rather than a bottle, should she want to give expressed breastmilk. A cup is better than a bottle. It is easy to clean and does not interfere with breastfeeding.

If the mother is using a bottle to feed the child

- Recommend a cup instead of a bottle
- Show mother how to feed the child with a cup

- **Lack of active feeding**

Children need their own serving and should be fed actively. In some areas it may be traditional for the whole family to eat from the same pot of food. Young children often need to be encouraged and helped to eat.

If a young child is left to feed himself, or if he has to compete with siblings for food, he may not get enough to eat. By asking, "Who feeds the child

and how?" you should be able to find out if the child is actively being encouraged to eat.
The mother should sit with the child and encourage him to eat from his own serving.

If the child is not being fed actively
- Sit with the child and encourage eating
- Give the child an adequate serving in a separate plate or bowl

- **Poor appetite**

The child may have a poor appetite because of lack of variety of foods, or lack of nutrients needed for appetite such as zinc and possibly iron. There may be anxiety or stress at home. Other children appear to have a loss of appetite, because they eat large quantities of non-nutritious foods such as chips, 'nick knacks' or sweets. Some children, who do not want to eat, are force-fed: their nose is closed and food is placed in the mouth. This is a harmful practice.
Counsel the mother about feeding according to the feeding recommendations in the box below (also chart booklet p.18 – 19)
Families can encourage the child to eat. They could:

- Offer small amounts at times when the child is alert and happy;
- Offer more food if the child shows interest;
- Give foods of a suitable consistency, not too thick or dry. (If for instance the porridge is too stiff, add some oil rather than water.)
- Give physical assistance - a spoon of a suitable size, food within reach of the child, young child sitting on caregiver's lap while eating;
- Offer verbal encouragement, e.g. "Open for lovely, tasty beans", smiles and other positive facial gestures.

It is important to remember that a poor appetite may be a symptom or indicator of some emotional or other psychological problem. Thus if there is no improvement on all the above recommendations, an attempt must be made to explore this aspect.

If the child has a poor appetite, or is not feeding well during this illness

- Breastfeed more frequently and for longer if possible
- Use soft, varied, favourite foods to encourage the child to eat as much as possible
- Give foods of a suitable consistency, not too thick or dry
- Avoid buying sweets, chips and other snacks that would replace healthy food
- Offer small, frequent feeds. Try when the child is alert and happy, and give more food if he shows interest
- Clear a blocked nose if it interferes with feeding
- If the child has a sore mouth, suggest soft foods that don't burn the mouth e.g. eggs, mashed potatoes, pumpkin or avocado
- Give physical help - a spoon the right size, food within reach, child sitting on caregiver's lap while eating. Do not force feed
- Expect the appetite to improve as the child gets better

o Not feeding well during illness

The child may be eating much less, or eating different foods during illness. Children often lose their appetite during illness. However, they should still be encouraged to eat the types of food recommended for their age, as often as recommended, even if they do not eat much. They should be offered their favourite nutritious foods, if possible, to encourage eating. It helps to give small feeds frequently. After illness, good feeding helps make up for any weight loss and prevent malnutrition.

Also look at the recommendations for the child with a poor appetite above.

o Giving traditional / folk remedies in the first 6 months

Traditional / folk remedies such as oral herbs or teas, or even enemas are often given as early as the first week of life. These reflect local beliefs or perceptions, and may be a response to a problem or situation with the child. Explore who decides when these are given. Explain that breastmilk helps to cleanse the baby and that it protects against infection.

o Not enough food in the home

The family may be very poor and there may not be enough food at home. Advice on feeding may not work because the mother simply has no money and no food. Even breastfeeding is difficult if the mother is hungry. The mother may know all about the right way to feed her child, but not have any foods.

This is an urgent situation. Try an urgent referral for welfare or community support, or supply what food you can from the clinic. Sometimes referral to hospital will help to mobilise support for the mother and child.

Food supplements are now readily available at clinics.

If there is no food available in the house

- Help mother to get a Child Support Grant for all her children under 7 years
- Put her in touch with a Social Worker and local organisations that may assist
- Give her vegetables from the clinic garden
- Supply milk and enriched (energy dense) porridge from the PEM scheme
- Give mother appropriate local recipes for enriched (energy dense) porridge

SPECIAL FEEDING PROBLEMS OF CHILDREN AFFECTED BY HIV (HIV+ve mothers but child is HIV –ve or HIV status unknown)

Infant of HIV positive mother will have the same feeding problems as other children, but special attention needs to be paid to the following problems

For children who are classified as HIV INFECTION or SUSPECTED SYMPTOMATIC HIV, follow the recommendations outlined above. Clearly there is now no longer any further risk of transmitting the virus from the mother.

- **Mixed feeding**

It is especially important that infants of HIV positive mothers do not receive breastmilk together with other feeds or fluids (mixed feeding) during the first 6 months of life. Mixed feeding can increase the transmission of HIV. Other feeds or fluids cause damage to the lining of the intestine, which allows the virus to gain entry into the body.

There is one exception to this: If the child is already HIV infected, or has symptomatic HIV, any breastmilk is better than receiving no breastmilk.

If an HIV positive mother has chosen to breastfeed, counsel her to do it exclusively, i.e. not to give other foods or fluids.
On the other hand counsel the mother of an infant on replacement feeds *not* to breastfeed. This is especially important at night, when preparing feeds can be a problem and the child may need to be comforted when crying.

- **Unsafe or inadequate replacement feeds**

Poor hygiene, diluted or concentrated feeds, inappropriate milk, infrequent feeding, and using a feeding bottle are all examples of unsafe replacement feeds. Counseling on replacement feeding is covered in Chapter 9.

CHAPTER 11

MISCELLANEOUS

ANY OTHER PROBLEMS

Once the child has gone through the entire integrated process it remains to establish whether there are any other problems. The mother may have brought him for skin sores, for example. The health worker will have to deal with the problem in accordance with her experience and background knowledge.
As there will be many HIV-infected children attending PHC facilities, health care providers may see patients with opportunistic infections or side effects of antiretroviral drugs. The *Guidelines for the Management of HIV-infected Children* should be consulted wherever the need arises.

IMMUNISATION and ROUTINE VITAMIN A

The immunisation schedule is on page 7 of the chart booklet. A careful assessment of the immunisation status of the child is important so that no opportunity is missed to vaccinate the child. Any missed immunisations should be given according to the age of the child. If no vaccinations have been given the schedule must commence from the beginning.
Every health care facility providing care for children should be in a position to give immunisations *whenever the facility is open*.
It is of importance to ensure that children are given the vaccine even though they are ill. If the child is well enough to go home, he is well enough to be immunised.
The only exceptions are

- No BCG to the Symptomatic HIV child
- No pertussis vaccine is given to the child who has had an adverse reaction to a previous DPT injection. DT is given instead.
- No pertussis vaccine is given to the child with epilepsy or other active neurological illness. DT is given instead.

Vitamin A is given according to the schedule on page 16 of the chart booklet. Each dose should be recorded on the RTHC.

FOLLOW-UP

One of the important features of IMCI is the follow-up of every patient that is classified in the Yellow section of the colour-coded algorithm. The Chart Booklet outlines the process to be followed for each particular illness for the child 2 months up to 5 years and for the young infant. Needless to say, the exact day for

follow-up needs to be negotiated with the mother, to ensure that it suits her and is convenient for the clinic activities.

WHEN TO RETURN IMMEDIATELY

This is a further very important feature of IMCI. The mother of every child that can go home on treatment needs to know what features to observe, which would indicate that the child is getting worse. Details of this can be found in the chart booklet pages 21 and 36.
The mother will receive information indicating severity of an illness, which would help her to make a decision in future whether the child's illness requires immediate clinical intervention. Moreover, it is anticipated that these important bits of information will be passed on to neighbours and the extended family. In the long run this could reduce the number of unnecessary visits to the clinic on the one hand; on the other hand it should avoid families "waiting to see if he gets better" when he already shows signs of severe illness.

For the child 2 months up to 5 years these are the signs:

Advise mother to return immediately if the child has any of these signs:	
Any sick child	• Not able to drink or breastfeed • Becomes sicker • Develops a fever
If child has COUGH OR COLD, also return if:	• Fast breathing • Difficult breathing • Wheezing
If child has diarrhoea, also return if:	• Blood in stool • Vomiting everything • Drinking poorly

These are the signs for the sick young infant:

Breastfeeding poorly or drinking poorly
Becomes sicker
Develops a fever
Fast breathing
Difficult breathing
Blood in stool
Vomits everything
Irritable or lethargic
Convulsions

COUNSEL THE MOTHER

It is advisable for the mother's health problems to be dealt with by the same health worker that has seen to her child. This is particularly important with regard to management of HIV-infected families. If the mother is in need of ART this should be provided during the same consultation.
One should also enquire whether she has any other health care needs at present. Fertility control, 'safe sexual practices' and tetanus immunisation are aspects that should be addressed regularly.