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Basic Antenatal Care Plus

Handbook

Second edition

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Acknowlegements

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Basic Antenatal Care Plus Handbook

Preface

The aim of this handbook is to provide the knowledge to perform basic antenatal care (BANC) effectively. This handbook was designed after a series of interviews and focus groups with health care providers working in primary health care clinics, often where there were no practising midwives. The interviews and focus groups aimed to understand the problems that health workers experience when providing antenatal care and provided information to plan the workbook.

Overwhelmingly the health care providers asked for a programme based on the learning principles used in Integrated Management of Childhood Illnesses (IMCI) programme. There were numerous requests for flow diagrams and protocols for care designed like IMCI. All clinics also requested that obstetric emergencies be included, as often the clinics are the first point of call for a critically ill woman.

This handbook is not intended to replace any existing programme but aims to bring together all these resources and facilitate their use. The handbook is part of a BANC Plus quality improvement package that includes:

- Basic Antenatal Care Plus Handbook.
- The Integrated Management of Pregnancy and Childbirth programme of the WHO (adapted for the Tshwane Metropole in cooperation with Tshwane Metropolitan Municipality and Tshwane/Metsweding Regional office of Gauteng Province, the Obstetrics and Gynaecology Department of the University of Pretoria and the MRC Maternal and Infant Health Care Strategies Research Unit). This programme provides the flow charts in the IMCI format.
- A training CD on basic skills needed for antenatal care.
- BANC Plus Facilitators Guideline to Training of Trainers.
- BANC Plus Training of Trainers file.
- BANC Plus Task Book.
- Health Facility Protocol and Audit Book.
- Information leaflets for primary care facility managers and referral hospital managers.

As references:

- The Perinatal Education Programme (PEP). This functions as a reference work for BANC Plus. Ideally, once BANC Plus is established, those interested should progress to undergo the PEP training.
- Department of Health. Guidelines for Maternity Care in South Africa: A manual for clinics, community health centres and district hospitals.
- Standard Treatment Guidelines and Essential Drug List for Primary Health Care
- Saving Babies 2012-2013: Ninth report on perinatal care in South Africa
- Saving Mothers 2011-13: Sixth report on Confidential Enquiries into Maternal Deaths in South Africa
- Department of Health. National consolidated guidelines for the prevention of mother-to-child transmission (PMTCT) of HIV and management of HIV in children, adolescents and adults. April 2015.

The programme is designed specifically for those primary health care facilities performing basic antenatal care, but can be used by any antenatal clinic providing more advanced care to ensure each pregnant woman has the basic care also included and not overlooked.

The Basic Antenatal Care Plus Handbook explains the process of providing antenatal care and explains the reasoning behind the guidelines presented. The process of providing antenatal care has been simplified, and only interventions that are effective during the antenatal period are used and those that are not are excluded. All interventions have good evidence to support their use. All facilitators and trainers should read this handbook before running a training session.

The second edition of the handbook for what is now termed BANC Plus, has been revised to include new knowledge and research. The biggest change has been the increase in number of antenatal visits. Further studies and a re-analysis of previous work found that focused antenatal care that aims to have goal-orientated coverage of essential interventions with 4 visits is no longer recommended, and is associated with higher perinatal mortality than standard antenatal care models with more visits. (Dowswell et al. Alternative versus standard packages of antenatal care for low-risk pregnancy. Cochrane Database of Systematic Reviews 2015. Issue 7 Art. No.CD000934). After debate a national guideline was proposed: “Basic Antenatal Care (BANC) package in South Africa – motivation to increase the routine number of

antenatal visits” (Gebhardt GS, et al 2016), and accepted by the national department of health. This edition follows the guideline as set out by Gebhardt et al.

There have also been tremendous advances in the screening and treatment of HIV infection since the first edition. The HIV/AIDS section in this handbook is in line with current guidelines. In this regard, we acknowledge the kind assistance of Dr Natasha Davies, of the Wits Reproductive Health and HIV Institute.

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Part 1

Introduction to Basic Antenatal Care Plus

Some important definitions

The antenatal period: It is the time from when a woman becomes pregnant until she goes into labour to deliver the baby.

Antenatal care: It is the health care provided to a woman in the antenatal period.

Gestational age: It is how old the pregnancy is and is usually talked about in weeks. For example, “she is 20 weeks pregnant”.

The expected date of delivery (EDD): It is the date on which it is expected the baby will be born. It is calculated from the last normal menstrual period (LNMP) by adding 7 days to the date of the first day of the LNMP (to give the day) and adding 9 months to the month to give the month. (If the LNMP is after March, you can subtract 3 from the month and add one to the year.)

A trimester: Pregnancy is divided into three time periods. The first trimester is the first 3 months or 12 weeks, the second trimester is from 3 months to 7 months or 12 weeks to 28 weeks, and the third trimester from 7 months or 28 weeks until the baby is born.

A fetus: It is an unborn baby.

A neonate: It is a baby that has been born alive. The baby is called a neonate for the first month (28 days) of life.

An abortion (miscarriage): The definition used internationally now is a baby born before 22 weeks gestation or weighing less than 500g. In South Africa, we still use the old definition of the loss of the baby before 28

weeks (7 months gestation) or weighing less than 1000 g. Babies born between 22 weeks and 28 weeks (5-7 months, or 500 g-999 g) are called late abortions.

A stillbirth: It is a baby born dead. It usually refers to babies more than 500 g.

A neonatal death: It is a baby born alive that dies within the first month (28 days). An early neonatal death is a baby dying in the first week (7 days); a late neonatal death is a baby dying after the first week but before the end of the fourth week (month).

A perinatal death: It is a stillborn baby or a neonatal death

Morbidity: It is where damage occurs to the patient (mother or baby) but the patient does not die.

Mortality: It is the death of a patient.

Perinatal mortality rate (PNMR): It is the number of stillbirths plus neonatal deaths divided by the number of births. To make the figures easy to use they are multiplied by 1000; the PNMR is expressed per thousand births. The PNMR is a figure that can be used to compare various places. A high rate is bad and low rate is good. For example, a developed country has a PNMR of 10/1000 births for babies weighing 500 g or more; in South Africa that figure is about 55/1000 births. The PNMR for babies weighing 1000 g or more in developed countries is about 5/1000 births; and in South Africa it is about 30/1000 births. In South Africa we usually use the PNMR for babies over 1000 g because we do not have the facilities to help all the babies born alive (neonates) under 1000 g.

A maternal death: It is the death of a pregnant woman during the pregnancy. The pregnancy is from conception till 6 weeks (42 days) after the birth of the baby. It includes deaths of women due to abortions or ectopic pregnancies, but does not include coincidental deaths, that is women

dying due to motorcar accidents or assault. However, these deaths are still collected by the National Committee for the Confidential Enquiries into Maternal Deaths and reported separately. The number of deaths from assault is a useful measure to determine things like how much abuse there is of pregnant women.

Maternal mortality ratio (MMR): It is the number of women who died in pregnancy (including the first 6 weeks after the birth of the baby) divided by the number of live births. To make the figures easy to use, it is multiplied by 100 000. The MMR is expressed per 100 000 live births. The MMR is a figure that can be used to compare various places. A high rate is bad and low rate is good. For example, a developed country has a MMR of 10/100 000 live births; in South Africa that figure for maternal deaths in health institutions is about 150/100 000 live births, but is significantly higher when deaths outside facilities are included.

Gravidity: Gravidity is the number of times the woman has been pregnant, including the current pregnancy. It does not matter what the pregnancy's outcome was.

Parity: Parity is the number of times a woman has been pregnant and the pregnancy has progressed as far as the baby being viable, namely 28 weeks.

Preterm: It is when the pregnancy is less than 37 completed weeks.

Preterm labour: It is when a woman with a preterm baby goes into labour. This is also a common cause of low birth weight babies.

Premature neonate: It is a baby that has been born before 37 completed weeks of gestation. Premature neonates are weak because they are immature and all their organs have not fully developed. Immaturity is a big cause of neonatal death.

Premature rupture of membranes: It is when the membranes break more than 1 hour before the woman starts having contractions. If the pregnancy is preterm, this is called preterm premature rupture of membranes.

Abruptio placentae: This is where there is a bleed behind the placenta before the baby has been born. Abruptio placentae has a high perinatal mortality and is a common cause of perinatal death in the metropolitan areas of South Africa. It is difficult to predict who will develop it, but women who smoke, or who have hypertension or who have had abruptio placentae before are at higher risk. The women usually come to the clinic or hospital complaining of vaginal bleeding with clots, and severe abdominal pain. This is an obstetric emergency.

Placenta praevia: This is where the placenta is positioned over the mouth (cervix) of the uterus (womb). When the cervix starts to open the woman starts to bleed vaginally. The placenta being torn away from the uterus causes the bleeding. The bleeding is usually painless and bright red. The condition is not common but the bleeding can be very heavy and the woman can bleed to death very quickly. It is an obstetric emergency.

What is antenatal care?

Antenatal care is the health care of pregnant women in the months and weeks before the birth of their babies. The care is aimed a detecting problems already present or that can develop in the pregnant woman and her unborn child. Once detected, the problem can be treated. It has a further role of improving the general health of the woman. Not only is the pregnancy examined, but also the general health and habits of the woman. Interventions during pregnancy can have permanent beneficial effects later in the woman's life.

What can antenatal care achieve?

- Improve maternal health
- Improve the health and survival of the baby
- Provide the pregnant woman information on:
    - Warning signs during pregnancy and what to do
    - Habits such as smoking and drinking alcohol
    - Nutrition
    - Contraception
    - Feeding her infant
    - HIV

Antenatal care can screen for, detect and thus prevent many maternal complications from occurring before childbirth. It can detect and treat anaemia, other chronic diseases such as tuberculosis (TB) or complications of HIV infection and other sexually transmitted infections, and can improve the nutritional status of the woman. This substantially improves the woman's chance of survival should a severe complication occur during pregnancy or childbirth. Antenatal care does not play an important role in preventing some of the common causes of maternal death that occur during or after childbirth, such as postpartum haemorrhage, antepartum haemorrhage and puerperal sepsis, which are often unpredictable.

Antenatal care can significantly improve the outcome for the unborn baby. It can detect and treat some of the infections that are dangerous to the infant; it can treat pregnant women with medical conditions such as diabetes mellitus that are harmful to the infant; and it can detect complications arising in pregnancy such as pre-eclampsia or poor intrauterine growth of the baby. Antenatal care therefore allows treatment and intervention to prevent death of the baby.

Table 1.1 shows conditions that occur during pregnancy, which can be successfully detected and treated, thereby improving the health of the pregnant woman and the health and survival of the unborn baby (fetus).

Table 1.1. Conditions that can be successfully detected and treated in pregnancy

Maternal condition	**Worst effect on pregnancy**
Anaemia	More likely to bleed, smaller babies
Hypertension and pre-eclampsia	Convulsions, haemorrhage, maternal deaths, fetus/neonatal death
Medical diseases e.g. diabetes mellitus, epilepsy, heart disease	Maternal death; fetus/neonatal death
HIV complications	Maternal death; preterm birth, growth impaired babies, HIV infected babies
Chronic infections e.g. tuberculosis	Maternal deaths; fetus/neonatal death
Urinary tract infections	Maternal kidney infection, preterm labour, fetus/neonatal death
Vaginitis and other sexually transmitted infections	Preterm labour, fetus/neonatal death
Malnutrition	Small babies
Fetal condition	
Poor fetal growth	Fetus/neonatal death
Post-maturity	Meconium aspiration, fetus/neonatal death
Congenital infections e.g. syphilis	Fetus/neonatal death
Congenital abnormalities	Fetus/neonatal death
Twins, triplets	Preterm labour, fetus/neonatal death
Abnormal fetal lie	Ruptured uterus, fetus/neonatal death
Rhesus isoimmunisation	Anaemic or jaundiced neonate, fetus/neonatal death

Why should there be antenatal care in all health care clinics?

In 1997, maternal death became a notifiable condition. All women who die during pregnancy or within six weeks of giving birth have to be reported to the provincial departments of maternal and child health. The provincial MCWH units then inform the National Committee for the Confidential Enquiries into Maternal Deaths. Every death is assessed, and the cause and potential avoidable factors, missed opportunities and substandard care are recorded. The results of this enquiry are detailed in the **Saving Mothers: Confidential Enquiries in Maternal Deaths in South Africa** reports, which come out every three years.

These reports show that non-pregnancy related infection, such as tuberculosis, pneumonia and meningitis, is the biggest killer of pregnant women. Over 90% of these women are HIV-infected. The second most common cause is obstetric haemorrhage, followed by hypertension in pregnancy, pregnancy related sepsis (abortion and puerperal sepsis) and pre-existing medical conditions such as heart disease. Appropriate antenatal care can play a major role in preventing deaths from HIV/AIDS (with related conditions such as pneumonia, tuberculosis, meningitis and malaria), from hypertension and from complications of pre-existing medical diseases. Further, by improving the health of the woman, for example correcting anaemia, women would be better able to withstand the complications of haemorrhage and sepsis.

South Africa also has good information on why babies die. The regular **Saving Babies** reports detail the commonest primary obstetric causes of deaths of unborn and newborn babies. These are unexplained stillbirth, spontaneous preterm birth, intrapartum asphyxia and birth trauma, antepartum haemorrhage and complications of hypertension. One in four of the deaths of babies are recorded as unexplained stillbirths. Research has shown that this group is a mixture of babies that have died due to intrauterine

starvation (intrauterine growth restriction - IUGR), post-maturity, congenital abnormalities and intrauterine infections. All of these can be detected and some prevented by antenatal care. Antenatal care will also have an impact on deaths due to hypertension in pregnancy, but unfortunately only has a limited impact on deaths due to spontaneous preterm labour, intrapartum asphyxia and birth trauma, and antepartum haemorrhage.

Effective antenatal care in South Africa can make a major contribution to improving pregnant women's health and saving some of their lives, and also significantly improve the health and survival of unborn babies.

Where should basic antenatal care (BANC) be performed?

Every opportunity to see and treat pregnant women should be seized. Every site where pregnant women make contact with health services should be utilised. Thus all primary health care facilities should provide basic antenatal care (BANC). The closer the care is to the woman the more likely it is used. The national Demographic and Health Survey (DHS) tells us that over 95% of all pregnant women attend antenatal care at least once. However, the antenatal care coverage is worst in the more rural and poor areas, and best in the urban areas. The aim of the Department of Health is to have all pregnant women attend antenatal care starting before 14 weeks' gestation.

When should antenatal care start?

Antenatal care should start at the time pregnancy is diagnosed. The sooner a pregnant woman is brought into the system, the earlier problems can be detected. Treatment then has a greater chance of success.

Most women will confirm they are pregnant within the first three months of missing a menstrual period. Most women go either to their local clinic or their local general practitioner to confirm they are pregnant. This means they make contact with the health services early in their pregnancy. This opportunity to initiate antenatal care should not be missed. The current way clinics are

functioning allows for immediate initiation of antenatal care. If the pregnancy test is done at the clinic or general practitioner's office, the first visit can be performed on the same day that the test result is given to the woman. The earlier antenatal care starts, the less the chance of complications and the better the chance of a good pregnancy outcome.

Who should perform antenatal care?

Research has shown that appropriately trained midwives (nurses with midwifery training and advanced midwives), doctors or specialists all perform basic antenatal care equally well. Where complications are detected, the pregnant women are best seen and treated by specially trained midwives and doctors. This can be done in combination with the primary health care clinics.

How should basic antenatal care be performed?

Table 1.2 lists the effective interventions of the antenatal period. Detecting and treating the conditions in Table 1.2 will certainly improve the outcome of the pregnancy for both mother and child.

The clinical process followed by each health care provider for each antenatal visit of the pregnant woman after the greeting and rapid assessment and management (RAM) is:

- **Ask, check antenatal record**
- **Look, listen, feel**
- **Record signs**
- **Classify**
- **Treat and advise**

  Every woman should receive or be checked at every visit:

  Iron, folate and calcium (and multivitamins if indicated)

  Nutritional advice

  Advice on what to do if the warning signs in pregnancy appear

Where she plans to give birth

What transport arrangements have been made should she go into labour

- **Complete antenatal record and clinic checklist**
- **Make arrangements for the next visit**

Table 1.2. Effective interventions during the antenatal period

Problem	Prevention	Screen/diagnose	Treatment
Mother			
Anaemia	Iron and folate prophylaxis	Check haemoglobin	Iron and folate or iron injections or blood transfusion
Hypertension/pre-eclampsia	Calcium supplementation	Check blood pressure, urine	Treat hypertension
Syphilis	As for STIs	RPR, VDRL	Benzathine penicillin
Vaginitis	As for STIs	Syndromic approach	Erythromycin and metronidazole
Urinary tract infection	Personal hygiene	Urine dipsticks or urine culture	Ampicillin
HIV/AIDS	As for STIs	Counselling and voluntary testing	Antiretroviral therapy for mother, PMTCT for baby
Tuberculosis	Isoniazid preventive therapy (IPT) where indicated	Sputum for GeneXpert, culture, Chest X-ray	Anti-TB drugs
Malaria	Prophylaxis	Symptomatic treatment	Anti malarial drugs
Pre-existing medical conditions, diabetes, heart disease, epilepsy		History and examination	Refer
Gestational diabetes mellitus		Family history, previous baby's birth weights, glycosuria	Investigate, Treat as necessary or refer
Malnutrition	Protein/calorie supplementation, multivitamin supplementation	History, clinical examination (Body/mass index)	Refer social workers, food supplementation
Fetus			
Poor fetal growth	Protein/calorie supplementation, advice on smoking	Uterine growth (serial symphysis-fundus measurements)	Timely delivery
Post-maturity	Accurate gestational age	Calculate gestational age	Induce labour at 41 weeks gestation
Multiple pregnancies	Careful assisted reproduction	Uterine growth, sonar	Refer
Breech presentation		Uterine palpation	External version/ caesarean section
Congenital abnormalities	Peri-conception folic acid, advice on alcohol consumption	Maternal age, previous history, uterine growth, sonar abnormalities	Refer to specialists
Rhesus isoimmunisation	Anti –D prophylaxis for Rh negative women in previous pregnancy	Rapid Rh, Coombs test for Rh negative women	Refer Rhesus negative women with anti-D antibodies
Neonatal tetanus	Tetanus toxoid immunisation		

How should antenatal care be organised?

What was done, how it was done and when the visits were arranged for antenatal care originated from European models in the early 20th century. There was no scientific basis for the way antenatal care was performed or what was performed at each visit. The traditional model entailed monthly visits to 28 weeks' gestation; fortnightly visits to 36 weeks' gestation; and weekly visits thereafter up to the onset of labour. This usually amounted to 12 visits. The content of the visits remained the same, and each visit was more a ritual than a method designed to detect and solve problems.

Since the 1990s, there has been a thorough evaluation of the way antenatal care is performed, including the number, timing and content of antenatal visits and also who should perform the visits. From 2005, only five BANC visits were recommended. But research has recently shown that additional visits are necessary in the third trimester to prevent so-called unexplained stillbirths.

The principles on which antenatal care now stand consist of:

- Identification of women with special health conditions and/or those at risk of developing complications, using a simple checklist
- Those women with special health conditions or risk factors should be referred to higher levels of care. Care must be taken to ensure identification of all women with special health conditions or risk factors
- Timing the visits such that the maximum benefit can be obtained, without wasting human resources
- Performing only examinations and tests that have been proven to be beneficial, and at the most appropriate time (Tables 1.1 and 1.2)
- Wherever possible, rapid easy-to-perform tests should be used at the antenatal clinic or in a facility close to the clinic. The results should be available on the same day so treatment can be initiated at the clinic without delay
- Health care providers should make all the pregnant women feel welcome at their clinic, and it should be convenient for the pregnant women to

attend the clinic. This implies that opening hours of the clinics should be as convenient as possible to the women to come to the clinic.

Providing effective antenatal care is dependent on identifying those pregnant women who will be suitable for BANC, those that require specialist attention, and those that can be seen by both groups of health care providers. This is done at the first meeting, ideally at the time of pregnancy confirmation. This is called the first visit. At this visit, the pregnant women with uncomplicated pregnancies can go into the BANC Plus programme. There are set criteria that must be met for women to qualify for BANC, and these are recorded on the patient's clinic file by a checklist and on the antenatal record. At each subsequent visit, the woman must be reassessed to see if she still qualifies for BANC or should be referred on for further attention. (Approximately 25% of pregnant women at the end of their first visit will not qualify for BANC and need further special care. This percentage is increased in very poor areas). During pregnancy, that percentage will increase by about a further 20%. This should not worry you; it means you are doing your task correctly.

After the first visit, the subsequent BANC Plus visits each have their own aims and content, and are recorded on the patient's antenatal record and the checklist in her clinic file (see below). The first visit is where the first page of the antenatal record is filled in. The follow-up visits are filled in on the second page of the antenatal record (or on the back of an antenatal card). At the end of the first visit, it should be clear who qualifies for BANC and who needs further assessment. The woman should be given a date for follow-up and told where that will be.

The process begins as soon as the pregnant woman steps into the clinic. (See charts on principles of good care. These apply to all contacts between the health care provider and the women and their babies.) There are certain specific issues relating to antenatal care.

Patient flow

Every patient should be greeted and immediately assessed using the quick check and rapid assessment and management system (see charts). Providing there are no acute factors and it is her first visit to the clinic about her pregnancy, or pregnancy has just been confirmed, she needs to undergo the **"first visit"**. This is a very important visit and serves to classify the woman as requiring specialised care in addition to BANC, or only BANC. The antenatal record is issued at this visit and the clinic record and checklist are completed. The woman is advised on her next visit.

The **follow-up visits** are at 20, 26, 30, 34, 36, 38 and 40 weeks' gestation. At her follow-up visits, after the questioning and examination, the antenatal record is completed and the follow-up visit checklist completed.

Combined care

A pregnant woman can have all her antenatal care visits at a primary health care clinic if she qualifies for BANC, or she can have her antenatal care visits in the referral hospital if she has a special risk factor or factors. She can also have **combined** care; that is care at both the primary health care clinic and the referral hospital. For example, a woman could have had a caesarean section in her previous pregnancy due to a big baby. She should be referred to the referral hospital after the first visit at the clinic. The referral hospital will evaluate her and, if everything is normal, may refer the woman back to the primary health care clinic to continue with basic antenatal care. There may be instructions for the clinic to refer her back to the hospital at 38 weeks' gestation, and the hospital may take over antenatal care and plan the delivery with the woman. This is combined care. Obviously, should any new problem occur during the

antenatal care at the clinic the woman would be referred immediately back to the referral hospital.

Record keeping

At antenatal clinics, there is a record for each pregnant woman. This is filled in at each visit and includes results of the special investigations done. This file is mainly for clinic administrative purposes. This clinic patient file can be adapted to act as a checklist. Checklists have been shown to improve the quality of care of pregnant women by ensuring procedures are not forgotten.

Further, there is a record of the findings of the antenatal visit and all the information on the pregnancy. This record contains the core information regarding everything related to the pregnancy. Currently this is the antenatal record, which may be on a card or may be contained in the pages of the maternity case record book. The pregnant woman must keep this document with her during the pregnancy. This is good practice as it has been proven that it is far more effective for the pregnant woman to keep her record than for the clinic or hospital to do so. The patient-carried antenatal record is an important means of communication between the different health care providers involved in the care of the woman during pregnancy and childbirth. This is currently incorporated into the national maternity record, which the woman keeps with her.

Audit

The proper functioning of the clinic requires that information be kept on the number of pregnant women being seen per month and various other bits of information. That information must be kept by the clinic and sent monthly to the local head office.

Further, the quality of the antenatal care can be assessed using the antenatal care assessment tool. This tool in combination with assessment

of the checklists will tell the supervisor of how well the clinic is functioning (details are given later).

Basic equipment and drugs

Each clinic that deals with pregnant women must have the essential drugs and equipment and an “emergency trolley” that holds the basic equipment for the clinic to deal with an emergency while waiting to transfer the patient to the appropriate place. The “emergency trolley” must have, for example, the basic equipment to conduct a safe birth, manage haemorrhage and eclampsia (see later).

Role of the supervisor/s

Each clinic will have a person or people who will fill the roles of supervisor of antenatal care. There are two major categories of supervision, **clinical care** and **administration**. Each category might have a different supervisor or the same person can perform them. The specific tasks in each category are:

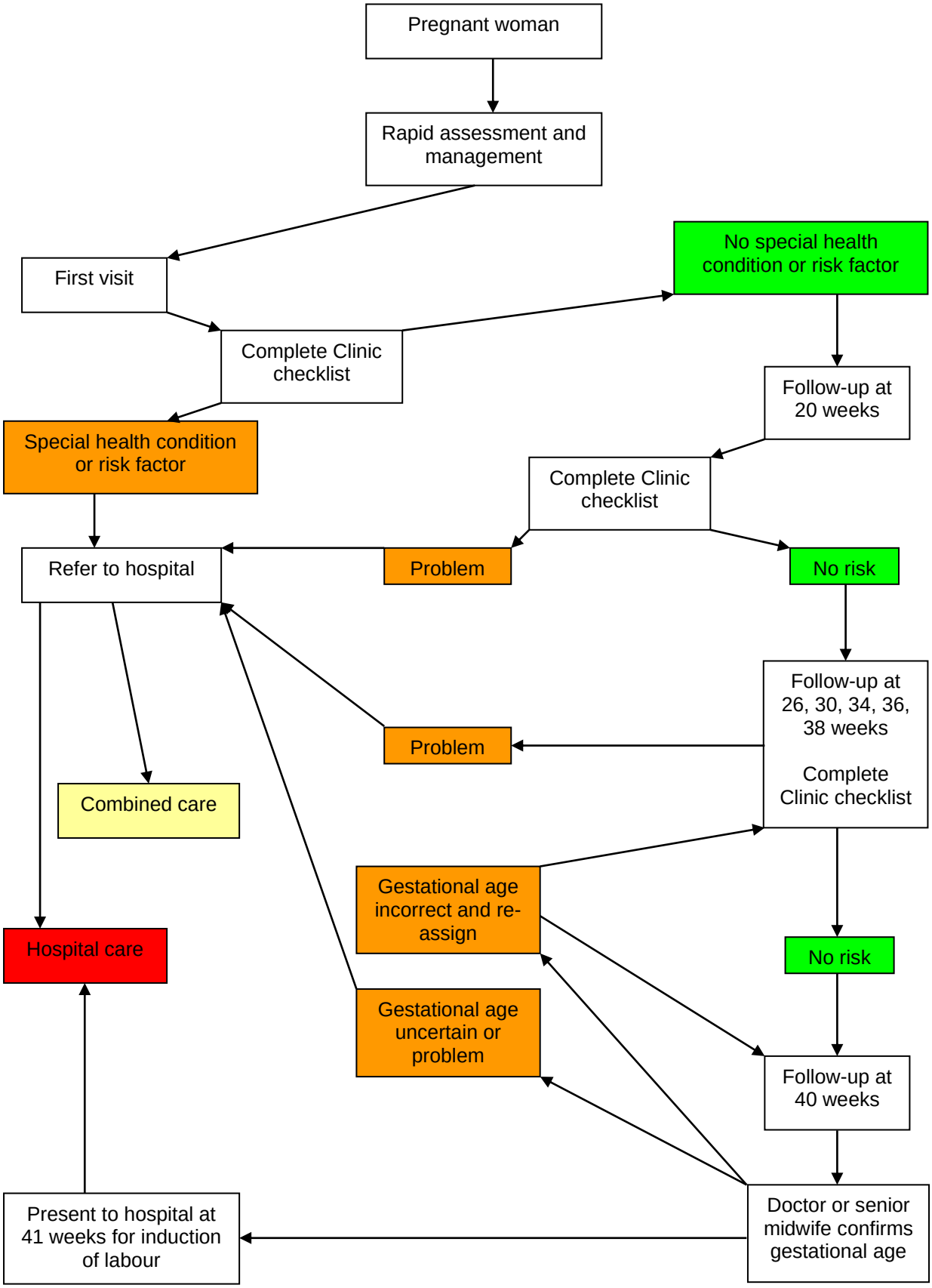
Clinical supervision

- Act as consultant in clinic to other health care providers for antenatal care
- Perform quality assurance
- Check cases
- Train other health workers

Administration

- Collect clinic statistics
- Order drugs and equipment
- Ensure facilities and equipment are in working order

Organisation of antenatal care



Part 2. Checklists

Banc Plus: Clinic Checklist – Classifying (first) visit

Name of patient_____ Clinic record number | | | | | | | |

Address _____ Telephone _____

_____ Cell _____

INSTRUCTIONS: Answer all the following questions by placing a cross mark in the corresponding box

Obstetric History	**No**	**Yes**
1. Previous stillbirth or neonatal loss?		
2. History of 3 or more consecutive spontaneous abortions		
3. Birth weight of last baby < 2500g?		
4. Birth weight of last baby >4500g?		
5. Last pregnancy: hospital admission for hypertension or pre-eclampsia/eclampsia?		
6. Previous surgery on reproductive tract		
(Caesarean section, myomectomy, cone biopsy, cervical cerclage,)		
Current pregnancy		
7. Diagnosed or suspected multiple pregnancy		
8. Age < 16 years		
9. Age > 37 years		
10. Isoimmunisation Rh (-) in current or previous pregnancy		
11. Vaginal bleeding		
12. Pelvic mass		
13. Diastolic blood pressure 90 mmHg or more at booking		
General medical		
14. Diabetes mellitus on insulin or oral hypoglycaemic treatment		
15. Cardiac disease		
16. Renal disease		
17. Epilepsy		
18. Asthmatic on medication		
19. Tuberculosis		
20. Known 'substance' abuse (including heavy alcohol drinking)		
21. Any other severe medical disease or condition		

Please specify _____

MomConnect: Discussed and information given: (Circle) **Yes** **No**

A yes to any ONE of the above questions (i.e. ONE shaded box marked with a cross means that the woman is not eligible for the basic component of antenatal care

Is the woman eligible (circle**)** **Yes** **No**

If NO, she is referred to _____

Date_____ Name _____ Signature _____

(Staff responsible for antenatal care)

Clinic checklist: Follow-up visits (back page of first visit checklist)

First visit for all women at first contact with clinics, regardless of gestational age. If first visit later than recommended, carry out activities up to that time	**VISITS**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
DATE :								
Approximate gestational age (weeks)	**<14**	**20**	**26**	**30**	**34**	**36**	**38**	**40**
Classifying form indicating eligibility for BANC								
History taken								
Full clinical examination								
Estimated date of delivery calculated								
Blood pressure taken								
Maternal height/weight/MUAC								
Haemoglobin test								
RPR performed								
Urine tested for protein, sugar and nitrites								
Rapid Rh performed								
HIV counselling and testing		Retest every 12 weeks if negative						
ART for HIV-infected women		Viral load monitoring as per guidelines						
Tetanus toxoid given								
Iron and folate supplementation provided								
Calcium supplementation provided								
Information for emergencies given								
Antenatal record completed and given to woman								
Asked if fetal movements felt and normal								
TB symptom screen								
Clinical examination for anaemia								
Urine tested for protein, glucose								
Uterus measured for growth - twins, IUGR								
Instructions for delivery/transport to institution								
Recommendations for lactation and contraception								
Detection of breech presentation and referral								
Remind woman to bring antenatal record in labour								
Doctor or senior midwife to review gestational age								
Give hospital visit date at 41 weeks for induction								
Initials staff member responsible								

Additional Visits		
Date	**Reason**	**Action/Treatment**

Notes on completing Checklists

1. The classifying (first visit) part of the antenatal record is completed after the full history and examination has taken place, and the record has been filled in. The checklist is then completed. Should there be a tick in any one of the Yes (shaded) areas, the woman must be referred to the next level of expertise for assessment and management plan. This does not necessarily mean referral to another facility, but can mean referral to a specially trained antenatal care midwife or the visiting primary health care doctor.
2. The level of referral is dependent on the reason for the referral and the protocols that have been developed in the clinic. For example, a woman aged 37 years may be referred to the clinic's own doctor or genetic counsellor if that is the protocol decided on by the clinic's health workers in collaboration with the referral hospital. The clinic's doctor or counsellor would then send the woman to the hospital if the woman wants to have genetic testing after she has been counselled. If the woman decides not to have any testing, or if testing turns out to be normal, she can then go back to the clinic for further follow-up.
3. At the end of the visit and once everything has been documented on the antenatal record, the record should be checked against the checklist to ensure all the activities have been performed. Ideally, this should be done by the senior midwife and can act as a quality control. The date must be entered and the gestational age must be completed. The next visit is the one that follows on according to gestational age. For example, if the woman has her first antenatal visit at 22 weeks' gestation, her next visit will be at 26 weeks, that is visit 3 in BANC Plus.
4. The follow-up visits' checklist is completed at the end of each visit. The date and gestational age must be completed under the appropriate visit. Ensure that all the clear spaces have been completed.
5. If the woman is brought back out of sequence for an additional visit, that visit should be entered in the "Additional visits" section with the date and the reason for the visit and the action taken or treatment given.

Part 3

The visits

The first (classifying) visit: How, what and why

This visit separates the pregnant women into two groups: those eligible to receive routine basic antenatal care (BANC); and those who need special care based on their specific health conditions or risk factors. Pre-set criteria are used to determine who qualifies for BANC. The women selected to follow BANC do not require any further assessment or special care at the first visit, regardless of the gestational age at which they start the programme. The remaining women are given care corresponding to their detected condition or risk factor. It is possible that a woman initially referred to a higher level of care because of a condition identified in the first visit is subsequently considered suitable to follow BANC.

Note: The procedures of BANC Plus must be carried out in each pregnant woman irrespective of the level of care she is receiving.

Ideally, the first visit should occur before 14 weeks of pregnancy. This is usually possible if the first visit is performed at the time the pregnancy is confirmed. (Pregnancy tests must be provided at the clinic. Most women confirm their pregnancy in the first trimester). However, regardless of the gestational age at the first visit, all pregnant women coming for the first time must undergo the procedures of the first visit. This will take about 30-40 minutes.

The first page of the antenatal record is filled in, as well as the clinic checklist.

Table 3.1 goes through the how, what and why of the first visit as well as the actions that should be performed.

Table 3.1. The First Visit (How, what, why)

How	What	Why – Identify special conditions or risk factors for referral
Ask	**Personal history**	**Identify special conditions or risk factors for referral**
	Name	
	Age	<16 or >37 high risk and refer Genetic counselling
	Address and telephone or cell number	Contact
	Relationship with father of child	
	Tobacco and alcohol use	Tobacco – increased risk growth restriction, abruptio placenta Alcohol – Fetal alcohol syndrome
	Housing	Support system
	Sanitary conditions	Hygiene possible
	Energy source	Storage medication
	Literate	Information given to woman – written or verbal
	Income, occupation	Resources available, e.g. medical aid to supply antiretroviral therapy
	Obstetric history	**Identify special conditions or risk factors for referral**
	Number previous pregnancies	More than 5 pregnancies
	Year, gestational age at birth of baby, sex, birth weight,	Low birth weight (<2500g), growth restricted, premature (<34 weeks), macrosomic (>4500g)
	Method of delivery (obstetrical operations)	Previous caesarean section Previous assisted delivery
	Outcome (live, miscarriage, IUD, ENND, LND, infant deaths)	Risk for current pregnancy, any death- refer
	Special maternal complications	Recurrent early miscarriage, thrombosis, embolus, hypertension, pre-eclampsia, eclampsia, abruptio placenta, placenta praevia, breech or transverse presentation, obstructed labour, third-degree tears, third stage excessive bleeding, puerperal sepsis, postpartum depression: Refer
	Special perinatal (fetal and newborn) complications	Multiple pregnancy, malformed or abnormal child, rhesus-antibody affection, resuscitation or other treatment of newborn: Refer
	Gestational age history	**Calculate EDD**
	First day last normal menstrual period (LMP)	Calculate gestational age
	Cycle, regular/irregular, duration	Reliability of LMP to calculate gestational age
	Previous contraception, type	Determine “washout” period
	When stopped	Reliability of LMP to calculate gestational age

	When and how was pregnancy confirmed Sonar in this pregnancy Future plans for pregnancies	Help with estimation of gestational age Accurate gestational age Introduction to contraceptive use after current pregnancy and what contraceptive method would be appropriate
	Medical history Specific conditions: Hypertension, heart, kidney, diabetes, epilepsy, asthma, tuberculosis (TB) HIV infected Medication Operations other than C/S Allergies Family history; twins, diabetes, congenital abnormality Current cough, no weight gain, night sweats, fever	**Identify special conditions or risk factors for referral** High risk pregnancy: Refer Stage, ART, PMTCT, viral load, adherence, other medication Severity of condition, teratogenic drugs Might indicate high risk Penicillin allergy Risk for current pregnancy, might need referral Symptom screen for TB, for sputum test
Look, feel, listen (Physical Examination)	Record weight and height; mid-upper arm circumference (MUAC) Measure blood pressure Check general condition, pale, malnourished, jaundiced, short of breath, etc Thyroid mass Breasts Chest and heart auscultation Feel for uterus, if palpable measure height (in centimetres), Look for abdominal scars, especially caesarean section scars Consider vaginal examination using a speculum	**Identify special conditions or risk factors for referral** Body mass index (weight (kg)/(height)^2 in meters) malnutrition: refer BMI <18.5 or >32.3 kg/m^2; MUAC <23 or ≥33 cm Hypertension: Refer Anaemia, Chronic disease: Refer Thyroid lump high risk: Refer Ability to breast feed Heart or lung lesions: Refer Correlate with estimated gestational age calculated from LMP: If not correlate refer for sonar 30 years or more with no cervical smear, or suspect STI

Tests	Test urine, protein, nitrites, leucocytes, glucose Haemoglobin Rapid Rh test RPR HIV counselling and testing Viral load if HIV-infected on ART	**Identify special conditions or risk factors for referral** Pre-eclampsia, urinary tract infection, diabetes Anaemia Rhesus isoimmunisation Syphilis Positive - ART. Negative – lifestyle, condoms, bring partner for testing Early detection of adherence issues or HIV resistance to drugs
Plan	Classify for BANC Plus or referral Clinic checklist	Determine level of antenatal care Check that nothing has been overlooked
Implement	Iron and folate supplements to all women Calcium supplementation to all women Tetanus toxoid; booster or first injection RPR positive – treat for syphilis Rh negative send Coombs test or refer HIV-infected – start ART In malaria endemic areas: sulphadoxine/pyrimethamine Refer high-risk cases – see checklist	**Preventing complications** Prevent anaemia Prevent hypertension and pre-eclampsia Prevent neonatal tetanus Prevent congenital syphilis and stillbirths Prevent rhesus isoimmunisation or refer for treatment Improve woman's health and pregnancy outcome for infant Prevent malaria Improve pregnancy outcome
Give advice	Safe sex and partner HIV testing Stop tobacco, alcohol Infant feeding What to do with haemorrhage, warning signs Birth plan	**Preventing complications and improve general health** Prevent STIs and HIV infection Prevent fetal alcohol syndrome, growth restriction, abruptio plaentae Discuss options if HIV-infected, promote exclusive breast feeding Educate woman Where (what institution) she will give birth, what arrangements for transport when goes into labour need to be made
Questions and answers	Give time for free communication	Bring up issues worrying woman or things left out
Schedule next visit	Write on antenatal record and clinic checklist	
Complete records	Complete clinic record Complete antenatal care and give it to the woman	Checklist helps to prevent things being overlooked Patient carried record is far more effective than clinic held notes

Follow-up visits: How, what, when, why

The traditional model of antenatal care entailed monthly visits to 28 weeks gestation, then more frequent visits up to the onset of labour, usually a total of 12 visits. The content of the visits remained the same and each visit was more a ritual than a method designed to detect and solve problems.

In recent years, there has been a thorough evaluation of the number, timing and content of antenatal visits. The follow-up visits have found to be most effective from 26 to 38 weeks of gestation. These visits coincide with performing examinations and tests at critical times that have the most benefit for the pregnant woman and most chance of detecting problems that can be treated. Findings from a large international study run by the WHO have recently been updated, and suggest that concentrating visits in the period from 26 to 38 weeks may reduce stillbirths related to IUGR and hypertension.

In South Africa, antenatal care has tended to start late, after 20 weeks' gestation. This must be changed, if the goal of having healthy women and babies is to be met. Antenatal care should start in the first trimester (that is in the first three months of pregnancy). To accommodate this and the pregnant women's wishes, the ideal timing of visits for pregnant women in South Africa would be at pregnancy confirmation (usually within the first 14 weeks), thereafter at 20, 26, 30, 34, 36, 38 and 40 weeks' gestation. At each visit, care must be taken to ensure that all the actions that need to be performed are performed, and problems identified are acted upon. It is stressed to the woman that she can attend the clinic at any time, and must do so if there is anything that is worrying her.

Each follow-up visit, except the short visits at 36 and 40 weeks, should last about 20 minutes. At the short visits there is no need for the woman to lie on a bed or undress, unless she has a problem that requires physical examination. What should be performed at each BANC Plus visit is detailed in Table 3.2. At the end of each visit, the woman's clinic checklist should be checked to see that all the things have been performed.

Table 3.2. Follow-up visits (How, what, when, why)

How	What	When							Why
Rapid assessment and management (RAM									Act immediately if there is an emergency
		20	**26**	**30**	**34**	**36**	**38**	**40**	
Ask	How are you?	**x**	**x**	**x**	**x**	**x**	**x**	**x**	
	Is the baby moving?	**x**	**x**	**x**	**x**	**x**	**x**	**x**	
	Have you had any bleeding?	**x**	**x**	**x**	**x**		**x**		
	Have you any concerns/symptoms of?	**x**	**x**	**x**	**x**	**x**	**x**	**x**	
	Vaginitis								Risk of ascending infections
	Urinary tract infection								Risk of ascending infections
	Cough, no weight gain, night sweats, fever								Tuberculosis, other chest infections
	Malnutrition								Chronic disease, poverty
	HIV/AIDS								Ensure proper management
Check antenatal record									
	Calculate current gestational age	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Check fetal growth and confirm at 40 weeks
	Syphilis serology	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Check result and treat if necessary
	Haemoglobin	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Check result and treat for anaemia if Hb low
	HIV counselling and testing	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Check if retested, start ART if HIV-infected
	HIV/AIDS care and monitoring	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Monitor viral load as per guidelines
	Booster dose Tetanus toxoid			**x**					Only if immunising for the first time
	Previous visits concerns	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Have these been solved?
Look, feel, listen									
	Pallor	**x**	**x**	**x**	**x**		**x**		Screen for anaemia, repeat Hb 30 & 38 weeks
	Blood pressure	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Screen for hypertension
	Urine; protein/glucose	**x**	**x**	**x**	**x**	**x**	**x**	**x**	Screen for pre-eclampsia and diabetes
	Uterine growth	**x**	**x**	**x**	**x**		**x**		Screen for IUGR
	Fetal presentation				**x**		**x**		Screen for abnormal lie, e.g. breech

How	What	When							Why
		20	26	30	34	36	38	40	
Signs		x	x	x	x	x	x	x	Note all the abnormalities
Classify		x	x	x	x	x	x	x	Classify the abnormalities into diseases
Treat and advise		x	x	x	x	x	x	x	Treat and advise according to the diseases identified.
Fill in antenatal record and revise birth plan if needed		x	x	x	x	x	x	x	
Implement interventions	Iron and folate supps for all women	x	x	x	x		x	x	To prevent anaemia
	Calcium supplementation to all women	x	x	x	x		x		To prevent hypertension
	Tetanus toxoid; booster or first injection								To prevent neonatal tetanus
	If RPR positive – treat for syphilis	x	x	x	x	x	x	x	To prevent congenital syphilis and stillbirths
	Rh negative send Coombs test or refer								To identify Rh-isoimmunisation
	HIV-infected – start/continue ART	x	x	x	x	x	x	x	To support, treat and prevent transmission
	In malaria endemic areas: sulphadoxine/pyrimethamine	x	x	x	x		x		To prevent malaria
General advice	Safe sex	x	x	x	x		x		Prevent STIs
	Stop tobacco, alcohol	x	x	x	x		x		Prevent IUGR and congenital abnormalities
	Infant feeding advice	x	x	x	x		x		Prepare for feeding choice and reduce MTCT
	Plan for haemorrhage or warning signs	x	x	x	x		x		Early identification of complications
	Birth plan	x	x	x	x	x	x	x	Make sure there is a transport plan to get to the institution and which institution is to be used
	Contraceptive advice	x	x	x	x		x		Plan for future pregnancies and space children
Questions and answers		x	x	x	x	x	x	x	Enable woman to voice concerns
Date next follow-up visit		x	x	x	x	x	x	x	
Maintain complete records		x	x	x	x	x	x	x	Ensure antenatal care and clinic checklist completed

Part 4

Special Skills

Monitoring blood pressure and urine

Some useful definitions

Pre-eclampsia: It is a disease that only occurs in pregnancy and makes the woman: swell-up; have headaches; pain in her abdomen; her blood pressure is usually high and there is usually protein in her urine. We do not know what causes it. It affects every organ in the body and the baby as well. It is the second most common direct cause of maternal mortality in South Africa. The women usually die due to a brain bleed or heart or lung failure. However, it is common for the women to have kidney failure and to bleed because of loss of clotting factors. It is a common cause of perinatal death and intrauterine growth restriction. It can be prevented or its onset delayed by giving calcium tablets to pregnant women. Detecting the disease early and sending the women to the appropriate place can prevent complications. In emergencies it is very important to lower the blood pressure and prevent convulsions.

Eclampsia: It is a woman with pre-eclampsia that fits (has a convulsion).

Why should the blood pressure and urine be monitored?

Pre-eclampsia is a common and serious disease in pregnant women, as explained above. It can be detected in its early stages at the antenatal clinic, when the woman is not symptomatic and the blood pressure is only mildly raised. Sometimes the earliest signs might be proteinuria or IUGR. A woman might also have some symptoms that indicate she has severe disease. These symptoms are:

- Severe headache
- Blurred vision and
- Epigastric pain

Pre-eclampsia is more likely to occur in:

- The first pregnancy by her partner
- In women who have had pre-eclampsia or eclampsia before
- In women with hypertension
- In women less than 18 years old or more than 35 years old
- In women with multiple pregnancy.

Detecting the disease early and referring the women to the appropriate place can prevent complications to the woman and the baby. Taking the blood pressure regularly and testing the urine for protein is the best way to find pre-eclampsia early. Therefore it is important to take the blood pressure and test the urine at each antenatal visit.

Unfortunately, eclampsia can sometimes occur without any warning, even in women regularly attending antenatal care. Therefore, it is important for every clinic to be able to give the emergency treatment to women with eclampsia and pre-eclampsia before referring the women. In emergencies, it is very important to lower the blood pressure and prevent convulsions or further convulsions.

How should the blood pressure and urine be monitored?

The woman's blood pressure (BP) should be taken and urine should be tested at every visit. The BP can be taken with the woman sitting or lying on her side. It is important that she should not lie on her back. The cuff should cover two-thirds of the arm. This is important in obese women where an obese cuff might need to be used to get an accurate BP measurement. The systolic BP is when the first sound is heard and the diastolic BP is when the sound disappears. (See skills CD for demonstration or PEP Maternal Manual – Skills Workshop 3).

The urine is tested for protein using urine dipsticks. It is important to ensure that the dipsticks have not expired and to wait 30 seconds before reading the strip. (See skills CD or PEP Maternal Manual – Skills Workshop 3).

What is hypertension?

A pregnant woman is said to have hypertension if her diastolic BP is 90 mmHg or more or the systolic BP is 140 mmHg or more.

What is proteinuria?

A woman is said to have proteinuria if there is 1+ or more as measured on a reagent strip.

What should be done with women with hypertension and/or proteinuria?

If the diastolic BP is 110 mmHg, or the systolic BP is 160 mmHg, or more, on two readings, and there is 1+ proteinuria; or

If the diastolic BP is 90 mmHg or more on two readings and she has 1+ proteinuria and she has symptoms (severe headache, blurred vision or epigastric pain) then she has **severe pre-eclampsia**.

She should be give magnesium sulphate and antihypertensive treatment if the diastolic BP does not fall below 110 mmHg or the systolic BP does not fall below 160 mmHg 15 minutes after giving the magnesium sulphate. She should then be referred **urgently** to the referring hospital.

If the diastolic BP is from 90-109 mmHg on two readings, or the systolic BP is 140-159 mmHg or more on two readings, and she has 1+ or more proteinuria but no symptoms she has **pre-eclampsia**. She should be referred to hospital the same day.

If the diastolic BP is 90 mmHg or more on two readings, or the systolic BP is 140 mmHg or more on two readings, and she has no proteinuria and no symptoms she has **hypertension**.

If the diastolic BP is 100 mmHg or more on two readings she should be referred to hospital. She should be advised on the danger signs and be advised to reduce her workload and rest.

If the diastolic BP is from 90 to 99 mmHg on two readings, or the systolic BP is from 140 to 149 mmHg on two readings, with no proteinuria and no symptoms, she should be advised on the danger signs and be advised to reduce her workload and rest. She should be seen at the clinic again in 1 week. If the BP remains high, she should then be reviewed by a doctor or advanced midwife. Antihypertensive treatment might need to be started.

Can pre-eclampsia be prevented?

Pre-eclampsia can be prevented or the beginning delayed by giving calcium tablets to pregnant women. All pregnant women must take 1 g of calcium per day.

Screening for anaemia and malnutrition

Some useful definitions

Anaemia: This is when the amount of haemoglobin (substance that carries oxygen) is low. It is defined when the haemoglobin level is below 11 g/dL. Most treatment starts when the haemoglobin level is below 10 g/dL.

Body Mass Index (BMI): This is a measure of the nutritional state of the woman. It is calculated from the weight (in kilograms) and height (in metres) of the woman. The formula is weight/(height)^2.

Mid-upper arm circumference (MUAC): In the absence of weight and height information, MUAC is a useful indicator of nutritional status. With the same tape used for measuring symphysis-fundal height, measure the circumference of the free-hanging arm with the elbow extended, half-way between the tip of the shoulder (acromion) and the tip of the elbow (olecranon), to the nearest one mm.

Why should there be screening anaemia and malnutrition?

Malnourished women have a much greater chance of dying and of having pregnancy complications than women who are not malnourished. For example, if a woman has a bleed after delivery of the baby, she is more likely to bleed to death if the haemoglobin is 8 g/dL (anaemia), than if it is 12 g/dL (normal), because when she is anaemic she can take in much less oxygen to her body. (Anaemia is one of the early signs of malnutrition.)

Malnutrition is often a sign of poverty. If malnutrition is identified, then referring her to a social worker can help the woman and she can also get food parcels. Malnourished women deliver more low birth weight babies than women who are well nourished. It has been shown that giving the woman balanced protein/calorie supplementation can improve the general health of the mother and birth weight of the baby.

Babies that are malnourished in the uterus and in the first year of their lives are more likely to develop hypertension, heart attacks, strokes and diabetes mellitus when they are adults.

Anaemia is very common. In Tshwane Metropole, one in five pregnant women have a haemoglobin value less than 10 g/dL. In a lot more pregnant women, the iron stores are also low. Iron is essential for the body to produce haemoglobin.

Anaemia can also be a sign that the woman has another chronic disease like HIV infection, tuberculosis and malaria.

Obese women are also malnourished.

How should screening for malnutrition be performed?

At the first visit, the woman should be weighed and her height should be measured. The body mass index (BMI) can be calculated using the measurements obtained or read off a chart. The BMI is a measure of the nutritional state of the woman. It is calculated from the weight (in kilograms) and height (in metres) of the woman. The formula is weight/(height)^2. A BMI of less than 18.5 kg/m^2 indicates malnutrition. A value more than 32.3 kg/m^2 indicates obesity that is also a form of malnutrition.

If the BMI cannot be calculated, the MUAC can be easily measured. MUAC <23.0 cm suggests undernutrition or chronic illness, and ≥33.0 cm suggests obesity.

How should screening for anaemia be performed?

Anaemia is when the amount of haemoglobin (substance that carries oxygen) is low. It is defined when the haemoglobin is below 11 g/dL. Most treatment starts when the haemoglobin is below 10 g/dL.

Women who are severely anaemic are pale (in their conjunctiva and on their hands) and complain that they tire easily or get short of breath doing routine things like the housework. All women should be questioned at each visit about symptoms and have their her hands and conjunctivae of their eyes examined.

At the first visit and at 32 weeks the haemoglobin level should be tested. Testing can be done by nurses in the clinic using a haemoglobinometer.

What action should be taken if there is malnutrition?

A malnourished woman must be examined to find out why she is malnourished. She needs to be assessed to see if there is an underlying disease (like HIV infection or tuberculosis), and her social circumstances need to be evaluated. If she is starving because she has no money or support, she can be referred to the social workers that will help her get financial support and assist her to get food parcels.

She will need to be seen by a doctor or an advanced midwife.

What action should be taken if there is anaemia?

If there is severe anaemia (haemoglobin less than 8 g/dL or she has symptoms or is very pale) she should be referred to hospital. She should be started on iron (ferrous sulphate 200 mg (1 tablet) three times daily) immediately. She should be counselled on the importance of taking her tablets. Nutritional advice should be given.

If there is mild anaemia (haemoglobin more than 8 g/dL but less than 10g/dL) she should be given iron; ferrous sulphate 200 mg (1 tablet) three times daily; and folic acid 5 mg (1 tablet) daily. She should be counselled on the importance of taking her tablets. Nutritional advice should be given.

- If she is less than 34 weeks pregnant she should be seen again in 4 weeks and the haemoglobin checked again. If it is still low she should be referred to hospital.

- If she is 34 weeks pregnant or more she needs to be referred to hospital for follow-up and delivery.

Can anaemia be prevented?

Anaemia can be prevented. All pregnant women should receive ferrous sulphate 200 mg (1 tablet) daily; and folic acid 5 mg (1 tablet) daily throughout their pregnancy. If they are found to be anaemic, they will need more iron and folic acid.

Monitoring fetal growth and post-maturity

Some useful definitions

Low birth weight: It is baby born who weighs less than 2500 g.

Intrauterine growth restriction (IUGR): It is a baby that is born that did not weigh as much as he/she should have for the age of the baby. In other words, the baby is smaller that he/she should have been. This is usually due to the fetus not getting enough food (nutrients including oxygen) during the antenatal period. It is a common condition and a big cause of perinatal deaths in South Africa. It is usually diagnosed when the baby weighs less than the 10th percentile for what he/she should have weighed at that age. There are charts used to find this out. IUGR is a common cause of low birth weight babies. It can be detected in the antenatal period and there are things that can be done to prevent the baby dying.

Post-maturity: It is when the baby is mature but starts starving in the uterus. It occurs most commonly in post-term fetuses.

Post-term: It is when the pregnancy goes on for more than 41 weeks. (It used to be defined if it went on for more than 42 weeks but it has been found that the perinatal mortality increases after 41 weeks.)

Why should fetal growth be monitored?

Poor fetal growth is a sign that the fetus might be suffering inside the uterus. Poor fetal growth or intrauterine growth restriction (IUGR) is also a major cause of stillbirths and of neonatal morbidity. By identifying these babies, appropriate intervention might save their lives. If poor growth is diagnosed interventions can be put in place to help the fetus and improve its health. If the fetus can be helped better in the nursery, delivery may be best option. Research has shown that babies that have poor nutrition in the uterus and in their first year of life are more likely to develop diseases like hypertension,

heart attacks, strokes and diabetes mellitus later in life. Identifying and helping these babies might improve their future health. Detecting IUGR and managing pregnancies with growth-restricted babies is one of the areas where we can make a difference to the outcome of the pregnancy.

How should fetal growth be monitored?

The **first step** is to establish the expected date of delivery (EDD) of the baby.
The **second step** is to calculate what the gestational age of the baby is at the time of the visit.
The **third step** is to measure the size of the uterus (indirect measure of the size of the baby).
The **fourth step** is to plot the size of the uterus (SF measurement) on a chart that shows how normal babies should grow.
The **fifth step** is to compare the size of the baby with the size of normal babies of the same gestational age.
The **sixth step** is to look at the pattern of growth of the uterus.

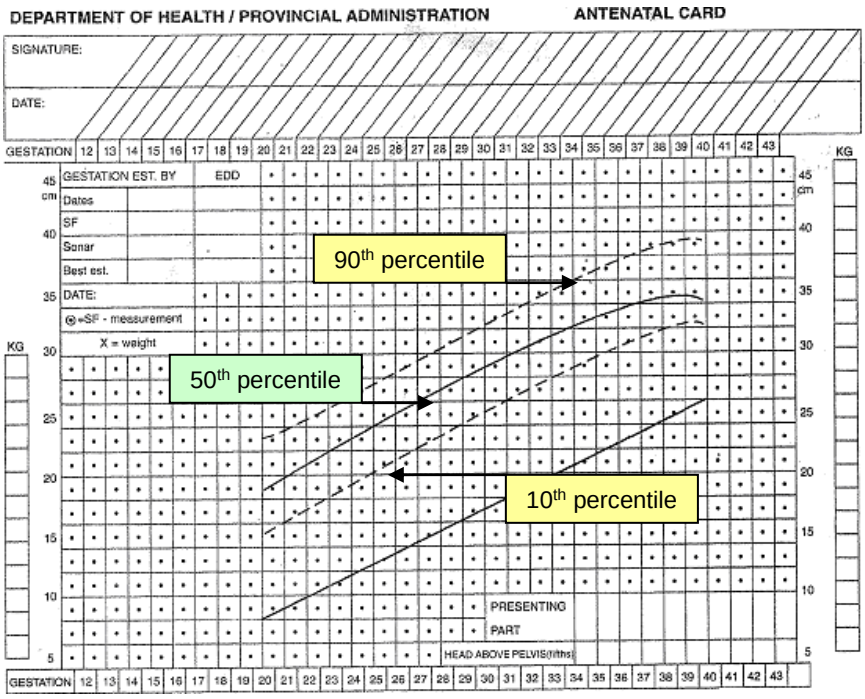
The **first step** is to establish the expected date of delivery (EDD) of the baby. This is a key step because once the EDD is known whenever a health care provider sees the mother the gestational age of the baby can be calculated. The EDD is established by finding out when the woman's last normal menstrual period (LNMP) was; establishing if it can be relied upon; and if so, by adding 9 months and 1 week to the LNMP to calculate the EDD. (See the section on the first visit.) It is very important to spend time in establishing the EDD because it is central to making important diagnoses like IUGR and post-maturity. The EDD is best established as soon as the woman confirms her pregnancy. This is a very important reason for doing the first visit at the same time the pregnancy is confirmed. If the dates are uncertain, then the woman can be sent for an ultrasound (sonar) examination of the pregnancy if the pregnancy is early enough (that is if the SF measurement is less than 24 cm). A lot of women have sonar performed privately so it is essential to ask them if they have had sonar performed. If so, it is very useful in establishing the EDD.

The **second step** is to calculate the gestational age of the baby at the visit. The gestational age at the time of the visit is best calculated using one of the gestational age calculators that should be present in all clinics. Use the calculator by putting the inner wheel's 40-week (term) marker against the date on the outer wheel that corresponds to the EDD. Then look at the date of the visit on the outer wheel and read off the gestational age in weeks on the inner wheel. Once the gestational age is known, we can measure the baby and compare its actual size with that it should be for its age. The gestational age should be marked on the growth chart. The gestational age (in weeks) is found running horizontally above and below the symphysis-fundus growth chart.

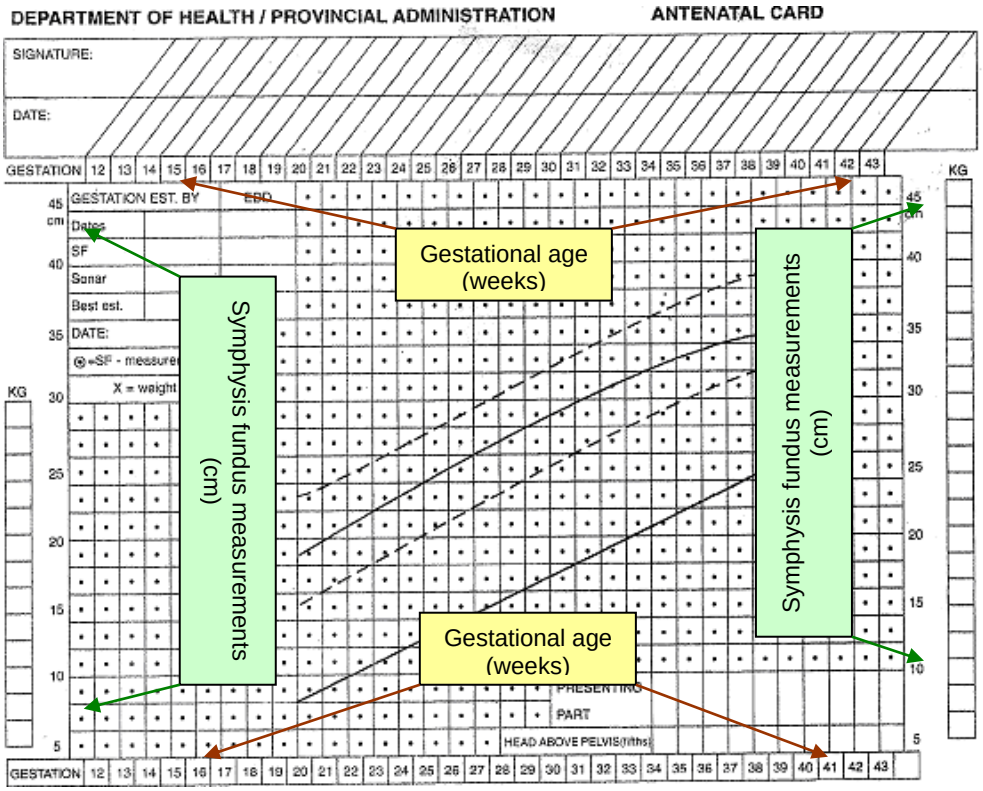
The **third step** is to measure the baby. This is done indirectly by measuring the size of the uterus with a tape measure, from the top point of the symphysis pubis to the top point of the fundus of the uterus. This is known as the symphysis-fundus (SF) measurement. It is measured in centimetres.

The **fourth step** is to plot the size of the uterus (SF measurement) on a chart that shows how normal babies should grow.

This chart is called **the symphysis-fundus growth chart**. The symphysis-fundus growth chart is a chart that shows how the uterus grows during the weeks of pregnancy. It also shows how the average uterus grows by a solid curved line. This is known as the 50th percentile line. The average baby's growth will follow the 50th percentile line. The symphysis-fundus growth chart also shows the 90th percentile and the 10th percentile of the growth of the uterus. The 90th percentile means that 90% of babies will fall below that line. If the mark falls above the 90th percentile line then the baby might be growing too much or there might be more than one baby (a multiple pregnancy). The 10th percentile means that 10% of babies fall below this line. If the mark falls below the 10th percentile it might be because the baby is growth restricted. The size of the uterus should be marked on the same line as its gestational age in weeks. See chart below.

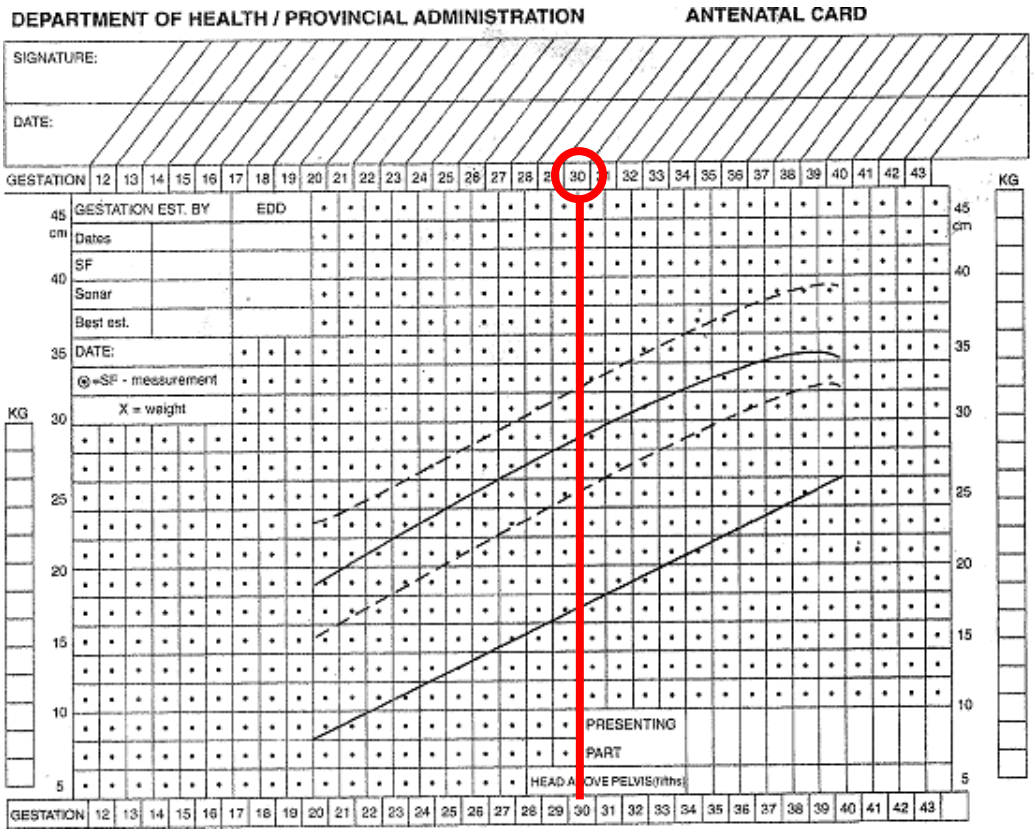


The SF measurements run vertically on each side of the symphysis-fundus growth chart. To plot the SF measurement, go to the gestational age in weeks that has been calculated and already marked for the visit. Follow the vertical line down until the point in centimetres is reached and make a dot and circle. (Note: The gestation in weeks always runs horizontally and the SF measurements in centimetres always run vertically. See diagram.)

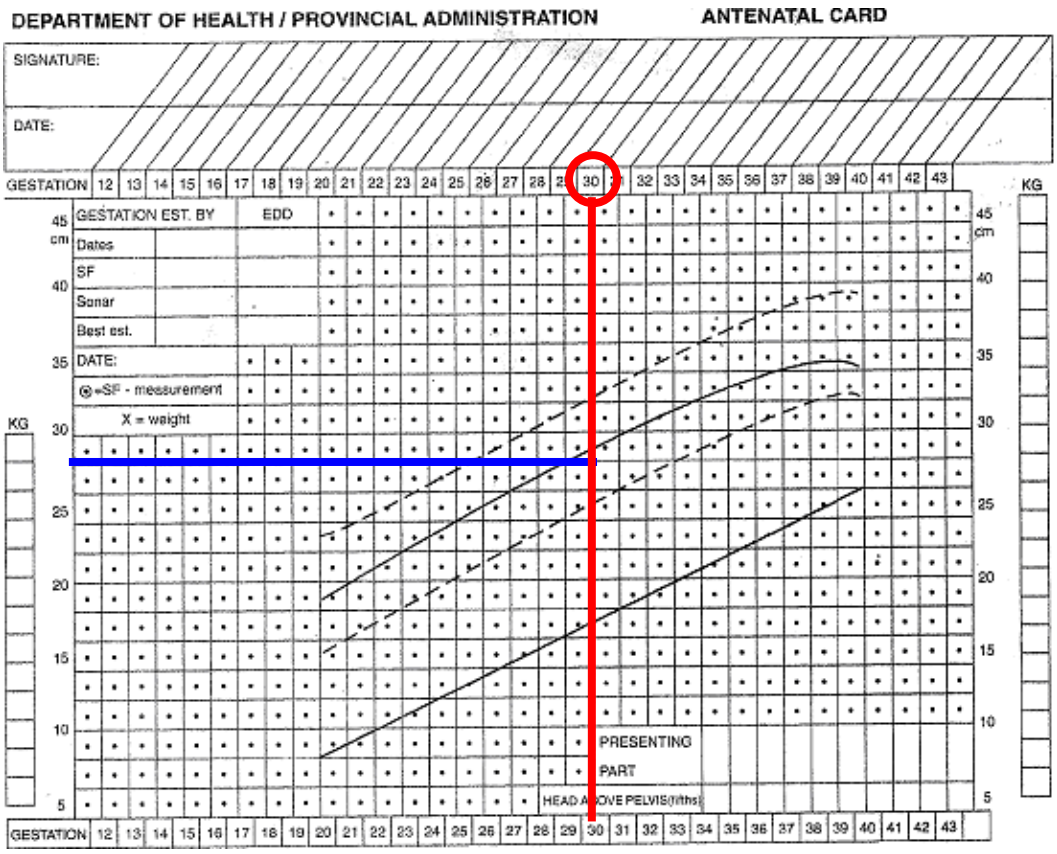


For example, if the EDD is 30 September, and the date of the visit was 22 July, then the gestational age at the time of the visit was 30 weeks gestation. The SF measurement was found to be 28 cm. Circle 30 weeks on the gestation line (see chart). Go to the SF measurement side and at 28 cm read across (blue line) until you reach the vertical line of the gestational age (red) at 30 weeks. At that point, make a small circle.

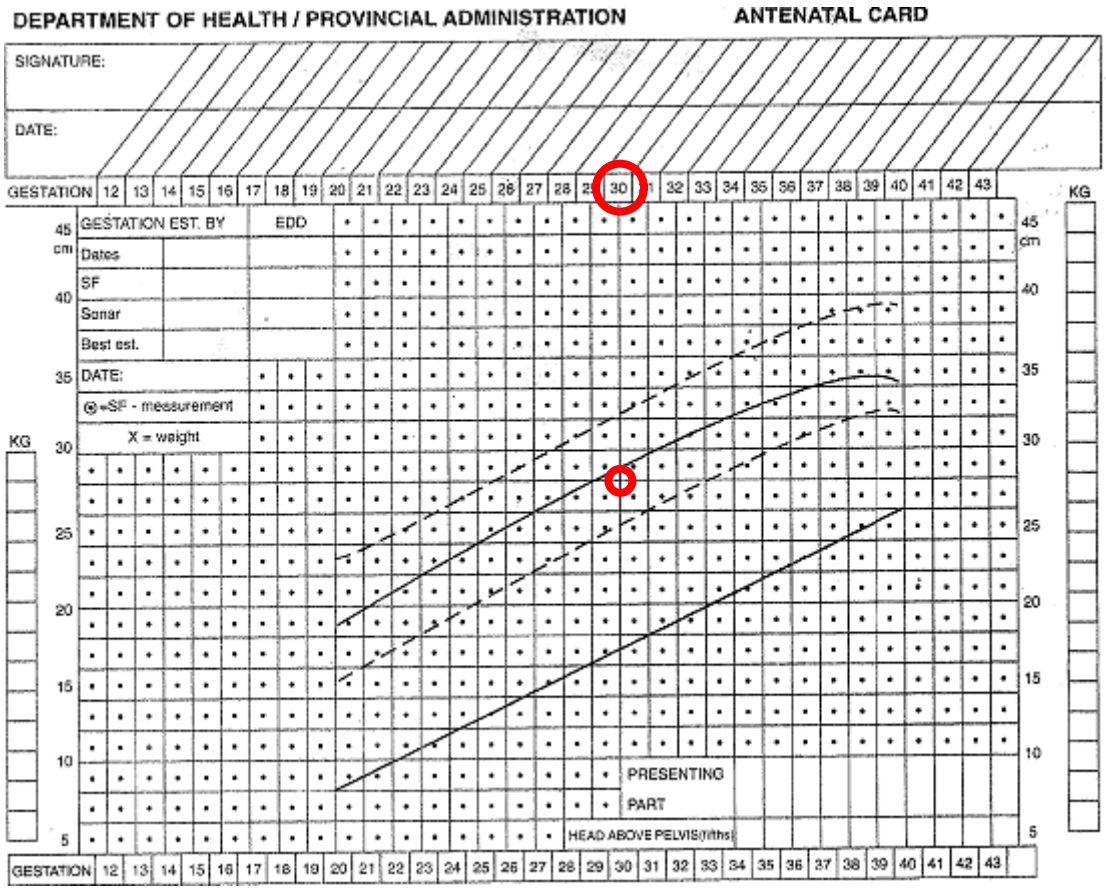
Step 1. Circle 30 weeks on the gestation line.



Step 2. Go the 28 cm on the SF measurement line and follow it across (blue line) until it meets the 30 week line (red).



Step 3. Mark where they meet with a small circle.



The **fourth step** is to compare the size of the baby with the size of normal babies of the same gestational age. This is done by looking at where the mark is compared to that of normal babies that is in relation to the 10th, 50th and 90th percentile lines.

Does it lie between the 10th percentile and the 90th percentile, that usually means the growth is normal?

Does it lie below the 10th percentile, which might mean there is poor fetal growth?

Does it lie above the 90th percentile, which might mean there is excessive growth or there are two or even more babies in the uterus?

(In the example, the uterine size is appropriate for the gestational age)

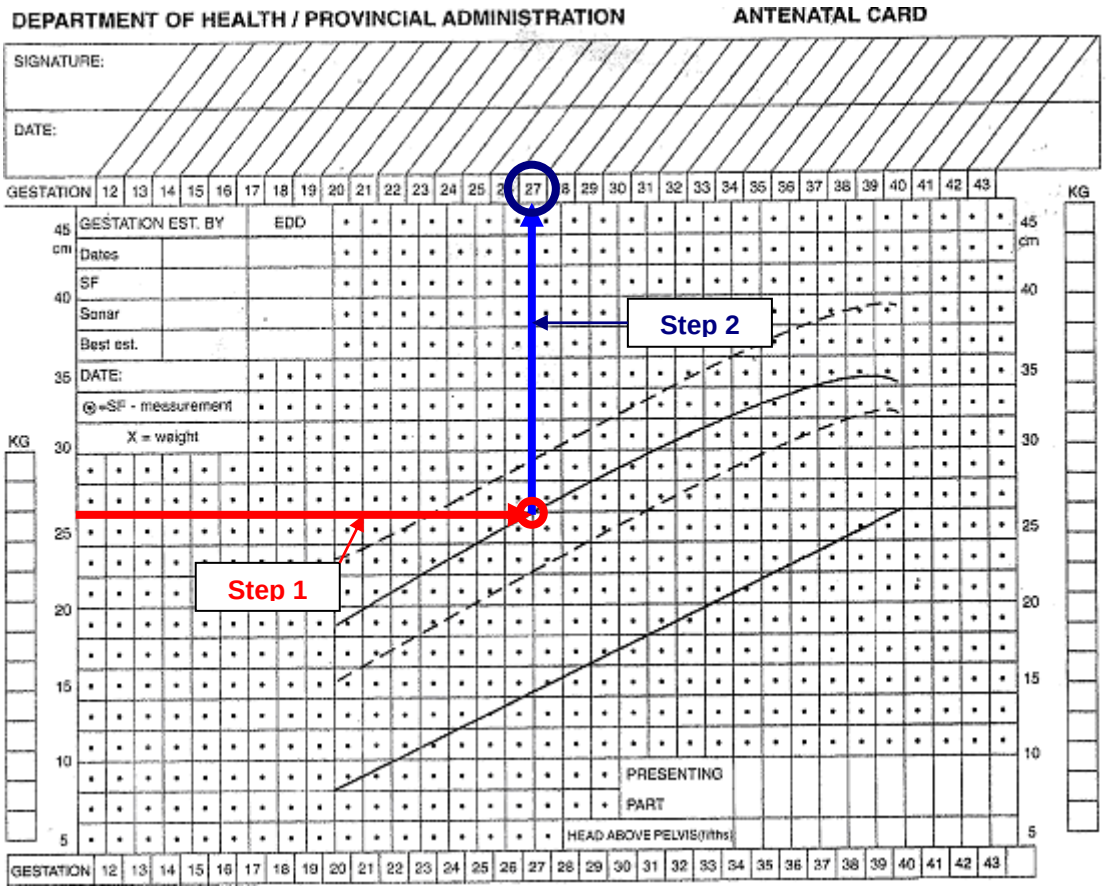
The **fifth step** is to look at the pattern of growth of the uterus. This means how the uterus has grown over time (pregnancy). In other words, how the baby has grown since the last visit and all the previous visits. If the uterus is the same size as it was at the last visit then it might mean that the uterus stopped growing. If the last measurement was more than 4 weeks ago, then this might mean that the fetus is growing poorly even if it has not crossed the 10th percentile line. If the measurement is below the last measurement, this might also mean the fetus is growing poorly.

What must be done when the EDD cannot be established?

In the circumstances where the EDD cannot be accurately established and it is too late for sonar (that is if the SF measurement is more than 24 cm), a different system is used to start the symphysis-fundus growth chart and establish an EDD.

Measure the SF height. Take that measurement and go vertically up the SF measurement line and mark the spot where the SF height corresponds to the line. Now move horizontally along the line until it crosses the 50th percentile SF measurement line. Make a dot and circle it. Now move vertically upwards until the gestational age line is met. Circle the gestational age. That gestational age is now the woman's presumed gestational age. Take out the gestational age calculator and put the inner wheel gestational age next to the days date. Now look at the inner wheel at the 40-week mark, read off the date given opposite it on the outer wheel. This date is the EDD. All the follow-up measurements are performed using the estimated EDD to calculate the gestational age at the time of the visit.

For example: If the woman's gestational age cannot be calculated and the SF measurement is 26 cm; Step 1 – go to 26 cm on the SF measurement. Take it across until it meets the 50th percentile line. Make a circle. Step 2 – at this point go up the vertical line to the gestation line. Circle where it meets the line (27 weeks). This is the estimated gestational age. If the date of the visit was 1 July, the EDD (from the gestational calculator) is 1 October.



What is a SF measurement pattern suggesting poor fetal growth?

1. Two successive SF measurements below the 10th percentile
2. Three separate SF measurements below the 10th percentile
3. Three successive SF measurements remaining the same without necessarily crossing the 10th percentile.
4. Two successive SF measurements 6 weeks or more apart remaining the same without necessarily crossing the 10th percentile
5. A SF measurement that is less than that recorded 2 visits previously without necessarily crossing below the 10th percentile.

What is a SF measurement pattern suggesting excessive growth?

1. Any SF measurement above the 90th percentile before 28 weeks
2. Successive SF measurements above the 90th percentile

SF measurements above the 90th percentile can be caused by:

1. Multiple pregnancy
2. Large baby
3. Diabetes mellitus
4. Polyhydramnios (excessive fluid around the fetus). It suggests multiple pregnancy or congenital abnormalities.
5. Obese woman. Unfortunately, in obese women the thickness of the abdominal wall will make the SF measurements unreliable. However, remember women with a BMI of >32.3 kg/cm^2 should be referred anyway.

If the baby is smaller than it should be, or it is larger than it should be, further action can be taken to find out if the baby is suffering or not. The mother and baby can then be helped.

What is the further action?

In excessive SF measurements suggesting excessive growth

These women must be reviewed so multiple pregnancies, congenital abnormalities, diabetes mellitus and a macrosomic baby (baby >90th percentile) can be evaluated. The birth plan of a woman with a macrosomic baby will need to be revised and she will need to deliver in a unit that can perform caesarean sections.

In reduced SF measurements suggesting IUGR

In situations where the SF measurement criteria above have not been met but the SF measurements are tending to be low:

1. Counsel on nutrition – Advise the woman to eat a greater amount and variety of healthy foods, such as meat, fish, oils, nuts, seeds, cereals, beans, vegetables, cheese, milk, to help her feel well and

strong. Review her social conditions. She might need referral to a social worker and might need nutritional support.

2. Advise to reduce workload and rest
3. Advise to stop smoking or taking alcohol if relevant
4. Advise use of a fetal movement chart (See section on counting fetal movements)
5. Arrange a follow-up visit for 1 week.

In situations where the reduced SF measurement criteria above are met

1. Listen for the fetal heart to check it the fetus is alive
2. Question on fetal movements. If the movements have been poor refer the same day to referral institution. If movements are good, refer within a week to the referral institution.
3. Counsel on nutrition – Advise the woman to eat a greater amount and variety of healthy foods, such as meat, fish, oils, nuts, seeds, cereals, beans, vegetables, cheese, milk, to help her feel well and strong. Review her social conditions. She might need referral to a social worker and might need nutritional support.
4. Advise to reduce workload and rest
5. Advise to stop smoking or taking alcohol if relevant
6. Advise use of a fetal movement chart (See section on counting fetal movements)

What is post-maturity?

Post-maturity is when the baby is mature but is starving in the uterus. It is a form of IUGR that occurs late in pregnancy and usually is not detected by poor SF growth. The baby cannot get enough food (nutrients) from the placenta. It outgrows its food source. It occurs most commonly in post-term fetuses but can occur earlier if the placenta is very small. Post-term is when the pregnancy goes on for more than 41 weeks. (It used to be defined if it went on for more than 42 weeks but it has been found that the perinatal mortality increases after 41 weeks.)

It is a very important condition because all of the perinatal deaths can be prevented.

How should post-term pregnancy be detected?

Post-term pregnancy is easy to detect if the EDD is known. All women should have their gestational age carefully reviewed at the 40 week visit. Those women who are confirmed to be 40 weeks pregnant must be told that if they have not given birth within 1 week over their EDD, they should go to hospital for consideration of induction of labour. A hospital referral note can be written at the 40 week visit, in case this should happen.

If the EDD is not known, or has been estimated by measuring the SF height, the best method of diagnosis is by estimating the amount of amniotic fluid present in the uterus using sonar. If the amount of amniotic fluid is low (amniotic fluid index less than 5 cm), induction of labour is suggested. Women with an uncertain EDD at the 40 week visit should be referred to hospital for assessment and possibly ultrasound estimation of amniotic fluid.

How should the pregnancies at risk for post-maturity be managed?

All women who are definitely one week beyond a clearly established EDD are advised to have an induction of labour. It has been shown that the woman does not have an increased chance of having a caesarean section or assisted delivery if labour is induced, but the baby will develop fewer complications than if left in the uterus.

Women with uncertain dates, but suspected to be post-term, should have an amniotic fluid measurement taken by sonar. Where this is low, induction of labour is advised. Where the amniotic fluid index is normal, the woman is instructed in the use of a fetal movement chart and should be seen for a weekly amniotic fluid volume measurement using sonar at the referral hospital.

Screening for infections (excluding HIV/AIDS)

Why should there be screening for infections?

Infections are a major cause of maternal and perinatal morbidity and mortality. Screening is appropriate for three categories of infection:

- **Tuberculosis (TB)** – this bacterial infection most commonly affects the lungs, where it is slowly progressive and destructive. TB has become much more common in South Africa in the last 20 years, and often affects pregnant women, especially those who are HIV-infected. Pregnant women with TB can also spread the bacteria to the people they live with. Rarely, the bacteria can cross the placenta and cause congenital TB in the baby.

- **Congenital infections** – the organism infects the fetus as well as the mother. The most important example is **syphilis**. Syphilis is a very important infection because it still causes many deaths, mainly stillbirths, and because it is easy to detect and treat. If it is detected and treated then the woman and baby are cured and the complications prevented. Other important infections are mainly viral infections like rubella. Unfortunately, there is not much that can be done in pregnancy for these women. It is important for women to be immunised against rubella. This will prevent the disease.

- **Urogenital tract infections** – the organisms (usually bacteria) infect the urogenital tract (uro = urethra, bladder, ureters and kidney; genital = vagina, cervix, uterus and fallopian tubes). These infections have a direct effect on the pregnancy, often causing preterm labour or stillbirths. Unexplained stillbirths are the most common category and spontaneous preterm labour is the third most common cause of death of babies in South Africa. Some years ago, a study was done in Durban where post-mortems was done on all the babies that died. The study found that amniotic fluid infections which caused both stillbirths and preterm labour causing

neonatal deaths was the most common of all the causes of death. Almost one in three deaths were caused by it. If these infections are detected, then they can be treated, preventing most of the complications. Unfortunately amniotic fluid infections are difficult to detect and diagnose without expensive special tests. If these tests are not done then the disease is not diagnosed. So amniotic fluid infection does not appear as a common cause in the lists of diseases where causes of death are given. If there was a simple method to diagnose this condition, it might become the most common cause of perinatal death in South Africa, as shown in the Durban study. Other important urogenital infections are urinary tract infections, asymptomatic bacteriuria and vaginitis.

Amniotic fluid infection is when there is an infection in the amniotic fluid. The organisms usually come up from the vagina and through the cervix to infect the membranes. Once the membranes are infected, the organism spreads to the amniotic fluid. This is a difficult condition to diagnose, but it is responsible for many complications in pregnancy. The main complications are preterm labour and stillbirths.

Urinary tract infection (UTI): This is an infection in the urethra or bladder that can spread up to the kidneys and there it is called pyelonephritis. UTI usually causes symptoms like burning when the woman passes urine or the woman has to go often to pass urine, even at night. This can go on and cause the woman to go into labour. It sometimes occurs with amniotic fluid infections.

Asymptomatic bacteriuria: It is pregnant women who have a UTI but are unaware of it, that is they do not report symptoms of the UTI. This is an important condition because the woman can develop pyelonephritis or go into preterm labour or deliver a low birth weight baby. This can be prevented it we diagnose the asymptomatic bacteriuria and treat it.

Vaginitis: This is an excessive discharge from the vagina of the woman. The discharge can be foul smelling, yellowish or she can experience that she is very itchy in her perineum (area surrounding the vagina). This is an important condition because it can be treated and this will make the woman more comfortable. It has also been shown that women with vaginitis are more likely to go into preterm labour and to have more stillbirths. Treatment of vaginitis might help prevent this.

How should screening for infections be performed?

All pregnant women should be screened for

- TB – at all visits, irrespective of HIV status
- Syphilis – at the first visit
- UTI – at all visits

TB screening questions

- Cough
- Weight loss or failure to gain weight during pregnancy
- Drenching night sweats
- Fever

If the woman answers that she has any one of these four symptoms, she is screen-positive for TB.

Syphilis screening

This is best done on-site at the clinic using the RPR test. The results are available immediately and treatment can be started the same day. (See CD on obstetric skills, PEP Maternal Manual Skills Workshop 1-4, and IMPC – C7 and L5)

Urinary tract infection screening

A UTI is best detected by culture of a midstream urine specimen, but this is not practical in the primary clinic setting. Another method, not as

accurate, but much simpler, is by using urine dipsticks that has nitrites and leucocyte esterase reagents on the strip.

What should be done there if there is an infection?

Syphilis

Syphilis should be treated immediately with penicillin if the woman is not allergic to it. If the RPR is positive and there is no previous test result, irrespective of the RPR titre (level), treat for late syphilis:

- Benzathine benzylpenicillin, IM, 2.4 MU once weekly for 3 weeks or
- If the woman reports that she is penicillin-allergic, refer for consideration of penicillin desensitisation. Erythromycin or azithromycin may not be sufficient to cure syphilis in the fetus.

UTI

Should be treated using ampicillin, or cotrimoxazole/trimethoprim (Bactrim).

Vaginitis

Should be treated using the syndromic approach to STIs. Ceftriaxone, IM, 125 mg immediately, and erythromycin, oral, 500 mg 4 times daily for 7 days and metronidazole, oral, 400 mg twice daily for 7 days. National guidelines may change, and the most recent guidelines should be followed.

TB

Test screen-positive women using GeneXpert. Take two sputum specimens at the clinic (outside) as per TB guidelines, and follow up for results. Note that a negative GeneXpert test, especially in an HIV-infected woman, does not always exclude TB. If you remain concerned about TB in a pregnant woman, refer for further investigation.

HIV/AIDS in pregnancy

Why should there be HIV counselling and testing (HCT) in pregnancy?

HIV infection is associated with around 4 out of 5 maternal deaths in South Africa. HIV infection has a long incubation period. Most of the women who will die from complications of HIV infection in the next 10 years are already infected with HIV. The only way to prevent the deaths of these women and enable them to care for their babies is to improve their general health, provide lifelong antiretroviral treatment (ART) and treat infections early when they occur. ART given in pregnancy also reduces the chance of the baby becoming HIV-infected during the pregnancy or at delivery. An HIV-infected baby will need life-long ART.

Women who have HIV infection in pregnancy are more likely to experience:

- TB, pneumonia, PCP (Pneumocystis pneumonia)
- UTI, vaginitis
- Postpartum sepsis
- Anaemia and malnutrition
- Stillbirths
- Preterm labour
- IUGR babies

By managing HIV-infected women appropriately during pregnancy, many of these conditions can be prevented or treated effectively.

Therefore, the HIV status of the woman needs to be known to enable the woman to be treated appropriately and to prevent the babies from being infected if the woman is infected. HCT is the only way to do this.

When to test pregnant women for HIV

Women with unknown or reportedly HIV-negative status must be tested **as early as** possible in the pregnancy. No pregnant woman should leave a clinic

without knowing her current HIV status. Even if the clinic is fully booked, HCT must be done and treatment started if the woman is HIV-infected – the full first visit routine can be started on another day if necessary.

Women who test HIV-negative at the first visit should be retested for HIV every 12 weeks while still pregnant, and again during labour, and then every 12 weeks throughout breastfeeding. This is because women who contract HIV during pregnancy or breastfeeding have a high risk for transmitting HIV to their babies.

Encourage women who test HIV-negative to bring their male partner(s) to access HIV testing. Up to 4% of all HIV-negative women will become positive while pregnant. This can be avoided if HIV-infected male partners are tested and linked to care to initiate ART. In sero-discordant couples (one positive, the other negative), where the positive partner is virally suppressed on ART, the chance of the negative partner being infected is very low, even without using condoms. But condom use must still be encouraged, also to prevent STIs.

What should be done if the woman is HIV-infected?

Since 2015, South African guidelines recommend that all HIV-infected pregnant women should be on ART, which should continue life-long after the pregnancy and breastfeeding, irrespective of CD4 count. This will improve the women's health and that of their partner(s), and reduce transmission of HIV to children.

The detail of HIV/AIDS treatment is in the national guidelines, which must be available in all clinics. Knowledge about HIV/AIDS care is constantly evolving and expanding, and the guidelines frequently change. Clinic supervisors must keep their ears and eyes open for changes in guidelines and inform the clinic staff about the changes, both verbally and with available updated guidelines.

General principles for the first antenatal visit:

- Woman known to be HIV-infected and already on ART:
    - Check for symptoms and signs of TB and other infections
    - Take blood for viral load, no matter when last checked
    - Continue ART, usually with the fixed-dose combination (FDC) of tenofovir (TDF), emtricitabine (FTC), and efavirenz (EFV).
    - Follow up for viral load result in 2 weeks.

- Woman found to be HIV-infected for the first time, or known to be HIV-infected and not on ART:
    - Check for symptoms and signs of TB, STIs, and other infections
    - Screen for active psychiatric disease (questions)
    - Screen for kidney disease (questions, proteinuria and blood for creatinine level)
    - Screen for severe anaemia (haemoglobin test)
    - Check CD4 count
    - Start ART with FDC (or AZT with active psychiatric disease, kidney history positive or proteinuria). But do not give AZT if haemoglobin <7 g/dL.
    - Follow up for creatinine and CD4 count results in one week.

Subsequent visits:

Follow-up care for HIV-infected women depends on the results of tests done at the first visit. Updated national guidelines should be consulted and followed.

Counselling for congenital abnormalities

Some useful definitions

A congenital abnormality: It is when the baby has some abnormality it was born with. For example clubbed feet. There are many causes of congenital abnormalities, for example: toxins such as alcohol can cause damage to the fetus; abnormalities in the hereditary material (chromosomes) often cause severe abnormalities that can cause the death of the baby or severe morbidity; and infections occurring during the pregnancy such as rubella. It is important to try and diagnose the abnormalities before the birth of the baby because much can be done to help the baby and the mother. Also. early diagnosis allows for the mother to make important decisions about the future of the pregnancy. All women who are 37 years old or more are at risk and should be counselled about the risk and their options.

Why should there be counselling for congenital abnormalities?

Babies born with birth defects and genetic disorders are making an increasingly important proportion South Africa's perinatal mortality and morbidity. Looking after the children also places a large burden on the family and society. Many congenital abnormalities can be detected during pregnancy and there are various options for treatment. However, before any treatment options can be discussed, the congenital abnormality needs to be identified.

Who should be counselled?

Some pregnant women are at particular risk for having abnormal babies:

- Women 37 years and older
- Women who have had three or more first trimester miscarriages
- Women who have had a previous child with a genetic disorder or birth defect, or family members affected by a specific genetic disorder
- Alcohol and or other drug exposure during pregnancy
- Women with diabetes mellitus

How should the counselling be performed?

All institutions offering maternity care should have genetically trained nursing staff to provide counselling. Unfortunately, this ideal has not been reached. However, all pregnant women can be informed of certain facts, and those at risk of an abnormality can be referred for further counselling and testing.

All women should be provided with the following facts:

- The risks of having a severely abnormal baby increase with maternal age
- Alcohol causes severe abnormalities in babies and alcohol should not be taken during pregnancy
- The risk for an abnormal baby is high when the parents are related
- The risk of an abnormality is increased if there is a family history of genetic disorders
- Folic acid taken three months before the woman becomes pregnant and at lest during the first three months of pregnancy prevents neural tube defects (a very serious abnormality for the baby)

What should be done if the woman agrees to go for testing?

If the woman agrees to testing, an appointment should be made for her at the referral unit that deals with this. It is important to note that testing should be performed before 20 weeks' gestation, and there might be some urgency in getting the woman to the appropriate place in time.

Can congenital abnormalities be prevented?

- Neural tube defects can be prevented if folic acid is given before and during the pregnancy
- Fetal alcohol syndrome can be prevented if no alcohol is taken during pregnancy

Monitoring Fetal Movements

Why should fetal movement be monitored?

Before a baby dies, it stops moving. When one is ill or starving one does not run around, but one lies down and rests. The baby does the same. Often there is a long time between the decrease and stopping of the baby's movements and the death of the baby. This gives health care providers to intervene to save the babies life, if they see the pregnant woman soon enough.

In the Saving Babies reports, the lack or response to poor fetal movements by pregnant women has been recorded as one of the most common avoidable factors. Inappropriate response by the pregnant woman was noted in 5-10% of all perinatal deaths. If all women responded appropriately to poor fetal movements, a large number of babies' lives could be saved.

The value of monitoring fetal movements must be part of the standard education package of all pregnant women and of the community, and part of health education in schools. If there was a general awareness of the importance of monitoring fetal movements by the general public, many babies' lives could be saved.

How should fetal movements be monitored?

The pregnant woman is the best "tool" for monitoring fetal movements. The woman should be alerted to the importance of being aware of her baby's movements. All women must be asked at all antenatal care visits from 20 weeks about their fetal movements. In addition, all women must be told to report to the clinic if the baby is moving less than the baby used to.

In cases where the baby is in danger of becoming ill or starving (for example in women with hypertension, with IUGR, with possible post-maturity) the woman should be instructed to count the baby's movements at a set time for

an hour each day. A fetal movement chart can be given to the woman. She should record how many times the baby moves in the hour. If the baby moves less than 4 times in the hour, she should continue counting for the next hour. If the baby still is not moving more than 3 times in the hour, the woman should immediately report to the clinic or hospital so the baby can be further investigated. If the number of times the baby moves is less than half what it usually moves, the woman should go through the same process outlined above. The number of movements during an observation period is less important than a decrease in movements when compared with previous observations.

At the clinic or hospital, if the woman complains of poor fetal movements, the health care provider should listen for the fetal heart to check if the baby is still alive. If the fetal heartbeat is heard, then a fetal heart rate monitoring should be performed using a cardiotocograph (CTG) machine. District hospitals all have a CTG. If the woman cannot go the closest hospital or health centre, she should be advised to rest in the clinic and monitor the baby's movements for the next six hours. If there more than 3 movements in those six hours, the woman can go home, but must repeat the count the next day. If there are less than 4 movements, then the pregnant woman must be referred to hospital, by calling an ambulance if necessary. An example of a kick chart is given below.

Antenatal Kick Chart

Daily counting of your baby's movements gives valuable information about your baby's condition.

Choose any period of one hour long for the counting. Count while you are resting lying on your left or right hand side. Mark each movement on the chart.

If the baby has moved 4 times or **more** before an hour has finished, you can stop counting. If the baby moved **less than 4 times** in an hour, then repeat the counting a few hours later. If there are still **less than 4 movements in the second hour** of counting, you must then **urgently visit the hospital** for further assessment of the condition of your baby.

DATE	TIME	NUMBER OF MOVEMENTS

What should be done when there are no or poor fetal movements?

If there are no fetal movements, the fetal heartbeat must be listened for, with a fetal stethoscope or Doptone.

> If no heartbeat can be detected, the baby might be dead and the woman must be referred to hospital to confirm whether the baby is dead.
>
> If there is a heartbeat, the fetus is alive. If there are still no fetal movements, the woman must have a cardiotocograph (CTG). The woman must be referred to hospital on the same day for a CTG.

If there are poor fetal movements, and the CTG is done, then the CTG can be normal or indicate fetal distress:

> If there is fetal distress, the baby needs to be delivered, usually by caesarean section.
>
> If the fetal heart rate pattern is normal, the woman should be given a fetal kick chart and asked to come back in 1 week.

Performing a CTG and interpreting the recording is shown in the manual on fetal heart rate monitoring. Advanced midwives must be able to perform and interpret a CTG trace.

Part 5

Special Supervisor Skills

Supervisors of clinics need some information as to how the clinic is functioning. This section gives information on basic data required by the regional offices, how to perform quality assurance of the antenatal care provided, and an essential drugs and equipment list.

The role of the supervisor

Each clinic will have a person or people who will fill the roles of supervisor of antenatal care. There are two major categories of supervision, **clinical care** and **administration**. Each category might have a different supervisor or the same person can perform them. The specific tasks in each category are:

Clinical supervision

Act as a consultant in clinic to other health care providers for antenatal care

Perform quality assurance

Check cases

Train other health workers

Administrative supervision

Collect clinic statistics

Order drugs and equipment

Ensure facilities and equipment are in working order

Clinical supervision

The clinical supervisor is the person with the most skill at antenatal care. Ideally, this supervisor would check every patient's findings at least at the first visit (using the checklist and the woman's antenatal record) and again at the 40-week visit (using the follow-up checklist and the woman's antenatal record). If there is any uncertainty about the accuracy of the midwife's

findings, the supervisor must check the findings at *every* visit until she is satisfied with the accuracy and completeness of the findings.

It is recognised that these standards are not always easy to meet in some clinics. That does not lessen the need to state this basic minimum standard for antenatal care. If the standard has not yet been attained, this deficiency must be recorded and efforts must be made to meet the standards as soon as possible. This is what the principle of equity means when describing Primary Health Care For All.

One other point needs emphasis. Every woman who is found to have a high-risk factor must have access to a clinic that performs high-risk antenatal care. This can be in the local clinic with a visit from a doctor or a specially trained advanced antenatal care midwife. If this is not possible, the woman with high-risk factors must be referred to the high-risk antenatal clinic in the nearest hospital.

The clinical supervisor is also responsible for training other health care providers in antenatal care and answering their questions. A good way to detect problems and to know where to focus the training is to perform quality assurance of the antenatal records. However, the antenatal record is of no use if the original observations are incorrect. Therefore, the clinical supervisor must check the clinical skills of the other health care providers. The essential clinical skills are:

- Taking a history
- Taking the blood pressure
- Examining for anaemia, malnutrition and other general signs of illness
- Measuring the symphysis-fundus (SF)
- Plotting the SF measurement
- Determining the lie of the fetus
- Testing the urine
- Measuring the haemoglobin level

The clinical supervisor should observe the method of examination of the other health care providers and check the results. Where necessary, the skills should be taught to the health care provider.

Quality assurance for antenatal care

To make sure that high standards of record keeping and following the protocols (guidelines) are maintained, the quality of the work must be frequently checked. If this is not done, standards will drop and the perinatal mortality rate will go up.

The antenatal records make provision for the following information to be recorded:

History

1. Age, parity and gravidity
2. Details of previous pregnancies, including causes of death and indications for operations
3. Previous illnesses that might influence this pregnancy, including cardiac disease, renal disease, diabetes, HIV/AIDS and TB
4. History of the present pregnancy
5. The date of the first day of the last menstrual Period (LMP) and the estimated date of delivery (EDD) correctly estimated and filled in on antenatal record (including the table in the antenatal graph).
6. The estimated period of gestation correctly plotted on the antenatal graph as determined from the EDD calculated at the first visit

Examination

7. Maternal height and weight, MUAC
8. Blood pressure recorded at each visit
9. Heart examination for cardiac disease
10. SF correctly plotted on the graph at each visit according to the EDD calculated during the first visit

11. Estimation whether there is evidence of IUGR according to graph of SFH measurements
12. Fetal presentation, recorded from 34 weeks onwards
13. Fetal heart heard or fetal movements felt
14. Urinalysis for proteinuria and glycosuria
15. Haemoglobin and Rh group
16. Syphilis test result recorded
17. Has the client been counselled for HIV testing, and the result recorded?
18. Has tetanus toxoid been given?

These findings are recorded on the patient retained antenatal record.

In the antenatal clinic, the following steps are taken in interpreting findings and using them for decision-making and appropriate action. These 7 items are added to the 18 items of history and examination to complete the 25 items that are essential in antenatal care.

19. **Identify and record the risk factors and rate their severity and significance**. This is dependent on use of the checklists.
20. **Decide on appropriate action and record your action plan. This will include interventions and referral if indicated**. The appropriate intervention will be determined by the information gained thus far. Protocols of antenatal care indicate which risk factors require that the mother be referred for further specialised management.
21. **Discuss with the patient the most appropriate place for her delivery (clinic or hospital) and record this on her antenatal record.**
22. **Discuss with the patient suitable transport arrangements for when she goes into labour, and record this on her antenatal record.**
23. **Decision taken by the mother re future family planning**
24. **The findings at the first visit and the 40 week visit must be double-checked and counter-signed by an ADM or doctor or a senior, experienced midwife.**

The first visit and the 40 week visit are the times when every item in the history and examination must be double-checked to ensure that nothing has been missed, and that the gestational age is confirmed. The diagnosis has to be correct and the decisions about possible referral or treatment must be accurate. There are no second chances if something is missed at the 40 week visit. One midwife cannot take this responsibility alone. The midwife must be supported by a supervisor who reviews all findings and decisions with her.

25. **Decide when the patient needs to be seen again, and record the date on her antenatal record.**

Audit of the antenatal record is conducted to determine whether:

- the information was accurate and complete
- the right decisions were made

A percentage score is given for each antenatal record checked. An average score can then be given for each health facility and then a combined score for each sub-district. It is recommended that a supervisor, on a monthly basis, should carry out the exercise until the standards are high. It can then be performed three-monthly.

The Quality Check form is given below. This can be photocopied and used in the clinic or hospital. Professor Hugh Philpott and Dr Anna Voce developed the quality check form.

Ideally, the clinical supervisor should perform this quality check regularly.

The steps taken in conducting the quality check are as follows:

1. Each month, examine 25 (or fewer if this is not possible) consecutive, antenatal records of all pregnant women who are 40 or more weeks pregnant, as the women leave the antenatal clinic. For each antenatal record, give 1 point for each of the items listed in the **quality check**

form that have been recorded on the antenatal records. This will give a maximum score of 25 points, which, if multiplied by 4, will give a percentage score. All the information can be entered on a single data sheet like the one illustrated after the quality check form.

2. Record the commonest items missing in the records
3. Record the major reasons for:
    - Incomplete record keeping
    - Incomplete decision-making
4. Answer the question: What will you do to improve the quality of record keeping and decision-making?

Quality Check for Antenatal Records

Each month, examine 25 (or fewer, if this is not possible) consecutive, antenatal records of all clients who are 40 or more weeks pregnant. Examine their records as they leave the antenatal clinic.

For each record, give 1 point for each of the items listed below that have been recorded. Half points can be given where a recording is incomplete.

History.

1. Age, parity and gravidity
2. Details of previous pregnancies, including causes of death and indications for operations
3. Previous illnesses that might influence this pregnancy, including cardiac, renal and diabetic disease
4. History of the present pregnancy
5. The date of the first day of the last menstrual Period (LMP) and the estimated date of delivery (EDD) and table on antenatal graph completed
6. The estimated period of gestation correctly plotted on the antenatal graph at the first visit

Examination

7. Maternal height and weight, or MUAC
8. Blood pressure recorded at each visit
9. Heart examination for cardiac disease
10. SFH correctly plotted at each antenatal visit on the antenatal graph according to EDD
11. Estimation whether there is evidence of IUGR according to graph of SFH measurements
12. Fetal presentation, recorded from 36 weeks onwards
13. Fetal heart heard or fetal movements felt
14. Urinalysis for proteinuria and glycosuria
15. Haemoglobin and Rh group
16. Syphilis test result recorded
17. Has the client been counselled for HIV testing and the result recorded?
18. Has tetanus toxoid been given?

Interpretation and decisions

19. Identification and recording of risk factors, their severity and significance
20. Record of action plan, including interventions and referral if indicated
21. Decision on place for delivery discussed with mother and recorded
22. Transport arrangements for when she goes into labour discussed with mother
23. Decision taken by mother re future family planning
24. Have the findings at 1st visit and 40 weeks visit been double-checked and counter-signed by an ADM or doctor or senior, experienced midwife.
25. Date of next visit.

This will give a maximum score of 25 points.

For each ANC record assessed, record: **Total:**_____

25

Multiply by 4 = _____%

ANTENATAL RECORD	Date:																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%
History																											
Age, Parity, Gravida																											
History previous pregnancies																											
Previous illness																											
History of present pregnancy																											
LMP, EDD																											
Plotting of EDD at first visit																											
Examination																											
Maternal Height, weight or MUAC																											
BP at each visit																											
Heart																											
Correct plotting of SFH																											
Presence of IUGR detected																											
Fetal presentation from 36 weeks																											
Fetal heart & movements																											
Urinalysis																											
Hb, Rh																											
Syphilis test results recorded																											
HIV counselled & result recorded																											
Tet tox given																											
Interpretation & Decisions																											
Ident & recording risk factors																											
Action plan & interventions																											
Discussion of labour with mother																											
Transport arrangements																											
Family planning																											
1st & 40 week visit signed																											
Date of next visit																											
Total																											
%																											

Administrative supervision

Every clinic must have an administrative supervisor who is responsible for the collection of the routine data required by the regional office, the ordering of drugs and equipment, ensuring the equipment remains in good condition, or are sent for repairs immediately or are replaced. The supervisor should also ensure the environment is appropriate, for example; privacy for patients, clean consulting rooms etc. The administrative supervisor is usually the facility manager.

Basic data collection

This is usually kept daily in the clinic register. Check that all the items are recorded in the register, so each month they can be given calculated from the register and given to the regional office.

The basic data required by the regional offices includes:

- Number of women attending for antenatal care for the first time
- Number of women starting antenatal care before 20 weeks gestation
- Number of women attending for follow-up visits
- Number counselled for HIV testing
- Number tested for HIV
- Number retested for HIV
- Number of HIV-infected women
- Number of HIV-infected women on antiretroviral treatment (ART)
- Number of HIV-infected women started on isoniazid preventive therapy (IPT)
- Number of HIV-infected women started on cotrimoxazole preventive therapy (CPT)
- Number screened for TB
- Number screened for syphilis
- Number who had positive syphilis serology
- Number treated for syphilis

- Number treated for STI
- Number of women pregnant less than 18 years old
- Number of women pregnant 35 years old or more
- Number of women referred for further evaluation
    - at the first visit and
    - at follow-up visits

Most of this information can be collected in the register by using the first visit checklist and recording the number of women seen for antenatal care at the reception area each day and adding the number up each week to get the number of visits per week. It can also be calculated per month.

If the checklists are used, the further information required can be obtained, like how many women attended for antenatal care three or more times. How many women were referred to the hospital for further evaluation etc.?

Equipment, supplies, drugs and tests for antenatal care (and emergencies)

The administrative supervisor is responsible to ensure that the following are kept in good supply

Warm and clean room

- Examination table or bed with clean linen
- Light source
- Heat source

Hand washing

- Clean water supply
- Soap
- Nail brush or stick
- Clean towels

Waste

- Bucket for soiled pads and swabs
- Receptacle for soiled linens
- Container for sharps disposal

Sterilization

- Instrument sterilizer
- Jar for forceps

Miscellaneous

- Wall clock
- Torch with extra batteries and bulb
- Clinic register
- Records
- Refrigerator

Equipment

- Blood pressure machine and stethoscope
- Body thermometer
- Fetal stethoscope
- Baby scale

Supplies

- Gloves:
    - utility
    - sterile or highly disinfected
- Urinary catheter
- Syringes and needles
- IV tubing
- Suture material for tear or episiotomy repair
- Antiseptic solution (iodophor or chlorhexidine)
- Spirit (70% alcohol)
- Swabs

- Bleach (chlorine base compound)
- Condoms

Tests

- Pregnancy test
- RPR testing kit
- Haemoglobinometer or Hb test kit
- Rapid Rh
- HIV testing kits
- Urine dipsticks that measure protein, glucose, nitrites and leucocytes
- Container for catching urine

Disposable delivery kit

- Plastic sheet to place under mother
- Cord clamps(sterile)
- Sterile blade

Drugs

- Oxytocin
- Ergometrine
- Magnesium sulphate
- Calcium gluconate
- Diazepam
- Hydralazine and nifedipine
- Drugs for ART – minimum AZT and FDC (EFV, TDF and FTC)
- Drugs for PMTCT in labour – nevirapine and Truvada (FTC and TDF)
- Ampicillin
- Gentamicin
- Metronidazole
- Benzathine penicillin
- Cloxacillin
- Amoxycillin

- Ceftriaxone
- Trimethoprim and sulfamethoxazole
- Clotrimazole vaginal pessary
- Erythromycin
- Ciprofloxacin
- Tetracycline or doxycycline
- Isoniazid (INH) and pyridoxine
- Lignocaine
- Adrenaline
- Ringer lactate
- Normal saline 0.9%
- Glucose 50% solution
- Water for injection
- Paracetamol
- Iron and folic acid tablets
- Calcium supplementation
- Mebendazole
- Sulphadoxine-pyrimethamine

Vaccine

- Tetanus toxoid