Practice Guidelines

For Family Physicians

Volume 3

Message from His Excellency

Prof. Dr. Hatem El Gabaly

Comprehensive development and modernization is one of Egypt's priorities and pursued objectives. Out of this rule, we are committed towards improving the quality of health care services available for all Egyptians; adults, children, the poor and the well-off.

The Ministry of Health and Population has adopted, as a top priority, developing current systems to provide and finance health services in guidance and vision of the political leadership to ensure high quality in service provision and meet needs and expectations of the population as well as keeping up with top-notch developments at all levels - primary, preventive, curative, diagnostic and rehabilitation.

This vision has been translated into a promising and ambitious Five Years Plan to institutionalize the Health Sector Reform Program on the national level. The plan is focusing on implementing the Family Health Model at all primary health care facilities in the 27 Governorates.

Our dream has been realized into a competent program of Health Sector Reform aiming to provide every person with high quality health services. These include physical, psychological and social welfare, which translate into high production and progress for our cherished Country, Egypt.

I am delighted to introduce one of the important publications for the Sector of Technical Support and Projects, representing a great team effort "**The Practice Guidelines for Family Physicians**" for the family physician at all Family Health Unites of MOHP Distributed all over the Country

Prof. Dr. Hatem El Gabaly

Minister of Health and Population

Preface

The Ministry of Health and population is working diligently to achieve equal and available quality health services for all citizens of Egypt. Our objective is to shape national policies for the goal of advancing health care delivery in all parts of the country.

Six years ago, the Ministry has adopted new policies and strategies in order to provide basic health services of high quality for all citizens in the framework of the Family Health Model. This has led to introducing new financing mechanisms that ensure the sustainability of finance and resources, and availability of affordable services along with effectiveness and efficiency of these services.

Having made situational analysis in details, highlighting points of weaknesses and strengths and defining actual needs, strategic plans were subsequently developed putting into practice the reforming infrastructure and human resources as well as partnerships between governmental, private and national sectors.

It gives me great pleasure to present this document. This system is in continuous reform, progressing incrementally, refining the knowledge base, and modifying concepts. This document is not the end product, but rather the first step of many others.

However, I hope it will help us towards our ultimate goal of a quality, effective, efficient, evidence based service to all Egyptians irrespective of geographical or social economic barriers.

The document is a collaborative work of the Ministry of Health and Population staff, and the Sector for Technical Support and Projects on both central and peripheral levels. Work in this document is subjected to continuous assessment, operation research, many of the issues presented in this document will be updated in further version.

Dr. Emam Mossa
Undersecretary of the Sector for Technical Support and Projects

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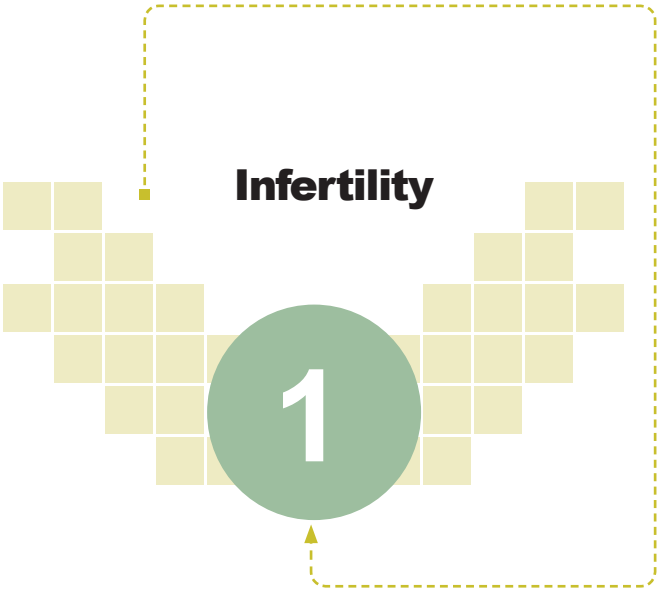
Abbreviations and Acronyms

ADL	: Activities of Daily Living
AIDS	: Aquired Immunodeficiency Syndrome
ANC	: Anti - Natal - Care
BEOC	: Basic Essential Obstetric Care
BP	: Blood Pressure
BPM	: Beat Per Minute
CDAs	: Community Development Agencies
COC	: Combined Oral Contraceptive
DM	: Diabetes Mellitus
DMPA	: Depoprovera
ECG	: Electrocardiogram
EDD	: Expected Date of Delivery
FHS	: Fetal Heart Sound
FHT	: Family Health Team
FHU	: Family Health Unit
HE	: Health Education
HIV	: Human Immunodeficiency virus
HMHC Project	: Healthy Mother/Healthy Child Project
HRT	: Hormonal Replacement Therapy
IADL	: Instrumental Activities of the Daily Living
IMPAC	: Integrated Management of Pregnancy and Childbirth
IPH	: Inosital 1, 4, 5- Triphosphate
IU	: International Unit
IV	: Intravenous
LMP	: Last Menstrual Period
MCH	: Maternal and Child Health
MOHP	: Ministry of Health and Population
NGOs	: Non-Governmental Organizations
OBs/Gyn	: Obstetrics and Gynecology
PHC	: Primary Health Care
PTH	: Parathyriod Hormon
STI	: Sexually Transmitted Infection
TT	: Tetanus Toxoid
VDRL	: Venereal Disease Research Laboratory


Infertility
1

Infertility

Definition

Inability to conceive after a year or more of well-timed marital relations without the use of contraception

Remember:

Infertility is a man's and woman's problem:

- Male factors 40%
- Female factors 40%
- Both 10%
- Unexplained 10%

Investigate and treat together

Aetiology

Table. 1: Female and Male Causes of Infertility

Female causes	Male Causes
1. Mechanical barriers: Scarring in the tubes or around the ovaries from PID, STD, previous operation, etc. 2. Endometriosis 3. Endocrine problems 4. Congenital problems of the uterus or cervix 5. Polycystic ovarian disease 6. Cervical mucous too sticky or too acid (by using litmus paper) 7. Immunological response: sperm antibodies that tend to destroy the sperms action through immobilization or causing them to clump. 8. Age: very young < 16 years, or 35+ are less fertile 9. Other factors: genetic abnormalities, extreme weight loss or obesity, excessive exercise, poor nutrition, environmental and industrial toxins, etc. 10. Lack of familiarity with techniques that help to achieve pregnancy	1. Problem of production and maturation of the sperms: previous infection e.g. mumps after puberty, undescended testicle, chemical and environmental factors, drugs, occupational hazards e.g. workers in hot environment. 2. Problems with the motility of the sperms: chronic prostatitis, abnormally thick seminal fluid, some drugs 3. Problem of transport of sperms: ductal obstruction due to past infection or STD 4. Inability to deposit the sperm into the cervix: impotence, premature ejaculation, hypospadius, etc. Other factors as poor nutrition and poor general health, smoking, alcohol & drug abuse.

The Role of The Family Physician in Infertility:

History and clinical examination

- One year or less and free → Reassure and counsel
- More than 18 months → Counsel and refer

Consider Early Referral If

Female	Male
• Age > 35 years • Amenorrhea/ oligomenorrhea • Previous abdominal/pelvic surgery • Previous PID/STD • Abnormal pelvic examination	• Previous genital pathology • Previous urogenital surgery • Previous STD • Varicocele • Significant systemic illness • Abnormal genital examination

The role of the Family Health Physician before referral

1. Reassure and avoid excitement
2. If there is extreme weight loss, look for the cause and manage
3. Obesity (BMI >30): advice for weight control
4. Treat any local infections according to protocols
5. Counsel

Counseling messages include

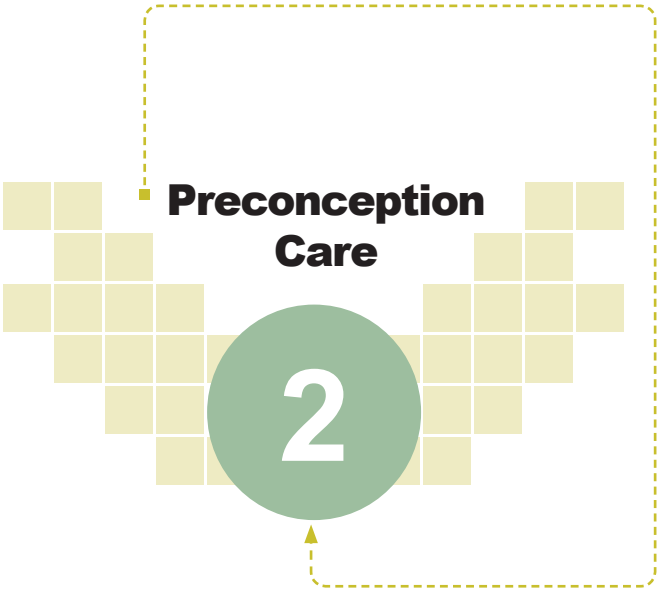
- Regulation of the timing and frequency of the marital relations: (A woman can use different ways to tell when her fertile time begins and

ends.) However, these method may make the couple anxious and may itself be a cause of delay. The appropriate advice is to have regular sex 2-3 times per week. You may however, inform the couple about the most fertile period:

- o Calendar calculation: A woman having regular menstrual cycles probably ovulates 14 days + one day before next period.
- o Cervical secretions, the peak period when the secretions are most slippery, stretchy and wet
- o Basal body temperature technique not to be used
- o Feel of the cervix: The opening of the cervix feels softer, opens slightly, and is moist

- The most effective position is the husband facing the wife and a thin pillow or folded towel under the hips to raise them. If the uterus is tilted back use three to four pillows.
- Avoid lubricants such as jellies, creams, and even saliva. If lubrication is necessary, egg white or vegetable oil is the safest.
- Don't douche immediately before or after intercourse, unless the cervical mucus is too acidic (as identified by litmus paper). Women may douche with backing soda 30 minutes before intercourse

An additional reference:
The Boston Women's Health Book Collective (1998); "OUR BODIES, OURSELVES, for the New Century"; Published by Simon & Schuster


Preconception
Care
2

Preconception Care

Care before conception includes:

- Premarital care
- Inter-conception care.

Premarital Care:

Theoretically premarital care extends from birth, throughout the premarital period. It is also affected by the health of the grandparents in a spiral life cycle continuum. By caring for the health of the present children and adolescents we are actually starting to provide care for the future generation. In practice the specific service provided is the premarital examination.

Premarital examination:

The objective of premarital examination is to promote the health of future parents, and to prevent health hazards for each of them and to have a healthy future generation.

Although the main concern in premarital examination is to diagnose and manage health problems related to marriage and reproduction, yet, it is a chance to provide full clinical assessment and to care for the individual in a total person approach.

To-date premarital examination is not mandatory. Although there are some trials to make it obligatory by law, yet such a law has not been put into action. However, some individuals would go for such examination, usually because they have some concern about their own health or they have a history of a familial or hereditary disease and are thus concerned about the health of their future children.

Premarital examination should include:

1. Assessment
2. Services

Medical ethics require that the results of examination are confidential, except in cases where you discover a disease that must be reported (e.g. HIV/ AIDS). In all cases you have to tell your client the facts, the consequences, the probabilities, and manage any health problems.

1. Premarital assessment:

Use the form in the "women health card"

***Identiffcation data*:** Name, address, age, sex, education, occupation, etc. At this point you may also ask about consanguinity between the future spouses.

Complaint: Usually there should be no complaint. However, there may be a concern that made the individual choose to have a premarital examination.

Personal medical history: Ask about relevant acute diseases e.g. rubella for females (usually this disease may be missed because of the nonspecific and mild clinical picture), and mumps for males.

Ask about important chronic diseases as heart, chest, kidney, liver, nervous system, diabetes,...etc.

Family history: Ask about relevant familial or hereditary diseases, specially those of a recessive character. Ask about diabetes, epilepsy....etc.

Clinical examination: This includes both general and systematic examination.

Laboratory investigations: The routine for premarital examination is for the blood and urine. Other tests could be done to detect health problems that are prevailing in the community and manage them for the welfare of the client; e.g., stools for parasites.

Blood examination include Blood group and Rh, blood picture and hemoglobin, VDRL test (Venereal Disease Research Laboratory test) for syphilis, examination for viral hepatitis B (+/- C), and for HIV/AIDS.

Other tests could be done according to the needs e.g. blood sugar in cases of suspected diabetes.

Urine examination include albumin and sugar; in addition to bacteriological examination specially for females.

Refer for tests that could be done according to situation or request, e.g. chromosomal studies for expected genetic abnormalities; examination of semen for male sterility.

2. Premarital services:

***Health education and counseling*:** Health education would cover topics related to family life and reproductive health in general. The future parents are advised about the appropriate time for the first pregnancy (too young mothers should postpone the first pregnancy to the age of 18 years at least); the importance of antenatal care visit early in pregnancy, precautions to be taken in pregnancy e.g., to avoid taking any drugs or be exposed to other teratogenic hazards.

Counseling is directed to specific at-risk factors or health problems, either related to the health of the individual him/herself, or to the future children.

Genetic counseling is aspecific form of

counseling to advise the parents about the probabilities of having a congenital or hereditary disease. It is done either in the premarital period, or during inter-conceptual care, usually after having such a problem with the previous child. Genetic counseling include study of the pedigree (through family history for both partners), and chromosomal studies for cases that could be discovered through this technique. (Consult your books in pediatrics for more details).

Immunization for females against Rubella. Remember that rubella vaccine should be taken at least 3 months before expected pregnancy.

Management of case and referral to specialists if any clinical condition is discovered during the premarital screening.

Inter-conception Care

Inter-pregnancy period is a chance to promote the health and the nutritional status of the mother, and to identify risks both for the mother and the future children, and appropriately deal with them.

Opportunities for recruiting mothers for inter-conception care include

- Postpartum / post-abortive care
- Mother attending the MCH for her child health care.
- Through family health record
- By the Extension workers (Raeda Rifeya) attending home visits

Objectives of Inter- Conception Care:

The goal of preconception care is to have a healthy couple, and healthy offspring.

***The specific objectives are*:**

- To decrease maternal morbidity
- To decrease maternal mortality
- To decrease fetal loss
- To decrease neonatal morbidity
- To decrease neonatal mortality
- To decrease disability among children

***The inter-conception care Package*:**

Preconception care should include

- Counseling
- Health promotion
- Risk assessment and modification
- Psychosocial interventions

Preconception Care Package includes

- A visit with a health provider to
  - o discover problems,
  - o provide counseling
  - o appropriate management
- Nutrition care
  - o Correction of anemia
  - o Advise on eating habits
  - o Vitamin supplements, specially folic acid
- Avoidance of unhealthy substances, smoking, drugs
- Avoidance of irradiation
- Genetic testing and counseling as needed
- Counseling on pregnancy plans and birth spacing

***What to look for in inter-conception care*:**

Maternal conditions:

- Anaemia / haemoglobinopathies
- Rh isoimmunization
- Diabetes
- Hypertension
- Heart problems
- Asthma
- Epilepsy
- Kidney disease
- STI (and husband)
- Mental / psychological troubles

***Family history*:**

- Diabetes
- Haemoglobinopathies (B thalassaemia, Sickle cell disease)
- Down syndrome (specially if born to a young mother in the family)

***Harmful exposures*:**

- Smoking
- Drugs
- Toxins
- Radiation

Remember:

Whenever you are treating a married female in the child bearing period for any disease condition Please ask frankly whether she is / suspects to be pregnant. if so Avoid prescribing potentially harmful drugs or irradiation

***Obstetric history*:**

- Complicated previous pregnancy
- Bad outcome of pregnancy

Conditions in the newborn / child:

- Congenital abnormalities and hereditary diseases e.g.
  - o B thalassaemia
  - o Sickle cell disease
  - o Down syndrome
  - o Neural tubal defect
  - o Congenital hypothyroidism

Supplementations

- Iron supplementation may extend for 3 - 6 months after delivery to correct for any anemia, and to give her a chance to rebuild her iron stores.
- Folic acid supplementation reduces the possibility of neural tubal defect in the coming pregnancy

Birth spacing, by the use of a suitable contraceptive technique that does not affect lactation is an essential intervention for the welfare of the mother and her children. In addition to the methods mentioned with postpartum care lactation amenorrhea method could be used if certain specifications are fulfilled. See flow Chart.

Note Birth spacing, by the use of a suitable contraceptive technique that does not affect lactation is an essential intervention for the welfare of the mother and her children.

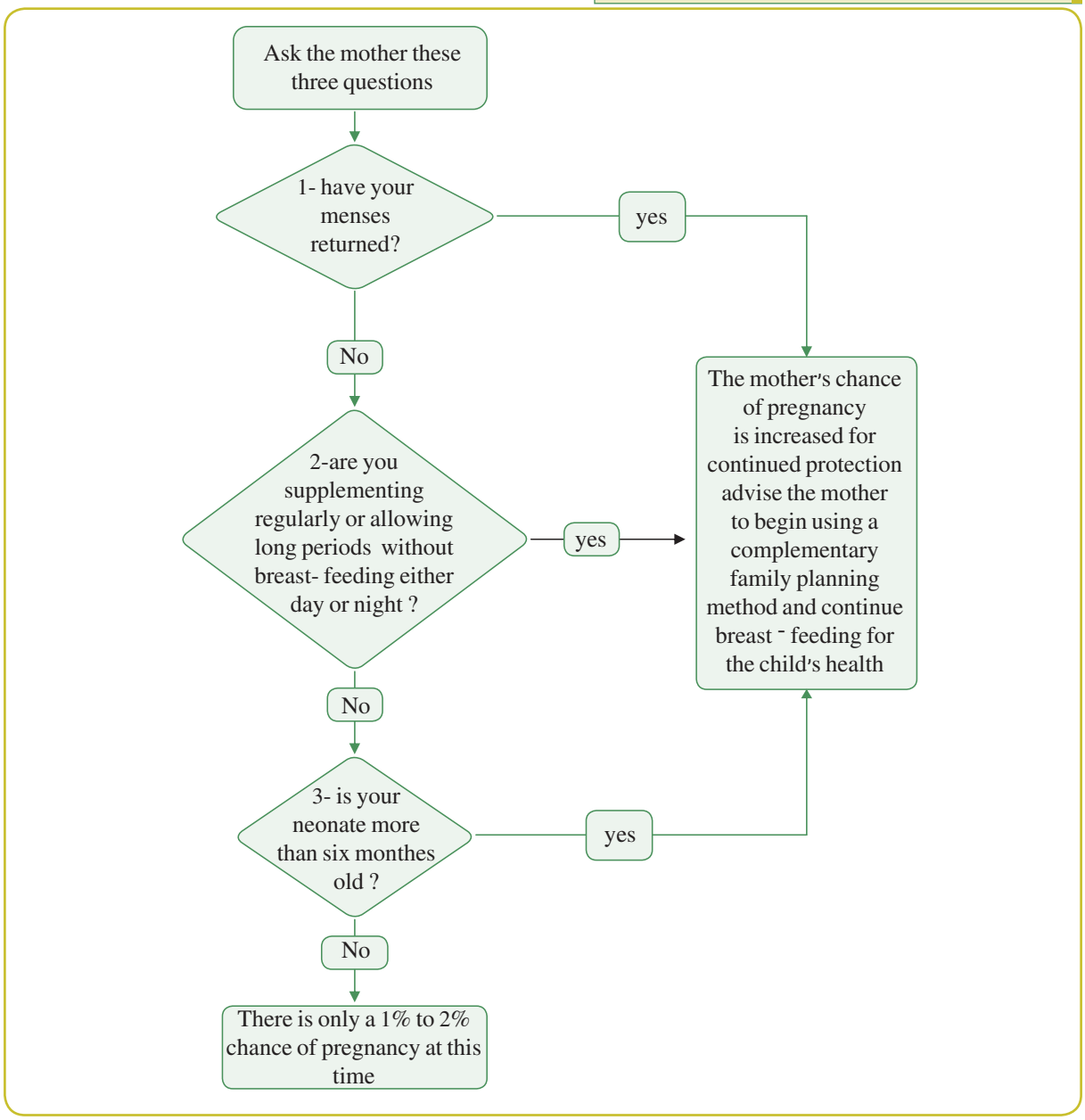
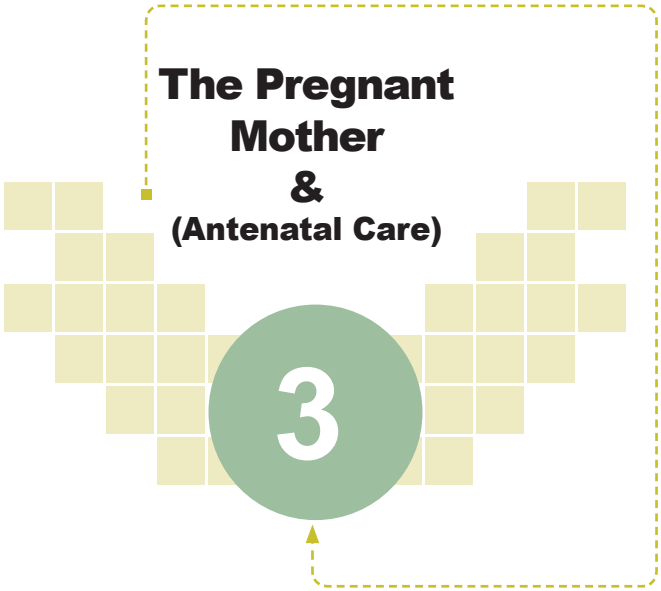


Figure "1": Flow Chart Diagram For How to Test Lactation as a Reliable Method of Contraception


The Pregnant
Mother
&
(Antenatal Care)
3

The Pregnant Mother

A: Antenatal Care (ANC)

Objectives of ANC:

Goal: To have healthy pregnancy, clean and safe delivery and to give birth to a full term healthy baby.

The aim:

- To achieve early and high coverage of pregnant mothers by ANC.
- To provide comprehensive package of health services to promote the health of the mother, prevent health hazards, and for early detection of complications and appropriate management.
- To prepare the mother for safe delivery.
- To prepare the mother for providing adequate care for the coming child.
- To prepare the mother for practicing child spacing.

Components of ANC:

Antenatal care includes the following:

- Registration and record keeping
- Periodic examination, including Laboratory tests
- Risk detection and management
- Immunization
- Referral as needed
- Emotional and psychological support
- Health education
- Nutrition care
- Dental care
- Home visiting
- Social care

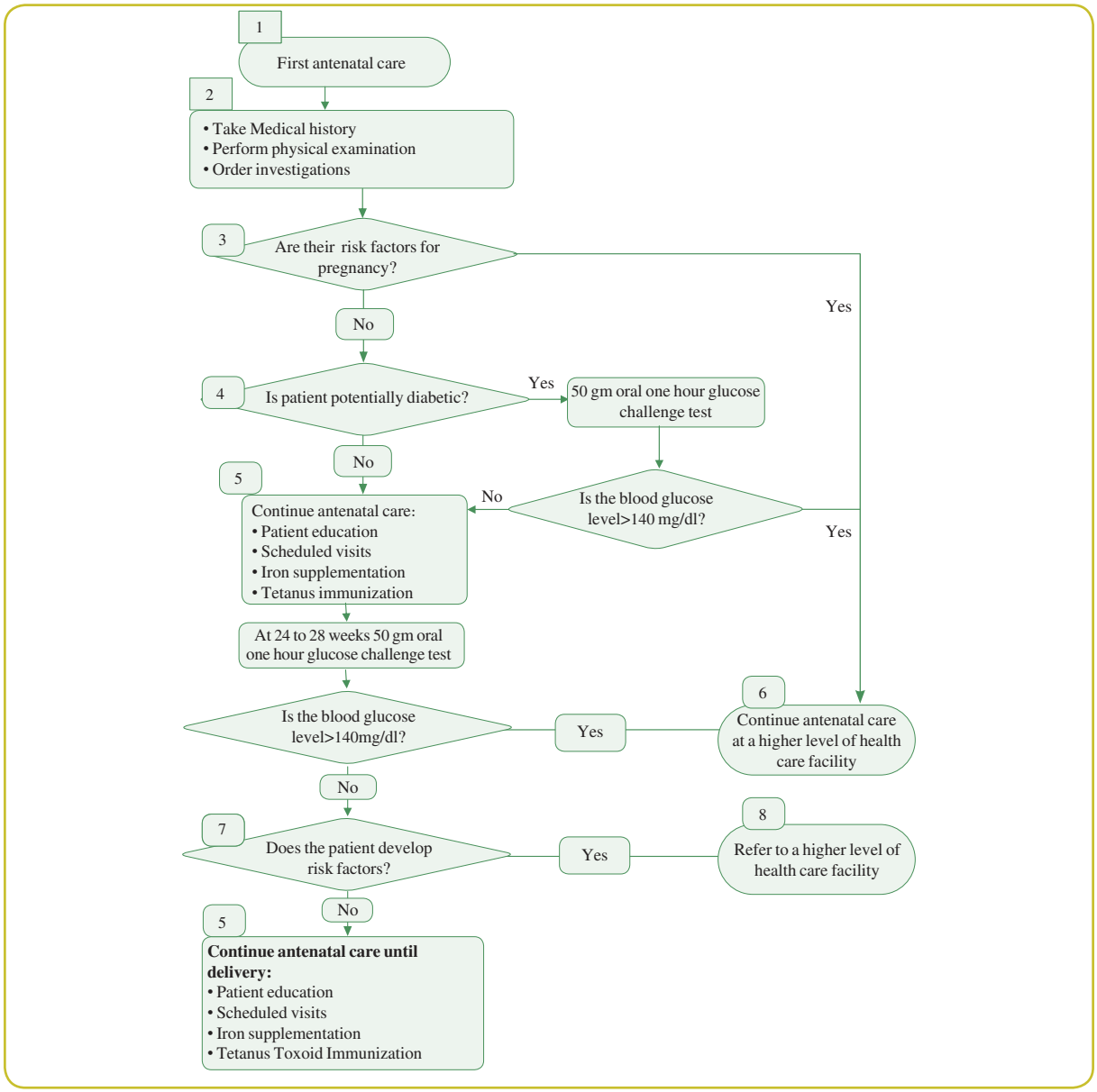


Figure "2": Flow Chart Diagram For Essential Antenatal Care

Registration

On the first visit

- Complete a "Pregnancy follow-up form" to be included in the family folder
- Complete the ANC card if available to you
- Check if the woman has "Women Health Card" and complete the relevant information. (The woman health card covers adolescent girls health, premarital examination, pregnancy care for three pregnancies, inter-pregnancy care, and care for the menopausal woman). Ask the mother to bring her card, if she has one; if not issue a new card.
- Register the mother in the "New pregnant registry"

With repeated visits

- Complete the ANC form in the family folder
- Complete the data in the women's card
- Register in the repeated visits registry
- **You should always try to increase coverage and early utilization of ANC**

This can be through:

- The health extension workers (Raeda Rifeya or Murshidat) visiting homes
- Community awareness
- Community natural leaders including the Daya
- The health education sessions held in the FHU

Periodic examination

Ideally the woman should visit the center according to the following schedule:

To 28th weeks gestation ⟶ every 4 weeks

28th to 36 weeks gestation ⟶ every 2 weeks

Thereafter ⟶ every week

Antenatal Care Table BEOC Protocols

Note **Minimum Required Visits**

- First visit: as early as possible in the first trimester
- Second visit 22-26 weeks
- Third visit 30-32 weeks
- Fourth visit 34-36 weeks
- Fifth visit 38-40 weeks

Table. 2: Antenatal care visits

Antenatal Care					
	First Visit Booking or Registration	**Second Visit**	**Third Visit**	**Fourth Visit**	**Fifth Visit**
Timing	As early as possible in the first trimester before 12 weeks	22-26 weeks	30-32 weeks	34-36 weeks	38-40 weeks
History Taking	Personal history				
	Obstetric history				
	Family history				
	Medical history				
	Surgical history				
	Complaints	History of any complaint	History of any complaint	History of any complaint	History of any complaint
Physical Examination	Height and Weight	Weight	Weight	Weight	Weight
	Blood pressure	Blood pressure	Blood pressure	Blood pressure	Blood pressure
	Fundal level	Fundal level	Fundal level	Fundal level	Fundal level

Antenatal Care Table

Table. 3: Continue Antenatal care visits

Antenatal Care					
	First Visit Booking or Registration	**Second Visit**	**Third Visit**	**Fourth Visit**	**Fifth Visit**
Timing	As early as possible in the first trimester before 12 weeks	22-26 weeks	30-32 weeks	34-36 weeks	38-40 weeks
Physical Examination (cont.)		Fetal Heart Sound	Fetal Heart Sound	Fetal Heart Sound	Fetal Heart Sound
				Fetal presentation	Fetal presentation
Investigations	Urine analysis	Urine analysis by dipstick	Urine analysis by dipstick	Urine analysis by dipstick	Urine analysis by dipstick
	Stool analysis for ova and parasites				
	Complete blood count				
	ABO grouping and Rh typing				
	Wasserman reaction				
	Arrange for pelvic ultrasound				
		Screen for DM			

Antenatal Care Table

Table. 4: Continue Antenatal care visits

Antenatal Care					
	First Visit Booking or Registration	**Second Visit**	**Third Visit**	**Fourth Visit**	**Fifth Visit**
Timing	As early as possible in the first trimester before 12 weeks	22-26 weeks	30-32 weeks	34-36 weeks	38-40 weeks
Education and Counseling (cont.)	When to seek medical care	When to seek medical care	When to seek medical care	When to seek medical care	When to seek medical care
	Adequate nutrition	Adequate nutrition	Adequate nutrition	Adequate nutrition	Adequate nutrition
	Personal hygiene	Personal hygiene	Personal hygiene	Personal hygiene	Personal hygiene
	Dental care				
	Breast care			Breast care	
	Exercise				
	Clothing				
	Smoking				
	Counsel for Home Birth				
			Breast-feeding		

Table. 5: Continue Antenatal care visits

Antenatal Care					
	First Visit Booking or Registration	Second Visit	Third Visit	Fourth Visit	Fifth Visit
Timing	As early as possible in the first trimester before 12 weeks	22-26 weeks	30-32 weeks	34-36 weeks	38-40 weeks
Education and Counseling (cont.)		Fetal movement awareness	Fetal movement awareness	Fetal movement awareness	Fetal movement awareness
			Arrange for home visit		
			Travel		
			Warning of symptoms of pre-eclampsia	Warning of symptoms of pre-eclampsia	Warning of symptoms of pre-eclampsia
				Postpartum care	
				Contraception	
			Birth preparedness and complication readiness		

Table. 6: Continue Antenatal care visits

Antenatal Care					
	First Visit Booking or Registration	Second Visit	Third Visit	Fourth Visit	Fifth Visit
Timing	As early as possible in the first trimester before 12 weeks	22-26 weeks	30-32 weeks	34-36 weeks	38-40 weeks
Education and Counseling (cont.)					Post term management
					Postpartum vaccination
	Fill out the Woman's Health Card	Fill out the Woman's Health Card	Fill out the Woman's Health Card	Fill out the Woman's Health Card	Fill out the Woman's Health Card
	Schedule for next appointment	Schedule for next appointment	Schedule for next appointment	Schedule for next appointment	Schedule for first postpartum visit
Immunizations		Tetanus toxoid	Tetanus toxoid		

First Visit includes the following:

History taking:

- Date of last menstrual period (LMP) and calculate expected date of delivery (EDD)
- General health and any complaint
- Past medical history; including history of chronic diseases as heart, chest, kidney, mental disorders, epilepsy, past operations, allergies.....etc.
- Previous blood transfusion
- Current medications
- Dietary history
- Family history specially diabetes, familial and hereditary diseases
- Detailed obstetric history
- Tetanus toxoid vaccination history, and verify from the vaccination card
- Social history

Examination:

- Weight and height measurement (Obesity and stunting may be risk factors)
- Blood pressure (Blood pressure more than 140/90 is a risk)
- Complete clinical check-up
- Laboratory investigations
- If the first visit is after 20 weeks of gestation assess the fundal height
- Assess risk factors if any

Intrauterine growth retardation of the fetus can be revealed clinically by careful observation of the fundal height, recorded in centimeters from the top of the symphysis pubis. To make this measurement accurately with a measuring tape:

- Identify the highest level of the fundus with light pressure, using the edge of the hand, in case uterus is dextrorotated, refer to specialist. If necessary mark this level on the skin.
- Identify the top of the symphisis by palpation through the fat of the mons pubis.
- Measure with a tape from the symphisis to the level of the fundus, with the tape face down to avoid bias. Preferable the tape should be made of un- stretchable cloth or paper.

Between 20 and 34 weeks the height of the fundus in centimeters should be approximately equal to the gestational age in weeks, unless the mother is obese where the measurement in centimeters may be more than the fundal height because of the thickness of the abdominal wall.

Note If there is an indication, Ultrasound is done by a specialist or trained person

Repeat Visits:

During each visit

- Update the history and listen to any problems and worries.
- Assess weight increase by the 20th week the pregnant would have usually gained 3.5 kg. After that date she is not allowed more than 0.5 kg per week of gestation as a maximum. The total gain during pregnancy is usually between 9 - 11 kg.
- Assess blood pressure.
- Perform general and systematic examination.
- Examination and care for the teeth.
- Assess the fundal height.
- Take the samples for laboratory tests.
- Provide health education and services as needed.

Laboratory tests:

See the table

More tests could be done as required.

Risk Detection:

At-risk concept means "there is standard care for everyone, and more care for those in need according to the need". At-risk factors can be detected from the history taking and first ANC examination, or may develop during the course of pregnancy.

The at-risk approach is a method by which we ensure that every one is receiving a standard level of care, and that more care is given to those at-risk according to the type of risk.

Early detection of risk factors during pregnancy is important to prevent hazards for the mother and/

or the outcome of pregnancy.

Remember:

Risk factors may develop for the first time during labor.

Birth attendants should be trained for risk detection and timely referral

The aim of the at-risk approach is to provide quality, cost-effective, rationalized care for every mother according to her own needs. According to their condition, mothers are

(a) observed more closely,

(b) referred to a specialist, or

(c) directed to have mandatory hospital delivery

See table for risk factors

Table. 7: At risk Factors in pregnancy

	Risk Factors	FHU (a)	Specialist (b)	Hospital Delivery (c)
Risk Factors detected by history in the first visit	- Age less than 18 or more than 40 (a)	√		
	- First pregnancy or 5th or more (a)	√		
	- Pregnancy spacing less than 2 years (a)	√		
	- History of giving birth to a baby less than 2.5 kg or more than 4 kg (b)		√	
	- Previous foetal death (b & c)		√	√
	- Repeated abortions (b)		√	
	- History of caesarian section (c)			√
	- Previous pre-term delivery (b +/- c)		√	√
	- History of severe toxaemia of pregnancy (b +/- c)		√	√
	- History of birth of a baby who needed intensive care (c)			√
	- History of birth of a baby with congenital abnormalities (c)			√
	- History of severe psychological troubles in a previous pregnancy (b)		√	
	- Medical conditions that led to termination of a previous pregnancy (b +/- c)		√	√
	- Cervical tear (b)		√	
	- Chronic diseases (by history or examination) as heart, essential hypertension, chest (e.g., tuberculosis and asthma), kidney, diabetes, endocrine disorders, epilepsy, cancer, mental disorders, (b & c)		√	√
	- Sexually Transmitted Diseases (b)		√	
Detected early in pregnancy	- Diabetes mellitus (b)		√	
	- Severe under nutrition (b)		√	
	- Severe anaemia (b)		√	
	- Positive serologic test for syphilis (b)		√	
	- Rh incompatibility (c)			√
	- Persistent urinary tract infection (b)		√	
	- Severe persistent vomiting (b)		√	
	- Huspected ectopic pregnancy (b)		√	
Detected later in pregnancy	- Severe pregnancy induced hypertension (b & c)		√	√
	- Antepartum hemorrhage (b)		√	
	- Multiple pregnancy (c)			√
	- Prematurity or postmaturity (c)			√
	- Poly-hydramnios / oligo-hydramnios (b & c)		√	√
	- Intra-uterine growth retardation (b & c)		√	√
	- Abnormal presentation (c)			√
	- Cephalo-pelvic disproportion (c)			√
	- Abnormalities in the genital tract (c)			√

a. Observe more closely and refer if needed

b. Refer to the specialist in the district hospital and follow his/her instructions

c. Mandatory hospital delivery

For a & b delivery can still take place at home or at the unit attended by trained personnel (Physician - Nurse)

Immunization:

The only vaccine given to the mother is Tetanus Toxoid (TT). If the mother have not been vaccinated before she should receive two doses of TT separated by 4 weeks at least. With subsequent pregnancies she should receive one dose.

For full immunization TT is given according to the following schedule:

Tetanus Toxoid during pregnancy

TT1	After the first trimester
TT2	At least 4 weeks after TT1 or during subsequent pregnancy
TT3	At least 6 months after TT2 or during subsequent pregnancy
TT4	At least one year after TT3 or during subsequent pregnancy
TT5	At least one year after TT4 or during subsequent pregnancy

Emotional and Psychological Support:

Early in pregnancy the mothers may suffer from stress or anxiety. They need emotional support from the health care personnel and from the husband and the family. Drugs are avoided.

Note Work with the husband and family to provide support, love and care to the pregnant mother

Health Education:

Health education (HE) is an essential component of ANC. The messages differ with the progress of pregnancy.

Messages to be stressed in the first visit include:

- The importance of ANC, the recommended dates, and the date for the next visit.
- Life style, the need to decrease strenuous physical work, to have enough rest and sleep, appropriate exercise, to have adequate diet, personal hygiene and clothes, care for the teeth. etc.
- Avoid taking any drugs during pregnancy
- Alarming signals of pregnancy, the pregnant is asked to seek immediate care at the center if she develops any of the following:
  - o Vaginal bleeding (including spotting),
  - o Persistent abdominal pain,
  - o Severe and persistent morning sickness,
  - o Persistent headache,
  - o Blurring of vision,
  - o Leakage of water from the vagina,
  - o Stoppage of fetal movement for more than 4 hours in late pregnancy,
  - o Swelling of the feet, fingers or face,
  - o Vaginal discharge with itching or odor.

With the advance in pregnancy other messages need to be added. These messages are related to:

- breast feeding and preparation of the breast and nipples,
- preparation for labor and signs of onset of labor,
- essentials of baby care,
- birth spacing.

In addition to health education individual mothers would receive counseling as indicated for their own personal needs.

Nutrition Care:

Adequate nutrition is essential to promote the health of the mother during and after pregnancy. It is also important to have a full term healthy baby. Nutrition in pregnancy may affect the future lactation performance and successful breast feeding.

Nutrition care during pregnancy includes:

- Nutritional assessment
- Nutrition education
- Nutrition supplementation
- Correction of nutritional deficiencies

Nutritional Assessment:

Hemoglobin estimation is a measure for anemia. Anemia is diagnosed in pregnant mothers if the level of hemoglobin is less than 11 g / 100 ml (110 g/l). An arbitrary classification for the degrees of anemia is given by the WHO,1994:

Table. 9: Levels of Anemia during pregnancy

Level of anemia	Hemoglobin gm/dl	Hematocrit (PCV) %
Moderate Severe Very severe	7 - 10.9 4 - 6.9 <4	24 - 37 13 - 23 <13

Clinical examination for manifestations of malnutrition.

Dietary assessment is part of the history taking. This is done by asking about the foods usually eaten. The last 24 hours recall method is useful for semi-quantitative and qualitative analysis to identify expected major deficiencies in the diet of the mother

Nutrition Education:

Nutrition education during pregnancy provides an excellent opportunity to improve the nutritional status for the whole family by implementing appropriate feeding habits through women who are the member of the family responsible for planning and preparation of the family diet.

Nutrition education should cover messages related to adequate diet, the need to avoid excessive salt, and the importance of compliance to nutrient supplementation.

Principles of Adequate Diet

The general principle is to select foods according to the Food Guide Pyramid with modifications.

1. At the base of the pyramid is the cereal group This group includes bread, rice, pasta.
2. The second layer of the pyramid is the vegetables and fruit group This group will supply vitamins, minerals and fibers which is important for bowel motion and prevention of constipation. Deep green vegetables should be well presented to be a good source of Iron. Green and colored vegetables and fruits as well as diary products, egg yolk, liver are good sources of vitamin A. Fresh vegetables and fruits are recommended to supply vitamin C.
3. The third layer of the pyramid include two important groups:
   - o The milk group is very important for the calcium content. It also supplies animal protein, riboflavin and other vitamins. The milk group include milk, yogurt, cheese, and desserts based mainly on milk as pudding (e.g. mehlabeya). The fat-free cheese (Gebna Kareesh) is very useful; however, it has to be low salt cheese.
   - o The meat, poultry, eggs, beans group supply proteins

- The fourth layer of the pyramid include fats. If the mother is receiving enough animal protein (2/3 of protein requirements) fat content would be adequate.
- Pregnant mothers should receive enough water.

Nutrition Supplementation:

1. All pregnant mothers should receive routine iron and folic acid supplementation after the first three months of pregnancy. The dose is 200 mg ferrous fumurate or sulphate and 300 ug folic acid which should be given once per day.

Do not forget

All pregnant mothers should receive routine iron and folic acid

2. It is recommended that women at high risk for neural tubal defects take 5 mg folic acid supplement daily prior to conception and for the first 12 weeks of pregnancy. Multivitamins may also be given.
3. Calcium: If you are not sure that the mother is consuming enough milk to satisfy the increased calcium requirements, calcium supplements may be given in the second trimester 500 mg tablets twice daily.

Correction of Nutritional Deficiencies:

This is done on the level of the MCH/PHC. Severe deficiencies may be referred to a specialist or hospital. The most common deficiency is anemia. Correction of anemia by higher doses of iron in addition to folic acid.

Do not forget

Severe deficiencies referred to a specialist or hospital. Correction of anemia

Curative management of iron deficiency anemia:

Give ferrous fumurate or sulphate 200mg 3 times daily. Gastrointestinal intolerance can be managed by changing to another varity or decrease the dose.

Indications for Referral:

- HB < 8 gm / dl
- Intolerance to oral iron
- Breast care
- Persistent anemia

Home visiting

Home visiting is expected to be done by the Raeda Rifeya and/or nurse midwife for two purposes;

- To follow-up the drop-outs from antenatal care visits asking them to attend the ANC clinic. and
- later in pregnancy to assess the housing condition and to prepare the place and requirements for a safe and clean delivery if the mother chooses to deliver at home.

In all conditions home visiting should be an opportunity for appropriate health education.

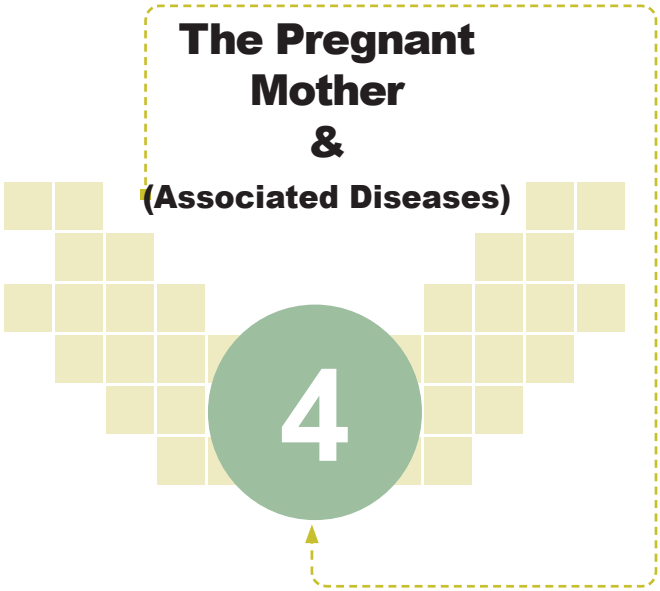
(See the section on" working with the community " for steps of entering a household)

Social care

Families that need social care are referred to the social worker within the health unit in the urban areas or to the social care unit / NGOs in the rural areas.

MOHP References:
MOHP; Central Adm. for PHC, HMHC project/JSI/USAID; "Basic Essential Obstetric Care: Protocol for Physicians"
Ibid; "Comprehensive Essential Obstetric Care: Protocol for Physicians "
Ibid; " Basic Essential Obstetric Care: Flow Charts for Physicians "
Ibid; Essential Obstetric Care: Flow Charts for Physicians "
Ibid; Basic Essential Obstetric Care: Flow Charts "
MOHP; Quality Improvement Directorate "Clinical Practice Guidelines Dissemination Workshop: Obstetrics and Gynecology
وزارة الصحة والسكان، الإدارة المركزية للرعاية الصحية المتكاملة، الإدارة العامة لرعاية الأمومة والطفولة:"دليل خدمات رعاية الأمومة والطفولة"
جمهورية مصر العربية، وزارة الصحة والسكان، منظمة الصحة العالمية ٩٩/٢٠٠٠: "دليل العمل بالرعاية الصحية الأساسية"

Other references:
Commonwealth of Virginia, Department of Health, Bureau of Maternal Health, Richmond, Virginia, USA (1977): "Maternal Health Clinic Manual".
WHO; UNFPA; UNICEF; World Bank (2000); "Integrated Management of Pregnancy and Childbirth (IMPAC), Managing Complications in Pregnancy and Childbirth: A guide to midwives and doctors" WHO/RHR/00.7


The Pregnant
Mother
&
(Associated Diseases)
4

The Pregnant Mother

B. Associated Diseases

Mothers Presenting with Alarming Signal of Pregnancy or Associated Disease

Diabetes

Diabetes can be discovered from the first visit, or it may develop later in pregnancy

First visit

If the pregnant is diabetic before pregnancy: refer to be cared for by the internist and the obstetrician

The pregnant is at high risk for diabetes:

The risk factors include

- Family history of diabetes
- Previous gestational diabetes
- Poor obstetric history
  - o Repeated abortions
  - o Unexplained fetal death
  - o Traumatic and operative delivery
  - o Macrosomia > 4.5 kg
  - o Neonatal metabolic changes (jaundice, hypoglycemia, hypocalcemia)
- Maternal obesity
- Advanced maternal age > 35 years
- Multiparty

If the mother have one or more of the risk factors ask for oral glucose challenge test

Follow the direction and the diagnosis of Gestational Diabetes written in the Diabetes Unit in this Guideline.

Repeat visits

In each ANC visit urine is tested by dipstick. Positive cases are tested by the oral glucose challenge test. This test is routinely done at 24 - 28 weeks of gestation.

Diabetes in Pregnancy

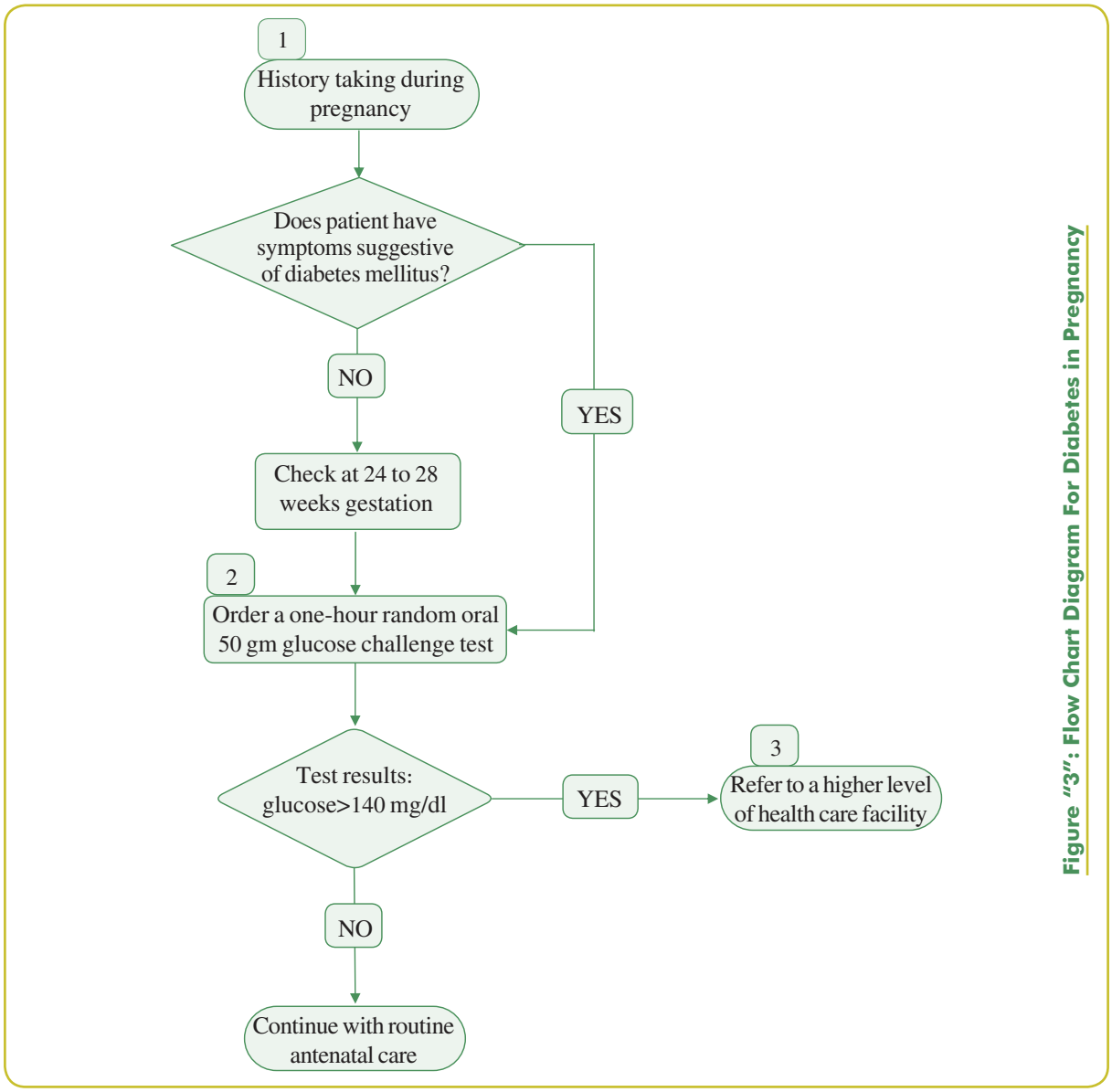


Figure "3": Flow Chart Diagram For Diabetes in Pregnancy

1.Medical History

The following are important data in the history that suggest the presence of diabetes mellitus:

History of Polyuria, Polydipsia or Polyphagia

2.Glucose Challenge Test

If the patient has symptoms suggestive of diabetes mellitus, order the following:

One-Hour Random Oral 50gm Glucose Challenge Test

- The patient does not need to be fasting.
- Fifty (50) gm of glucose is dissolved in water and taken by the patient.
- The patient's blood glucose is measured after one hour.
- If the blood glucose is greater than 140 mg/dl, a three-hour oral glucose tolerance test should be performed to confirm the diagnosis of diabetes mellitus, and the patient should be referred.

Time of test	Serum glucose concentration (must exceed two or more values for diagnosis)
Fasting	> 95 mg/dL
One hour	> 180 mg/dL
Two hour	> 155 mg/ dL
Three hour	> 140 mg/ dL

Figure "4": Diagnosis of Gestational Diabetes Mellitus Using 3-hour 100-g Oral Glucose Tolerance Test

3.Referral

Refer to a higher level of health care facility for further management.

Vaginal bleeding before 20 weeks

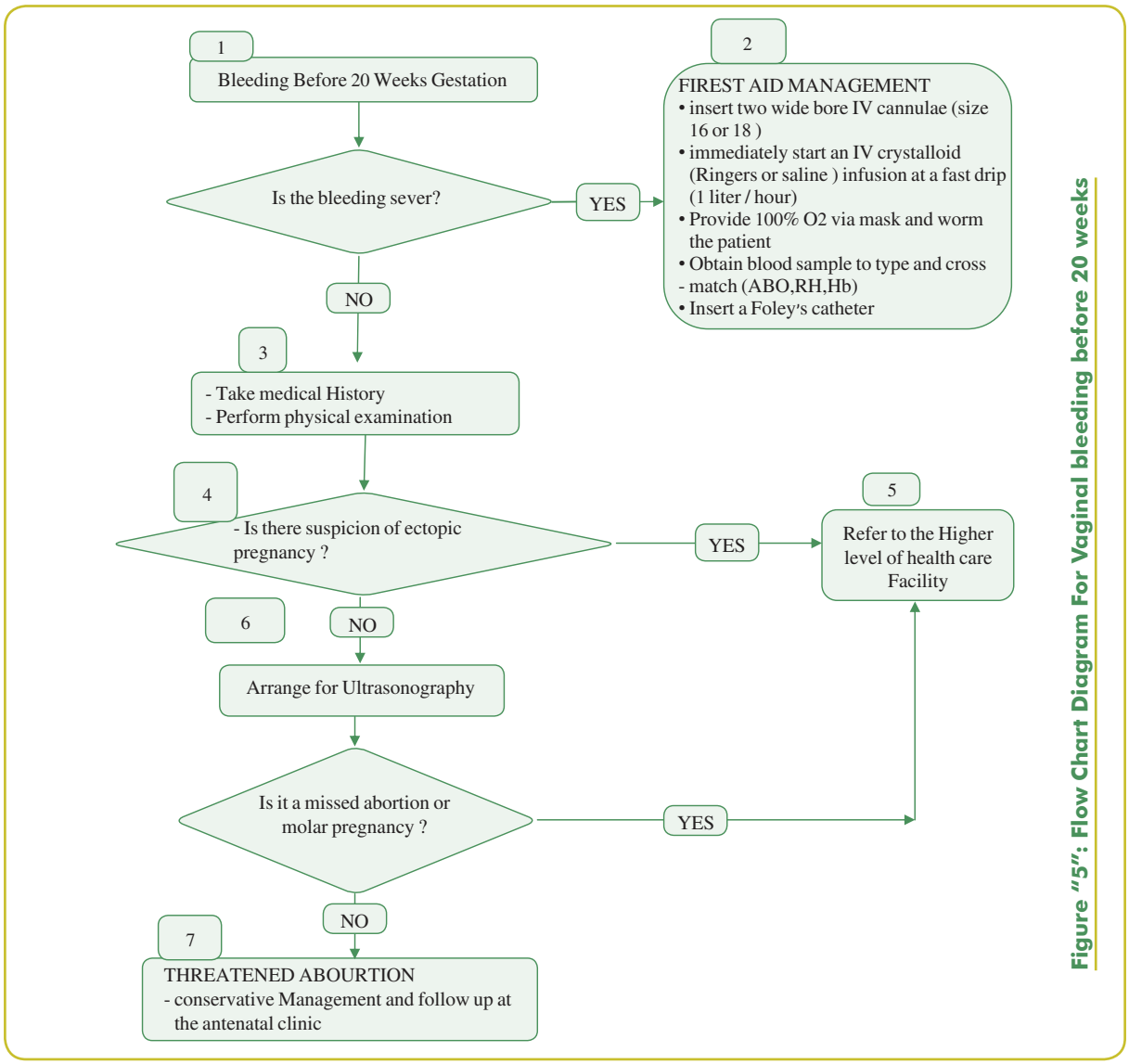


Figure "5": Flow Chart Diagram For Vaginal bleeding before 20 weeks

Bleeding in early pregnancy

1. Definition

Bleeding in early pregnancy is loss of blood from the genital tract before 20 weeks of gestation.

Possible Causes

- All types of abortions
- Ectopic pregnancy
- Molar pregnancy
- Local causes, polyps
- Trauma

2. First Aid Management

In a life-threatening condition like this, first aid management is the most important step which determines if the woman lives or dies. It should follow these guidelines:

- Insert two wide bore IV cannulae (size 16 or 18).
- Immediately start an IV crystalloid (Ringer's or Saline) infusion at a fast drip (1 liter/hour).
- Provide 100% oxygen via mask and warm the patient.
- Obtain a blood sample to type and cross-match (ABO, Rh, Hb).
- Insert a Foley's catheter.

3. Clinical Picture

Medical History

- Take and record a complete history, including the first day of last menstruation, the pattern and amount of bleeding, the presence and type of pain, dizziness, or urinary symptoms. Also record any history of reproductive tract infections.

Physical Examination

- Record blood pressure, pulse and temperature.
- Meticulously examine the external genitalia and vagina for lesions, signs of trauma or infection.
- Perform a speculum examination to document suspected local causes such as:
  - The presence of blood or products of conception in the vagina or cervix
  - The condition of the cervix
    - Cervicitis
    - Polyp or tumor
  - Conduct a gentle bimanual examination to document the following:
    - Condition of the cervix (open or closed)
    - Size, shape, and consistency of the uterus
    - Presence of pain and/ or adnexal masses

4.Ectopic Pregnancy

An ectopic pregnancy occurs when the blastocyst implants outside the normal uterine cavity.

An ectopic pregnancy is suspected if a missed period coincides with a positive pregnancy test along with one or more of the following:

- Lower abdominal pain and shoulder pain
- Vaginal spotting
- Fainting episodes
- Lower abdominal tenderness and rigidity
- Tenderness upon mobility of the cervix
- Adnexal mass

5.Referral

- IV fluids (Ringer's or saline) and 100% oxygen via mask should continue throughout the referral.
- Monitor blood pressure and pulse every five minutes and monitor the urine output every 30 minutes throughout the referral.

6.Ultrasonography

Ultrasonography is essential for diagnosing different types of abortion i.e., threatened, complete or missed or a molar pregnancy.

7.Management of Threatened Abortion

If a diagnosis of threatened abortion is made,

recommend bed rest and no sexual relations. Follow weekly in the outpatient clinic.

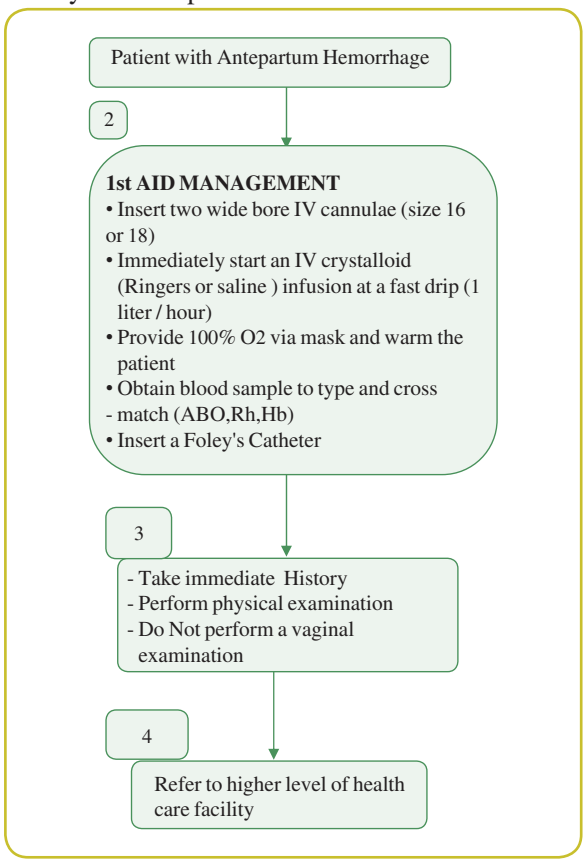


Figure "6": Flow Chart Diagram For Vaginal bleeding after 20 weeks

Bleeding after 20 weeks Gestation "Antepartum hemorrhage"

Definition

Antepartum hemorrhage is bleeding from or within the genital tract after 20 weeks of gestation.

Possible Causes

- Placenta previa
- Placental abruption
- Trauma
- Tumors
- Infection
- Vasa previa
- Other rare conditions

1.First Aid Management

This is a critical clinical situation where proper first aid management can be essential to saving awoman's life and to improving the overall outcome. First aid management should include the following steps:

- Insert two wide bore IV cannulae. (size 16 or 18).
- Immediately start an IV crystalloid (Ringer's or saline) infusion at a fast drip (1 liter/hour).
- Provide 100% oxygen via mask and warm the patient.
- Obtain a blood sample to type and cross-match (ABO, Rh, Hb).
- Insert a Foley's catheter.

2.Clinical Picture

Medical History

- Record acomplete history, including the date of the first day of last menstruation, the pattern and amount of bleeding, the presence and type of pain, symptoms and signs of hypovolemia (nausea, vomiting, dizziness, pallor, perspiration), the presence or absence of fetal movement or fetal heart sounds, and any urinary symptoms.

Physical Examination

- Record blood pressure, pulse and temperature.
- Meticulously examine the external genitalia for lesions, signs of trauma or infection.
- Placenta previa-there is usually no pain and the uterus is soft.
- Placental abruption
  - o The uterus may be painful and tense.
  - o Fetal parts are difficult to feel.
  - o Fetal heart sounds may be inaudible.
  - o Caogulopathies occur in 30% of the cases in which the abruption is severe enough to kill the fetus.
  - o Dark brownish-colored amniotic fluid suggests a placental abruption.
- Don't perform vaginal examination.

3.Referral

- Referral to a higher level of health care facility should be in an equipped ambulance (see Section in Ambulance).
- A physician should accompany the patient.
- IV fluids (Ringer's or saline) and 100% oxygen via mask should continue throughout the referral.
- Monitor blood pressure and pulse every five minutes and monitor the urine output every 30 minutes throughout the referral.

High Blood Pressure

Classification

- Hypertension may be present before pregnancy i.e., coincidental/ chronic hypertension identified on the first visit early in pregnancy, and persists after pregnancy termination
- May be aggravated by pregnancy and develop to pre-eclampsia (with proteinurea) or eclampsia (with convulsions)

- Pregnancy induced hypertension: pre-eclampsia and eclampsia

Chronic hypertension

A rise in blood pressure is defined as systolic > 140 and/or diastolic > 90.

- Refer to obstetrician for assessment and advice for follow-up
- Encourage additional periods of rest
- High level of blood pressure maintain renal and placental perfusion. Blood pressure should not be lowered below its pre-pregnancy level. There is no evidence that aggressive treatment to lower the blood pressure to normal levels improves either fetal or maternal outcomes (WHO, IMPAC page S-49)
- If the woman is on anti-hypertensive medication before pregnancy and the disease is well controlled, continue the same medication if acceptable in pregnancy (see the section on hypertension)
- Examine more frequently and refer if any increase occur
- Monitor fetal growth and fetal distress
- If per-eclampsia develops manage accordingly

Pre-eclampsia

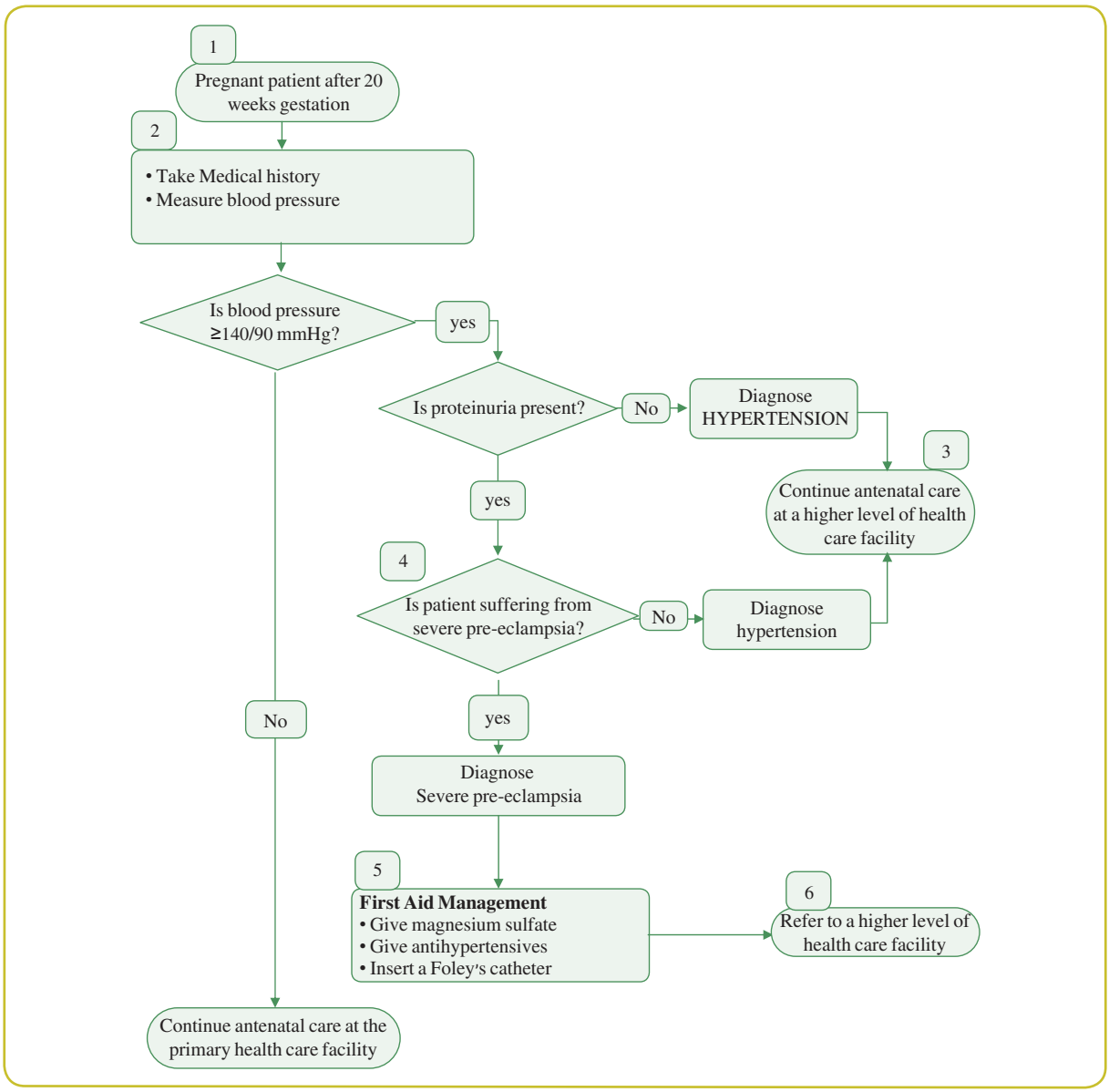


Figure "7":Flow Chart Diagram For Management of Pre-eclampsia

1.Definition

Apregnant patient is considered to have pre-eclampsia if she has a blood pressure ≥ 140/90 mmHg and proteinuria ≥ 1+ after 20 weeks gestation.

2.Clinical Picture

Medical History

During antenatal care and after 20 weeks gestation, the following states or symptoms should alert the physician that pre-eclampsia may exist or develop:

- Nulliparous woman
- Maternal age < 18 years or > 35 years
- Headache and/or dizziness
- Blurring of vision
- Epigastric pain
- Abnormal weight gain
- Edema of the lower limbs reaching above the knees or present early in the morning before getting out of bed

Physical Examination

Routine measurement of blood pressure during regular antenatal care visits is very important for early diagnosis of cases of pre-eclampsia.

3.Criteria for Severe Pre-eclampsia

- Diastolic blood pressure ≥ 110 mmHg
- Proteinuria ≥ ++

4.First Aid Management

Magnesium Sulfate

Magnesium sulfate should be given as an intravenously administered loading dose to achieve a plasma magnesium level that prevents eclamptic convulsion, and is then maintained by subsequent administered maintenance doses.

- The recommended regime begins with a loading dose of 6 gm diluted in 200 cc of Ringer's lactate and infused slowly by IV drip over 15-20 minutes to be followed by the maintenance dose of 2 gm/hour given slowly by IV route.
- The maintenance dose is continued during the referral process.

Antihypertensive: Indicated when the Diastolic BP≥ 110 mmHg

Nifedipine: A calcium-channel blocker that can be given orally and should not be used sublingually. One capsule 10 mg is given orally before referral.

5.Continuing Antenatal Care

All cases of mild pre-eclampsia and chronic hypertension must be referred to a higher level of health care facility for further management.

6.Referral

Referral of cases with severe pre-eclampsia to a higher level of health care facility should follow these guidelines:

- Referral should be in an equipped ambulance (see section on ambulance)
- A physician should accompany the patient.
- Limit IV fluid intake unless there is bleeding
- Avoid giving diuretics.
- In addition to the maintenance dose, if the patient develops an eclampsia convulsion during referral administer magnesium sulfate 2 gm IV slowly.

Eclampsia

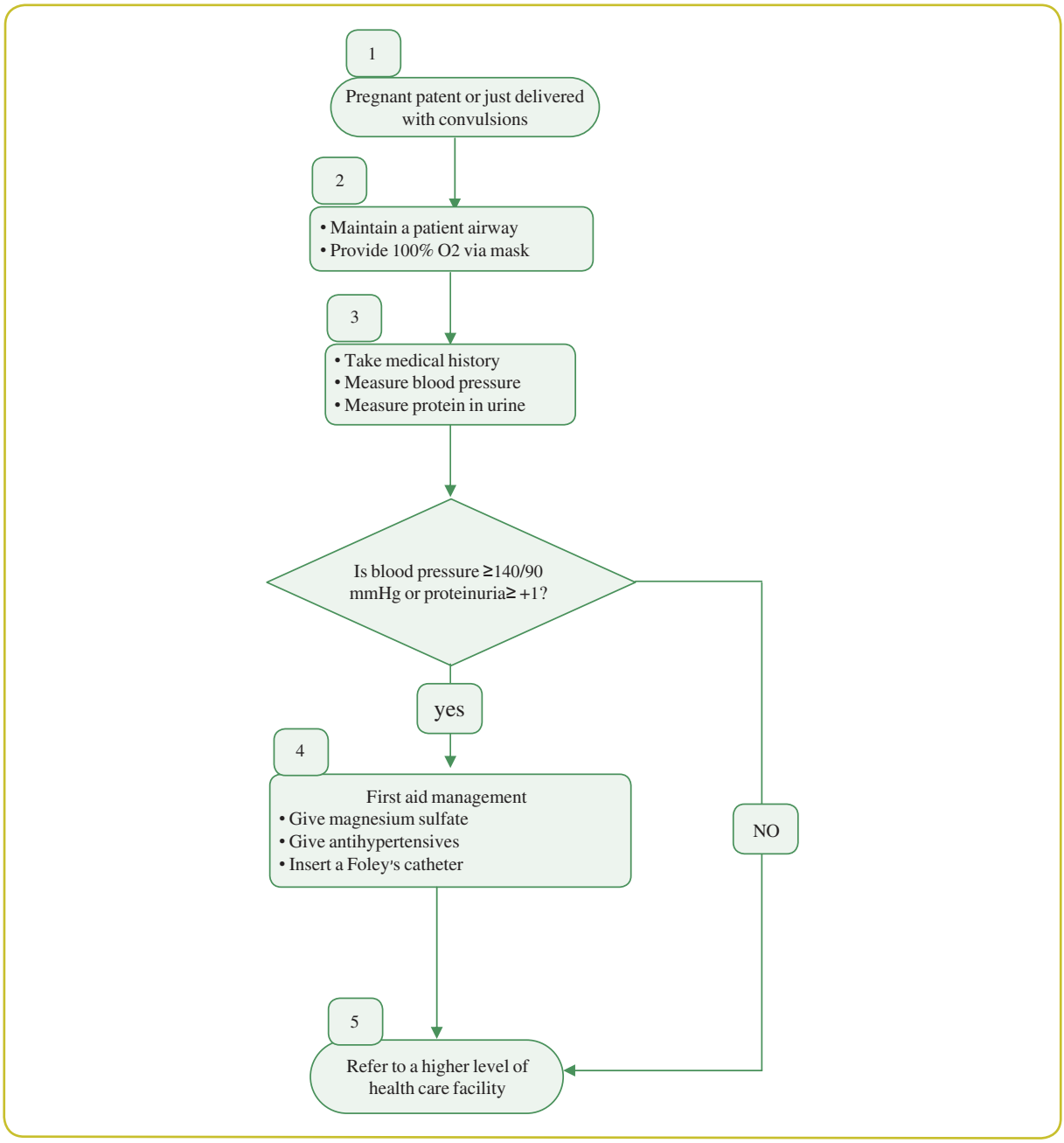


Figure "8": Flow Chart Diagram For Management of Eclampsia

Eclampsia

1.Definition

Eclampsia is the development of convulsions with hypertension that are induced by pregnancy.

Eclampsia usually occurs in the antepratum period (after 20 weeks of gestation) but may also occur intrapartum and rarely, postpartum. It is always preceded by pre-eclampsia.

2.Patent Airway

Airway patency

Ensure a patent airway by using a mouth gag if necessary, and suctioning.

Oxygen

Provide 100% oxygen via mask.

3.Clinical Picture

Medical History

The physician should ask the accompanying family about history of previous fits, severe headache, blurring of vision, or severe epigastric pain.

Physical Examination

- Measure the blood pressure.

Laboratory Investigation

- Measure proteins in urine by dipsticks.

4.First Aid Management

The Occurrence of convulsions endangers the lives of the woman and the fetus, so first aid management is life-saving in these conditions. In addition to maintaining a patent airway, the following should be done:

Magnesium sulfate

Magnesium sulfate should be given as an intravenously administered loading dose to achieve a plasma magnesium level that prevents eclamptic convulsion. This level is then maintained by subsequent administered maintenance doses.

- The recommended regime begins with a loading dose of 6 gm diluted in 200 cc of Ringer's lactate and infused slowly by IV drip over 15-20 minutes to be followed by the maintenance dose of 2 gm/ hour given slowly by IV route.
- The maintenance dose is continued during the referral process.

Antihypertensives: Indicated when the Diastolic BP≥ 110 mmHg

Nifedipine: A calcium-channel blocker that can be given orally - and should not be used sublingually. One capsule 10 mg is given orally before referral.

Insert a Foley's catheter

5.Referral

Referral of cases with eclampsia to a higher level of health care facility should follow these guidelines:

- Referral should be in an equipped ambulance .
- A physician should accompany the patient.
- Ensure airway patency and provide 100% oxygen via mask throughout referral.
- Limit IV fluid intake unless there is bleeding.
- Avoid giving diuretics.
- In addition to the maintenance dose, if the Patient develops an eclamptic convulsion during referral administer magnesium sulfate 2 gm IV slowly.
- Protect the Patient from harming herself by elevating the railways of the bed.

Heart Disease in Pregnancy

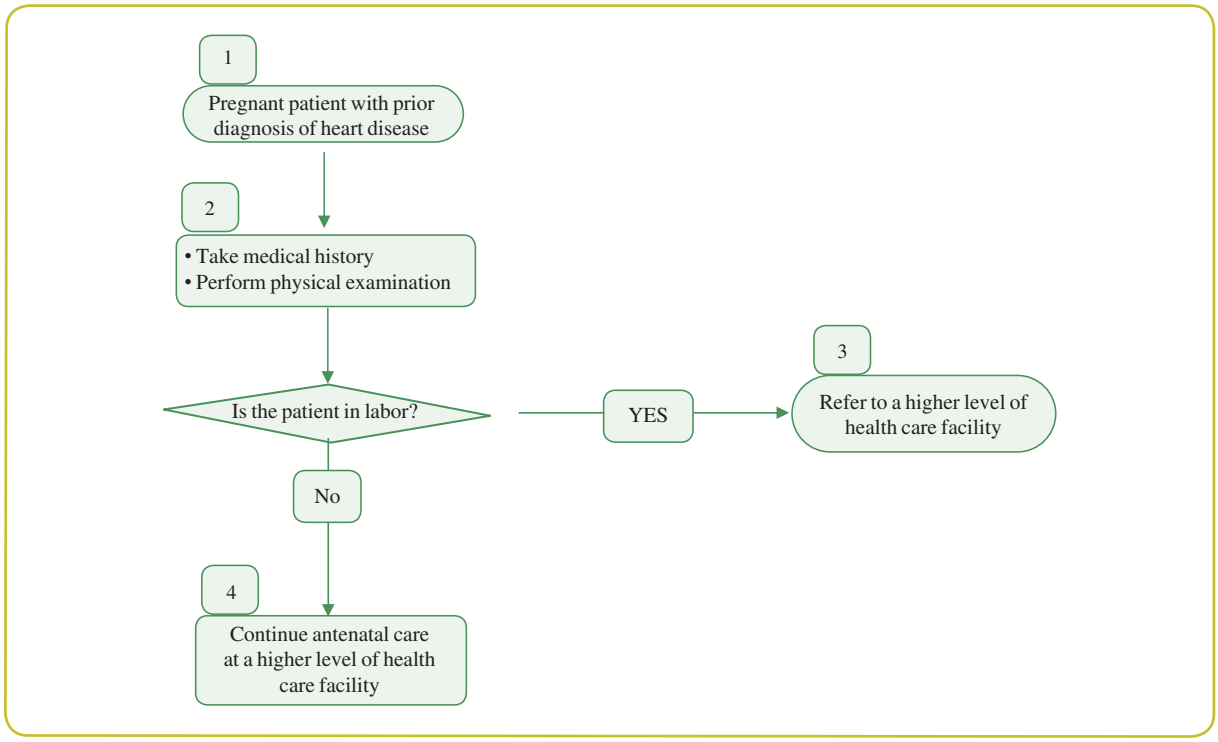


Figure "9": Flow Chart Diagram For Management of Heart Disease in Pregnancy

1.Definition

A pregnant patient should be considered to have heart disease if she has a history or symptoms of rheumatic heart disease or if she has had previous operations to the heart (valvotomy or valve replacement).

2.Clinical Picture

Medical History

- Dyspnea with ordinary effort
- Dyspnea at rest
- Paroxysmal nocturnal dyspnea
- Dyspnea on lying flat

Physical Examination

- Blood pressure and pulse.
- Orthopnea
- Congested neck veins
- Lower limb edema
- Enlarged tender liver
- The presence of a diastolic murmur
- Bubbling crepitations in cases complicated by pulmonary edema

3.Referral

If a patient with a history and signs of heart disease is in labor she should be referred. Referral to a higher level of health care facility should follow these guidelines if the patient is in labor.

- Referral should be in an equipped ambulance provided with a delivery kit.
- A physician should accompany the patient.
- The patient should lie in a semi-recumbent position during referral.
- Administer 100% oxygen via mask continuously.
- Give Ampicillin 2 gm IV (prophylaxis).
- Restrict IV fluid infusion to < 75 ml/hour if the patient is in heart failure.
- Give furosemide (Lasix®) 40 mg (two ampoules) IV.

4.Antenatal Care

Antenatal care for those patients who are not in labor should be performed in a hospital for combined obstetric and cardiac management.

Table. 10: Essential drugs for managing complications in pregnanacy and child birth

Antibiotics	IV Fluids
Amoxicillin	Dextrose 10%
Ampicillin	Glucose (5%, 10%, 50%)
Benzathine penicillin	Normal saline
Benzyl penicillin	Ringer's lactate
Cefazolin	
Ceftriaxone	Anticonvulsants
Cloxacillin	Diazepam
Erythromycin	Magnesium sulfate
Gentamicin	Phenytoin
Kanamycin	
Metronidazole	Antihypertensives
Nitrofurantoin	Hydralazine
Penicillin g	Labetolol
Procaine penicillin g	Nifedipine
Trimethoprim/ sulfamethoxazole	
Steroids	Oxytocics
Betamethasone	15-Methyl prostaglandin f2a
Dexamethasone	Ergometrine
Hydrocortisone	Methylergometrine
	Misoprostol
Drugs used in emergencies	Oxytocin
Adrenaline	Prostaglandin e2
Aminophylline	
Atropine sulfate	Anaesthetics
Calcium gluconate	Halothane
Digoxin	Ketamine
Diphenhydramine	Lignocaine 2% or 1%
Ephedrine	
Frusemide	Analgesics
Naloxone	Indomethacin
Nitroglycerine	Morphine
Prednisone	Paracetamol
Prednisolone	Pethidine
Promethazine	

Sedatives

Diazepam

Phenobarbitone

Antimalarial

Artemether

Artesunate

Chloroquine

Clindamycin

Mefloquine

Quinidine

Quinine dihydrochloride

Quinine sulfate

Sulfadoxine/Pyrimethamine

Tocolytics

Indomethacin

Nifedipine

Ritodrine

Salbutamol

Terbutaline

Other

Anti-tetanus serum

Ferrous fumerate

Ferrous sulfate

Folic acid

Heparin

Magnesium trisilicate

Sodium citrate

Tetanus antitoxin

Tetanus toxoid

Vitamin K

An Overview on Drugs in Pregnancy and Lactation

Drug Use in Pregnancy

It has been estimated that over 90% of women take three to four drugs at some stages of pregnancy.

- The indications for drug use:
  - o Chronic illness;such as epilepsy, depression, and rheumatoid arthritis.
  - o Diseases commonly associated with pregnancy, especially hypertension, urinary tract infections,vomiting and other gastrointestinal complaints.
  - o Occasionally drugs are administered to pregnant women to treat foetal disorders; e.g. Flecainide is given to mothers to treat foetal bradycardia.
- The stages of prenatal development can be divided into:

Stages of Development Include:

Blastocyst formation: 0: 16 days of gestation. only affected by ethyl alcohol,cytotoxic drugs.Cell death or a bortion is the usual outcome.Teratogenicity is not expected in this period.

Organogenesis: 17: 60 days of gestation.Affected by different teratogens.It is the common time of records of teratogenicity.

- Histogenesis and Functional development: up to full term.Affected by Alcohol,Nicotine,Anti-thyroid drugs,Steroids.

Drug Dosing in Pregnancy

As a rule,a dose of a drug given at any stage of pregnancy should be kept as low as possible to decrease toxic effects on the foetus.

Potentially addictive drugs should be tapered as term approaches; e.g. Anti-psychotic&Anti-depressant drugs.

- **Dose changes during pregnancy is due to changes in the Pharmacokinetics of drugs in pregnancy as follows:**
  - o GFR is increased by about 50% during pregnancy, so clearance of drugs excreted unchanged in urine is increased,and higher maintenance doses are required, e.g. B-lactam antibiotics,and Lithium.
  - o Hepatic metabolism of drugs is increased due to enzyme induction by hormones of pregnancy,but the effect on drugs is difficult to predict.
  - o Metabolism of methadone and phenytoin is increased in the third trimester requiring higher maintenance doses.
  - o Conversely metabolism of Theophylline is decreased, necessitating reduction of the dose.
  - o Volume of distribution of drugs(Vd) in pregnancy is increased by the expansion of ECF volume in pregnancy,togather with the foetal total body fluids.Thus increased Loading doses may be required with hydrophilic drugs.
  - o Protein Binding:Albumin is the main plasma protein that binds acidic drugs like (Salicylates&Phenytoin) .,alpha-1-Glycoprotein binds basic drugs(Opiods&Beta blockers).
  - o During pregnancy,concenteration of albumin falls,and the unbound fraction of drugs is increased,which necessitate adjustment of the dose.Therapy can only be reliably guided by clinical assessment of unbound rather than total plasma concentration of the drug.
- Critical factors affecting placental drug transfer

and drug effects on the foetus include the following:

- o The physicochemical properties of the drug.
- o The rate at which the drug crosses the placenta,and the amount of the drug reaching the foetus.
- o The duration of exposure to the drug.
- o Distribution characteristics in different foetal tissues.
- o The stage of placental and foetal development at the time of exposure to the drug.
- o The effects of drugs used in combination.

A-Lipid Solubility of Drugs:

Drug passage across the placenta is dependent on lipid solubility and the degree of drug ionization.

- Lipophilic,unionized drugs cross the placenta more easily than polar drugs.
  - o For example,Thiopental crosses the placenta almost immediately,and produce sedation and apnoea in the newborn infant.
  - o Ionized drugs such as Succinylcholine and d-Tubocurarine,cross the placenta slowly,and achieve very low concentration in the foetus.
  - o Impermeability of placenta to polar compounds is relative rather than absolute.
  - o If high enough maternal/foetal concentration gradient are achieved,polar compounds cross the placenta in measurable amounts e.g. Salicylate,which is almost completely ionized at physiologic PH,crosses the placenta rapidly.This is because the small amount of salicylate that is not ionized is highly lipid soluble.
  - o Some drugs are TRAPPED in the foetal circulation due to slightly lower PH compared with maternal plasma.

B-Molecular Size:

- Drugs with MW of 250-500 can cross the placenta easily,depending upon their lipid solubility and degree of ionization.
- Those with MW 500-1000 cross the placenta with more difficulty.Higher MWs cross very poorly.
- An important clinical application of this property is the choice of heparin as an anticoagulant in pregnant women-being very large sized and polar. Unlike warfarin,which is teratogenic and should be avoided during the 1st trimester and even beyond(as the brain continues to develop),heparin may be safely given to pregnant women needing an anti-coagulant.
- Apparent exceptions to the "Size Rule"are maternal antibody globulins and certain polypeptides that cross the placenta by some selective mechanisms

C-Protein Binding:

- The degree of binding to albumin may affect the rate of transfer and the amount transferred.
- However if a compound is very lipid soluble (e.g. Some anaesthetic gases),its transfer and overall rate of equilibration are more dependent upon/and proportionate to placental blood flow.
- If a drug is poorly lipid soluble and is ionized,its transfer is slow,and will probably be impeded by its binding to maternal plasma proteins.
- Differential protein binding: Some drugs exhibit greater protein binding in maternal plasma than in foetal plasma because of a lower binding affinity of foetal proteins.This has been shown for Sulphonamides,Barbiturates, Phenytoin.

D-Placenta and Fetal Drug Metabolism:

- Two mechanisms help to protect the foetus from drugs in the maternal circulation.
- The placenta itself plays a role as a semipermeable barrier and as a site for metabolism of some drugs passing through it.
  - o Several different types of aromatic oxidation reactions have been shown to occur in placental tissue.
  - o It should be noted that metabolites of some drugs may be more active than the parent compound and may affect the fetus adversely.
  - o Conversely it is possible that the metabolic capacity of the placenta may lead to creation of toxic metabolites,and the placenta therefore may augment toxicity (e.g.Ethanol,

Benzpyrenes).

- Drugs that have crossed the placenta enter the fetal circulation via the umblical vein.About 40-60% of umblical venous blood flow enters the fetal liver,the remainder bypass the liver and enter the general fetal circulation.
- A drug that enters the liver may be partially metabolised there before it enters the fetal circulation.In addition,a large proportion of drug present in the umblical artery-returning from the placenta- may be shunted through the placenta back to the umblical vein,and into the liver again.

Some Pharmacodynamic Aspects of Importance During Pregnancy

- Drug effects in pregnancy:
  - The effects of drugs on the reproductive tissues (Breast,Uterus, etc..) of the pregnant woman are sometimes altered by the endocrine environment appropriate for the stage of pregnancy.
  - Drug effects on other maternal tissues are not changed significantly by pregnancy, although some physiologic parameters as cardiac output,renal blood flow, etc.. may be altered and may require the use of drugs not needed before pregnancy.
  - For example, Cardiac glycosides and diuretics may be used to treat CHF precipitated by pregnancy,and insulin may be used to treat pregnancy induced Hyperglycemia.

Foetal Therapeutics

- Drug administration to the pregnant woman with the fetus as the target of the drug.
- At present,corticosteroids are used to stimulate fetal lung maturation, when preterm birth is expected.
- Phenobarbitone when given to pregnant women near term,can induce fetal hepatic enzymes responsible for glucuronidation of bilirubin,thus
  - reducing the incidence of neonatal jaundice.
  - Administration of Phenobarbitone to pregnant mothers was found also to reduce the risk of intracranial haemorrhage in preterm infants.
  - Antiarrhythmics(e.g.Digoxin,Flecainide, procainamide,Verapamil,etc) may be given to mothers for treatment of fetal arrhythmia.

Predictable Toxic Drug Actions

In The Foetus:

- Chronic use of opiods by the mother may produce dependence in the foetus and newborn.This dependence may be manifested after delivery as a neonatal withdrawal syndrome.
- Drugs crossing the placenta may exert DIRECT pharmacologic effect on the foetus e.g. Corticosteroids in large doses may cause fetal adrenal suppression,Carbimazole to mothers may lead to suppression of foetal thyroid,..etc..
- ACE inhibitors to mothers may result in significant and irreversible renal damage in the fetus,and therefore contraindicated in pregnant women.
- Adverse effects may be delayed as in case of female fetuses exposed to diethylstilbesterol, who may be at increased risk of adenocarcinoma of the vagina after puberty.
- The foetus may be INDIRECTLY affected by pharmacologic effects of the drug on the maternal circulation.This is seen with some antihypertensives(B-blockers),that can cause fetal hypoxia secondary to maternal hypotension.
- The effect of the drug may be idiosyncratic due to genetic predisposition.The effects are unpredictable, and not dose related, and usually lead to major irreversible congenital anomalies.
- Drug effects on the foetus are described in terms of the Trimester of Risk,and some drugs may present a different risk according to trimester of exposure, e.g. Phenobarbitone

causes congenital anomalies in the first trimester,and leads to neonatal bleeding if used in the third trimester.NSAIDs&Sulfa show such differential risk.

- Exposure to drugs in Pre-embryonic stage leads to all or none response,leading either to death and abortion of embryo,or complete recovery by regeneration of affected cells.

Teratogenic Drug Actions

- A single intrauterine exposure to a drug can affect the fetal structures undergoing rapid development at the time of exposure. Thalidomide is an example of a drug that may profoundly affect the development of the limbs after only brief exposure.
- What is meant by Teratogenicity??
  - o Teratogenesis: Gross structural malformations during foetal development, through affection of DNA.
  - o The effects are more in first trimester at the time of Organogenesis.
  - o Congenital anomalies:are non reversible birth defects caused by genetic predisposition or other factors including drug exposure.
  - o Approximately 2% of all live births are associated with congenital anomalies, and it has been estimated that 5% of those are caused by drugs, e.g.:

- Androgens-Lithium - D-Penicillamine.
- Phenytoin. - Tetracyclines.
-Thalidomide. - Warfarin
- Cytotoxic drugs - Carbimazole
- Ethanol - Diethylstilbsterol
- Isotretenoin

A substance that is considered teratogenic, should:

1. Result in characteristic set of malformations, indicating aselectivity for certain target organs.
2. Exert its effect at a particular stage of fetal development.
3. Show a dose dependent incidence.

Examples of Teratogens

Drug	Effect
Thalidomide	Phacomelia,Heart defects,Gut atresia.
Penicillamine	Loose skin
Warfarin	Saddle nose,Retarded growth,Limb,Eye,CNS defects
Corticostroids	Cleft palate,Congenital Cataract.
Androgens	Masculinisation of female foetus
Oestrogens	Testicular atrophy
Stiboesterol	Vaginal adenosis,vaginal&cervical cancer (+20ys)
Phenytoin	Cleft palate,Microcephaly,MR.
Valproate	Neural tube defect,spina bifida.
Carmazepine	Retardation of foetal head growth.
Cytotoxic drugs	Hydrocephalus,Cleft palate,Neural tube defects
Aminoglycosides	8th cranial nerve damage
Tetracyclines	Teeth and bone affection.
Ethanol	Foetal Alcohol Syndrome
Retinoids	Hydrocephalus,Skin deformities (Stop 2ys before pregnancy)
Heavy metals	CP,MR,Microcephaly
ACEI	Renal dysfunction,Oligohydramnios.
Spironolactone	Feminzation of male foetus
NSAIDS	Closure of DA &Renal impairment.
Sulpha & Thiazides	Neonatal hemolysis of RBCs&Thrombocytopenia

Teratogenic Mechanisms

- These mechanisms are poorly understood and are usually multifactorial.
- Drugs may have a direct effect on maternal tissues with secondary or indirect effects on fetal tissues.
- Drugs may interfere with the passage of oxygen or nutrients through the placenta and therefore have effects on the most rapidly metabolizing

tissues of the foetus.

- Also drugs may have important effects on the processes of differentiation in developing tissues.For example,vitamin A(Retinol)has been shown to have important differentiation-directing actions in normal tissues.
- Several vitamin A analogues (Isotretinoin, etretinate)are powerful teratogens,suggesting that they alter the normal processes of differentiation.
- Deficiency of a critical substance,for example folic acid supplementation during pregnancy appears to reduce the incidence of neural tube defects e.g. spina bifida.
- Contiued exposure to a teratogen may produce cumulative effects,or may affect several organs going through varying stages of development. Chronic consumption of high doses of ethanol during pregnancy, esp. during 1st and 2nd trimesters,may result in foetal alcohol syndrome,in which CNS development and facial growth may be affected.

Drug Use in Lactation

- Transfer of drugs into the breast milk is almost always by Passive Diffusion.
- Several factors affect the rate of passive diffusion, e.g.:
  - o Maternal Pharmacokinetic Parameters.
  - o Physiological Nature of MILK.
  - o Physico-chemical properties of the drug.
- Breast milk differs from plasma in that it has:
  - o Lower PH
  - o Lower Protein Binding Capacity
  - o Higher Concentration of Lipids
- The following factors affect the extent of drug transfer to milk:
  - o PKa: This measure the fraction of the drug that is ionized(Low lipid solubility)at physiological PH.
  - o Protein Binding of drugs:drugs that are highly bound to plasma proteins,will be held in the maternal plasma.
  - o Lipophilicity: It is directly proportionate to the passage of drugs into milk.
- Thus;the profile of drugs that pass minimally into milk,would be:
  - o Acidic
  - o Highly bound to plasma proteins
  - o Low to moderate lipophilicity, e.g. Nsaids.
  - o Those with higher concenteration in Milk, are:
  - o Basic
  - o Low protein binding
  - o Lipophilic.
- It should be kept in mind that the Composition of milk varies between mothers and within the same mother at different times.
- Infant exposure to drugs during breast feeding can be assessed by calculating the MILK: plasma Ratio (MPR),using the AUC of the drug in maternal plasma and milk over the same dose interval.
- If MPR is known or can be estimated for a drug from its physicochemical criteria,the infant dose (**Dinf**.) can be caculated as follows:

  Dinf. = **CP** mat. xMPRx Volume of milk.
  (average maternal drug concn.)

- Drugs not absorbed orally in adults are also not absorbed by infants.Therefore drugs such as: Aminoglycosides,Vancomycin,Heparins &Insulins are considered safe to use in breast feeding mothers.
- Examples of drugs giving high infant exposure,and must be avoided during lactation are:

Amiodarone-Carbimazole-Isoniazid-Lithium-Metronidazole-Phenobarbitone-Theophylline.

- Idiosyncratic allergic drug reactions may occur in sucking babies, e.g. rash from an antibiotic.Also hemolysis of RBCs may occur to a small amount of certain drugs in cases of G-6-PD deficiency.
- Only few drugs affect milk production, which is controlled by Prolactin.Thus drugs decreasing prolactin like Oestrogen,or dopaminergic agonists(Bromocryptine), reduce milk production. Thiazides and Serotonin antagonists may also decrease milk production.
  - o Most antibiotics taken by nursing mothers can be detected in breast milk.Tetracyclines achieve 70% of maternal serum concentration in breast milk, with the risk of affecting infant

teeth and bone.

- o Although chloramphenicol concen. in breast milk is not high enough to cause grey baby syndrome,it can produce idiosyncratic Pancytopenia ,and thus it should be avoided in nursing mothers.
- o Isoniazid rapidly reaches equlibrium between breast milk and maternal plasma.The concentration achieved is high enough to cause pyridoxine deficiency unless the mother was given pyridoxine supplement.
- o Quinolones are also avoided with breast feeding because if their effects on growing cartilage and articular tissues.
- o Most sedatives and hypnotics achieve concentrations in breast milk sufficient to produce a pharmacologic effect in some infants.

- Barbiturates taken in hypnotic doses by the mother can produce sedation,lethargy,and poor suck reflexes in infants.
- Diazepam can have a sedative effect on sucking baby,but the most important is its long half life will lead to significant drug accumulation.
- Lithium enters the breast milk in concentrations equal to that in maternal plasma.Clearance of this drug is dependent on renal elimination.
- Breast feeding should be avoided if mothers are receiving cancer chemotherapy,or radioactive agents like iodine.

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Ibid; "Comprehensive Essential Obstetric Care: Protocol for Physicians"
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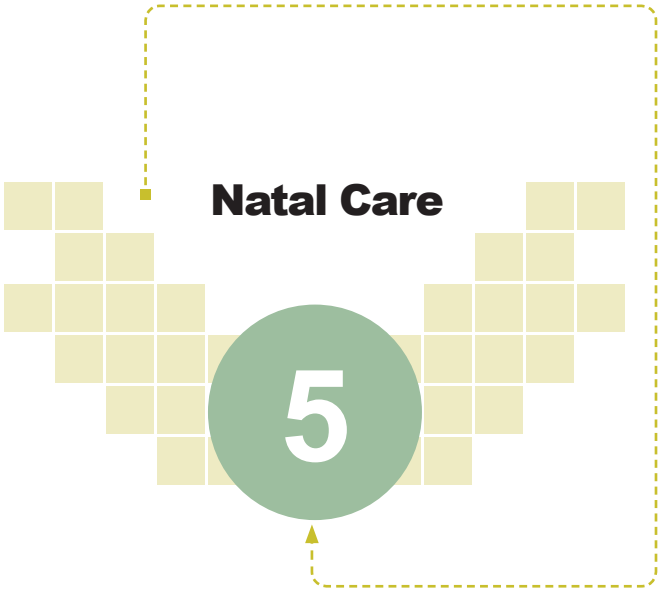

Natal Care
5

Normal Labor

1- Labor Pains

Women usually perceive labor pains as upper abdominal pain, colicky in nature, radiating to the back and lower abdomen, and sometimes associated with menstrual-like cramps or lower abdominal heaviness. The pains occur frequently, more or less regularly, and with increasing amplitude on the partograph.

2- Clinical Picture

History Taking

- Personal history
- Obstetric history
  - Number, mode and outcome of previous deliveries. If woman has previously delivered by cesarean section, refer to a higher level of health care facility.
  - Warning symptoms e.g., vaginal bleeding, rupture of membranes, decreased fetal movements, severe headache, blurring of vision or severe epigastric pain.
  - Last normal menstrual period (NMP).
  - Expected date of delivery (EDD).
- Past medical and surgical history.

Physical Examination

- **General**
  - Vital signs: blood pressure, pulse and temperature
  - Height and weight
- **Chest and Heart Examination**
  - Wheezing
  - Crepitations
  - Murmurs
- **Abdominal**
  - Fundal level, fetal lie and presentation
  - Uterine contractions
  - Fetal heart rate
- **Local**
  - Cervical dilation and effacement
  - Presenting part and its station
  - Condition of the membranes and liquor in case of ruptured membranes
  - Pelvic bone capacity

Laboratory Investigation

- Hemoglobin level
- ABO grouping and Rh typing
- Urine analysis (for protein and sugar and acetone)

3- Risk Factors

The presence of one or more of the following risk factors indicate that the woman should be managed at a higher level of health care facility:

- Grand multipara (parity ≥ 5)
- Previous uterine incision (CS, hysterotomy or myomectomy)
- Previous intrapartum death or early neonatal death
- Previous postpartum hemorrhage or retained placenta
- Past medical diseases (hypertension, diabetes, renal diseases, heart diseases)
- In the current pregnancy
  - Vaginal bleeding (antepartum hemorrhage)
  - Premature rupture of the membranes
  - Hypertension
  - Fundal level > amenorrhea (macrosomia in polyhydramnios, multiple pregnancy)
  - Fundal level < amenorrhea (IUGR in oligohydramnios)
  - Malpresentations (any presentation other than vertex)
  - Inadequate pelvic capacity

4- The Labor

True labor pains are regular, frequent uterine

contractions that increase progressively in frequency, intensity and duration, resulting in cervical effacement and dilation.

- Confirm the diagnosis of labor.

5- Education

A woman may be placed on "hold" status for observation in case her labor pains are false and until they change to true labor pains.

A woman who is not in labor should receive education which includes symptoms and signs to look for and reassurance that she can come back to the unit when these changes occur.

If the diagnosis is not firm, if the patient lives far from the facility, or if it is night time, the patient may be asked to stay for observation.

6- Care During The First Stage of Labor

- Reassure the patient and explain all procedures to her.
- Keep the family informed of progress.
- Allow clear fluid diet.
- Analgesics should always be offered when needed.
- Allow free ambulation until ROM occurs.
- Monitor vital signs ever hour.
- Monitor uterine contractions every 30 minutes (note frequency in 10 minutes and their duration).
- Monitor progress of labor (cervical dilation and head descent) using the partograph according to the protocol.
- Monitor the fetal heart rate every 30 minutes (before, during and after uterine contractions).
- Encourage the woman to pass urine every two hours.
- Observe the color of the amniotic fluid.
- Avoid giving oxytocia.

7- Amniotomy

If SROM has not occurred, amniotomy should be done early in labor unless:

- Fetal head is not engaged, for fear of the occurrence of cord prolapse
- Cervix is dilated < 3 cm

Early amniotomy reduces and prevents the incidence of failure to progress in labor.

8- Fetal Distress

If the plotting of cervical dilation crosses the Alert Line of the partograph, a more senior assessment should be performed.

Fetal distress is identified when:

- Basal fetal heart rate < 120 bpm or > 160 bpm

9- Referral

Referral to a higher level of health care facility should follow these guidelines if the patient is in labor:

- Referral should be in an equipped ambulance provided with a delivery kit.
- A physician or a well-trained delivery room nurse should accompany the patient.
- Administer prophylactic antibiotics (Ampicillin 2 gm IV) before or during referral.
- If referral is due to fetal distress, position the woman in a left-lateral position and provide 100% oxygen via mask.

10- Care during the Second Stage of Labor

- Make sure that the cervix is fully dilated.
- Encourage the woman to wait to push until she feels the urge to bear down.
- Encourage her to push during contractions and to relax between them.
- Do not push on the abdomen to force delivery.
- Monitor fetal heart rate every 5 minutes.
- Use the palm of one hand to support the

perineum during contractions, while the second hand applies pressure to the fetal head to control the speed of extension and crowning.

- There are doubts about the benefits of sustained rubbing of tissues that are already highly vascularized and edematous.
- Mediolateral episiotomies, the most commonly used incision, effectively avoids the anal sphincter and the rectum.
- Episiotomy is indicated if there is:
  - Signs of fetal distress
  - A rigid perineum causing insufficient progress of labor and fetal distress.
  - Threatening signs of an emerging tear.
  - Third degree tear in previous delivery.
  - Extensive female genital mutilation (FGM).
- If performed, episiotomy should be done after crowning.

11- Prolonged Second Stage

If the second stage exceeds two hours in a primipara or one hour in a multipara, or if there is fetal distress in the from of fetal bradycardia < 120 bpm, or tachycardia > 160 bpm, the woman should be managed at a higher level of health care facility.

12- Delivery of The Fetus

- Deliver the head between contractions to minimize the incidence of perineal tears.
- Deliver the shoulders and then the body will follow.
- Dry secretions off the mouth.
- Clamp the cord after pulsation ceases.
- Bulb suction the mouth first and then the nose.
- Perform tactile stimulation to stimulate breathing and crying.
- Put the neonate under a radiant warmer. For neonatal resuscitation see Vol. 1.

13- Care During The Third Stage of Labor

- If an episiotomy was done, it should be repaired in layers.
- The placenta is delivered by active management.
  - Administer 10 IU oxytocin IM.
  - Perform controlled cord traction.
  - Inversion may occur as a result of excessive cord traction while the uterus is still relaxed, vigorous fundal pressure, or exceptionally high intra-abdominal pressure as a result of vomiting or coughing.
  - Immediately massage the fundus of the uterus until the uterus is contracted.
- The placenta should be delivered within 30 minutes. If not, you are confronted with a case of retained placenta.
- Watch for signs of placental separation: vaginal bleeding, lengthening of the cord, suprapublic bulge, then perform controlled cord traction.
- Inspect the placenta and membranes to exclude missing parts.
- In case of retained placenta, it is appropriate to wait 30 minutes before referral to a hospital in absence of bleeding. During this time continuous uterine massage is performed and oxytocin 20 lU/liter normal saline or Ringer's solution is given by IV infusion.
- Suture first and second degree tears under local anesthesia. Suture vaginal mucosa from the apex, which must be clearly identified, down to the introitus. Then repair the perineal body with stitches of the same material.
- **Refer third degree tears to the hospital.**
- For aftercare of perineal tears advice the woman to wash the perineum each day with warm water and antiseptic solution; then carefully dry the perineum. Order a low-residue diet. If the woman has extensive tears and retains urine, order catheterization. If

infection occurs sufficient sutures are to be removed to permit drainage, and antibiotics given.

14- First Aid Management

Postpartum hemorrhage is the major killer of women in their reproductive years, so immediate first aid management is necessary if the number of women dying from postpartum hemorrhage is to be reduced. First aid management should include the following steps:

- Insert two wide bore IV cannulae (size 16 or 18).
- Immediately start an IV crystalloid (Ringer's or saline) infusion at a fast drip (1 liter/ hour).
- Provide 100% oxygen via mask and warm the patient.
- Obtain a blood sample to type and cross match (ABO, Rh, Hb).
- Insert a Foley's catheter.
- Perform uterine massage.
- Administer oxytocin 20 IU/ liter.
- Refer according to referral guidelines.

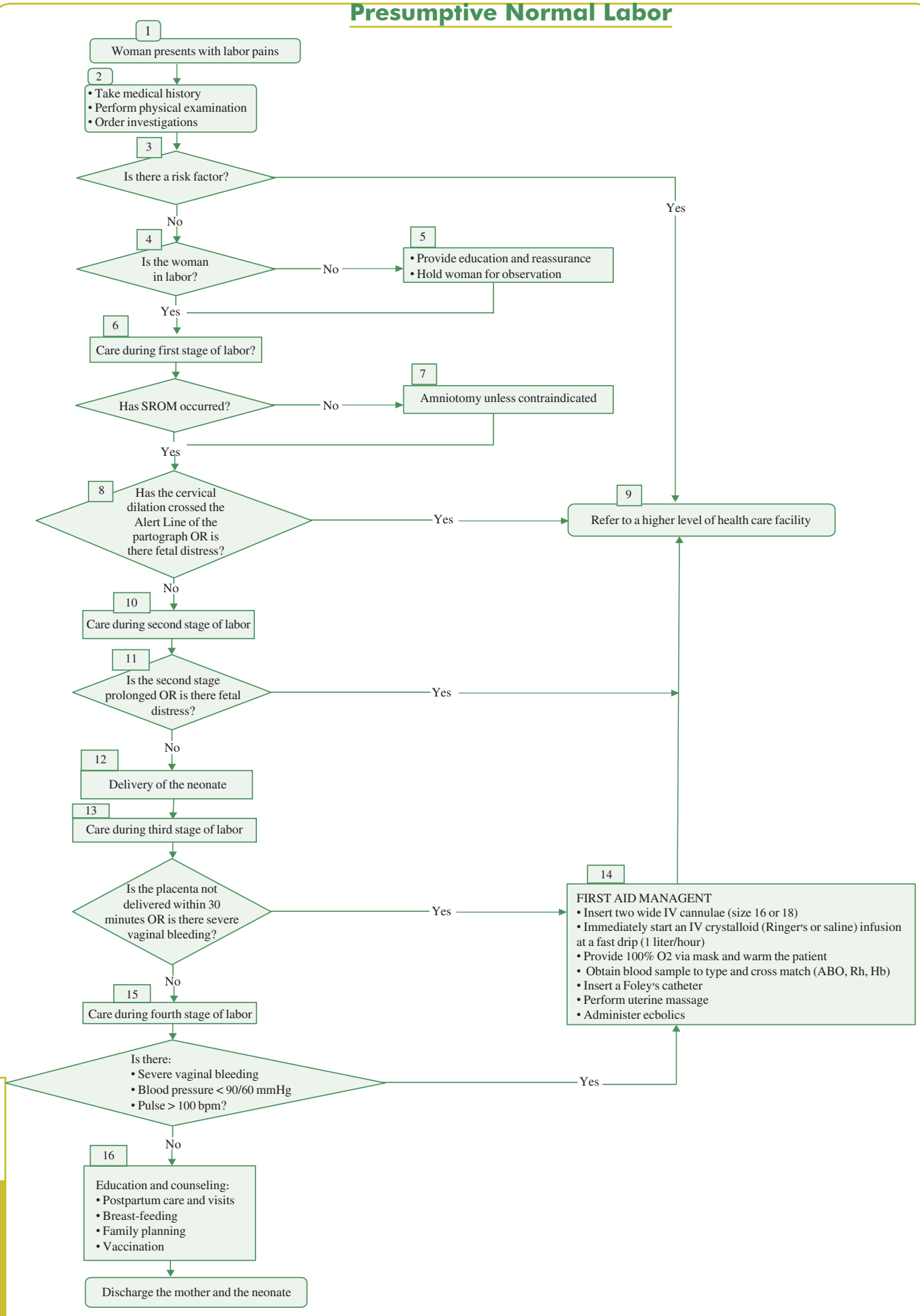
15- Care during The Fourth Stage of Labor

- Monitor vital signs (blood pressure, pulse and temperature) every 30 minutes for two hours.
- Massage the uterus to prevent uterine atony.
- Observe for vaginal bleeding.
- Encourage the woman to urinate.
- Encourage immediate breast-feeding.
- Administer one vitamin A capsule (100.000 IU) to the mother at this time.
- Fill out the Woman's Health Card after the delivery is complete.

16- Education and Counseling

Before discharge, the woman should be informed about the postpartum care visits and their importance, the schedule and who will be conducting these visits. She should also be educated about the importance of exclusive breastfeeding for the first six months. The woman should be counseled regarding family planning. The woman needs to be educated about the sets of vaccinations her neonate will receive (hepatitis B, BCG, DPT, OPV, etc.) and the timing of these vaccinations.

Presumptive Normal Labor



The Partograph

When you look at the figure below which is the partograph you might have some questions, and here we will answer them together.

BEOC Protocols
Chapter 12 Recognize and Manage Labor

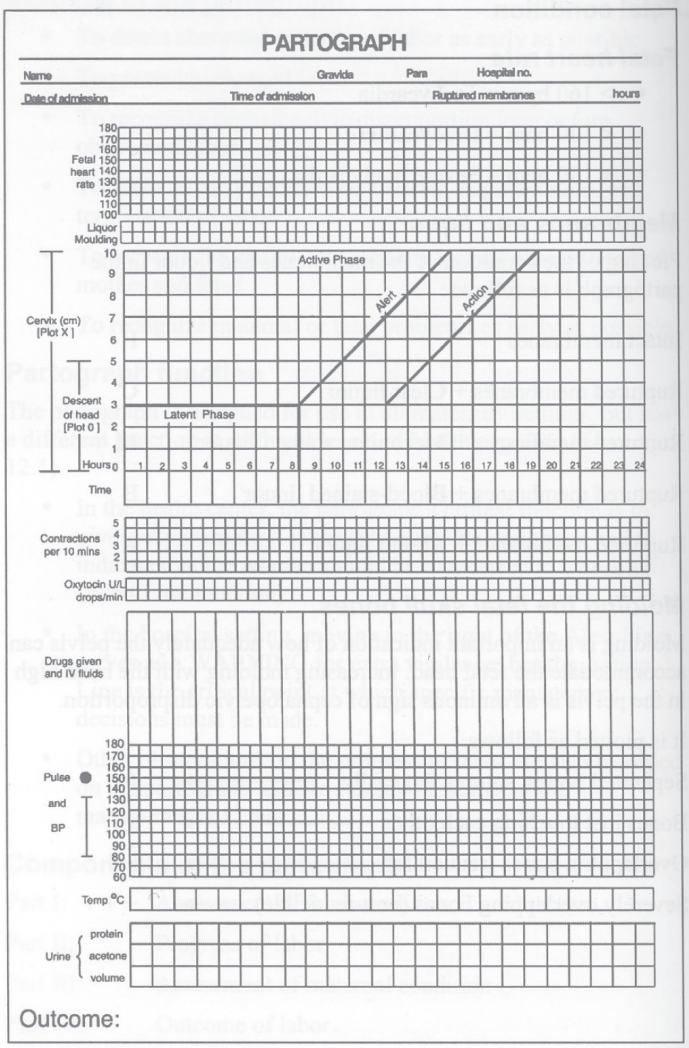


Figure 12.1 Partograph

What is meant by the partograph?

A partograph is a graphical record of progress during labor. Progress is measured by cervical dilation against time in hours.

What is a partograph designed for?

It monitors and assesses fetal condition, progress of labour and maternal condition.

How to fill out a partograph?

From above downwards you will sequentially fill out the partograph by the following items:

1. Fetal heart rate

- > 160 bpm = Tachycardia
- < 120 bpm = Bradycardia
- < 100 bpm = Severe bradycardia

2- Condition of membranes and liquor

- Intact membranes I
- Ruptured membranes + Clear liquor C
- Ruptured membranes + Meconium stained

liquor M

- Ruptured membranes + Blood-stained liquor B
- Ruptured membranes + Absent liquor A

3- Moulding of fetal skull bones

- Separated bones, sutures felt easily 0
- Bones just touching each other.....+
- Overlapping bones (reducible).....++
- Severely overlapping bones (non-reducible).....+++

Note: that items number 1-3 assess fetal condition.

4-Cervical Dilatation

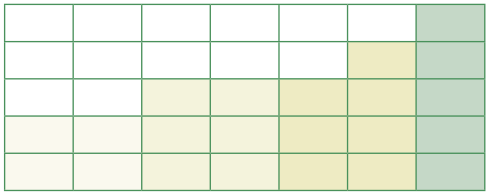
- Plot cervical dilatation in cm against time in hours
- Cervical dilation which lasts the whole first stage of labour is divided into a latent phase and an active phase. Latent phase starts from onset of labor until the cervix reaches 3cm dilation. This lasts eight (8) hours or less. Contractions occur at least twice every ten (10) minutes with each lasting > 20 seconds.
- Once 3 cm dilation is reached, labor enters the active phase. Contractions occur at least three (3) times every ten (10) minutes each lasting > 40 seconds. The cervix should dilate at a rate of 1 cm / hour or faster.
- The Alert line drawn from 3 cm to 10 cm dilatation represents the rate of dilatation of 1 cm/hour. Moving to the right of the Alert line means thez patient should be referred to the hospital.
- The Action line is drawn four hours to the right of the Alert line. Here, specific management decisions must be made at the higher level of the health care facility.
- When the woman arrives in the latent phase the time of admission is 0 time.

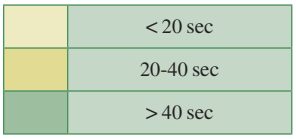
5-Descent of Fetal Head

- Apply the Rule of Fifths: When 2/5 or less of the fetal head is felt above the level of symphysis pubis this means that the head is engaged, and by vaginal examination, the lowest part of vertex has passed or is at the level of ischial spines.
- See figure for assessing the descent of fetal head by vaginal examination.

6-Uterine Contractions

- Assess their frequency by counting their number in a ten-minute period.
- Measure their duration in seconds from the time the contraction is felt abdominally, to the time the contraction phases off.





Observing contractions

Note that items number 4-6 assess progress of labour.

7-Maternal Condition, By Monitoring:

- Drugs, IV fluids
- Pulse, blood pressure
- Temperature
- Urine volume, analysis for protein and acetone

*How to detect anomalies through the partograph?

- Moving to the right of Alert line is a WARNING = referral.
- Reaching the Action line = intervention is due.
- Prolonged latent phase (dilatation < 3 cm, lasting for > 8 hours): **refer** to a hospital.
- Prolonged active phase (plotting of dilatation to the right of Alert line): **refer.**
- Secondary arrest of cervical dilatation (normal cervical dilatation followed by secondary arrest): **refer to hospital.**
- Secondary arrest of head descent (normal head descent followed by secondary arrest): **refer to hospital.**

- Fetal distress (see above): **refer to** a higher health facility.
- If membranes have been ruptured for 12 hours or more, broad spectrum antibiotics (Ampicillin 2 gm IV) should be given.

Clean and Safe Home Birth

1- Reasons Families Choose to Give Birth at Home

It is safe to say that a woman should give birth in a place she feels is safe, and at the most peripheral level at which appropriate care is feasible and safe (WHO, 1996).

Reasons families choose to give birth at home include:

- Local traditions and/or customs
- Greater comfort and privacy
- Trust in the daya who is often known and respected in the local community.

2- Women at Risk to Deliver at Home

Home: Infectious disease present (e.g., hepatitis), unsanitary conditions

Obstetrical: Pre-eclampsia or eclampsia, multiple gestation, placenta previa, polyhydramnios, Rh isoimmunization, previous cesarean section, previous stillbirth or neonatal death, multipara > 4

Medical: Cardiac disease, tuberculosis, diabetes, venereal disease, essential hypertension, severe anemia history of infertility

Fetal: Breech or transverse lie, gestation < 37 weeks, gestation > 42 weeks, intrauterine fetal death, intrauterine growth retardation, previously diagnosed congenital fetal malformation

3- Hospital Delivery

Women who have one or more of the previous risk factors should be advised that hospital delivery is much safer for her and her newborn. The health care provider should encourage her and her family to deliver at the hospital. S/he should discuss with them the obstacles they have to deal with to allow hospital delivery and reach a solution for these obstacles.

4- Counseling for Home Birth

Before counseling for home births remember "the four delays" that were found to predispose to maternal mortality:

in recognizing the problem (lack of awareness of danger signs)

- in deciding to seek care (health facility inaccessible, fear of costs, fear of poor treatment
- in reaching the health facility (lack of transportation)
- in receiving adequate treatment at health facility (lack of equipment, supplies, trained personnel, drugs, blood)

During a home birth DON'T do the following:

- extensive use of oxytocin and ecbolics
- use of for forceps and vacuum extractions
- fundal pressure to speed up the delivery
- cesarean section at home
- lack of infection control precautions

Counseling for home births should start early at the antenatal care booking visit, the aim of this counseling is to ensure the following:

- **A family birth plan:**
  - Communication: how to contact the birth attendant on starting pains.
  - Danger signs looked for by the family and birth attendant to decide referral to health facility.
  - Who decides transportation?
  - How will the woman be transported? How will the cost of transportation be paid?
  - Where will the woman be transported?
  - The pregnant woman should carry the antenatal card at all times.
  - Who will donate blood, if necessary.
- Birth preparedness: plan for appropriate location within the home, choose a skilled provider, birth kit and identify support people.
- Complication readiness: where and how to be referred? Who will help in transporting her, funding medical care and donating blood.

- Awareness of danger symptoms and signs that might occur during the course of birth (obstetrical complications: see number 9).

5- Assessment of The Place of Birth

During antenatal care, the nurse who is working in the primary health care facility should arrange a home visit with the woman. The aim of this visit is to:

- Identify the address of her home and the quickest way to get there.
- Inspect the home to ensure that it meets the criteria to allow a clean and safe birth to take place.

6- Accepted Criteria for Home

The place for delivery should be assessed for the following:

- Availability of clean water
- A room that is clean and has enough light
- A place that is an adequate distance from sites where animals are present.
- A place that is as near as possible to the main entrance of the home to prevent delays in case of emergency and if referral is needed.
- Availability of the supplies needed at home during birth to make delivery clean and safe using the "Preparation for Home Birth Checklist" (mentioned later).

7- Upon Arrival at Home

- Ensure cleanliness of the place of delivery and that the assigned place for delivery fulfills the expected criteria.
- Reconfirm the availability of transportation in case of complications or if an emergency arises.
- Review the Woman's Health Card to have an updated overview of the prenatal care.

8. Medical History and Physical Examination

History Taking

- LMP, confirmation of maturity (gestational age > 37 weeks), and EDD.
- History of the onset of labor pains, their frequency, and duration
- History of vaginal bleeding
- History of rupture of membranes
- History of decreased fetal movements
- History of severe headache
- History of severe epigastric pain
- History of blurring of vision
- History of convulsions

Physical Examination

General

- Blood pressure, temperature, respiration, and pulse
- Check for pallor or jaundice

Abdominal

- Fundal level
- Fetal lie and presentation
- Check fetal heart sounds
- Inspect for any existing scars

Pelvic

- Examine the vulva for rigid perineum, scars, or marked varicosities.
- Cervical dilatation
- Status of the membranes and color of amniotic fluid
- Presenting part

9- Risk Factors During Labor

- Gestation < 37 weeks
- Vaginal bleeding (fresh, bright red blood)
- Temperature > 37.5 °C
- Blood pressure ≥ 140/90 mm Hg
- Abnormal fetal lie or presentation
- Abnormal fetal heart rate (< 120 bpm or > 160 bpm)
- Prolapse of the umbilical cord
- Progress of labor crossed the Alert Line of the partograph
- Delivery of the fetus delayed > 4 hours after ROM
- Meconium stained liquor

10- Referral to The Health Facility

Referral Guidelines for the Mother (mentioned later).

The birth attendant should accompany the woman during referral to the health facility.

- Provide continuous monitoring of the woman during referral.
- Confirm infusion of crystalloid during referral.

Referral Guidelines for the Newborn (**see neonatal section**)

Clear airways and confirm spontaneous breathing.

- Wrap the newborn to provide warmth during referral.

11- Management of the First Stage of Labor

- Encourage movement, changes in position and having a shower except if the membranes have ruptured in the presence of a non-engaged fetal head.
- Maintain hydration in labor.
- Use infection control precautions by ensuring "the six cleans": clean hands, perineum, delivery service, cord-cutting instruments, cord ties and nothing unclean should be introduced into the vagina.
- Provide supportive care to the woman and her family. Also teach the family members to provide supportive care to the woman by massaging her back and shoulders between contractions, wiping her face and neck encouraging her every contraction and teaching her to exhale a long slow breath through her mouth while making "shhhh".
- Manage labor using the partograph
- Provide pain management through calm voice, deep breathing, cool cloth to forehead, encouragement and assistance in changing position.

12- Abnormal First Stage

If the progress of labor is prolonged and the Alert Line of the partograph is crossed or the fetal heart rate is < 120 bpm or > 160 bpm, this may reflect an abnormal labor or fetal distress.

13- Management of the Second Stage of Labor

- The upright (sitting or semi-sitting) position of the woman is preferred in the second stage to help with descent of the fetal head into the obstetric axis.
- Encourage spontaneous pushing 3-5 times for a relatively brief duration (each 4-6 seconds) using a bearing-down effort with each contraction.
- Check FHR every 5 minutes
- Provide slow delivery of head to avoid perineal tear.

14- Abnormal Second Stage

The second stage is considered abnormal if it is prolonged (> one hour in primigravida or > 30 minutes in multiparous women), or if the fetal heart rate is abnormal (< 120 bpm or > 160 bpm).

15- Delivery of the Fetus

Provide care and deliver the fetus according to Chapter 13 in the BEOC Protocols.

- Provide care of the perineum.
- Perform episiotomy when indicated. Episiotomy is not done because of insufficient progress of labor alone. The latter necessitates referral, not an episiotomy.
- Deliver the fetus. Place it on the mother's stomach, dry it then cover.

16- Immediate Care of the Newborn

Immediate care of the newborn to prevent neonatal death must include the following:

- Provide warmth-put the newborn directly on the mother's stomach, dry the newborn, and cover it with clean, dry linen.
- Clear the upper airway, establish breathing.
- Wipe the newborn's mouth and nose with a clean gauze pad.
- Rub the newborn's back, or flick the toes to stimulate respiration.
- If there are excessive secretions, use a clean sterile bulb syringe, suctioning the mouth first (starting with the sides), then the nose.
- Facilitate immediate breast-feeding (do not allow the family to take the newborn and give it anything other than breast milk).
- Clamp and cut the umbilical cord correctly,

following correct infection control measures.

- DON'T slap the back, hang upside down, squeeze the rib cage, force the thighs onto the abdomen, shake the newborn and use hot or cold compresses or baths

17- Management of The Third Stage of Labor

Active management of the third stage compares favorably with physiological management. It includes:

- Oxytocin 10 IU given intramuscularly
- Controlled cord traction
- Uterine massage
- Delayed cord clamping until the pulsations stop. This is the physiological way of treating the cord and is not associated with adverse effects in normal deliveries.
- Use two sterile kocher's clamps to clamp the cord temporarily, and cut the cord between them to deliver the placenta.

Signs of Placental Separation

- Hardening of the uterus
- Lengthening of the cord
- Spurt of blood from the vagina

Following signs of placental separation, gently pull the cord until the placenta appears at the vulva. Grasp the placenta, and by using a gentle twisting motion pull it out, then check for complete delivery of the placenta and the membranes.

- Perform uterine massage immediately after delivery of the placenta.
- Repair any perineal tears or episiotomy.

18- Maternal or Neonatal Danger Signs

Mother

- Retained placenta (not delivered after half an hour after delivery of the newborn)
- Hemorrhage

Newborn

- Newborn having difficulty breathing, blue, cold, smells bad, poor muscle tone.

19- First Aid Management

If there are maternal or neonatal danger signs provide first aid management and refer.

Mother

- Insert an IV Cannula size 18, and start a crystalloid infusion (normal saline or Ringer's lactate).
- If there is Hemorrhage apply a vaginal pack and perform bimanual compression.

Newborn

- Maintain warmth and clear airways with a bulb syringe.
- Provide tactile stimulation.
- Refer to the hospital, but if there is no spontaneous respiration immediately initiate gentle and careful mouth -to- mouth respiration (gentle puffs).
- Take care that too much air pressure can burst the newborn's lungs and kill it.

20- Management of The Fourth Stage of Labor

The birth attendant should observe the woman and neonate for AT LEAST the first two (2) hours after delivery.

Mother

For the first two hours check and record every 30 minutes:

- Blood pressure, pulse and temperature
- Vaginal bleeding and firmness of the uterus
- Uterine massage

Administer one vitamin A capsule (100.000 IU)

Newborn

If the newborn is pink, warm, has good muscle tone, and is breathing well, keep it with the mother and encourage breast-feeding. Supporting and facilitation the bonding process and immediate and exclusive breast-feeding should be the priority during the first hour or two postpartum. There is no urgency to put in the eye drops or care for the cord.

21- Danger Signs during the Fourth Stage

Mother

- Hemorrhage

- Tachycardia (pulse > 100 bpm)
- Hypotension (BP < 90/60 mm Hg)
- Temperature > 38 °C

Newborn

- Newborn having difficulty breathing, blue, cold, smells bad, poor muscle tone, any obvious congenital malformations.

22- Postpartum Care and Counseling

- Perform a quick checkup of the mother for bleeding, blood pressure, firm uterus and vit A supplementation.
- Perform a quick basic assessment of the newborn to ensure normal breathing, pink color, not feeling cold, absent congenital anomalies, signs of prematurity, good muscle tone good birth weight.
- Provide cord care. The length of the umbilical stump after cutting is usually 2-3 cm from the abdominal wall.
- Provide eye care. Chloramphenicol eye drops t.d.s. for 3 days
- Observe breast-feeding.
- Follow guidelines for waste disposal:
  - Bury placenta in soil at least 50 cm below service. Don't throw the placenta in the nile river.
  - Put syringes, swabs and cotton in a plastic bag, close tightly and burn away from home.
  - Put syringes and cannulas in a plastic box and take them to health facility for proper disposal.
  - Advice household to wash towels and bed sheets separately
- Perform record keeping.

Postpartum Counseling: Details are found in the section of home birth

Before leaving the home, provide postpartum counseling to the woman and her family

- Maternal danger symptoms and signs
- Neonatal danger symptoms and signs
- Wrapping
- Breast-feeding
- Cord care
- Bathing
- Further postpartum visits
- Family planning

Preparation for Home birth Checklist

The family is provided with the following checklist to prepare for a clean and safe home delivery (Source BEOC page 301. Some of the items are provided by the health center in a birth package.

- Family birth plan
- Clean home
- Clean surfaces in the room where delivery will take place
- Enough light
- Clean gowns for mother
- Sanitary napkins
- Bath towels
- Clean sheets and pillowcases
- Plastic sheeting to protect mattress
- Disinfectant soap
- Cord clamp
- Disposal sterile scalpel
- Disposable single-use gloves
- One pair of sterile gloves
- Trash can lined with a plastic bag
- Clean cotton blankets to receive the newborn
- Diapers
- Clean clothes for the newborn
- In cold climate, a source of heat

Note It is very important to keep the newborn warm by wrapping in enough clothes, specially the preterm

Clean and Safe Home Birth

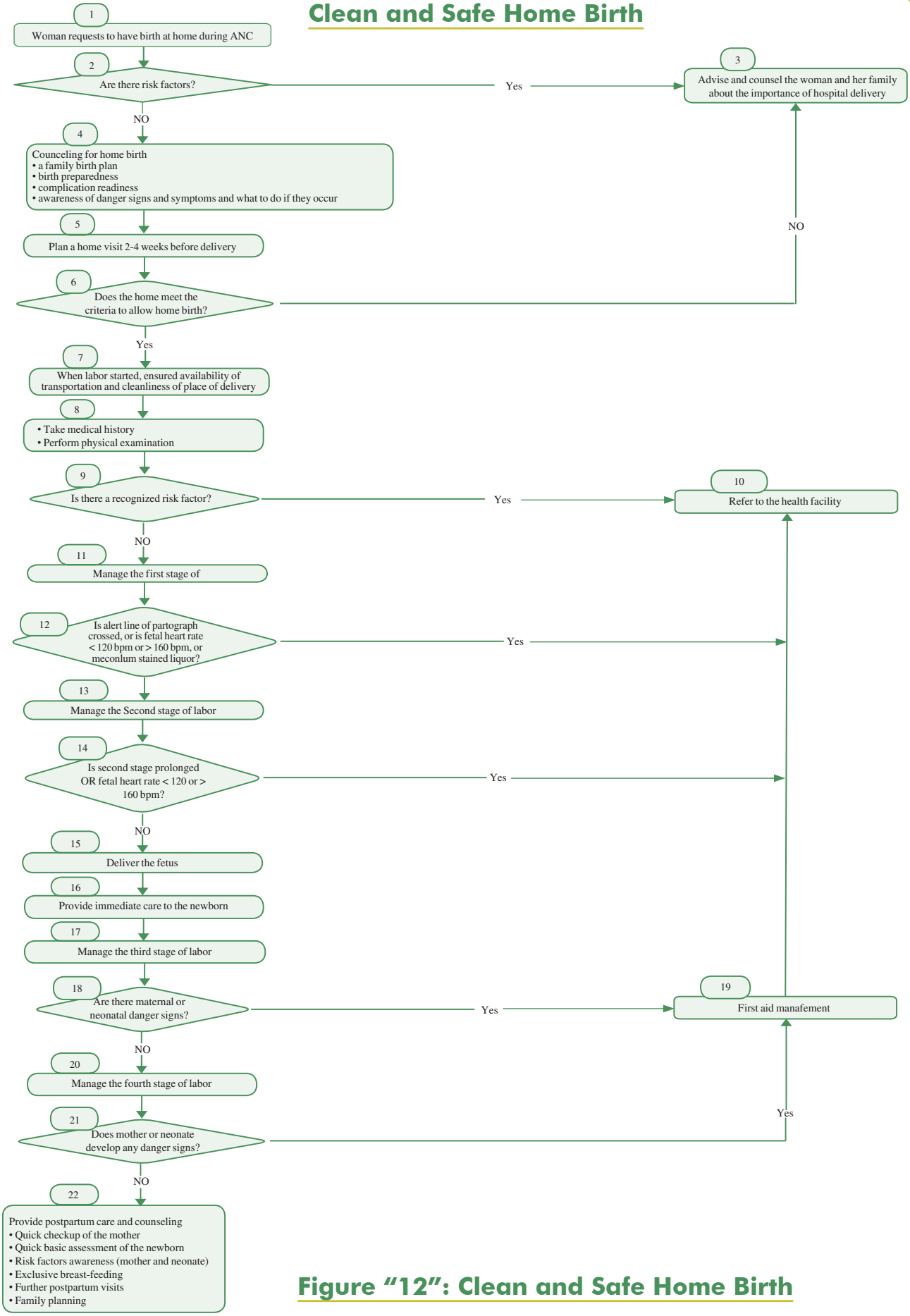


Figure "12": Clean and Safe Home Birth

Referral Guidelines for The Pregnant Patient

- First aid management should be taken before referral according to the protocol.
- Use and properly fill out a standard Referral Form recording the time of referral and signature of referring physician (see Appendices V and C). This from must go with the patient.
- Referral should be in an ambulance equipped with:
  - o IV stand
  - o Sphygmomanometer
  - o Oxygen delivery system (cylinder, regulator and tubing)
  - o Oxygen masks and nasal catheters
  - o ECG monitor
  - o Suctioning apparatus
- The patient should be transferred by stretcher.
- The patient should be accompanied by a physician. A well-qualified nurse is acceptable in the following situations:
  - o Preterm labor
  - o The patient crosses to the right of the Alert Line on the partograph during labor.
- Maintain a patent airway.
- Provide 100% oxygen via mask.
- Warm the patient.
- Maintain a continuous IV infusion at the suggested rate, according to the protocol.
- Measure vital signs (blood pressure and pulse) every 5 minutes.
- Maintain a Foley's catheter and monitor urine output every 30 minutes.
- Administer medications according to the protocol.

Preparation of The Ambulance

At the beginning of each shift the head nurse on duty in the emergency room is responsible for checking the ambulance for the availability and function of the items and drugs listed below.

The ambulance should be supplied with the following items, drugs and disposables and any deficiencies or used items should be replaced.

Items to be provided in the ambulance:

- Stretcher that can be reclined to acquire a semi-recumbent position.
- Oxygen delivery system (cylinder, regulator and tubing).
- Oxygen mask and nasal catheter.
- Mouth gag (two).
- Sphygmomanometer, adult (one).
- ECG monitor.
- Suctioning apparatus.
- IV Stand (better if fixed to the stretcher) (one).
- Two baskets, one for collection of hard objects (syringes) and other for non-hard objects e.g., cotton, gloves.
- Delivery kit (include if delivery is possible), see Appendix D in the BEOC Protocols.

Drugs to Be Provided in The Ambulance:

- IV Fluids-Saline, Ringer's Lactate and Dextrose 5% (three liter bottles of each item).
- Magnesium Sulfate 10% 10 ml ampoules (10 ampules should be available at any time).
- Furosemide (5 ampoules).
- Glucose 25%, 20 ml ampoules (5 ampules).
- Regular Insulin (20 IU/ml).
- 2% Lidocaine (1 ampoule).
- Nifedipine.

Disposable Items to Be Provided in an Ambulance:

- IV cannulae, sizes 16 and 18 (2 of each).

- IV infusion set (five sets).
- Syringes 3, 5, 10 and 20 ml (two of each).
- Foley's catheter, sizes 12 and 14 (2 of each).
- Urine bags (3 to 4).
- Suction catheters.
- Gloves, single use (1 pack- 100 pieces).
- Cotton
- Gauze 4×4 (10 pieces)
- Alcohol swabs (10)
- Chromic cat gut suture, size 0 (3 packets)
- Clean towels (4)
- Sterile water
- Betadine/iodine
- Insulin syringes
- Medical tape
- Bulb suction and cord clamp.

MOHP References:
MOHP; Central Adm. for PHC, HMHC project/JSI/USAID; "Basic Essential Obstetric Care: Protocol for Physicians"
Ibid; "Comprehensive Essential Obstetric Care: Protocol for Physicians"
Ibid; "Basic Essential Obstetric Care: Flow Charts for Physicians"
Ibid; Essential Obstetric Care: Flow Charts for Physicians"
Ibid; Basic Essential Obstetric Care: Flow Charts"
MOHP; Quality Improvement Directorate "Clinical Practice Guidelines Dissemination Workshop: Obstetrics and Gynecology
وزارة الصحة والسكان، الإدارة المركزية للرعاية الصحية المتكاملة، الإدارة العامة لرعاية الأمومة والطفولة: "دليل خدمات رعاية الأمومة والطفولة"
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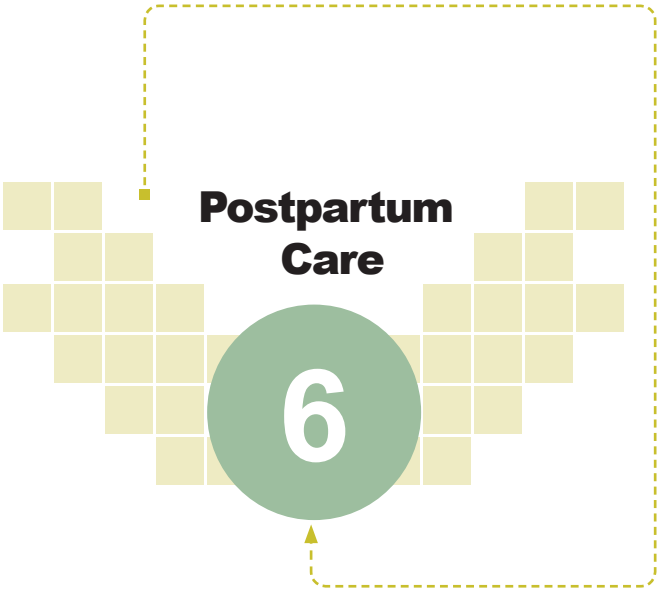

Postpartum
Care
6

Postpartum Care

The postnatal period extends from birth until 42 days after delivery.

Objectives of Postnatal Care:

For The Newborn:

1. Early detection of any health problems
2. Establishment and promotion of successful breast feeding
3. Counseling and initiation of proper infant care by the mother and the family

Care for the newborn is discussed under the newborn section

For The Mother

1. Reproductive health promotion (Physical, psychological and social)
2. Prevention of postpartum complications
3. Early detection of any complications and referral as needed
4. Psychological support by the health care providers
5. Counseling for support by the husband and family
6. Social adjustment and re-integration in the family and the society
7. Counseling for the use of contraception for spacing
8. Providing appropriate health education messages.

Postpartum Care

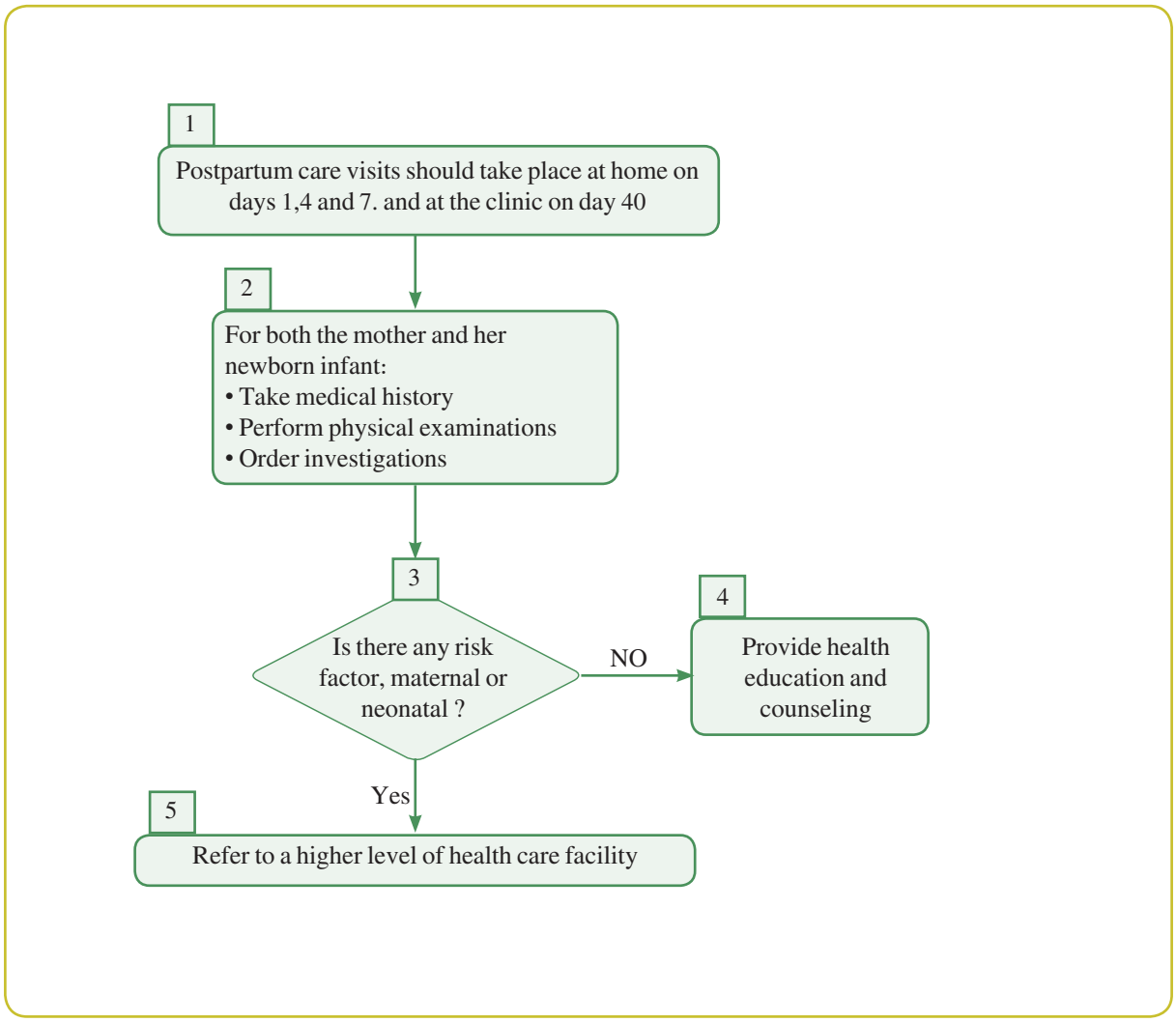


Figure "13": Flow Chart Diagram For Postpartum Care

Postpartum Care

1.Definition

The postpartum period, or puerperium, starts about two hours after the delivery of the placenta and continues for six weeks. it is the period of time when the anatomic and physiologic changes of pregnancy are reversed and the body returns to the normal non - pregnant state.

The plan for postpartum care visits suggests the guidelines of care that can be offered at each point of contact during the puerperium. Visits that take place at home on days 1,4,and 7 are conducted by a nurse. The visit on day 40 takes place at the clinic where care is provided by the physician. Refer to the postpartum care table

2.Clinical Picture

Mother

The health care provider examines the mother first during the postpartum care visits.

History Taking

- Ask about any abnormal bleeding, the number of perineal pads used daily, and the amount of bleeding.
- Ask about severe headaches, visual disturbances, epigastric pain, and urination.
- On day 1 confirm if the mother received a vitamin A capsule after delivery. if she did not yet receive one give her one vitamin A capsule (200.000 IU) now.
- On days 4 and 7 postpartum, ask about any of the danger symptoms calf and / or chest pain (thrombotic complications) or foul smelling discharge and fever or chills (sepsis).

Physical Examination

General

- Vital signs: blood pressure, pulse and temperature
- Examine the breasts for retracted nipples.
- Examine the lower limbs for edema or tender calf muscles.

Abdominal

- On day one assess the fundal height and firmness by palpation, palpate the abdomen for tenderness, and check the uterus for involution.
- On day 40 note the condition and tone of the abdominal musculature. If the patient had a cesarean section, the incision should be observed

Local

- Note the amount of vaginal bleeding and examine the perineum for any infections, lacerations or hematomas.

Laboratory investigation

On day 40 check the hemoglobin level and a complete urine analysis.

Infant

After the mother the health care provider's attention should be focused on the infant.

History taking

Ask the mother about danger symptoms, and any concerns she has about her infant.

Physical Examination

- **General**
  - o Tone, color, weight, temperature and respiratory rate
- **Chest**
  - o Examine the chest for retracted chest wall during respiration.
- **Abdominal**
  - o Examine the umbilical stump for signs of infection or bleeding
  - o At day 7 check that the umbilical stump has been fallen off or it is totally dried.

Laboratory Investigation

- On day 1 counsel the mother to have her infant screened for congenital hypothyroidism within the first week. On day 7 check that the infant was screened and if not perform the screening.

3.Danger Symptoms and Signs

Mother

The women should seek medical care if any of the following danger symptoms arise during the postpartum period:

- Vaginal bleeding
- Severe headache, blurring of vision, severe epigastric pain or convulsions

- Fever or malodorous vaginal discharge
- Painful calf muscle
- Abdomen very tender when pressed
- Chest pain or dyspnea
- Fainting

Do not forget

The health care provider should refer the women to the health care facility if any of the following signs were detected during postpartum home visits:

- Pulse > 100 bpm
- Blood pressure > 140/90 mmHg
- Temperature > 38 °C
- Tender or hard breast
- Tender calf muscles
- Lower abdominal tenderness
- Malodorous vaginal discharge or infected perineal wound (episiotomy or tear)

Infant

The mother should be educated immediately after delivery about the danger symptoms her infant may develop that necessitate that she immediately seek medical care:

- Convulsions or continuous sleep
- Refusal of feeding for two successive times
- Has a delayed passage of stool or urine for more than 24 hours
- Diarrhea or excessive vomiting
- Fever or cold skin
- Has an abnormal color - pale, dusky, yellow, blue or mottling of skin
- Has an umbilical stump that is red, oozing, draining pus or discharge
- Rapid respirations (panting)
- Poor, weak sucking (inability to latch onto the nipple and breast - feed easily)
- Lethargy (does not grasp finger, floppy)
- Week and / or constant painful cry
- Has an eye /eyes that are swollen, sticky or draining pus or discharge

Do not forget

The health care provider should refer the infant to the health care facility if any of the following signs were detected during the postpartum home visits:

- Temperature < 36 °C or 38 °C
- Respiratory rate > 60 / minute
- Flaccid, non- reactive infant
- Jaundice, cyanosis or pallor
- Difficulty in breathing manifested by nasal flaring and retraction of the chest wall during respiration.
- Bloody or purulent discharge form the umbilical stump
- Sever abdominal distention
- Ambiguous genitalia

4.Health Education And Counseling

Mother

The health provider should then do the following:

- Encourage the mother to ambulate early in the postpartum period.
- Explain the benefits, initiation and establishment of successful breast feeding and the importance of periodic suckling and complete emptying of the breasts.
- Stress the importance of seeking medical aid if danger symptoms or signs appear.
- Explain the importance of good nutrition
- Explain about abdominal muscle tone and exercises.
- Counsel the mother at day 7 about contraception
- Encourage the mother to visit the health care facility with her infant for the last postpartum visit on day 40 and explain its importance

Infant

The health care provider should give the mother instructions regarding:

- Proper temperature regulation
- Care of the umbilical cord
- Care of the eyes
- The importance of seeking medical advice if she notices any of the neonatal danger signs

- The importance and details of the infant vaccination schedule

Timing of Postpartum care

Home deliveries receive the nurse for postpartum care on the first day (within 24 hours), on the 4th and on the 7th day. The mother is then asked to visit the center on the 40th day for complete assessment and initiation of contraception.

Care for mothers giving birth in the hospital is provided in the hospital until discharge; then it will completed as home deliveries.

Each visit covers both the mother and the newborn. In each visit relevant history taking, examination of both mother and child, counseling, and referral as needed

(See Tables 2-6 for details of visits)

Mothers are examined for: Temperature, blood Pressure, involution of the uterus and discharges.

The baby is examined for: General condition, color, vitality, feeding, umbilical stump, ensure that the baby is passing urine and stools, and that there are no congenital abnormalities.

On the 3rd to the 7th day a blood sample is taken from the heel for screening for hypo-thyroidism according to protocol.

Health education messages in the postnatal care include - in addition to the above- the following messages:

- Signs and symptoms of postnatal complications, and the need to seek early medical care.
- Care for the lactating mother, her nutrition requirements and life style,
- Initiation and technique of breast-feeding,
- Care for the breast, and nipples,
- Baby care, bathing, care for the skin, eyes, nose, ears and umbilical stump.
- Stimulating activities to promote the development of the baby,
- Time for start of well-baby care, the schedule for the first visit, the vaccination schedule and the importance of regular visits to the MCH center for monitoring the health, growth and development of the child,
- Birth spacing.

Table. 11: Postpartum Care Table

Postpartum Care Table					
		First Visit	Second Visit	Third Visit	Fourth Visit
Venue		At Home	At Home	At Home	At the Health Facility
Timing		Day 1	Day 4	Day 7	Day 40
History taking	Mother	Amount of vaginal bleeding			
		Sever headache or blurring of vision			
		Urination			Ask about stress incontinence
			Calf or chest pain		
			Fever or chills		
			Foul smelling vaginal discharge		
				Inquire how breast feeding is proceeding	Inquire how breast feeding is proceeding

Table. 12: Continue Postpartum Care Table

Postpartum Care Table					
		First Visit	Second Visit	Third Visit	Fourth Visit
Venue		At Home	At Home	At Home	At the Health Facility
Timing		Day 1	Day 4	Day 7	Day 40
History Taking (cont.)	Mother (cont.)				Inquire about general health
		Ask about any other danger symptoms	Ask about any other danger symptoms	Ask about any other danger symptoms	
	Infant	Ask the mother about danger symptoms	Ask the mother about danger symptoms	Ask the mother about danger symptoms	Ask the mother about danger symptoms
Physical Examination	Mother	Blood pressure, pulse and temperature	Blood pressure, pulse and temperature	Blood pressure, pulse and temperature	Blood pressure, pulse and temperature
		Examine the breasts	Examine the breasts	Examine the breasts	Examine the breasts
		Fundal height and uterine firmness	Fundal height and uterine firmness	Fundal height and uterine firmness	Fundal height and uterine firmness
		Amount of vaginal bleeding	Note color of the lochia	Note color of the lochia	
		Examine the perineum	Examine the perineum	Examine the perineum	Examine the perineum
					Inspect the cervix

Table. 13: Continue Postpartum Care Table

Postpartum Care Table					
		First Visit	Second Visit	Third Visit	Fourth Visit
Venue		At Home	At Home	At Home	At the Health Facility
Timing		Day 1	Day 4	Day 7	Day 40
Physical Examination (cont.)	Mother (cont.)				Examine the uterus and adnexa
					Examine the chest and heart
					Examine the lower limbs
					Tone of abdominal muscles
	Infant	Tone, color and respiratory rate	Colour, weight and temperature	Colour, weight and temperature	Colour, weight and temperature
		Examine the chest			
		Examine the umbilical stump	Examine the umbilical stump	Check if the umbilical stump has fallen off	

Table. 14: Continue Postpartum Care Table

Postpartum Care Table					
		First Visit	Second Visit	Third Visit	Fourth Visit
Venue		At Home	At Home	At Home	At the Health Facility
Timing		Day 1	Day 4	Day 7	Day 40
Physical Examination (cont.)	Infant (cont.)	Check for the presence of any danger signs	Check for the presence of any danger signs	Check for the presence of any danger signs	Check for the presence of any danger signs
Investigations	Mother				Hemoglobin
					Complete urine analysis
Health Education and Counseling	Mother	Check if the mother received a vitamin A capsule (100.000 IU) after delivery. If not, provide one			Check if the mother received a vitamin A capsule (100.000 IU) after delivery. If not, provide one
		Encourage early ambulation			
		Explain benefits of breast-feeding	Periodic sucking and complete emptying of the breast		

Table. 15: Continue Postpartum Care Table

Postpartum Care Table					
		First Visit	Second Visit	Third Visit	Fourth Visit
Venue		At Home	At Home	At Home	At the Health Facility
Timing		Day 1	Day 4	Day 7	Day 40
Health Education and Counseling (cont.)	Mother (cont.)		Importance of good nutrition	Importance of good nutrition	
			Abdominal muscle exercises		
				Contraception	Contraception
				Schedule the Day 40 visit at the health facility	
		When to seek medical care	When to seek medical care	When to seek medical care	
		Fill out the Woman's Health Card	Fill out the Woman's Health Card	Fill out the Woman's Health Card	Fill out the Woman's Health Card
	Infant	Potential danger signs	Potential danger signs	Potential danger signs	Potential danger signs
		Proper temperature regulation			
		Care of umbilical cord	Care of umbilical cord		
		Care of eyes	Care of eyes		

Table. 16: Continue Postpartum Care Table

Postpartum Care Table					
		First Visit	Second Visit	Third Visit	Fourth Visit
Venue		At Home	At Home	At Home	At the Health Facility
Timing		Day 1	Day 4	Day 7	Day 40
Health Education and Counseling (cont.)	Infant (cont.)	Counsel the mother to have her infant screened for congenital hypothyroidism within the first week		Check if the infant was screened for congenital hypothyroidism and if not, arrange screening	
				Infant vaccination schedule	Infant vaccination schedule

Postpartum Contraception

This will be again discussed with family planning. The following is a summary table

Time of start of the different contraceptives among lactating and non-lactating postpartum mothers:

Table. 17: Continue Postpartum Care Table

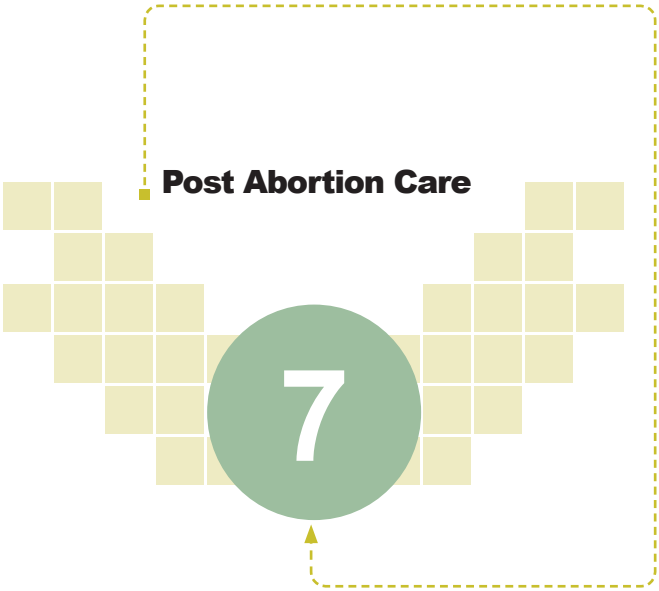
Method	Lactating	Non-lactating
• IUDs	6 weeks	6 weeks
• Progestin-only pills (POP)	6 weeks	4 weeks
• Progestin-only injectables (the three months injectables)	6 weeks	Immediately, before 6 weeks
• Implant contraception (Norplant)	6 weeks	Immediately, before 6 weeks
• Condoms	Any time	Any time
• Other local methods	Any time	Any time
• COC	6 months	3 weeks*
• Combined injectables (one-month injectables)	6 months	3 weeks*

* IUD can be applied in the immediate postpartum period and within the first 48 hours, but never between 48 hours and 6 weeks.

* Combined estrogen-progestin contraceptives should be delayed until 3 weeks due to an increased risk of blood clotting problems during this period.

MOHP references

MOHP; Central Adm. for PHC, HMHC project/JSI/USAID; "Basic Essential Obstetric Care: Protocol for Physicians"
Ibid; "Comprehensive Essential Obstetric Care: Protocol for Physicians"
Ibid; "Basic Essential Obstetric Care: Flow Charts for Physicians"
Ibid; Essential Obstetric Care: Flow Charts for Physicians


Post Abortion Care
7

Abortion, post abortion care and Post partum/post abortion problems

Definition of Abortion

Abortion is the termination of pregnancy by any means before the fetus is sufficiently developed to survive (less than 20 weeks gestation based on the date of the last menstrual period or fetal weight less than 500 gm).

Types of Abortion

Threatened abortion: mild intrauterine bleeding occurring with or without uterine colic, without expulsion of products of conception, and without dilatation of the cervix.

Inevitable abortion: intrauterine bleeding occurring with continuous and progressive dilatation of the cervix but without expulsion of the products of conception

Incomplete abortion: expulsion of some but not all products of conception; cervix is usually dilated.

Complete abortion: expulsion of all products of conception.

Missed abortion: the embryo or fetus dies but is retained in utero.

Recurrent abortions: occurrence of three or more consecutive abortions.

Septic abortion: an infected abortion where microorganisms and their products are disseminated into the maternal systemic circulation. (See puerperal sepsis)

Abortion may be spontaneous or induced

Induced abortion is illegal in Egypt, however, it can be self induced for unwanted pregnancies.

Table. 18: Diagnosis of Vaginal Bleeding in Early Pregnancy

Presenting symptom & other symptoms and signs typically present	Symptoms and signs sometimes present	Probable diagnosis
- Light bleeding - Closed cervix - Uterus corresponding to dates	- Cramping lower abdominal pain - Uterus softer than normal	Threatened abortion
- Light bleeding - Abdominal pain - Closed cervix - Uterus slightly larger than normal - Uterus softer than normal	- Fainting - Tender adnexal mass - Amenorrhoea - Cervical motion tenderness	Ectopic pregnancy
- Light bleeding - Closed cervix - Uterus smaller than dates - Uterus softer than normal	- Light cramping / lower abdominal pain - History of expulsion of products of conception	Complete abortion
- Heavy bleeding - Dilated cervix - Uterus corresponds to dates	- Cramping lower abdominal pain - Tender uterus - No expulsion of products of contraception	Inevitable abortion
- Heavy bleeding - Dilated cervix - Uterus corresponds to dates	- Cramping / lower abdominal pain - Partial expulsion of products of conception	Incomplete abortion
- Heavy bleeding - Dilated cervix - Uterus larger than dates - Uterus softer than normal - Partial expulsion of products of conception which resemble grapes	- Nausea / vomiting - Spontaneous abortion - Cramping lower abdominal pain - Ovarian cysts (easily ruptured) - Early onset pre-eclampsia - No evidence of a fetus	Molar pregnancy

Note

Light bleeding takes longer than 5 minutes for a clean pad or cloth to be soaked
Heavy bleeding takes less than 5 minutes for a clean pad or cloth to be soaked
Source: WHO, UNFPA,...(2000) IMPAC)
See Bleeding before 20 weeks of gestation

Management of Threatened Abortion

- Recommend bed rest
- Observe for amount of bleeding
- No sexual relations
- Follow-up in the clinic
- Refer if it converts to other types

All Other Forms of Abortion Should Be Referred

Referral

General principles

- First Aid Management always provided before transport to stabilize the patient
- Document history, physical examination and investigations, and records sent with the patient
- Communication with the referred to hospital to ensure immediate care as the patient arrives
- Patient is accompanied by the appropriate level of staff
- Transfer with an appropriately equipped ambulance (If not available provide any other form of transport immediately and ensure the procedures needed for safe transport. In every community a plan for the method of transport in case of emergency should be arranged beforehand, and implemented if need arises)

Note

First Aid Management

- Keep the airway patent
- Insert two wide bore IV canulae size 16 or 18
- Immediately start an IV crystalloid (Ringer's or saline) infusion at a fast drip
- Provide 100% oxygen via mask
- Warm the patient
- Obtain blood sample and cross match for ABO, Rh, and Hemoglobin
- Insert a foley's catheter

Post Abortive Contraception

All post abortive patients should be counseled for contraceptive use

Note

Contraception

- Many abortions are induced to get rid of unwanted pregnancies.
- All hormonal contraceptives could be used immediately or within 7 days.
- IUD can be used immediately if there is no infection.

Postpartum/ Post Abortive Problems

Note

In postpartum care always be alert

- Perform regular check up for early detection of risks and complications
- Monitor vital signs: blood pressure, pulse, and temperature

Postpartum/post Abortive Problems/ Complications Include:

- Postpartum hemorrhage
- Puerperal sepsis
- Septic shock

Postpartum hemorrhage (PPH)

PPH is an excessive amount of blood, approximately more than 500 ml. (Heavy bleeding takes less than 5 minutes for a clean pad or cloth to be soaked) manifested as continuous flow of blood or passage of blood clots sufficient to affect the general condition of the mother as shown by a rising pulse rate, falling blood pressure, and poor peripheral perfusion.

Management

- First aid
- Refer

As mentioned earlier

Puerperal Sepsis

Puerperal sepsis is defined as a bacterial infection in the genital tract following delivery or abortion.

It is presented by:

- High temperature
- Offensive vaginal discharge
- Tender uterus

Management

- Start triple antibiotics: Ampicillin 2gm IV + Gentamicin 2 mg / kg IV + Metronidazole 500 mg rectal suppository
- Stabilize the patient and refer as mentioned earlier

Septic shock

Septic shock is a morbid condition caused by an infectious focus. In its early stages it results primarily from decreased systemic vascular resistance that is not compensated for completely by increased cardiac output. Its end result leads to multiple organ failure syndrome and is manifested by hypotension, tachycardia and an altered level of consciousness.

Management

Refer to the Emergency Section

1. First and management
2. **Refer according to protocol mentioned earlier**

Abdominal Pain

Refer to the section on emergency

Moderate pain: Paracetamol 500 mgm by mouth as needed

Severe Pain: Should be referred.

Reference:

MOHP; Central Adm. for PHC, HMHC project/JSI/USAID; "Basic Essential Obstetric Care: Protocol for Physicians"
Ibid; "Comprehensive Essential Obstetric Care: Protocol for Physicians"
Ibid; "Basic Essential Obstetric Care: Flow Charts for Physicians"
Ibid; Essential Obstetric Care: Flow Charts for Physicians"
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MOHP, Sector for Population and Family Planning, (2004); "National Standards of Practice for Family Planning and Reproductive Health Clinical Services Delivery".
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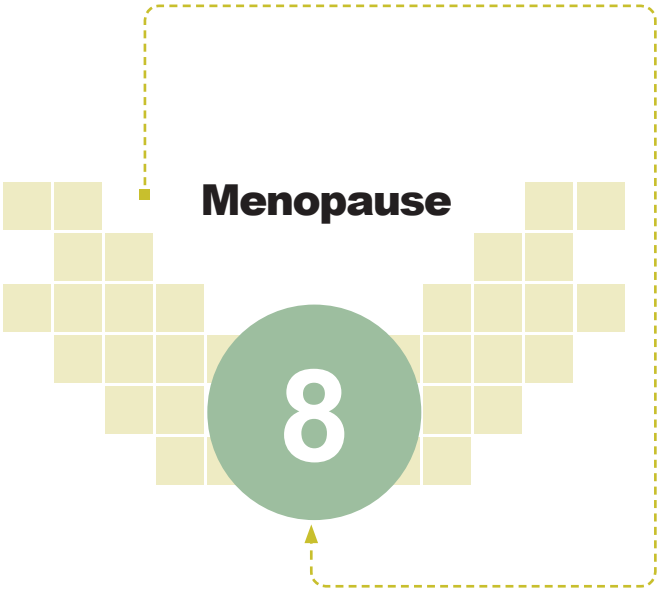
WHO, UNFPA, UNICEF, World Bank (2000); Integrated Management of Pregnancy and Childbirth (IMPAC): Managing Complications in Pregnancy and Childbirth, A guide for midwives and doctors.
WHO, (2000); "Medical Eligibility Criteria for Contraceptive Use" Second edition.
Johns Hopkins Population Information Program, WHO, USAID, (2001); "The Essentials of Contraceptive Technology: A handbook for Clinic Staff".


Menopause
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Menopause

Definition

Natural menopause is a physiologic process of cessation of menstruation. It may be abrupt, but is usually gradual and preceded by a period of hypomenorrhea and/or oligomenorrhea.

Note Any irregular or excessive bleeding at this period should be considered pathological until proven otherwise

Clinical presentation

- Age varies. After the age of 40; usually between 45-50 years.
- Hot flushes; night sweat; sometimes nausea dizziness, fatigue, headache, palpitation, and lack of concentration.
- Urogenital atrophy with increased risk of recurrent urethritis, uterine prolapse, cystoceles and rectoceles.
- Vaginal dryness
- Controversy concerning whether psychological symptoms such as depression, irritability, insomnia and nervousness are related to menopause.

Note If the menopausal woman needs treatment refer to Ob/Gyn specialist

Hormone Replacement Therapy (HRT) should be prescribed only by the specialist

Management of Menopause at The FHU

Counseling

- Reassure, explain that the associated symptoms are due to menopause and will disappear by time when the body is acclimatized to the new situation.
- Avoid increase in weight, control diet and have regular exercise.
- Avoid smoking
- Increase calcium intake in the diet (milk and milk products)
- Return to the clinic if any return of bleeding occurs.
- Beast self examination
- Come for yearly checkup

Interventions

- Calcium Carbonate 500mg 2-3 times daily
- Estrogen ovules or cream for vaginal dryness
- Mammography every year
- Yearly pap smear

Management of Menopause / Use of Hormone Replacement Therapy

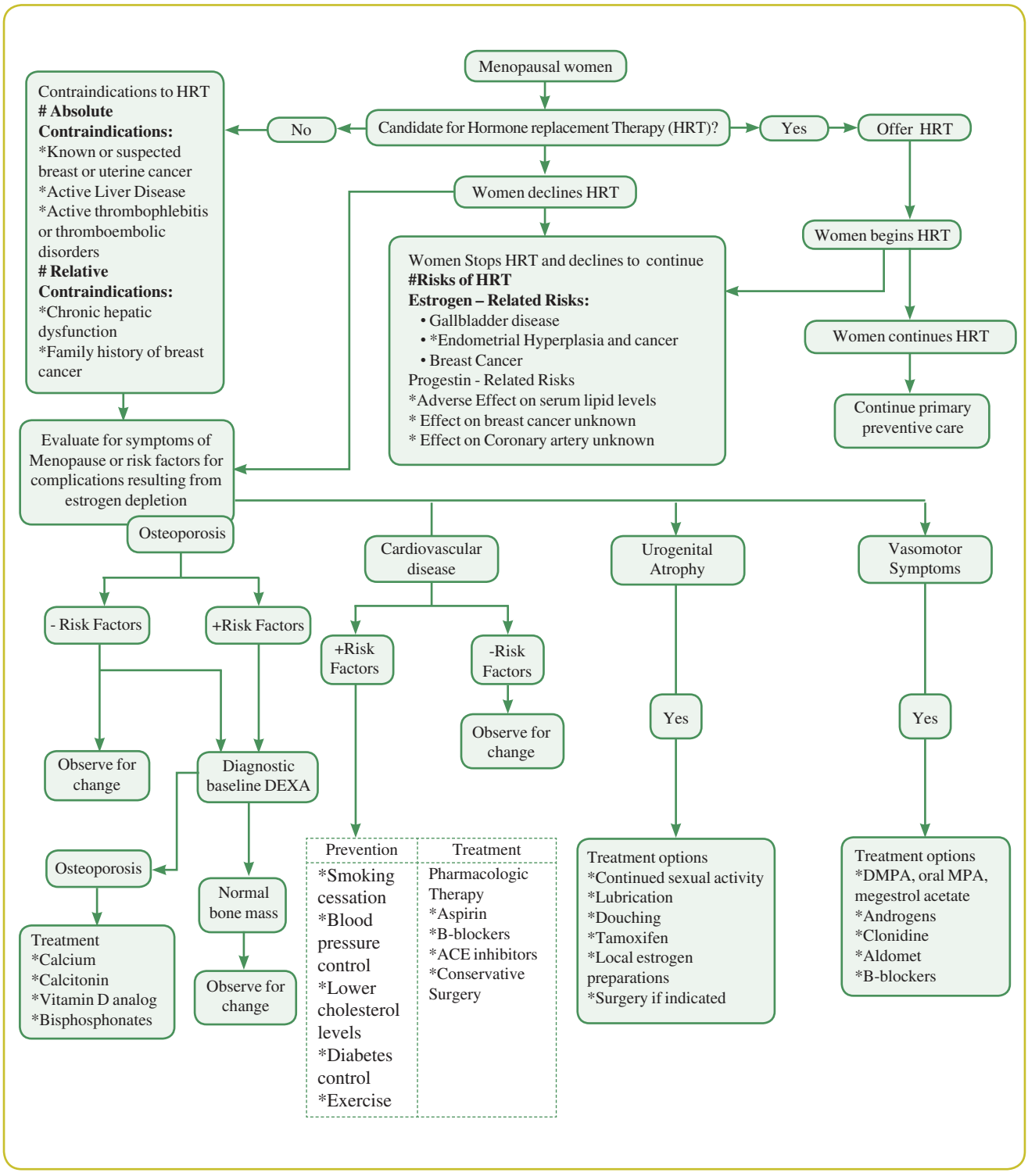
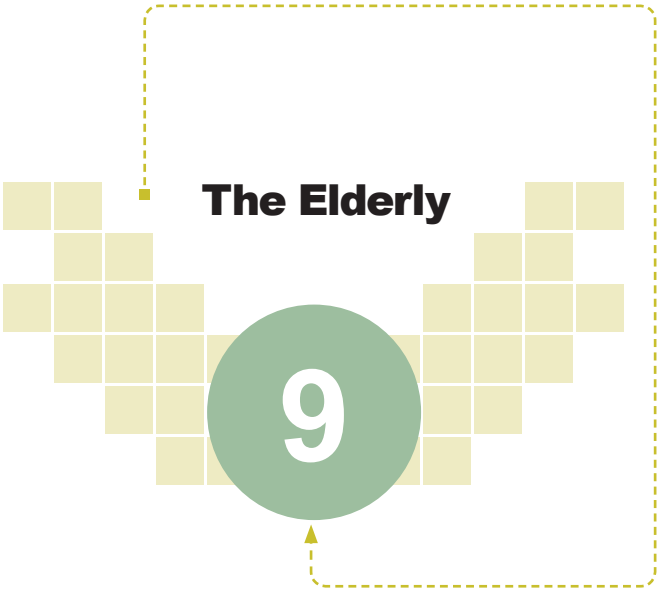


Figure "14": Flow Chart Diagram For management of women during Menopause


The Elderly
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The Elderly

Introduction

Ageing is a biologic process that starts early in life. Special needs for the elderly increase with advancing age. According to the WHO "elderly" are people 60 years and above; the "eldest elderly" or the "very old" are people 80 years and above. In another classification the age of the elderly starts at 65 years. It is classified into three stages; "young old" (65 - 74), "old" (75 - 84), and "old old" (85 +). However, care planning should be based on screening and assessment of the real needs of the elderly.

In view of the demographic transition the elderly population is rapidly increasing all over the world. People above the age of 60 will double by the year 2050 to reach 21%. In developing countries they will increase four times. According to the 1996 census people 60 years and above represent 5.8% of the population of Egypt. The percentage of the elderly is relatively rapidly increasing.

Elderly people vary greatly in their health problems and their health needs. The frail (week elderly) are considered an at-risk population.

Health Problems of the Elderly

With advancing age there is usually "Progressive Incapacity Associated with Ageing." This does not afflict all elderly persons in the same way. The likelihood of chronic diseases increases. This is associated with progressive limitation in Activities of Daily Living (ADL). However, a cause-and-effect relationship is not always present. ADL is a measure of disability for the old age. The individual may need help in one or more of the ADL components, which include: Bathing, dressing, toileting, transferring from bed to chair, continence, and feeding. The scope of the ADL is broadened by the use of another indicator, the Instrumental Activities of the Daily Living (IADL) which include three more indicators: Housekeeping, money management, and simple (e.g. grocery) shopping.

Health problems of the elderly cover all aspects of health. Physical, mental, psychological, and social health problems all increase. Although spiritual health may also be affected, yet it may be the window for effective management plans.

- Physically the elderly may suffer from elevated blood pressure; decreased immune system response; reduced sensations as reduced visual and auditory acuity; loss of muscle and bone mass; increased bone fragility and liability to fractures; fragility of the skin;...
- Nutritional problems of the elderly are related to loss of teeth, loss of appetite related to health or psychological problems, lack of appropriate food due to unavailability of care givers, etc.
- The elderly may show slow mental response; decreased cognitive ability; lack of concentration. Depression and dementia are important problems among the elderly.
- The elderly may fail to cope with stresses of life. Psychological and social stresses are usually associated with retirement from work with the concomitant reduction in income, status, social contacts, and involvement in community affairs. The problems are also associated with the lack of companions and the loneliness the elderly has sometimes to face when all the children are grown-up and start their own lives. The situation is aggravated by the loss of the spouse.
- An important problem that the elderly may face is "Elderly Abuse." The abuse may be physical, emotional / psychological, financial, etc. Exploitation, violence, verbal assault, violation of rights and neglect of the elderly are important forms of elderly abuse.

The physical, mental, social, and psychological health problems interact together and need to be addressed in a comprehensive package for better quality of life for the elderly population.

Objectives

Goal

To achieve active and healthy ageing through ageing-friendly Health Care Centers.

Purpose

To establish and maintain regular contacts between the elderly and the health system, and to provide appropriate service and counseling in relation to the changing physical, social and psychological issues, and to help individuals and families to adjust to a changing lifestyle with ageing.

Specific objectives

1. To promote the health of the elderly population.
2. To preserve functional integrity of the elder and conserve an active ageing process.
3. Risk detection and risk modification.
4. Early detection of health problems among the elderly.
5. Proper management including referral and follow-up.
6. Ensuring enabling and supporting environment for the elderly at home and in the community.

Inputs / Resources

1. The physical resources

of the Family Health Care Facilities (FHC) in the form of a space, and equipments could satisfy the needs for the clinical examination of the elderly. The same applies to the laboratory services. The elderly who would need advanced clinical, or laboratory investigations will be referred. However, space will be needed for health education and providing special activities for the elderly. The waiting area can be used for the health education activities. If a women's club is available within the center it can be used for elderly women as well. Some social and recreational activities for men can be provided at times different from those of women.

2. Trained Human Resources

- The physician and nurses should be trained / oriented on the holistic approach for elderly care. Their training should cover the physical, psychological, and social aspects of health care.
- The social worker is a very important member of the health team caring for the elderly. If a social worker is not one of the PHC staff, then establishing strong relations and involving the nearest Social Care Center in elderly care should be initiated.
- Health visitors or extension workers should be trained to identify the health needs and potentials for home care for the elderly. They can also work with the family and help in life style modification and follow-up of care plans for the elderly.

3. Health Records / Registers

- The family health record is used to identify the elderly individuals in the family.
- The personal medical record is used for the initial examination and for follow-up of the elderly.
- A problem oriented medical record is used for problem identification and follow-up of the progress for individual health problems (including psychological and social problems)

4. Community Resources

The care for the elderly is multidisciplinary. Several community organizations can share in supporting the elderly socially and psychologically. Community organizations, facilities and opportunities for providing elderly care should be identified and involved in care programs. Involving elderly in community activities as appropriate will provide them with opportunities for active interaction with the society. Such community resources include NGOs, Community Development Agencies (CDAs), Clubs, Social Care Centers, etc.

Residential homes for the elderly, adult day care centers, and potentials for congregate care through Mosques, Churches or special Community Groups should be identified. Coordination and support of such organizations / programs should be established for better care for the elderly.

Activities / Process

Services aiming at health promotion, prevention and management of health problems among the elderly are provided through the Family Health Care Centers (FHC) in collaboration with other community organizations, and is supported by a referral system.

Recruitment of The Elderly to Receive Health Care:

With the start of the "ageing-friendly" health care program in the FHC we need to identify the elderly population in our community and initiate for them appropriate health care interventions. Identification and recruitment could be done through:

- The elderly attending the clinic for episodic

care from any health problem.

- The family folders in the Family Medicine practice is a good source for identification and initiation of care for the elderly in the family.
- Home visits: The health visitor for any reason (Family Planning, MCH, etc.) will be asked to identify elderly people in the families / communities that she visits, and invite them to receive the health care package provided by the center.
- Social services: Governmental and NGOs providing social services to the elderly will be asked to refer their beneficiaries to receive the comprehensive health care package provided by the FHC.
- Dissemination of information in the community to inform the population about the availability of an elderly health care program in the FHC.

Services for The Elderly at The FHC Level Include:

- Assessment, risk detection, and risk modification.
- Physical activity
- Care for nutrition.
- Immunization.
- Health education and counseling.
- Management of health problems including referral.
- Social adaptation within the family and the community.

A health record is issued. This record will include all medical and social information, the care plan for the elderly, referrals, services provided and follow-up information.

Assessment of The Elderly

Periodic assessment is an ongoing process throughout the stages of life. It is specially important for the elderly. Periodic assessment is intended for risk detection and risk modification, early detection of health problems, and to establish and follow a "health care plan" for the elderly.

Periodic examination should be done routinely every year, unless otherwise indicated due to the presence of specific risk factors.

Assessment Will be done Through:

- History taking including personal medical history for the first visit should be updated every visit; family history; dietary history; and social history.
- Physical examination: Systematic examination will include general (weight and blood pressure), and special systematic clinical examination. Elderly who may need more specific investigations are referred to the secondary level of care.
- Psychological assessment: Depression may be common among the elderly. Be alert to suggestive symptoms as loss of appetite, tendency to sleep to much, lack of interest in the surroundings. Referral may be needed.
- Laboratory investigations: Measurement of Hemoglobin in blood is a useful measure. Other tests can be done according to needs.

Periodic assessment should cover the following:

- Functional ability
- Specific diseases and problems
- Nutritional status
- Mental and emotional condition
- Social adaptation

Results of the periodic assessment are recorded in the personal medical record. Health problems are recorded in the personal problem-oriented medical record and in the family problem-oriented medical record.

Periodic assessment sessions is an appropriate occasion to provide health education messages and counseling.

Physical Activity

Physical activity is very important to maintain the physical and psychological health of the elderly including the ability to perform activities of daily living, to maintain lean body mass, to decrease blood pressure, to increase cardiac output, and to decrease the relative risk of coronary heart disease, stroke or osteoporosis.

Physical fitness is enhanced by physical training. Physical activity will depend on the individual ability. Walking outside the home is important and should be done regularly whenever possible. Simple aerobic exercise can be done outside or

inside the home. Other members of the family could be encouraged to join these exercises for their own benefit and to encourage the elderly for continuity of this practice.

Strength training is a specific type of exercise which involves increasing the force or weight against which a muscle must push or pull. This type of training increase the size of existing muscle fibers and may reverse the loss of strength in existing muscles.

Initiation of physical exercise among those who have been living a sedentary life should start gradually to avoid overload on the heart or big muscles. Walking should start by short distances and is gradually increased.

Group walking in a nearby open space would encourage the elderly, and improve their emotional and psychological health.

Care for Nutrition

Good nutrition is specially important for the elderly to promote physical, mental and social well-being.

Nutrition of the elderly aims at:

- Supplying nutrients that would satisfy the physiologic needs of the body.
- Maintaining the functions of the body.
- Preventing malnutrition.
- Preventing some diseases, e.g. osteoporosis, and improving the management of existing diseases.

Issues related to nutrition of the elderly include:

- Decrease in the smell and taste sensations.
- Dental problems.
- Diminished sensitivity to dehydration and reduced sensation of thirst which lowers spontaneous fluid intake.
- There is a tendency to have constipation.
- Decreased energy expenditure.
- Psychological and neurological problems.
- Loss of interest in food.

Food-based dietary guidelines for the elderly:

An elderly living with a family can eat with other family members from the regular food prepared for the family as a whole. Modifications can be introduced as necessary. The general principle however is to select foods according to the Food Guide Pyramid with modifications.

- At the base of the pyramid is the cereal group (6 servings). This group includes bread, rice, pasta. Broiled wheat (Belela) is useful as it is rich in the vitamin B group, contain fiber which will improve bowl motions, and is usually served with milk which is an important source of calcium.
- The second layer of the pyramid is the vegetables and fruit group (5 servings). This group will supply vitamins, minerals and fibers. Deep green vegetables should be well presented to be a good source of vitamin A. Fresh vegetables and fruits are recommended to supply vitamin C.
- The third layer of the pyramid include two important groups:
  - The milk group (3 servings) is very important for the calcium content. It also supplies animal protein, riboflavin and other vitamins. The milk group include milk, yogurt, cheese, and desserts based mainly on milk as pudding (e.g. mehlabeya). The fat-free cheese (Gebna Kareesh) is very useful; however, it has to be low salt cheese.
  - The meat, poultry, eggs, beans group (2 servings) supply proteins
- The fourth layer of the pyramid include fats which should be used sparingly, try to avoid saturated fat, depend more on oils.

The above mentioned food groups should constitute the basis for the family diet as a whole. However, for the elderly another layer is added at the base of the pyramid and this is Water. The elderly is encouraged to drink 8 cups of water daily regardless the sense of thirst which may be impaired as mentioned earlier.

Nutrient Supplementation

Although it is usually recommended to depend on natural foods, the elderly may be an exception. The elderly would need to have B12 supplements; and possibly Calcium, Vit. D, and folate. Other supplements can be given as needed.

General nutrition advice include:

- Eat a balanced diet based on the food groups. Decrease salt and fat.
- Eat regularly small frequent meals.
- Make the food appetizing with variation in the method of preparation and presentation to avoid monotony.
- Prepare the food in the form suitable for the elderly according to his condition. Soft food easy to swallow is recommended if there is a problem with the teeth or swallowing mechanism.
- Have company at the time of eating. Join the family on the table.

Feeding of sick elderly will depend on the disease condition and has to be specially designed for each condition.

Immunization

At present there are no obligatory or routine vaccinations given to the elderly in the PHC center. However, it is recommended to give Influenza vaccine every year during September / October (fall season); and to give pneumococcal vaccine once in the lifetime (can be repeated after 6 years for the at-risk elderly).

Health Education and Counseling

The target for the health education is the elderly himself, the care giver at home, or members in the community dealing with the elderly.

Health education would generally cover the components of a healthy life style. Specific messages include:

- Keep mental activity through engagement in the family affairs or in community activities.
- Keep social activity through joining an activity outside the home. Inter-generations activities are very useful for the elderly.
- Physical activity:. (mentioned earlier).
- Proper nutrition: (mentioned earlier).
- Cessation of all forms of smoking.
- Injury prevention.
- Counseling to elderly with special problems. The elderly will need counseling on personal health or social problems including adaptation to the marital relations in the broad sense.
- Advice to care takers should include
  - Keep company and be patient
    "و لا تقل لهما أف ولا تنهرهما و قل لهما قولا كريما"
  - Involve the elderly in family affairs and decision making in the family. Keep his mental alertness through activities suitable to his/her capabilities; elderly can share in counting the cost of bought items, the family budget planning, etc. educated elderly can spend time in completing cross words, solving puzzles, etc.
  - Be a good listener.
  - Keep someone in continuous observation for the elderly.
  - Arrange the house to be elderly friendly and to avoid home accidents or injury.
- An elderly with hearing impairment: advice the attendants for the following:
  - Don't shout. Try to speak at a lower pitch.
  - Speak slowly and clearly. Don't talk while eating or smoking.
  - Reduce the background noise, e.g. from radio or TV.
  - Make your face and lips visible to the elderly, have your face in the light.
  - Don't speak from another room.

Health Problems Prevention and management

The aim is to have the greatest number of healthy years and the fewest years of illness, which is referred to as "compression of morbidity". The two most important measures is physical activity and good nutrition. Exercising ones brain as well as the body would decrease the psychological disorders and decrease diseases such as Alzheimer's disease.

Prevention of osteoporosis starts early in life by having adequate diet rich in calcium, and by regular physical activity.

In general a healthy life style during all the stages of the human life cycle will help in achieving better health during older age.

Specific health problems have to be managed according to the nature of the disease. A well designed referral system with an appropriate

feedback mechanism will allow the elderly the benefit of proper management by specialists, and the follow-up care at the PHC facility. All health information has to be recorded in the personal medical record available at the PHC. This assures continuity of comprehensive care for the elderly.

Social Adaptation

Social adaptation is an important component of the health care package for the elderly which require an interdisciplinary approach. Assessment of the social condition is an important component of the health care assessment of the elderly. The elderly may need economic support and the social worker should handle this aspect.

The social environment at home is very important. Elderly living in extended families enjoy the privilege of inter-generation interaction. Elderly people living alone must have arrangements for home help as needed. Members of the family should be directed to provide the elder with family social connections.

The community plays an important role. In addition to homes for the elderly, communities can initiate elderly friendly activities. Elders club can be attached to the health center, the social center, or even to the youth club in the community, or to NGOs and CDAs in the community. Opportunities to engage the elderly in community activities e.g. illiteracy elimination classes, nurseries for young children, or other activities as appropriate will help maintain the physical and mental well-being of the elderly.

Outcome indicators

Health related indicators include:

- The percentage of family folders having the record completed for the elderly individuals in the family.
- The percentage of elderly receiving follow-up care by the PHC center in relation to those referred to higher levels.
- Self-rated health status can be assessed for a sample of attendants of the periodic examination or other social activities for the elderly. Rapid survey for elderly at home can sometimes help as an outcome indicator and as baseline information for developing strategies for care of the elderly.
- When implemented, the percentage of the elderly receiving recommended vaccines.
- The number of elderly and care takers attending health education classes.
- The number of elderly joining community activities for the elderly.

Important Factors Altering Drug Response in Elderly

- Drug Concentration at the site of action (Pharmacokinetics)
- End organ responsiveness to a given concentration of drugs (Pharmacodynamics).
- Host's ability to adapt to the drug effect (Homeostasis)

Most major organ systems show a decline starting in young adulthood and continuing throughout life,with NO middle age plateau.

- It is rather a linear decline beginning no later than 40 years.
- This change does not apply to every person above a certain age.
- For the clinician and clinical pharmacologist, the most important of these is decreased renal functions.

Pharmacokinetic Changes in Elderly

Absorption:

- Usually unchanged in elderly with intact healthy gastro-intestinal mucosa.
- Gastric acidity is commonly elevated in elderly, i.e., there is hyperacidity.This change will affect the ionization and hence absorption of some drugs.
- Greater consumption of over the counter "OTC" drugs, as Antacids & Laxatives could change absorption.
- Gastric emptying is delayed in elderly, which affects drug absorption.

Distribution:

- The following factors that affect volume of distribution, are altered as follows:
  - Muscle Mass is Reduced.
  - Total Body Water is Reduced.
  - Fat mass is increased.

- o Serum albumin decreased.
- o Alpha acid glycoprotein increased.

Table. 19: Biotransformation (Metabolism) in elder people

Geriatric adults (60-80 years)	Young adults (20-30 years)	Variable
53	61	Body water %of body weight)
12	19	Lean body mass (%of body weight)
38-45 36-38	26-33(Women) 18-20 (Men)	Body fat (%of body weight)
80	100	Kidney weight (%of body weight)
55-60	100	Hepatic blood flow (%of body weight)
3.8	4.7	Serum albumin (g/dl)

Biotransformation(Metabolism):

The capacity of the liver to metabolize drugs does not appear to decline constantly with age for all drugs.Some drugs are more affected than others.

1. Liver mass decreases by 1% every year,above age of 50.
2. Hepatic blood flow diminishes by 40% above age of 65.
3. Liver functions (Albumin,Prothrombin&others) diminishes.

Phase I metabolic activities

(Oxidation, Reduction,Hydrolysis) decreased or inhibited, e.g. with Barbiturates,Benzodiazepines, Quinidine,and Beta adrenoceptor blockers.

Meanwhile, Phase II metabolic activities; i.e., Conjugation, are not affected, i.e., remain normal.

- Other factors contributing to change in biotransformation of drugs in elderly include:
  1. Diminished hepatic blood flow.
  2. Slowing and reduction of ability of liver to recover from injury,e.g.Viral hepatitis,Consumption of alcohol,and exposure to toxic agents)
  3. History of liver disease impairing liver function as in schistosomiasis.
  4. Presence of diseases affecting liver function,as CHF.

Renal Elimination:

- The kidney is the main organ for clearance of drugs from the body.Drug dose adjustment is essential due to natural decline of renal function capacity.
- The half life of drugs is prolonged and possibly accumulation of toxic level of the drug ¯if the dose is not adjusted-may occur.
- Dose adjustment in renal patients:

  1-Adjustment of Dose:

  Normal dose X Normal Creatinine level/ Patient Cr.level.

  2-Interval(Frequency) Adjustment:

  Normal interval X Patient Cr.level/ Normal Cr.level.
- Creatinine Clearance is a better indicator than creatinine level in dose adjustment,especially in cases of liver cirrhosis patients receving potentially nephrotoxic drugs
- Cockcroft Gault formula can be used to transform creatinine level of serum in(mg/dl),into Creatinine Clearance in(ml/min),in patients from age 40 to 80 years as follows:

Cr.Clearance=(140-age) x (weight in Kg)/72 x serum Cr.

N.B: for Women multiply the result by 0.85.

Pharmacodynamic changes in Elderly

- It was believed that the elderly were much more Sensitive to the action of many drugs,implying a change in the pharmacodynamic interaction of the drugs with their receptors.
- But, it is now recognized that many of those apparent changes result from altered Pharmacokinetics or diminished homeostatic responses.

Remember:

Elderly are most sensitive to some sedatives, hypnotics and analgesics.

- There are some data from experimental work suggesting actual changes with age in the characteristics and/or number of certain receptors as well as some changes in the plasma membranes of cells.

Examples of receptor changes in elderly:

- Muscarinic receptors in CNS decrease leading to decrease in memory.
- PTH ‟in Kidney, decrease leading to decreasing activation of Vit. D.

- B1 receptor in Heart, decrease leading to decrease rate and contractility.
- Opiod receptors in Brain decrease, leading to Anoexia, Impotence, Behavioral changes, etc...
- Changes may occur at post-receptor levels,affecting cell messangers as Cyclic Nucleotides, IP_3, and Calcium.

Calcium mobilization is slowed down with age in response to hormones, neurotransmitters, neuromodulators, and cytokines (including Lymphokines).

Other Changes Occuring in Elderly:

CNS

- Cerebral blood supply diminishes by the athersclertic narrowing of vertebral and carotid vessels.
- Many neuronal loss and altered sensitivity to centrally acting drugs as;Benzodiazepines,B-blockers,Central Alpha-2 agonists,Tricyclic antidepressants, barbiturates, Opiates,etc...
- Baroreceptors sensitivity declines with age, leading to Postural hypotension with Nitrog lycerine,Phenothiazines,

  DHP- Calcium channel blockers(Nifedipine, Nicardipine),

  Alpha blockers(Prazosin,Terazocin&Doxaz osin).

Renin-angiotensin-aldosterone System:

- Plasma rennin level and blood aldosterone concentration declines with age probably due to decreased innervation of the juxta-glomerular cells.
- Elderly respond better to diuretics and calcium channel blockers better than Beta blockers and ACE inhibitors.
- This decline in function can predispose to Hyperkalemia especially with NSAIDs,ACE inhibitors,Beta Blockers,and Potassium Sparing Diuretics.

Adverse Reactions To Drugs in Elderly

Causes:

- Polypharmacy. -Multiple Diseases.
- Over consumption of OTC drugs.
- Age related changes in Ph.K.&Ph.D.
- Inappropriate prescribing patterns by physicians.
- Non compliance.
- Individual characteristics in drug response.

Rules of Prscribing for The Elderly

1.Think about the necessity for drugs:

- Is the diagnosis correct and complete?
- Is the drug really necessary?
- Is there a better alternative?

2.Don't prescribe drugs,which are not useful.Think of major side effects.

3.Think about the dose:

- Is it appropriate?
- What about the renal and hepatic functions?
- Should the dose be properly calculated?

4.Think about the drug formulation:

- Tablets, capsules, SR forms, Syrup, injections, suppositories, etc..

5.Think of new symptoms as side effects of drug use or withdrawal or due to drug interactions.

-Take carefully the drug history.

-Keep in mind interactions with other drugs, e.g.OTC drugs or Herbal Medicine.

6.The use of Fixed combinations may not be desirable.But it could help in patient compliance.

7.Full informations about withdrawn old prescripd drugs, when using new drugs.

8.Check Compliance.

9.Remember that stopping a drug is as important as starting it.

Examples of Problem- Drugs in Elderly

Drugs with a narrow safety margin(Therapeutic index):

- Digoxin
- Lithium.
- Theophylline.
- Warfarin.

Drugs with a Long Half Life:

- Glibenclamide.
- Nitrazepam,Diazepam.
- Fluoxetine.

Drugs Which Predispose to Falls:

- Psychotropics;Benzodiazepines.
- Antihypertensives;Alpha blockers.

Drugs Which Predispose to Bleeding:

- NSAIDs,
- Warfarin.

Drugs Causing Hypothermia:

- Phenothiazines.
- Tricyclic antidepressants.

Drugs causing Parkinsonian Effects:

- Metoclopramide.
- Psychotropics.

Drugs Which Cause Confusion/Affect Memory:

- Psychotropics, e.g. Thioridazine.
- Bezodiazepines.
- Anticholinergics.
- Cimetidine.

Causes of Poor Compliance in Elderly

Intentional:

- Patients don't like taking tablets.
- Drugs are Chemicals, some patients prefer naturals.
- Poor acceptability.
- Poor Tolerability.

Non- Intentional:

- Lack of awareness.
- Forgetfulness.
- Cognitive impairment.
- Visual/Auditory impairment.
- Dysphagia.
- Tablet container is inaccessible.
- Poor strength.
- Poor mobility.
- Polypharmacy.

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