Reproductive Health (Practical)

PGDMCH-104

DIRECTORATE OF DISTANCE EDUCATION

SWAMI VIVEKANAND

SUBHARTI UNIVERSITY

Meerut (National Capital Region Delhi)

Reproductive Health
(Practical)

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Self Learning Material

Directorate of Distance Education

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Reproductive Health

OBJECTIVE

- Elaborate the concepts of sexual and reproductive health and health care;
- Elaborate the concepts of access, universal access, and equity of access;
- Elaborate social and contextual determinants of sexual and reproductive health;
- Recommend a set of indicators within a conceptual framework for measuring universal access at country level;
- Discuss possible indicators for monitoring linkages between sexual and reproductive health care and HIV prevention, care, and treatment; and
- Explore the feasibility of establishing a technical reference group for sexual and reproductive health indicators

ASSIGNMENT 1: MONITORING AND EVALUATION OF REPRODUCTIVE HEALTH

INTRODUCTION

The goal of a monitoring and evaluation (M&E) system for the national reproductive health programme is to generate information that is used in evidence-based decision making to improve the reproductive health of the people of Kenya. Monitoring and evaluation is essential for assessing how policies and programmes are designed and conducted.

The first WHO Global Reproductive Health Strategy adopted by the 57th World Health Assembly in May 2004 (resolution WHA57.12) aims to accelerate progress in achieving universal access to sexual and reproductive health, and targets five core elements :

- Improving antenatal, delivery, postpartum and newborn care
- Providing high quality services for family planning, including infertility services;
- Eliminating unsafe abortion
- Combating sexually transmitted infections, including HIV, reproductive tract infections, cervical cancer and other gynaecological morbidities
- Promoting sexual health.

The strategy proposes key action areas to accelerate progress, namely:

- Strengthening the health systems capacity
- Improving information for priority-setting
- Mobilizing political will
- Creating supportive legislative and regulatory frameworks
- Strengthening monitoring, evaluation and accountability.

In resolution 57.12, the Health Assembly urged governments "to make reproductive and sexual health an integral part of national planning and budgeting". WHO global reproductive health strategy provides directions for the governments to accelerate the progress towards attainment of international development goals and targets related to sexual and reproductive health.

In the WHO Eastern Mediterranean Region, two consecutive resolutions were adopted to complement and accelerate implementation of the global reproductive health strategy in the Region. In October 2004, the WHO Regional Committee for the Eastern Mediterranean adopted resolution EM/RC51/R.4 Moving towards the Millennium Development Goals: investing in maternal and child health, in which it urged Member States they had not already achieved the targets of the Millennium Development Goals (MDGs)1 for improvement of maternal and child health, to strengthen existing national surveillance systems to monitor maternal and child mortality and morbidity trends and establish national maternal mortality committees to review and monitor maternal deaths. In October 2007, the Regional Committee adopted resolution EM/RC54/R.2, which aimed at ensuringuniversal coverage of the existing cost-effective interventions and improving the quality of vital registration and other relevant information and auditing systems in order to providereliable data on maternal, neonatal and child health indicators and to monitor progress.

CONCEPT OF REPRODUCTIVE HEALTH

Reproductive health does not start out from a list of diseases or problems-sexually transmitted diseases, maternal mortality - or from a list of programmes-maternal and child health, safe motherhood, family planning. Reproductive health instead must be understood in the context

of relationships: fulfilment and risk; the opportunity to have a desired child s or alternatively, to avoid unwanted or unsafe pregnancy. Reproductive health contributes enormously to physical and psychosocial comfort and closeness, and to personal and social maturation s poor reproductive health is frequently associated with disease, abuse, exploitation, unwanted pregnancy, and death.

The most significant achievement of the Cairo Conference was to place people firmly at the centre of development efforts, as protagonists in their own reproductive health and lives rather than as objects of external interventions.

The aim of interventions is to enhance reproductive health and promote reproductive rights rather than population policies and fertility control. This implies the empowerment of women (including through better access to education); the involvement of women and young people in the development and implementation of programmes and services; reaching out to the poor, the marginalized and the excluded; and assuming greater responsibility for reproductive health on the part of men.

HOW REPRODUCTIVE HEALTH DIFFERS FROM EXISTING FAMILY PLANNING AND MATERNAL AND CHILD HEALTH PROGRAMMES

Programmes dealing with various components of reproductive health exist in some form almost everywhere. But they have usually been delivered in a separate way, unconnected to programmes dealing with closely interdependent topics. For example, the objectives, design and evaluation of family planning programmes were largely driven by a demographic imperative, without due consideration to related health issues such as maternal health or STD prevention and management. Evaluation was largely in terms of quantity rather than quality-numbers of contraceptive acceptors as opposed to the ability and opportunity to make informed decisions about reproductive health issues. In general, such programmes exclusively targeted women, taking little account of the social, cultural and intimate realities of their reproductive lives and decision-making powers. They tended to serve only married people, excluding, in particular, young people. Services were rarely designed to serve men even though they have reproductive health concerns of their own, particularly with regard to sexually transmitted diseases. Moreover, the involvement of men in reproductive health is important because they have an important role to play as family decision-makers with regard to family size, family planning and use of health services.

A reproductive health approach would differ from a narrow family planning approach in several ways. It would aim to build upon what

exists and at the same time to modify current narrow, vertical programmes to ones in which every opportunity is taken to offer women and men a full range of reproductive health services in a linked way. The underlying assumption is that people with a need in one particular area - say treatment of a sexually transmitted diseases-also have needs in other areas-family planning or antenatal/postpartum care. Such programmes would recognize that dealing with one aspect of reproductive health can have synergistic effects in dealing with others. For example, management of infertility is difficult and expensive but it can be largely prevented through appropriate care during and after delivery and prevention and management of STDs. Promotion of breast-feeding has an impact on reproductive health in many ways-it helps prevent certain postpartum problems, delays the return to fertility, may help prevent ovarian and breast cancer, and improves neonatal health.

Another important difference between existing programmes and those developed to respond to the new concept of reproductive health is the way in which people-particularly women and young people who are the most affected by reproductive health concerns-are involved in programme development, implementation and evaluation. When women become more involved in programmes it becomes clearer that they have health concerns beyond motherhood and also that dealing with reproductive health involves a profound rethinking of the behavioural, social, gender and cultural dimensions of decision-making which affect women's reproductive lives.

FACTORS AFFECTING REPRODUCTIVE HEALTH

Reproductive health affects, and is affected by, the broader context of people's lives, including their economic circumstances, education, employment, living conditions and family environment, social and gender relationships, and the traditional and legal structures within which they live. Sexual and reproductive behaviours are governed by complex biological, cultural and psychosocial factors. Therefore, the attainment of reproductive health is not limited to interventions by the health sector alone. Nonetheless, most reproductive health problems cannot be significantly addressed in the absence of health services and medical knowledge and skills.

The status of girls and women in society, and how they are treated or mistreated, is a crucial determinant of their reproductive health. Educational opportunities for girls and women powerfully affect their status and the control they have over their own lives and their health and fertility. The empowerment of women is therefore an essential element for health. 7. Who is most affected by reproductive health problems.

Women bear by far the greatest burden of reproductive health problems. Women are at risk of complications from pregnancy and childbirth; they also face risks in preventing unwanted pregnancy, suffer the complications of unsafe abortion, bear most of the burden of contraception, and are more exposed to contracting, and suffering the complications of reproductive tract infections, particularly sexually transmitted diseases (STDs). Among women of reproductive age, 36% of all healthy years of life lost is due to reproductive health problems such as unregulated fertility, maternal mortality and morbidity and sexually transmitted diseases including HIV/AIDS. By contrast, the equivalent figure for men is 12%.

Biological factors alone do not explain women's disparate burden. Their social, economic and political disadvantages have a detrimental impact on their reproductive health. Young people of both sexes, are also particularly vulnerable to reproductive health problems because of a lack of information and access to services.

HUMAN RESOURCES FOR REPRODUCTIVE HEALTH

The operationalization of the new concept of reproductive health will mean changes in skills, knowledge, attitudes and management. People will have to work together in new ways. Health care providers will have to collaborate with others, including NGOs, women's health advocates, and young people. Managerial and administrative changes will also be needed because integrated services can impose, at least initially, greater burdens on already over-stretched staff and require attention to planning and logistics in order to ensure availability and continuity of services.

Training for reproductive health workers will need to focus on improving both technical and interpersonal skills. Additional training, particularly in counselling skills and in ways of reaching out to under-served groups will be essential elements of such training. The back-up and support of functioning referral systems will be essential elements if the full range of reproductive health concerns is to be adequately addressed.

MONITORING AND EVALUATION

Monitoring and evaluation of reproductive health takes place at two levels-the country and the global level. Globally, the international community has already defined a number of indicators relevant to reproductive health, including :

Maternal mortality :

- % pregnant women who have at least one antenatal visit.
- % of pregnant women who have a trained attendant at delivery.

- % of pregnant women immunized against tetanus contraceptive prevalence rate.
- % of infants weighing less than 2500 g at birth (a newborn indicator that reflects maternal reproductive health),

WHO is working on additional indicators for global monitoring in reproductive health, including indicators on incidence and prevalence of sexually transmitted diseases, quality of family planning services, access to and quality of maternal health services, prevalence of female genital mutilation and prevalence and nature of obstetric and gynaecological morbidities.

Reproductive health indicators should cover not only quantitative indicators such as those listed above, but also some qualitative indicators, such as women's satisfaction with services, perceptions of quality, maternal discomfort and dissatisfaction, perceived reproductive morbidities, opportunities for choice, and enabling environments. Particular attention will be paid to indicators that identify disparities within countries - between population groups and/or regions, for example.

Data collection should be seen as a means towards an end rather than an end in itself. It will, therefore, be necessary to focus increasingly on performance-based measures such as maternal audit, surveillance and other process measures. Such programme indicators should be useful for policy-making and be generated through data collection procedures that are useful for programme management at the level at which the data are collected. All data collection efforts should be sustainable by the national authorities and able to take into account new developments in terms of strategic thinking and implementation. In addition, all indicators should be valid, objectively measurable and reliable.

KEY ACTIONS

1. Advocate for the concept of reproductive and sexual health :The Resident Coordinator system can promote recognition of the concept of reproductive health as central to general health and human development. This implies the integration of reproductive health and reproductive rights into all related development priorities and programmes. Resident Coordinators should be aware that reproductive health is a dynamic and continuously evolving concept. Therefore, information sharing and collaboration will be needed to ensure that the approaches developed and implemented are based on the most recent and relevant information available and on the evolving experiences of those working in the field. The Country Strategy Note should be used as a vehicle to promulgate this vision more widely.

2. Promote multi-sectoral action : Reproductive health is a health issue but encompasses more than biomedical aspects and goes beyond the health sector. The determinants of reproductive ill-health lie in poverty, gender and other forms of inequity, social injustice, marginalization and development failures. All sectors affect and are affected by reproductive health. The Resident Coordinator system can advocate that all agencies and all sectors have roles and responsibilities in promoting reproductive health.

One of the key actions needed to improve reproductive health is the empowerment of women especially through education. The UN Resident Coordinator system can mobilize increased energies and resources for women's education both in-school and out-of-school (youth groups, workplaces, adult literacy and income generation groups etc.).

3. Stimulate adherence to essential principles : The Resident Coordinator system can disseminate the underlying principles which must serve as a guide to action in reproductive health. These are the guiding principles of human rights, equality and gender equity, and placing people at the centre of development efforts. Operational principles for the implementation of reproductive health policies and programmes include participatory processes, involvement of multiple perspectives and multi-sectoral action. The Resident Coordinator system is well-placed to ensure the involvement of different sectors and the participation of all those concerned with reproductive health. Where there are major regional, ethnic, religious or cultural variations within countries, these must be taken into account in the development of reproductive health strategies. Where certain groups have difficulties in making their voices heard, the Resident Coordinator system can play a role in providing a forum for the exchange of ideas and experiences.

4. Foster national ownership: A global reproductive health strategy must be translated into approaches that are country-driven. Implementation of reproductive health programmes is the sovereign right of each country, in a way that is consistent with national laws and development priorities, with full respect for religious, cultural and ethical values and in harmony with universally recognized human rights. The Resident Coordinator system can ensure that the development of strategies, policies and programmes is a nationally owned process and that decisions taken reflect national priorities and are not dictated by external agencies.

5. Ensure consistency and complementarity : Translating the concept of reproductive health into actions means ensuring a shared understanding of the concept and consistency and complementarity in the application of approaches. It is critically important to avoid

conflicting messages from UN agencies to national counterparts. The Resident Coordinator system can help to ensure consistency and bring together different parties in order to avoid duplication and make best use of resources. One practical way of doing this would be the creation in countries of a database of information from all in-country agencies on project design, implementation, monitoring, evaluation, lessons learned and future programme plans. This could be drawn upon by all agencies and would help avoid duplication while ensuring greater information-sharing and networking among agencies.

6. Coordinate agency, regional, bilateral and NGO activities : Each agency has specific mandates and comparative advantages which need to be incorporated into the concept of reproductive health. Some agencies, including WHO, UNAIDS, UNFPA, UNICEF, and UNHCR are likely to have a deeper involvement than others in reproductive health issues. While subscribing to the overall broad concept of reproductive health, agencies select priorities in a focused way on the basis on capacities and resources. Resident Coordinators should be well aware of agency mandates, capacities and resources and be able to assess where there are gaps and duplications and recommend strategies to overcome them.

Resident Coordinators can promote harmony between the activities of international agencies, bilateral donors and NGOs working to support government and regional strategies in reproductive health. The Resident Coordinator system should gather and disseminate information about the resources available at country, regional and global levels, in terms of funding, knowledge and expertise.

7. Assist in the identification of reproductive health needs: The Resident Coordinator system can help countries in the identification of national reproductive health needs and the selection of priorities, in the evaluation of current programmatic responses to the needs identified and in assessing potential for improvement and avoidance of overlap. The Resident Coordinators should promote the need for appropriate guidance and training for all agency, regional and national representatives in the reproductive health approach.

8. Support national planning: The resident coordinator system should support national planning through making the most effective use of specific agency plans and programmes, making the best use of the comparative advantages of each agency, and through seeking to achieve an appropriate balance in the response of country and agency activities and promoting an incremental improvement in programmes bearing the overall reproductive health vision in mind. Of particular importance in the national planning process is the development of decision-making tools and the improvement of managerial capacities. The overall objective is to

increase national capacity for planning and implementation of reproductive health policies and programmes within national constraints, objectives and approaches.

9. Promote integrated approaches : The Resident Coordinator system can ensure integration of all aspects of reproductive health, especially those delivered in the past through vertical programmes such as family planning. The Resident Coordinator can encourage the incorporation into reproductive health programmes of such concerns as the eradication of harmful practices affecting women's health, as well as various forms of violence.

The Resident Coordinator system can integrate follow-up to the various international conferences on related issues such as population, reproductive health and development, including the World Summit for Children, the United Nations Conference on Environment and Development, the World Social Summit, the United Nations Conference on Human Rights and the forthcoming Fourth World Conference on Women.

10. Support monitoring and evaluation : The Resident Coordinator system has an important role to play in monitoring and evaluation. Global monitoring should be limited and not impose additional burdens on national reporting systems. The Resident Coordinator should support national capacity-building for monitoring progress in country programmes in a way which is helpful to programme management and useful at the point of delivery of the intervention.

CHALLENGES IN MONITORING AND EVALUATING

1. Some MIS are not set up to track the special characteristics of youth programs.
2. Tracking services does not guarantee that you will know how many youth you are reaching.
3. You may be unsure whether general standards or implementation strategies are applicable in the country you work in.
4. Little is known about whether standards for adult programs are appropriate for youth.
5. The elements of successful youth programs have not been well-documented or disseminated.
6. Programs may have trouble developing systems that understand and respond to the needs of youth.
7. Measuring the quality of a program requires understanding complex meanings and addressing sensitive issues.
8. Measuring a program's access and coverage can be complex.
9. Assessing individual reactions to a program can be difficult.

10. Measuring influences on behaviors that didn't occur is difficult.
11. Measuring behaviors at a variety of developmental levels can be problematic.
12. Showing the link between health outcomes and youth development can be complex.
13. Some changes may not be measurable for a long time, and others may be hard to measure at all.
14. Attributing changes in outcomes to a particular program's strategy and activities is difficult.
15. Some types of evaluation are costly and may require funds beyond a youth program's resources.

ASSIGNMENT 2: PREPARATION FOR ANTENATAL CARE

INTRODUCTION

Women should be fully involved in decisions about their care and treatment in pregnancy and therefore need to be given the knowledge to make informed decisions. Where appropriate, a woman's partner and family should be involved and informed and their views and values respected. Good communication is crucial at every step in pregnancy.

Antenatal care is the routine health control of presumed healthy pregant women without symptoms (screeening), in order to diagnose diseases or complicating obstetric conditions without symptoms, and to provide information about lifestyle, pregnancy and delivery.

In Norway, primary health care (community care) is responsible for antenatal care. Each community should have a plan for antenatal care, and the communities are obliged by law to offer antenatal care provided by midwife. Specialists in obstetrics and gynecology also offer antenatal care to healthy pregnant women.

RECOMMENDATIONS

- Women who plan to get pregnant should start with folic acid (Vit B9) 0.4 mg daily (Strong recommendation)
- All pregnant women should participate in the antenatal care program (Strong recommendation)
- The first antenatal care visit should take place in gestational week 8-12 (Strong recommendation)
- Antenatal care performers should be a midwife or a general practitioner, or shared care where doctor and midwife cooperate (Strong recommendation)
- The standard preformed antenatal record "Helsekort for gravide" should be used and the woman should keep the record (Strong recommendation)

- Continuity of care should be attempted so that the woman know her caretakers (Strong recommendation)
- In healthy pregnant women, a basis program is recommended comprising 8 antenatal care visits up to and including the visit in week 40 (Recommendation)
- All pregnant women should have one routine ultrasound examination in week 17-19 (Strong recommendation)
- The attendancy rates as well as the patterns of antenatal care use, the content of the care provided care as well as the results of antenatal care should be routinely monitored (Proposal).

GENERAL PRINCIPLES

Care should be centred on the pregnant woman; the aim should be to keep her fully informed on the progress of her pregnancy and to provide her with evidence-based information and support to make informed decisions.

At first contact with a health professional, she should be given:

- Information on where antenatal care will be offered and by whom, including choice of providers where available and information about antenatal screening.
- Information about folic acid supplementation.
- Lifestyle advice including:
- Food hygiene and safe eating in pregnancy.
- Smoking cessation.
- Advice about avoidance of alcohol and illicit drugs in pregnancy.
- Medication advice (review of safety of any current medication in pregnancy and avoidance of over-the-counter (OTC) medication which may not be used in pregnancy).
- At booking, she should be given:
- Information about the development of the baby during pregnancy.
- The choice of attending antenatal classes.
- Written information about antenatal care - for example, the book "The Pregnancy Book" available from Health Departments. Patients with loss of sight or hearing, learning difficulties or poor comprehension of English should have the information provided in a way that is understandable to them.
- Advice about exercise.
- Information and choice regarding the place of birth.
- Information regarding nutrition and diet.
- Information about breast-feeding.
- Further explanation of antenatal screening.

- The opportunity to discuss any mental health issues.
- Before or at 36 weeks, she should be given:
- Information about breast-feeding.
- Information to prepare her for labour and birth (birth plan, pain relief options, how to recognise the onset of active labour).
- Information about care of the new baby and preparations needed.
- Information about routine procedures such as newborn screening and vitamin K prophylaxis.
- Advice about postnatal self-care, along with information about postnatal depression and "baby blues".
- At 38 weeks, she should be given:
- Information about management options for prolonged pregnancy.
- Other general principles
- In uncomplicated pregnancies, midwife/GP care should normally be offered, with specialist care readily available when complications occur.
- The patient should be seen by a small group of professionals who provide continuity of care.
- Antenatal care should be readily and easily accessible and should be in an environment which enables women to discuss confidential issues such as domestic violence, sexually transmitted infections, mental health problems or recreational drug use.
- Allow women the time and space to bring up issues of concern to them. Ask about the home situation and the support they have in pregnancy and will have in the immediate postnatal period. Establish if there are other children at home.
- Patients should carry their own notes. Maternity records should be structured to help provide the required level of evidence-based care.
- Assessment of gestational age should be based on an early ultrasound scan rather than the last menstrual period. Such scans should be offered to all women between 10 and 13 weeks and help to ensure:
- Consistency of gestational age assessments.
- Multiple pregnancy is picked up early.
- Improved accuracy of Down's screening assessment.
- Sensible decisions on induction of labour after 41 weeks.

INCIDENCE/EPIDEMIOLOGY

Annually, approximately 60 000 women give birth in Norway. In 2000, a study showed that the women who delivered had had on average 12 antenatal care visits. Almost half of the visits (44 %) was performed by

midwives. The rate of non-attenders, that is women who delivered without having attended to the antenatal care program, was 2 of 1000. Despite that antenatal care is the largest preventive care program; there are no routine collection of statistics as to the attendancy, the number of visits, the content of the provided care and the results of antenatal care.

NATIONAL GUIDELINES FOR ANTENATAL CARE

The Health authorities issued national guidelines in 1984 (2) and in 2005. The guidelines from 2005 are based on the evidence-based guidelines issued by NICE (National Institute for Health and Care Excellence) in 2003. These guidelines are revised regularly, a revised version was issued in 2008 (4) with some adjustments in 2010 and a new revision was planned in 2014. NICE has recently published a quality standard for antenatal care and a list of actions that is not recommended.

The Norwegian Directorate of Health has not decided when the guidelines for antenatal care will be revised, and when the antenatal care record ("Helsekort for gravide") from 1984 will be revised.

SCOPE AND LIMITATIONS

The present chapter relies on the guidelines for antenatal care provided by the Norwegian Directorate of Health in 2005 (3) and the updated NICE guidelines. No systematic search of literature has been performed.

The level of documentation and the grading of the recommendations is adapted from the guidelines (3, 4). This chapter contains the standard antenatal care program for healthy singleton pregnant women up to term. Topics beyond this scope are dealt with in the other chapters in the guidelines.

ORGANIZATION OF ANTENATAL CARE

Randomized trials indicate that antenatal care should be provided in a cooperation between general practitioner and midwife (Ia). If specialist care is needed, the woman should be referred to specialist in obstetrics and gynecology (specialist in private practice or hospital based outpatient clinic). Continuity of care, that is to pursue the women meets the same care provider throughout her pregnancy, increases the satisfaction (Ia).

It is documented that use of a structured antenatal record ("Helsekort for gravide" I improves the quality of the anamnesis (Ia). When the record is kept by the woman, satisfaction and coping increases (Ia). In addition, the care providers (general practitioner/midwife) must keep their own records.

NUMBER OF ANTENATAL CARE VISITS AND INTERVAL

The national antenatal care program from 2005 recommends a standard program with eight visits inclusive the routine ultrasound examination up to week 40. Also in 1984, a reduction of the number of routine visits was recommended but later studies showed that these recommendations had limited effect on clinical practice. It is well documented that the number of visits can be reduced without negative impact on the results (Ia), but with reduced patient satisfaction (Ia).

There are no clinical studies available to determine the optimal control intervals. Thus, the standard program (Table 1) is constructed from standard programs in other countries and clinical judgement (IV).

Table1. Recommended control visits and intervals for healthy singleton pregnant women.

	Gestational Week
1. visit	8-12
2. visit (routine ultrasound)	17-19
3. visit	24
4. visit	28
5. visit	32
6. visit	36
7. visit	38
8. visit	40

FIRST VISIT

The woman should visit the care provider soon after pregnancy is diagnosed so that life style advice, information about tobacco and alcohol, and information about use of drugs can be given and neccessary corrections made as early as possible. In particular, it is prudent to stop with drugs that can harm the fetus (III). Most women seek their general practitioner for the first antenatal care visit because she/he knows the woman and may contribute with important information. Some women, particularly those who know the midwife from an earlier pregnancy, seek a midwife for the first visit. There is evidence that pregnant women should be free to choose her care provider. The most important aspect is continuity of care.

At the first visit, women in need of specialist care (for example women with diabetes) should be identified and referred.

MEDICAL HISTORY

An accurate and systematic medical history should be adressed. The antenatal record "Helsekort for gravide" serves as a check list. The current use of drugs is an important topic. It is also important to record previous

pregnancies and their outcome, and get relevant information from the department of obstetrics where she delivered. Relevant information should be noted in the «Helsekort for gravide».

BLOOD TESTS- SCREENING

At the first antenatal visit, the following tests should be taken (general screening) :

- Hb–screening for anemia
- Rhesus and erythrocyte antibodies (Ia) (see "Immunisation")
- HIV (Ia)
- Syphilis (Ia)

Hepatitis B (see chapter 12) : In UK general screening is recommended (Ia), this has also been implemented in Denmark and USA. The arguments for general screening is that selective screening is inefficient, and that transfer of Hepatitis B virus to the newborn can be prevented. In Norway, the official recommendation is selective screening based on risk factors, but teher are good reasons to recommend general routine screening.

The following serologic tests are taken on indication (selective screening), the indications and required follow up in case of positive tests are discussed in separate chapters. Hepatitis C (see "Viral infections in pregnancy") (Ib)

Rubella-antibodies (see " Viral infections in pregnancy") (Ib)

OTHER TESTS AT THE FIRST ANTENATAL CARE VISIT

Asymptomatic bacteriuria

It is likely (4) that treatment of asymptomatic bacteruria cab prevent pyelonephritis (Ia), but a recommendation of screening depends on the prevalence in the population. The prevalence of asymptomatic bacteriuria has not been investigated in Norway. If the prevalence in Norway is similar to that reported from Sweden, a general screening in Norway would not be cost effective.

The official Norwegian recommendation is selective screening of women with frequent urinary tract infections (3) because the prevalence of asymptomatic bacteriuria is higher in this group.

Chlamydia testing

The official guidelines (3) recommend that pregant women < 25 years should be tested for chlamydia (possibly in a urine sample), but it is stated that the evidence is not sufficient to recommend screening. In the last NICE guidelines (4), general screening is not recommended in antenatal

care because of lack of evidence of a positive influence on the pregnancy outcome.

Somatic examinatinos

Blodpressure is measured and the urine is tested for protein. If the woman is healthy, no further somatic examinations are required. Further somatic examinations are performed on indications. Routine gynecologic examination and routine examination of the breasts is not recommended. BMI (bodymass-index) is recorded on the «Helsekort for gravide». Weight is not routinely measured at later antenatal visits, unless when it is necessary for treatment. Information is given about the routine ultrasound examination in week 17-19. Women who are or will be 38 years of age at delivery, or women with other indications for fetal diagnostics, should be offered early ultrasound examination in gestational week 12 (see chapter 4 "Ultrasound in the routine antenatal care").

The general content of antenatal care visits

- SF-measurement: The effectiveness of routine measurement of the symphysis-fundus distance to detect intrauterine growth restriction is limited; sensitivities of 15 to 30 % are reported. No controlled randomized studies have been reported, so the influence on pregnancy outcome cannot be assessed. Despite limited knowledge (III), it is recommended to obtain the SF measure ay all antenatal care visits from gestational week 24. The standard SF curve in the «Helsekort for gravide» is outdated and is misprinted.

  Because the curve is too low, intrauterine growth restriction may be overlooked if the official antenatal record "Helsekort for gravide" is used. A newly introduced SF normal curve is based on a large Swedish material, and this curve should be preferred.
- Blood pressure measurement and urinalysis
- Palpation of abdomen with assessment of fetal position and palpation of the fetal head (Leopold's maneuver): This is performed at all antenatal care visits starting in week 36. If cephalic position cannot be ascertained, the patient should be referred.
- Fetal heart sounds: Auscultation of fetal heart sound is not neccessary if the woman feels fetal movements. If fetal movements are reduced, she should contact her department of obstetrics.

Second visit (week 17-19)

In healthy women with normal singleton pregnancies at first antenatal care visit, no controll is requred before week 17-19. At this time in pregnancy, the only required measure is routine ultrasound examination.

Third visit (week 24)

The routine examinations ccomprise SF measurement, measurement of blood pressure and urinalysis for proteinuria. The chapter «Immunisation» argues for introduction of maternal blood tests to detect fetal RhD-positive fetuses and administer anti-D as prohylactic measure in week 29. The current plan where maternal RhD-antibodies in RhD negative women are routinely tested in week 28 and 36 will be discontinued if the Health Authorities decide to implement the new strategy.

Fourth and later visits

4. **visit (week 28)**: SF measurement, blood pressure, urinalysis, Hb and test for Rh-antibodies in Rh-negative
5. **visit (week 32)**: SF measurement, blood pressure, urinalysis
6. **visit (week 36)**: SF measurement, blood pressure, urinalysis and test for Rh-antibodies in Rhnegative
7. **visit (week 38)**: SF measurement, blood pressure, urinalysis, fetal position/presentation
8. **visit (week 40)**: SF measurement, blood pressure, urinalysis, fetal position/presentation

At the visits in week 32 and week 36, information should be given (breast feeding, labour and delivery, selection to differentiated obstetric care).

At the 40 weeks visit, the woman is referred to the actual obstetric department for a visit in week 41, where further management will be decided according to the department's routines (see "Postdate pregnancy").

Differentiated Obstetric Care

Healthy women with normal singleton pregnancies and assumed normal births should be offered to deliver at a low risk unit, alternatively she may have a home delivery if she wants to and this type of midwife service is available.

Differentiated obstetric care should also be offered in obstetric units whithout separate low risk units. Different models of organization are now tried out. In principle, a low risk patient should labour and deliver without use of unnecessary electronic fetal monitoring (see chapter "Fetal monitoring in labour").

PATIENT INFORMATION

Purposes

- To identify the social, economic and education status of the woman.

- To screen the "high risk" cases.
- To ensure alive, healthy and normal baby
- To identify and monitor the condition of woman and the fetus
- To detect the complications of pregnancy at an early stage like hypertension, anemia, and take appropriate action
- To detect and treat illness which the woman may have e.g. tuberculosis, anemia, etc by taking proper history and doing laboratory investigation
- To detect any deviation from normal condition which may lead to maternal morbidity or mortality like obstructed labor and APH
- To ensure a normal pregnancy with delivery of a healthy baby from a healthy mother.
- Advice about birth preparedness and complication readiness as any pregnancy may develop complication at any time.

  To detect and treat illness which the women may have e.g. TB, anemia by history taking and lavatory investigation.

General information

Gravida and parity ----------

Date of examination ----------

Marital status ----------

Address ----------

Age ----------

Name ----------

Ask the woman's ----------

Phone number(if available) ----------

Chief Complaints

- Ask if she has access to reliable transportation.
- Ask what are her family's sources of income/financial support.
- Ask if she has received care from another caregiver during this pregnancy.
- Menstrual and contraceptive history
- Present pregnancy
- Daily habits and lifestyle
- Obstetric history
- Medical history
- Interim history (return visits)

Past and Present Obstetrical History

Ask if she had any problems during a previous pregnancy or during/ the following childbirth :

- Convulsions during pregnancy or during/after childbirth
- Caesarean section, uterine rupture, or uterine surgery during childbirth
- Tears through the sphincter and/or rectum during childbirth
- Postpartum hemorrhage
- Stillbirths, preterm, low birth weight, babies, babies who died before 1 month of age, three or more spontaneous abortions
- Ask if she has breastfed before. If she has to ask how long she breastfed and whether she had any problems
- Ask her about the date of delivery
- Gestational age
- Immunization
- Complications
- Puerperium
- ANC/delivery
- Gravida
- Term pregnancy
- Pre-term birth
- Abortion
- Live birth (number of living children)
- Present obstetric history
- Date of last menstrual period
- Problem/complication during pregnancy
- Has she had nausea, vomiting, backache, headache
- Any history of vaginal bleeding and ankle swelling
- Past and present medical and surgical history
- Ask if she has any allergies.
- Ask if she has been diagnosed with anemia ion the last 3 months.
- Ask if she has been diagnosed with syphilis.
- Ask if she has been diagnosed with any chronic illnesses or conditions such as tuberculosis, heart disease, sickle cell disease, diabetic, goiter, or Another serious chronic illness.
- Ask if she has ever been in a hospital or had surgery.
- Ask if she is taking any drugs/medications (including traditions / local preparations, herbal remedies, over- the- counter drugs, vitamins, or dietary supplements)
- Ask if she has had a complete series of five tetanus toxoid (TT) If she has, asks if it has been less than 10 years since her last booster.

Family history

It is important to know the health status of the woman's parents and her siblings. it includes information about genetic and communicable disorders e.g. history of tuberculosis, diabetes, serious illness or complication, history of multiple pregnancies, APH, abnormal baby in the family etc.

ASSIGNMENT 3: PRENATAL CARE DURING PREGNANCY

INTRODUCTION

Prenatal care helps decrease risks during pregnancy and increases the chance of a safe and healthy delivery. Regular prenatal visits can help your doctor monitor your pregnancy and identify any problems or complications before they become serious.

Babies born to mothers who lack prenatal care have triple the chance of being born at a low birth weight. Newborns with low birth weight are five times more likely to die than those whose mothers received prenatal care.

Prenatal care ideally starts at least three months before you begin trying to conceive. Some healthy habits to follow during this period include:

- quitting smoking and drinking alcohol
- taking folic acid supplements daily (400 to 800 micrograms)
- talking to your doctor about your medical conditions, dietary supplements, and any over-the-counter or prescription drugs that you take
- avoiding all contact with toxic substances and chemicals at home or work that could be harmful

REQUIREMENTS

General requirements:

Prenatal care providers shall create and maintain records and reports that are complete, legible, retrievable and available for review by representatives of the Commissioner of Health upon request. Such records and reports shall include the following:

- a comprehensive prenatal care record for each pregnant woman which documents the provision of care and services received and which is maintained in a manner consistent with medical confidentiality requirements;
- special reports and data submissions as necessary for the Commissioner of Health;
- records of internal quality assurance;

- all written policies and procedures required by this section; and
- data submissions in electronic form as requested by the Commissioner of Health in compliance with the most current Department of Health policies for health information exchange in New York State.
- Prenatal care providers shall comply with all federal, state and local laws and regulations regarding the disclosure of protected medical information when sharing or transferring medical information with other healthcare providers or facilities. Providers shall therefore obtain written informed consent from patients prior to transfer of medical records or information where required by law.
- Prenatal care providers shall comply with the requirements to obtain informed consent for all services described herein, in accordance with all applicable laws and regulations.
- Any subcontracts between the prenatal care providers and other agents or agencies providing care and services shall:
- be available for review and inspection by the Department of Health; and
- require that subcontractors provide contracted care and services that meet the minimum standards established in this section and are provided in accordance with generally accepted standards of practice and patient care services.
- Prenatal care providers shall participate in quality improvement initiatives as requested by the Commissioner of Health.

Provider/Staff requirements:

Prenatal care services, including prenatal diagnostic and treatment services, provided to pregnant women and postpartum women shall meet generally accepted standards of care as described by the most current American Academy of Pediatrics (AAP) and American College of Obstetricans and Gynecologists (ACOG) guidelines for perinatal care and shall be provided by a qualified provider practicing as:

- licensed physician practicing in accordance with Article 131 of the New York State Education Law and must be either an obstetrical care physician (MD/DO), Board Certified or Board Eligible in their area of specialty, or have completed an accredited residency program in Family Practice or Obstetrics/Gynecology;
- nurse practitioner practicing in accordance with Article 139 of the New York State Education Law;
- licensed Midwife practicing in accordance with Article 140 of the New York State Education Law; or

- registered physician's assistant practicing in accordance with Part 94 of this Title, Article 37 of the NYS PHL and article 131 of the NYS Education Law.

Prenatal care providers shall promote the delivery of prenatal care services in a culturally sensitive/competent manner to all pregnant women including those with limited English proficiency and diverse cultural and ethnic backgrounds. Interpretation services must be offered to patients whose primary language is not English, in person when practical, or via telephone if a translator is not immediately available.

Prenatal care providers must either have admitting privileges at one or more hospitals or shall develop agreements with planned delivery sites including a system for sharing patient information for continuity and follow-up care.

Provider/Specialist/Consultation Requirements:

Prenatal care providers shall provide pregnant women timely access and referral to appropriate levels of prenatal care, (basic, specialty, and subspecialty), based on her assessed risk status in order to prevent, recognize and treat conditions associated with maternal and infant mortality and morbidity.

Management of pre-existing medical conditions - Providers shall provide or arrange for the provision of care for the specific needs of a pregnant woman with a pre-existing medical condition, according to current standards of practice.

Transfer of care - Practices shall develop criteria requiring transfer of primary responsibility for patient care from a family medicine practice physician, physician's assistant, licensed midwife or nurse practitioner to an obstetrician and/or maternal-fetal medicine specialist (high risk obstetrician or perinatologist).

Specialty physician consultation/referral - Prenatal care providers shall develop criteria for consultation and referral for care to a maternal-fetal medicine specialist, perinatalogist, high risk obstetrician, specialty physician, behavioral health specialist, including licensed social worker or other health care specialist as necessary based on the identification of specific risk factors or medical conditions requiring additional specialty monitoring and management. Prenatal care providers should follow AAP/ACOG's early and on-going pregnancy risk specific recommendations for consultation3. Referrals for specialty provider consultations should include:

description of the indication for the consult, the role of the consultant during the initial consult the role of the consultant during the follow-up care throughout the stages of pregnancy, and the sharing of patient/

clinical information between the primary care obstetrical provider and the special care consultant.

PRINCIPLES

a. Definition. Antepartal or prenatal care refers to the medical and nursing supervision and care given to the pregnant patient during the period between conception and the onset of labor.

b. Objectives of Prenatal Care. During the initial visit, the objectives are directed toward confirming a diagnosis of pregnancy and beginning the process of data collection to act as a basis for ongoing prenatal care. These objectives include:

(1) Prevention of complication.

(2) Modification of those complications that may develop.

(3) Support of the patient's goal to carry the infant to term and deliver a healthy baby.

(4) Education of the mother-to-be and her family for the parenting role.

(5) Inclusion of the family as a whole in the concept of "family-centered maternity care."

c. Health Care Professionals. Health care professionals involved in the administration of the prenatal care includes:

(1) Physicians. They are primarily involved in diagnosing normal and abnormal conditions associated with the childbearing cycle.

(2) Nursing personnel. Nursing personnel includes the nurse practitioners, clinical nurse specialists, registered nurses, and licensed practical nurses. Nursing personnel serves as teachers, counselors, and resource personnel. They have the responsibility to develop and implement nursing care plans.

(3) Others. Other health care personnel that are involved in prenatal care are:

(a) Dietitians.

(b) Laboratory technicians.

(c) Social services.

(d) Occupational therapists.

(e) Similar support personnel.

d. Choice of Health Care Professionals. The pregnant patient is responsible to choose the type of individual she prefers to consult for prenatal supervision and care. She may choose a private obstetrician, family practice physician, clinic with no control over which physician provides the care, or a nurse midwife. The primary concern is whether the individual she chooses meets her goals, desires, and expectations.

e. Early Care. Early, competent care is essential for the patient to avoid unnecessary risks to herself and her fetus.

INITIAL PRENATAL VISIT

a. The initial prenatal visit should be scheduled at the first signs of pregnancy. This is usually shortly after the second menstrual cycle is missed. Depending on where the care is to be given, the first prenatal visit may not be scheduled until after a positive urine pregnancy test is documented.

PRENATAL QUESTIONNAIRE

Last Name - First Name - Maiden Name		Age
Husband's Last Name - First Name - Middle Initial	Grade	Age
Address		Telephone No
Husband's Duty Station		Telephone No
Religion	Height	Weight Before Pregnancy

Number of times you have been pregnant (including present pregnancy): _____
Number of times you have delivered after 6 months: _____
Number of times you have lost a pregnancy before 6 months: _____
Number of your children who are living now: _____
First day of your last menstrual period: _____

PAST MEDICAL HISTORY

1: How is your general health? ☐ Good ☐ Fair ☐ Poor

Have you been under a physician's care for, or are you aware of, any problem you have in relation to:

	Yes	No
2. Frequent headaches, migraine, or fainting spells _____	☐	☐
3. Visual problems, contact lenses, etc. _____	☐	☐
4. Frequent earaches, deafness or dizzy spells _____	☐	☐
5. Frequent nose bleeds or sinusitis _____	☐	☐
6. Frequent sore throats, tonsillitis or hoarseness _____	☐	☐
7. Goiter, thyroid problems, abnormal metabolism _____	☐	☐
8. Frequent cough, tuberculosis, pneumonia, other lung problems _____	☐	☐
9. Heart murmur, leaky valve, rheumatic fever, high blood pressure, blood clots, phlebitis _____	☐	☐
10. Nausea and vomiting, ulcer, hepatitis, gall bladder trouble, fatty food intolerance, diabetes, constipation, diarrhea, bloody bowel movements _____	☐	☐
11. Kidney infection, kidney stone, pus in your urine, pain with or frequency of urination _____	☐	☐
12. Irregular periods, female problems, venereal disease _____	☐	☐
13. Anemia, low blood, leukemia, excessive bleeding _____	☐	☐
14. Infectious mononucleosis, swollen glands _____	☐	☐
15. Poliomyelitis, muscular disorders, frequent backache _____	☐	☐
16. Psychiatric problems, nervous breakdown, depression, nervousness, emotional problems _____	☐	☐
17. Have you ever received a blood transfusion or Rhogam or had an Rh problem _____	☐	☐
18. Are you allergic or sensitive to any drugs or medicine? Do you have asthma, hay fever or other allergy _____	☐	☐
19. Did you have any serious childhood illnesses or any complications of chicken pox, measles, German measles, or mumps _____	☐	☐
20. Have you had any operations (tonsils, D&C, appendix, etc. _____ What and when: _____	☐	☐
21. Have you had any serious injuries, broken any bones or been knocked unconscious What and when: _____	☐	☐

b. The initial prenatal visit may be particularly stressful to the patient. Some patients may be anxious about the nature of exams and tests to be done during the visit. The pregnancy may have been unplanned, there may be already existing financial or family problems, or some patients may have had unpleasant experiences

with previous pregnancies. The presence of one or more of these problems may serve to heighten the emotional content of the visit.

FAMILY HISTORY

Mother Living? ☐ Yes ☐ No . Age ____ If deceased, age at time of death and cause of death) _____

Father Living? ☐ Yes ☐ No Age ____ If deceased, age at time of death and cause of death) _____

Have any of your relatives (parents, brothers, sisters, grandparents, aunts, uncles, cousins) had diabetes, kidney disease, high blood pressure?

List: _____

How old were you when your periods started? _____

How long does your period last? _____

How long is it from the start of one period to the start of the next? _____

Do you have a problem with painful periods? ☐ Yes ☐ No

Previous Pregnancies (Including Miscarriages, Etc.)

	1	2	3	4	5	6
Date of delivery (or miscarriage)						
Weeks or months completed						
Duration of labor						
Type of delivery (normal, breech, Cesarean, etc.)						
Anesthesia						
Hospital						
Sex of baby						
Birth weight						
Complications or remarks (include child's present health)						

Are you taking any medications at present? ☐ Yes ☐ No If yes, what? _____

Is there anything else you feel we should know? If yes, what? _____

c. Setting a comfortable climate is very important to the patient. The patient's first impression and initial reception will influence how she may comply with the instructions given during pregnancy. If treated with a true concern as an individual, she will be more inclined to follow instructions. If the patient is rushed with little concern for her as an individual, she may decide not to return. A cordial, respectful environment in which the patient feels like a person is a necessity for every visit.

d. A thorough medical/obstetrical history is obtained. The history is essentially a screening tool that identifies the factors that may

detrimentally affect the course of pregnancy. This process involves interviewing the patient and possibly having the patient to complete a questionnaire to obtain the following information:

(1) Past medical history of the patient's mother and father (for example, hypertension, diabetes, and tuberculosis).

(2) Family illnesses (that is, diabetes, mental illness, and bleeding disorders).

MEDICAL RECORD | **PRENATAL AND PREGNANCY**

PATIENT'S NAME | AGE | HUSBAND'S NAME | GRADE | AGE

ADDRESS | PHONE | STATION | PHONE

RACE | RELIGION | GRAVIDA | PARA | AB | NO. LIVING

SIGNIFICANT HISTORY & FINDINGS HEIGHT | USUAL WT | IDEAL TERM WT.

OBSTETRICAL PROGNOSIS & RECOMMENDATIONS

EDC | LMP | CORRECTED EDC | QUICKENING

DATE														
WEEKS GESTATION														
WEIGHT														
B.P.														
FUNDUS														
POSITION														
STATION														
FHT														
EDEMA														
URINE														
DOCTOR														

RHYTHM LAB. WBC | Hb. | HCT | SEROLOGY

BLOOD TYPE | Rh | RUBELLA TITER | CYTOLOGY

CHEST X-RAY | OTHER

DATE | TREATMENT--PROGRESS

SMOKING
ALCOHOL
MEDICATIONS/DRUGS
VENERAL DISEASE (HERPES)
SICKLE CELL DS/TRAIT

NEW ORIENTATION BRIEFING. NORMAL COURSE AND
POSSIBLE PROBLEMS OF PREGNANCY DISCUSSED
PRENATAL [illegible] TRAINING IN
CREASED DIETARY NEEDS OF PREGNANCY WT.

PATIENT'S IDENTIFICATION (Name-last, first, middle, grade; date; address or medical facility) | IDENTIFICATION NO | ORGANIZATION | FACILITY NO. | WARD NO.

STANDARD FORM 533 (REV. 7-75)
General Services Administration and
Interagency Committee on Medical Records
FPMR 101-11.806-4
October 1975 533-103

HISTORY	(✓) NORMAL OR NONE		(X) ABNORMAL		EXPLAIN UNDER REMARKS
(1) GENERAL	(2) HEAD	(3) EYE	(4) EAR	(5) NOSE	
(6) THROAT	(7) NECK	(8) RESPIRATORY	(9) CARDIO.	(10) GASTRO.	
(11) URINARY	(12) GYN	(13) HEMO	(14) LYMPH	(15) MUSCUL.	
(16) NEURO-PSY.	TRANSFUS.		ALLERGY		

CHILDHOOD ILLNESSES

OPERATIONS

FAMILY HISTORY

MENSTRUAL ONSET	CYCLE	DURATION	PAIN

PAST PREGNANCIES

DATE	WEEKS GEST	LENGTH LABOR	TYPE DELIVERY	ANES.	HOSP	SEX	WEIGHT	REMARKS

REMARKS

PHYSICAL EXAMINATION	(✓) NORMAL OR NONE		(X) ABNORMAL		EXPLAIN UNDER REMARKS
(1) GENERAL	(2) HEAD & NECK	(3) EYES	(4) EARS	(5) NOSE	
(6) MOUTH	(7) THROAT	(8) TEETH	(9) CHEST	(10) BREASTS	
(11) NIPPLES	(12) LUNGS	(13) CARDIO	(14) ABDOMEN	(15) HERNIA	
(16) BACK	(17) EXTREM.	(18) NEURO	(19) SKIN	(20) LYMPH.	

EXT. GENITALIA

VAGINA

CERVIX

UTERUS

ADNEXA

RECTAL

PUBIC ARCH	B.I.	FORE PELVIS	SPINES	S. NOTCH
SIDE WALLS	D.C.	SACRUM	COCCYX	POST. SAG

PELVIS POSTERIOR SEGMENT ANTERIOR SEGMENT

REMARKS

SIGNATURE OF PHYSICIAN DATE

Standard Form 533 BACK (Rev. 7-75)

(3) Obstetric/gynecologic record.

(a) Last menstrual period (LMP) and menstrual history (for example, last regular cycle and spotting).

(b) Contraceptive history (Were birth control pills used? Did the patient become pregnant immediately after cessation of pills? How long after cessation of pills?

(c) Reproductive history (for example, number of previous pregnancies and their outcomes, complications).

(d) Exposure or treatment for any sexually transmitted diseases (STDs).

(e) Problems with the current pregnancy (for example, bleeding, nausea, and headaches).

(4) Present medical condition of the patient (for example, hypertension, diabetes, medications presently taking, and any drug allergies).

e. Physical examination. After a complete history is obtained, the patient is prepared for a through physical examination.

(1) Vital signs are taken to include:

(a) Temperature, pulse, respiration, and blood pressure.

(b) Fetal heart tones. Document if obtained with a doppler or fetoscope.

(2) Evaluate height, normal weight, and present weight.

(3) Obtain urine specimen. This should be obtained before the patient undresses for the pelvic examination.

(a) On the initial visit, a complete urinalysis is done.

(b) On subsequent visits, a urine specimen will be dipsticked for albumin and glucose.

(c) Additional testing will be done only if there are indications of toxemia of pregnancy or diabetes mellitus.

(4) Prepare patient for a pelvic examination, if performed.

(a) A pelvic examination is performed to confirm the pregnancy and to determine gestation. An examiner will look for signs of pregnancy—Chadwick's sign (color of cervix), Goodell's sign (softening of tip of cervix), and Hegar's sign (softening of the region between the body of the uterus and cervix). He will also evaluate the size of the uterine and the fundal height.

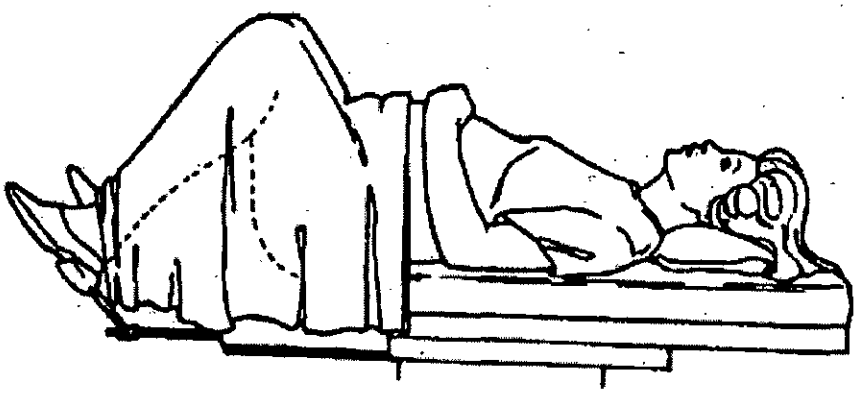
(b) Estimate of pelvic size. The examiner evaluates the position of the ischial spines and tuberosities. He evaluates diagonal conjugate to estimate pelvic canal size and whether it will allow passage of the fetus at the time of birth.

(c) Palpation of pelvic contents is done to identify any abnormal masses or tumors.

(d) Nursing responsibilities.

1. Assemble necessary equipment (speculum, lubricant, spatula for cervical scraping, glass slide, culture tube with sterile cotton-tipped applicator, exam gloves, and exam light).
2. Have the patient empty her bladder so she is more comfortable. It is easier for the examiner to evaluate the size of the uterus on an empty bladder.
3. Have the patient to remove her clothing and to put on a patient gown. Allow for patient privacy while changing.

4. Position the patient on the exam table in the lithotomy position with a drape to cover her.



5. Reassure and encourage the patient to relax during the exam. The patient can relax by taking two to three breaths and letting them out slowly through her mouth.
6. Provide wipes so the patient may remove lubricant used during the exam.
7. Allow for patient's privacy when redressing.
8. Clean up room and dispose of used materials properly.

(5) The physician will observe and palpate the patient's breast for abnormalities.

(6) A rectal exam is usually done at the end of the pelvic exam.

(7) Laboratory studies performed are as follows:

(a) CBC, Hgb, or Hct-to detect anemia.

(b) Sickle cell on black women-to identify patients with sickle cell anemia.

(c) VDRL-to identify patients with untreated syphilis.

(d) Rh factor, blood type-to determine if the patient is Rh negative.

(e) Rubella antibody titer-to determine immunity to rubella.

(f) Hepatitis screen-is done if patient history indicated cause for suspicion.

(g) HTLVIII (AIDS)-screening for AIDS may begin as a common part of the initial visit.

(8) Cultures taken at the time of the pelvic exam are as follows:

(a) Papanicolaou (PAP) Smear is done to detect any abnormalities of cell growth.

(b) Gonorrhea culture is done to screen the patient for possible infection to protect herself, her partner, and the fetus.

(c) Herpes simplex culture is done if there is a history or any lesions noted to rule out active herpes.

BASIC PATIENT TEACHING CONSIDERATIONS FOR THE EXPECTANT MOTHER ON THE FIRST PRENATAL VISIT WITH REINFORCEMENT ON EACH SUBSEQUENT VISIT

a. Instruct the patient on the importance of regularly scheduled follow-up visits (following the normal pregnancy).

(1) Once a month until the seventh month.

(2) Every two weeks during the seventh and eight month.

(3) Weekly during the ninth month until delivery.

(4) Patient teaching must continue on each visit.

b. Instruct the patient on the importance of proper nutrition.

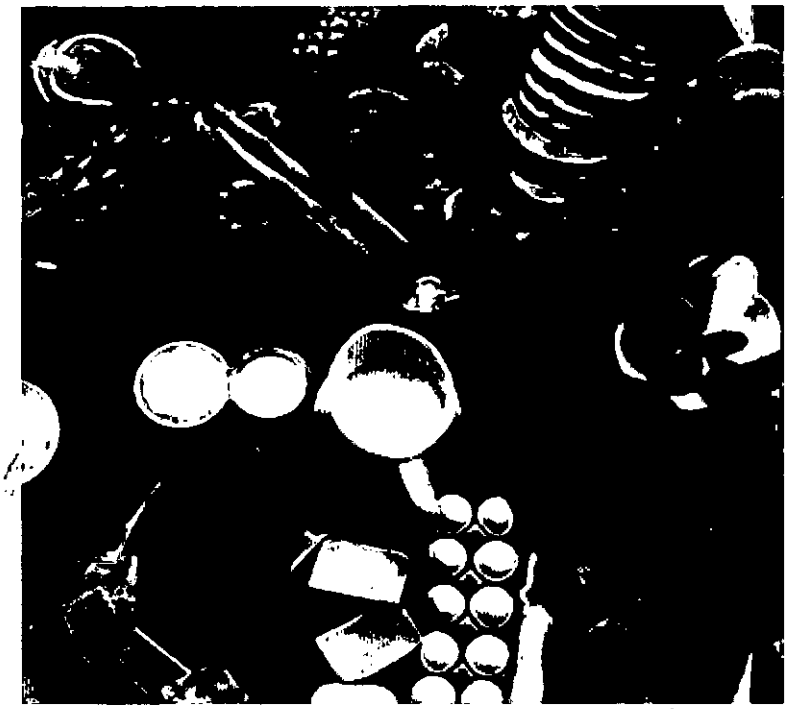
(1) A well-nourished mother and baby are thought to be far less the victims of obstetric and prenatal complications, such as:

(a) Preeclampsia.

(b) Prematurity.

(c) Growth retardation.

(d) Significant residual neurologic damage (that is, cerebral palsy, mental deficiency, or behavior disorders in the child).



(2) Guide to good eating-from the six basic food groups daily.

(a) Milk, yogurt, and cheese group—2 to 3 servings per day.

(b) Meat, poultry, fish, beans, eggs, and nuts group—2 to 3 servings per day.

(c) Vegetable and fruits—3 to 5 servings of vegetables and 2 to 4 servings of fruits per day.

(d) Breads, cereals, rice and pasta—6 to 11 servings per day.

(3) Proper weight gain for pregnancy. After an initial loss, the patient will gain 2 to 4 pounds during the first trimester. Expect a gain of a pound per week during the second and third trimesters.

c. Instruct the patient on the importance of proper rest and sleep.

(1) Pregnancy will cause the patient to tire more easily.

(2) Prevention of fatigue through short rest periods is vital to good health.

(3) The amount of rest or sleep required will vary with the individual and stage of her pregnancy.

d. Instruct the patient on the importance of exercise and fresh air.

(1) The degree will vary according to her condition and stage of pregnancy.

(2) Walking is usually the exercise of choice.

(3) Swimming is an excellent overall exercise program.

e. Instruct the patient on precautions to take during pregnancy.

(1) Decrease smoking or stop altogether if possible.

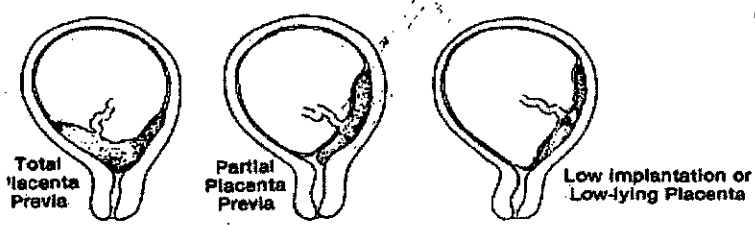
(2) Restrict or limit alcohol intake.

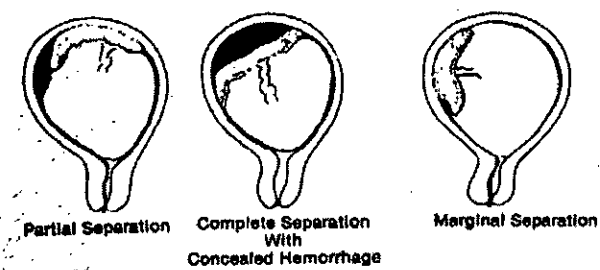
(3) Avoid children with measles or other contagious diseases.

(4) Do not change kitty litter boxes or eat raw meats to prevent toxoplasmosis.

f. Instruct the patient on potential danger signs of pregnancy that would necessitate her contacting her physician and coming in.

(1) Any vaginal bleeding, regardless of how small, may indicate possible miscarriage or abortion, placenta previa, or placenta abruptio.





(2) Symptoms that may indicate preeclampsia. The symptoms are:

(a) Severe continuous headache.

(b) Dimness or blurring of vision.
(c) Swelling of the face or hands, especially when present after resting all night.
(d) Scotoma--lashes of lights or dots before the eyes.
(e) Persistent vomiting.
(f) Sharp pain in the abdomen.
(g) Epigastric pain.
(h) Weight gain greater than 4 pounds in one week.
(i) Chills and fever.
(j) Burning upon urination.
(k) Sudden escape of fluid from the vagina. The patient should report immediately to the physician or the hospital. She should not wait for uterine contractions to start.
(l) Lack of fetal movement over a 24-hour period once "quickening" has been established.
(m) Regular uterine contractions less than 5 minutes apart for an hour for anyone less than 37 weeks pregnancy.

ASSIGNMENT 4: DIAGNOSIS OF PREGNANCY AND CALCULATION OF GESTATIONAL AGE

INTRODUCTION

It is advantageous to diagnose pregnancy as promptly as possible when a sexually active woman misses a menstrual period or has symptoms suggestive of pregnancy. In the event of a desired pregnancy, prenatal care can begin early, and potentially harmful medications and activities such as drug and alcohol use, smoking, and occupational chemical exposure can be halted. In the event of an unwanted pregnancy, counseling about adoption or termination of the pregnancy can be provided at an early stage.

The diagnosis of pregnancy requires a multifaceted approach using 3 main diagnostic tools. These are history and physical examination, laboratory evaluation, and ultrasonography. Currently, physicians may use all of these tools to diagnose pregnancy at early gestation and to help rule out other pathologies.

Diagnosis of pregnancy is best confirmed using a urine-testing kit that determines the presence of beta human chorionic gonadotrophin (beta-hCG).

Many women will have confirmed their own pregnancy by such means.

Where the absence of menses is the only current indicator of early pregnancy, it is important to confirm pregnancy using a testing kit.

An early ultrasound scan should be offered at 11-14 weeks, to determine gestational age and detect multiple pregnancies. It may also be part of the screening for fetal anomalies when the nuchal translucency is measured. Accurate gestational age assessment helps optimal antenatal care by, for example, reducing the need for induction of labour at >41 weeks.

Crown-rump length is the best surrogate measure of gestational age in the first trimester.

Pregnant women who present at or beyond 14 weeks of gestation should be offered an ultrasound scan to estimate gestational age using head circumference or biparietal diameter. If the crown-rump length is above 84 mm, the gestational age should also be estimated using head circumference or biparietal diameter. By the second or third trimester, multiple parameters may be used, including biparietal diameter, head and abdominal circumference and femur length.

CLINICAL SYMPTOMS OF PREGNANCY

The patient's history and physical examination play important roles in the diagnosis of pregnancy. Clinical signs and symptoms are often the earliest indication of pregnancy and should be considered first in the evaluation of patients. Abnormalities in menstruation, specifically amenorrhea, serve as the most common clinical marker for pregnancy in women who typically have regular menstrual cycles. Menstrual irregularities other than amenorrhea can also occur in pregnancy, and pregnancy should be a consideration in any woman who displays menstrual aberrations. More importantly, if irregular menses occur in the face of pregnancy, one must consider an extrauterine or nonviable intrauterine pregnancy. Biochemical testing and ultrasonography can help in the differentiation of these conditions. Abdominal enlargement, caused by the growing uterus, reaches the umbilicus by 20 weeks' gestation. Fetal movement can usually be perceived by 18 weeks' gestation. Breast tenderness, nausea, vomiting, and urinary complaints can also occur. However, physical symptoms are not sufficiently reliable to diagnose pregnancy.

Table 2. Clinical symptoms of pregnancy

- Amenorrhea
- Abdominal enlargement
- Fetal movement
- Breast tenderness
- Nausea
- Vomiting
- Urinary complaints

CLINICAL SIGNS OF PREGNANCY

Positive signs of pregnancy include identification of fetal heartbeat, maternal perception of fetal movement, and ultrasonographic demonstration of pregnancy. The demonstration of a fetal heartbeat by auscultation, Doppler technology, or sonography suffice as a positive sign of pregnancy. Auscultation of a fetal heartbeat can usually be achieved by 19 weeks' gestation in most pregnancies, and fetal heartbeat can be discerned by 10 weeks' gestation using Doppler ultrasound devices. Because of the relative rapidity of the fetal heart rate, fetal and maternal heartbeats should be easily differentiated.

TABLE. CLINICAL SIGNS OF PREGNANCY

- Identification of fetal cardiac action
- Perception of fetal movements
- Ultrasonographic recognition of pregnancy

Another sign of pregnancy is the perception of fetal movement by the examiner through the placement of his or her hands on the maternal abdomen. Fetal movement can be detected after the 20th week of pregnancy. Fetal movements are variable in intensity and can occasionally be visualized.

A third positive sign is the ultrasonographic demonstration of pregnancy. Ultrasonographic evidence of pregnancy can be seen as early as 4–5 weeks' gestation using menstrual dates. Fetal cardiac activity can be seen by 6 menstrual weeks' gestation, and the fetal brain can be seen by 8 weeks. The crown–rump length can be used accurately to assess gestational age within 4 days up to approximately 12 weeks.

SALIENT FEATURES OF HUMAN IMPLANTATION

Implantation, or the process by which the embryo comes in contact with, adheres to, and penetrates the endometrium, is necessary prior to the diagnosis of pregnancy. First contact between the blastocyst and the endometrium occurs 6 days after fertilization. This is known as apposition. Soon after apposition, the blastocyst becomes adherent to the endometrium, and the process of implantation has begun. Various molecules play an active role in this process. Laminin, a basement membrane glycoprotein involved in tumor invasion and possibly embryo adhesion and implantation, is expressed in human embryos by day 3 after fertilization.3 In humans, the first signs of blastocyst attachment occur on day 8.4 A host of molecular mediators are involved and are integral to the implantation process which is central to the diagnosis of pregnancy.

PREGNANCY TESTS

All urine or blood pregnancy tests rely on the detection of hCG produced by the placenta. hCG levels increase shortly after implantation, approximately double every 48 hours, reach a peak at 50-75 days, and fall to lower levels in the second and third trimesters. Laboratory and home pregnancy tests use monoclonal antibodies specific for hCG. These tests are performed on serum or urine and are accurate at the time of the missed period or shortly after it.

Compared with intrauterine pregnancies, ectopic pregnancies may show lower levels of hCG that level off or fall in serial determinations. Quantitative assays of hCG repeated at 48- to 72-hour intervals are used in the diagnosis of ectopic pregnancy as well as in cases of molar pregnancy, threatened abortion, and missed abortion. Comparison of hCG levels between laboratories may be misleading in a given patient because different international standards may produce results that vary by as much as twofold.

HOW THE TEST IS PERFORMED

A pregnancy test is done using blood or urine. There are two types of blood tests:

- Qualitative, which measures whether the HCG hormone is present
- Quantitative, which measures how much HCG is present
- The blood test is done by drawing a single tube of blood and sending it to a laboratory. You may wait anywhere from a few hours to more than a day to get the results.
- The urine HCG test is usually performed by placing a drop of urine on a prepared chemical strip. It takes 1-2 minutes for a result.

BIOCHEMICAL DIAGNOSIS OF PREGNANCY

A pregnancy test measures a hormone in the body called human chorionic gonadotropin (HCG). HCG is a hormone produced during pregnancy. It appears in the blood and urine of pregnant women as early as 10 days after conception. Human chorionic gonadotropin hormone synthesis and secretion in normal and aberrant pregnancies hCG is a glycoprotein secreted by the syncytiotrophoblast with a molecular weight of about 36,700 Da. The molecule contains about 30% carbohydrate, which is the highest concentration of carbohydrate moiety of any human hormone.6 hCG is the hormone that classically has been measured to diagnose pregnancy. It is composed of an a and ß subunit, which are noncovalently linked. The ß subunit confers specific activity to the hormone and is the subunit most commonly

measured in most pregnancy assays. There exists much homology between hCG and luteinizing hormone (LH), especially with respect to the first 121 amino acids of the ß subunits of both hormones, which have about 80% homology. hCG has a 24-amino acid extension on the carboxyl-terminal end that is lacking in the LH ß subunit.7 hCG can be detected by molecular techniques in human embryo culture at the 8-cell stage; however, detection of hCG in the plasma is not possible until implantation has occurred, approximately 10 days after the LH surge. Typically, the level of ß-hCG doubles approximately every 36 hours and peaks at about 100,000 mIU/ml at 10 weeks' gestation,6 after which it decreases to about 20,000 mIU/ml by midpregnancy, where it remains until term. ß-hCG is not diagnostic of only normal pregnancy. Abnormal elevations, plateaus, or decreasing titers of ß-hCG raises the possibility of ectopic pregnancy or miscarriage. The use of the assay in this context typically requires other modalities such as ultrasound, serum progesterone levels, or both.

Table 3. Characteristics of human chorionic gonadotropin

- Glycoprotein
- Composed of 30% carbohydrate
- a and ß subunits covalently bonded
- 80% Homology with luteinizing hormone
- Produced by embryo at 8-cell stage
- Produced by syncytiotrophoblast 10 days after luteinizing hormone surge
- Peaks at about 10 weeks' gestation (~100,000 mIU/ml)
- Level falls after 10 weeks until term (~20,000 mIU/ml)

HUMAN CHORIONIC GONADOTROPIN HORMONE ASSAYS

The first international standard for hCG was established in 1938; however, when stock standards ran low, the second international standard was established.8 Nevertheless, because of its relative impurity and heterogeneity, the more pure International Reference Preparation (IRP) was developed in 1980.9 The numerical value of the IRP in international units (IU) is about twice that of the second international standard.9

The early hCG assays were bioassays that consisted of injecting an animal, usually a rabbit, with the urine of the possibly pregnant women. Various end points such as increased prostate weight, seminal vesicle weight, and gain in uterine weight (depending on the gender of the rabbit) were measured. These assays were expensive and time consuming and lacked reliability.

The immunoassay provided greater ease compared with the bioassay, but it was plagued with high cross-reactivity. The standard assay was performed by mixing a known amount of anti-hCG with the patient's urine. If hCG was present in the urine, it would bind to the anti-hCG and leave no free anti-hCG to bind to hCG-coated red blood cells. In this situation no agglutination would occur, indicating a positive test result. A negative test result would be marked by agglutination of the red cells, indicating binding between the added anti-hCG and the hCG-coated red cells. The sensitivity of this assay was 150 mIU/ml.

The radioimmunoassay (RIA) was perhaps the most popular assay for hCG. This assay involved competition between radioactively labeled and unlabeled antigens for binding sites on an antibody that was highly specific for the hCG antigen.10 The disadvantage of the RIA is a relatively long turnaround time of 4–6 hours.

The enzyme-linked immunosorbent assay (ELISA) is a quick, easy method of hCG determination. This assay uses highly specific monoclonal antibodies for hCG. The sensitivity of this assay is as low as 5 mIU/ml, and hCG can be detected several days before a missed menses. The ELISA is based on a reaction between anti-a-hCG monoclonal antibody that is attached to a solid phase and the a subunit of hCG in the patient's urine. This reaction creates a complex that leaves the ß-hCG subunit exposed. An enzyme-linked monoclonal antibody to the ß subunit is then added to the reaction, forming an antibody-hCG-antibody-enzyme complex. Excess reagent is washed away, allowing the remaining enzyme to react with its substrate to form a colored product. The colorimetric reaction is then quantitated. Most qualitative tests use this technology.11 Most home pregnancy tests are based on urinary ELISA technology. Concern has been expressed regarding the accuracy of such kits, but this probably reflects the technique of the user rather than inadequacy of the kit itself.12 It is estimated that home pregnancy tests have a 10% false-positive and false-negative rate.

URINARY AND SERUM FOLLICLE-STIMULATING HORMONE

Total urinary and serum follicle-stimulating hormone (FSH) ß subunit levels in the postovulatory period are lower in conception cycles than in nonconception cycles. It has been shown by Qui and colleagues that mean serum and urinary FSH levels rose significantly above the postovulatory baseline by day 10–12 following the midcycle LH peak in nonconception cycles but did not rise at any time following ovulation in conception cycles.13 It was reported that sensitivity and specificity of urinary FSH to detect pregnancy were 88.9% and 89.3%, respectively.

EARLY PREGNANCY FACTOR

Early pregnancy factor (EPF) has been studied as an alternative to ß-hCG determination, because it can be detected in the blood prior to hCG.14 EPF is a placental protein and is one of the first pregnancy markers known to appear in the blood.

ULTRASONOGRAPHIC DIAGNOSIS OF PREGNANCY

Modern ultrasound technology, especially transvaginal techniques, have markedly enhanced the diagnosis and prognosis of early pregnancy. Although ultrasound alone has not replaced biochemical testing for the diagnosis of early pregnancy, in has greatly improved the differentiation of normal versus abnormal intrauterine pregnancies and the determination of extrauterine pregnancies.

SONOGRAPHIC METHODOLOGY

Transvaginal ultrasound allows early detection of pregnancy. A chorionic gestational sac can be detected with this method at a discriminatory zone of about 1400 mIU/ml and at about 6500 mIU/ml by transabdominal scanning16, 17 by the IRP. Practitioners must be aware of the assay standard being used for ß-hCG determination in their laboratory. The second international standard will have a discriminatory zone of about 50% less than the IRP. With this in mind and a keen sense of clinical awareness, aberrant pregnancies can be reliably detected.

NORMAL AND ABERRANT PREGNANCY

HCG level rises rapidly during the first trimester of pregnancy and then slightly declines. HCG level should almost double every 48 hours in the beginning of a pregnancy. HCG level that does not rise appropriately may indicate a problem with your pregnancy. Problems related to an abnormally rising HCG level include miscarriage and ectopic (tubal) pregnancy. An extremely high level of HCG may suggest a molar pregnancy or more than one fetus -- for example, twins. Your health care provider will discuss the meaning of your HCG level with you.

TABLE 4 SENSITIVITY OF TRANSVAGINAL ULTRASOUND IN THE DETECTION OF PREGNANCY

ß-hCG Level (IRP)	Structure Seen
1025 mIU/ml	Gestational sac
7200 mIU/ml	Yolk sac
10,800 mIU/ml	Fetal cardiac activity

ß-hCG, ß human chorionic gonadotropin; IRP, International Reference Preparation.

Ectopic pregnancies can now be diagnosed much earlier than was previously possible with the advent of transvaginal ultrasonography. This technology has a sensitivity of 100%, a specificity of 98%, a positive predictive value of 98%, and a negative predictive value of 98%.20 Lack of a gestational sac by day 35 of the menstrual cycle or when the ß-hCG level is 1025 mIU/ml is associated with an increased risk of ectopic pregnancy. Pseudogestational sacs, which represent a fluid collection within the endometrial cavity in conjunction with an ectopic pregnancy, must be considered and should not be confused with a normal gestational sac which should be located immediately adjacent to the endometrial cavity.21

NEW DIAGNOSTIC METHODS OF PREGNANCY FOR ASSISTED REPRODUCTION

Ultrasonographic assessment of endometrial thickness in patients undergoing in vitro fertilization (IVF) predict higher pregnancy rates when the endometrial thickness is 10 mm.22 Sonography has also been used to predict uterine receptivity in women undergoing assisted reproduction. Based on the uterine receptivity index, Serafini and colleagues demonstrated a mathematical equation involving the sonographic endometrial pattern, thickness, diastolic blood flow, and resistance index to be predictive of pregnancy outcome in women undergoing ovulation induction with leuprolide acetate and human menopausal gonadotropins.23

CONSIDERATIONS

Urine pregnancy tests will only be positive when you have enough HCG in your blood. If you are very early in your pregnancy, and the HCG level is below 25-50 mIU/mL, the test will be negative. The level is higher if your urine is more concentrated. So a good time to test is when you first get up in the morning. If you think you are pregnant, repeat the pregnancy test at home or at your health care provider's office.

EVALUATION OF GESTATION

The estimation of pregnancy dates is important for the mother, who wants to know when to expect the birth of her baby, and for her health care providers, so they may choose the times at which to perform various screening tests and assessments, such as serum screening, assessment of maturity, and induction of labor for postdate pregnancies.

The 3 basic methods used to help estimate gestational age (GA) are menstrual history, clinical examination, and ultrasonography. The first 2 are subject to considerable error and should only be used when ultrasonography facilities are not available. The date of feeling the first fetal movements (quickening) is far too unreliable to be useful. The date of

the first documented positive pregnancy test and the beta-human chorionic gonadotropin (bHCG) level may help ascertain the minimum gestational age. In women who conceived following assisted reproduction techniques, the date of embryo transfer is known and may date the pregnancy accurately. In rare cases, the date of coitus is known, and this may be useful in calculating the length of pregnancy.

CLINICAL METHODS OF ESTIMATING GESTATIONAL AGE

Menstrual History

Gestational age (GA) has traditionally been estimated from the date of the last menstrual period (LMP). This estimation assumes that conception occurs on day 14 of the cycle. The fallacy in this assumption is that the time of ovulation varies greatly in relation to the menstrual cycle, both from cycle to cycle and individual to individual. Basing GA on the LMP tends to result in an overestimation. The 95% confidence interval of menstrual dates is -27 to +9 days.

To further complicate matters, 10-45% of pregnant women cannot provide useful information about their LMP, and 18% of women with certain menstrual dates have significant differences between menstrual and ultrasonographic dating. The accuracy of menstrual history in women with a history of oligo-ovulation, such as those with polycystic ovarian syndrome, should be questioned. If conception occurred while oral contraceptives or long-acting progestogens were being taken, the LMP cannot be used because it has no relation to the time of ovulation.

Date of Pregnancy Test

Knowing the date of the first positive pregnancy test result allows the calculation of a minimum GA. This depends on the sensitivity of the test. For example, if the test was performed 4 weeks ago and the test is known to return positive results as early as 1 week after conception, then the minimum conceptional age (CA) would be 5 weeks (GA, 5 + 2 = 7 wk of amenorrhea). This information can be useful in clinical practice if the test finding has been documented by a health care professional.

ESTIMATING THE DELIVERY DATE

The expected date of delivery (EDD) is one of the earliest pieces of information a pregnant woman requests once pregnancy is confirmed. In order to calculate the EDD, the practitioner must know the median length of normal pregnancy and the last menstrual period (LMP) or ultrasonographic estimation of gestational age (GA). Pregnant women should be counselled that only 4% of all babies are born precisely on the estimated date of confinement. Failure to appreciate this may lead to unnecessary maternal anxiety if a pregnancy progresses beyond the EDD.

Therefore, giving a range for the likely date of birth (eg, EDD -2 weeks to EDD +1 week) is more useful.

The median length of human pregnancy is 280 days of amenorrhea (from the first day of the LMP) or a CA of 266 days (280-14). [4] Infants born before 37 completed weeks' gestation are deemed preterm, whereas those born after 42 weeks' are considered post-term. In normal pregnancies, the length of gestation is minimally affected by maternal characteristics. However, obese women are significantly more likely to go post-term.

PRENATAL RISK ASSESSMENT

Prenatal care (PNC) providers shall conduct a comprehensive prenatal care risk assessment for both maternal and fetal risks, at the earliest prenatal care visit, on all pregnant women.

The risk assessment shall include but not be limited to an analysis of individual characteristics affecting pregnancy, such as genetic, nutritional, environmental, behavioral health, psychosocial and history of previous and current obstetrical/fetal and medical/surgical risk factors. Historical obstretric risk assessment shall include an evaluation of prior preterm birth, risk for recurrent preterm birth and eligibility for progesterone supplementation as per ACOG recommendations.6 Prenatal care providers are encouraged to use a standardized written risk assessment tool, such as the ACOG, Hollister or POPRAS form. Using established criteria for determining high risk pregnancies, the prenatal care provider shall determine the woman's risk status based on generally accepted standards of practice.

The risk assessment shall be:

- reviewed at each visit;
- repeated formally early in the third trimester;
- used to form the basis for the development of the care plan and;
- documented clearly in the medical record.

Based on results of the risk assessment and the individual woman's increased risk for a poor pregnancy outcome, the prenatal care provider shall refer the pregnant woman for follow-up care. Referrals for such care may include but are not limited to: prenatal case management programs provided by managed care plans, other case management programs, home visitation agencies, or community-based programs for prenatal care coordination.

In accordance with Public Health Law section 2530-a 2.3. Prenatal care providers shall complete a standardized New York State Prenatal Care Risk Screening Form, which summarizes the results of the

comprehensive risk assessment (as described in C.1.) for each new pregnancy. The completion of this risk screening form once during the pregnancy and reporting of the information shall be with the pregnant woman's informed written consent and shall be in a format to be developed by the Commissioner. If consent and voluntary participation is obtained, prenatal care providers shall complete the New York State Prenatal Care Risk Screening Form at the earliest prenatal care visit and transmit the information in a confidential manner to be determined by the Commissioner.

ASSIGNMENT 5 : PHYSICAL EXAMINATION OF ANTENATAL MOTHER

INTRODUCTION

A full general examination, including BP, height, and weight, is done first. BMI should be calculated and recorded. BP and weight should be measured at each prenatal visit.

In the initial obstetric examination, speculum and bimanual pelvic examination is done for the following reasons:

- To check for lesions or discharge
- To note the color and consistency of the cervix
- To obtain cervical samples for testing

Also, fetal heart rate and, in patients presenting later in pregnancy, lie of the fetus are assessed (see Figure : Leopold maneuver).

Pelvic capacity can be estimated clinically by evaluating various measurements with the middle finger during bimanual examination. If the distance from the underside of the pubic symphysis to the sacral promontory is > 11.5 cm, the pelvic inlet is almost certainly adequate. Normally, distance between the ischial spines is = 9 cm, length of the sacrospinous ligaments is 4 to = 5 cm, and the subpubic arch is = 90°.

During subsequent visits, BP and weight assessment is important. Obstetric examination focuses on uterine size, fundal height (in cm above the symphysis pubis), fetal heart rate and activity, and maternal diet, weight gain, and overall well-being. Speculum and bimanual examination is usually not needed unless vaginal discharge or bleeding, leakage of fluid, or pain is present.

PREPARATION OF PATIENT FOR EXAMINATION

- The patient is asked to evacuate the bladder
- Keep woman is supine/dorsal position with the thighs slightly flexed
- Loose all the clothes and fully expose the abdomen

- The examiner should stand on the right sided of the patient
- Wash your hand, dry and warm up by rubbing

A. GENERAL EXAMINATION

The general examination should include observation, systemic examination, and laboratory tests.

INSPECTION

State of health, gait, nutritional status: good/average/poor, build obese/average/thin, personal hygiene, ability to walk.

WEIGHT

Record the weight in kg or Ibs and should be taken on each subsequent visit. An average patient will gain 8-12kg during the course of pregnancy. Women who start pregnancy with a low weight tend to gain less weight. Inadequate weight gain is often associated with low birth babies, IUGR, preterm delivery and poor perianal outcome.

Excessive weight gain may be due to fluid retention.

HEIGHT

Record the height in cm. A short stature is often associated with a small pelvis. Woman with a height of less than 4.8" or 150 cm is more prone to problems of mechanical dystocia and abnormal presentation.

VITAL SIGN

Take temperature, blood pressure, pulse, respiration and record it, if any abnormalities; immediately inform to senior or doctor.

HEAD

Colour, texture, cleanliness of head and hair, check for extra growth or tumor.

EYE

Check eyelids, sclera, and cornea for any infection and conjunctiva for pallor: examine conjunctiva, tongue, and nails for pallor which is indicative of anemia.

ORAL CAVITY

Examine the tongue, teeth, gums, and tonsils. Patient with poor oral hygiene, gingivitis, or dental caries should be referred for dental care. There may be a sign of glossitis and angular stomatitis.

NECK

Examine for neck veins, thyroid gland or lymph nodes for any abnormality. slight physiological enlargement of the thyroid gland occurs during pregnancy in 50% cases.

RESPIRATORY SYSTEM

Check for breathing, size, and shape of the chest, any node or tumor on chest movement of chest muscle during respiration. Percuss the chest wall for resonance sound, auscultate for detection of breathing sounds.

CARDIOVASCULAR SYSTEM

Auscultate the heart sound for any abnormalities, identify any cases of a cardiac disease.

ABDOMEN

In early pregnancy, the abdomen is palpated for enlarged liver, spleen or kidney and any abnormalities. But in later pregnancy, the abdomen is palpated for a gravid uterus.

BREAST

Observe for skin changes during pregnancy; gently palpate the breast for any tumor or nodes, secretion of colostrum, an appearance of striae.

EDEMA OF LEGS

Examine for pitting edema over the lower 1/3 of the leg, above the medial malleolus. Edema may be physiological and postural in origin or a manifestation of a medical disorder like cardiac disease, anemia, pre-eclampsia, etc.

VARICOSITIES

Note the presence of varicose veins and their distribution. Pregnancy tends to aggravate this condition.

B. Abdominal examination

A prenatal abdominal examination should be performed on women from 12 weeks till delivery of the baby. The examination should be done on each subsequent visit.

A thorough systematic abdominal examination beyond 28 weeks of pregnancy can reasonably diagnose the lie, presentation, position and the attitude of the fetus.

OBJECTIVES

- To observe signs of pregnancy
- To assess fetal size and growth
- To assess fetal health
- To diagnose the location of fetal art, lie, presentation, position, presenting part etc
- To detect the gestational period by fundal height
- Preparation of patient for examination

- The patient is asked to evacuate the bladder
- Keep woman is supine/dorsal position with the thighs slightly flexed
- Loose all the clothes and fully expose the abdomen
- The examiner should stand on the right sided of the patient
- Wash your hand, dry and warm up by rubbing
- Steps of abdominal examination
- Inspection
- Palpation
- Measurement of fundal height
- Palpation
- Obstetric grip
- Fundal grip
- Lateral or umbilical grip
- Pelvic grip
- Pawlik's grip
- Auscultation

INSPECTION

- Observe the abdomen for
- Whether the uterus is longitudinal or transverse or oblique
- The uterine contours spherical, flattened anteriorly, cylindrical or pendulous
- The uterus appear unduly enlarged or small
- Presence of any incision scars due to previous surgery
- Skin changes: skin condition, shiny and stretched, evidence of scabies, eczema or prominent veins
- Blood vessels on the abdomen

PALPATION

- Measurement of fundal height
- The fundal height of the uterus is measured in cm from the top of the symphysis pubis up to the midpoint of the uppermost margin to the uterine fundus after centralizing it.
- If the fundal height does not correspond to the expected period of amenorrhea, an investigation should be done.
- Palpation- obstetric grip

I. Fundal grip

- This is performed late in pregnancy to differentiate the fetal parts.
- Steps
- The examiner facing towards woman head.

- Use tip of the fingers close together and put hand on sides of the fundus
- Curve around the upper border of a uterus and palpate them up to the fundus by rocking the fetal parts from side to side and palpating its surface, consistency, and ease with which it can be balloted an estimate made of fetal part occupying the fundus of the gravid uterus.
- The commonest fetal part occupying fundus is the fetal breech. It is less well defined than the cephalic pole; it is softer, more irregular and has restricted mobility. It can't be moved independently of the fetal back.
- Smooth, hard and globular mobile mass suggestive of head
- In transverse lie, neither of the fetal poles palpated in the fundal areas.

II. Lateral or umbilical grip

- It determines the position e.g. where is the fetal back ?
- Steps
- Face towards the patient face

The hands are to be placed flat on either side of the umbilicus palpate one after the other sides and front of the uterus to find out both right and left side.

Support uterus with your hand on one side and palpate the opposite side to determine the fetal back and repeat in the both right and left aside.

The back is suggested by smooth curved and resistant feel.

The limb side is comparatively empty and there is small knob like irregular parts.

III. Pelvic grip

- It finds out what is the presenting part in the lower pole of the uterus
- Steps
- Turn your face to the woman feet.
- Make knee slightly bend and relax.
- Place the tip of the four fingers of each hand on either side of the patient abdomen, just above the symphysis pubis.
- Ask a woman to take a deep breath and as she exhales, sink your finger down slowly and deeply around the presenting part to palpate.

IV. PAWLIK'S GRIP

Steps

Face towards the patient face.

The overstretched thumbs and four fingers of a right hand are placed on the lower pole of the uterus keeping the ulnar border of the palm on the upper border of the symphysis pubis.

When the finger and thumbs are approximated, the presenting part is grasped distinctly, if not engaged, it has mobility from side to side is tested. The fetal head, which is the commonest fetal part to occupy the lower segment can be felt as a hard rounded, globular, ballotable part:

In a transverse lie, a Pawlik grip is empty.

Auscultation

Auscultation is done to assess the heartbeat of a fetus. It is a reliable indicator of the fetal life inside the uterus.

Auscultation of the fetal heart sound, rate, and rhythm give an indication of fetal well-being. The location of maximum intensity can also resolve doubt about the presentation of the fetus.

The fetal heart sound is best audible through the back (left scapular region) in vertex and breech presentation. However, in face presentation, the FHS are heard through the fetal chest. As a rule, the maximum intent of the FHS is below the umbilicus in cephalic presentation and around the umbilicus in the breech.

C. Vaginal examination

It has been well established that a gentle, careful vaginal examination undertaken under the aseptic condition is safe, informative and doesn't cause discomfort to the patient. It provides an opportunity to assess the pelvis and guess fetal pelvic relationship. It also provide following information

- General assessment of pelvis
- Feto-pelvic relationship
- Bishop score: to assess inducibility of the cervix for labor
- Sign of onset of labor
- Perineal floor: evaluate whether the perineum is soft, stretchable and elastic or hard and rigid

ASSIGNMENT 6: PREGNANT ABDOMEN EXAMINATION

INTRODUCTION

Examination of the pregnant abdomen is performed routinely throughout pregnancy. Expectant mothers attend ante-natal check-ups

regularly throughout their pregnancy where this is performed by both doctors and midwives. You will get the chance to practice this skill during your obstetrics and gynaecology placement in medical school, however as you will likely encounter pregnant women in whatever area you specialise in (ok there are a few exceptions) it is an essential skill to be able to perform, as such it IS commonly examined on in OSCEs.

This skill demonstrates two areas; your communication skills with the mother, and your examination technique. There will usually be real patient volunteers for this station so remember to be gentle as your patient may have had her bump examined many times before your turn. Like most stations this still follows the general rule of "inspection, palpation, auscultation".

The obstetric examination is distinct from other examinations in that you, the clinician, are trying to assess the health of two individuals – the mother and the fetus – simultaneously. From the initial history, you should be able to judge the health of the pregnancy, any risk factors that need to be addressed, and any concerns from the parents. The history is an opportunity for you to find out how much the parents know about pregnancy, labour and delivery and if they have any preferences to which these events are carried out. A carefully taken history will also direct your attention to specific signs during the examination. As such, it is important that you develop a concise and systematic method of taking the history and carrying out the examination so that you do not miss any important information. This article focuses primarily on the examination.

Pregnancy is a sensitive issue, especially for the primigravida's. Therefore, extra care is needed when you approach a pregnant woman. Always obtain expressed informed consent before examining her and have a chaperone accompany you throughout the examination. A walk-through of what you will be doing is a good way of reassuring the patient and allows the examination to go on smoothly. It is also important to let your patient know that if the examination is too painful, she can stop at any time she wants. Finally, before you begin, you should always wash your hands, especially at an OSCE station.

PREPARATION

Before you see the patient, you should have the patients' details in front of you. Most antenatal clinics routinely measure and plot the mother's height and weight, her blood pressure and check her urine sample using dipstix before the consultation. This information will be documented in her antenatal notes so you should be familiar with it. Before you begin, the patient should empty her bladder if they have not already done so.

Position the patient as comfortable as possible on the examining couch at an adjusted angle of 30°. In later pregnancy, the pregnant patient should be positioned at a higher angle or in the left-lateral tilt position to avoid aortocaval compression. Expose the abdomen of the patient, ideally from the lower chest (just below the breasts) to the symphysis pubis. Place a sheet over the exposed area when you are not examining her and cover any exposed undergarments to maintain the patient's dignity.

I - GENERAL EXAMINATION

- The obstetric examination begins by looking at the patient. Pay particular attention to :
- General appearance–fatigue/exhausted, anxious, depressed, nausea
- Does she appear pallor or breathlessness?
- Does she have difficulty getting up and walk from the waiting room to the clinic room?

Measure the mother's height and weight if this has not been done. Generally :

- Smaller women tend to have smaller babies
- Patients with a high BMI are more likely to develop gestational diabetes, macrosomnia, and polyhydramnios
- Measure the mother's blood pressure and check her urine dipstix if this has not been done. This is to identify:
- Hypertension
- Proteinuria
- Glucosuria
- UTIs

II - INSPECTION

On inspection, there are 5 signs that you should focus and comment on (see fig. 1).

Size

- The uterus is normally visible in the abdomen at 12-14 weeks of gestation
- It will reach the level of the umbilicus at around 20 weeks of gestation
- The uterus will reach maximum height at the level of the xiphisternum at 36 weeks
- Note: the size and shape of the uterus should be regular and symmetrical unless there are multiple pregnancies or polyhydramnios.

Scars

- The most important scar to look for is the Pfannenstiel scar, which is a transverse scar across the lower abdomen. The Pfannenstiel scar indicates a previous Caesarean-section.
- Other scars to look for are laparoscopic scars and laparotomy scars, if indicated in the patient's previous surgical history.

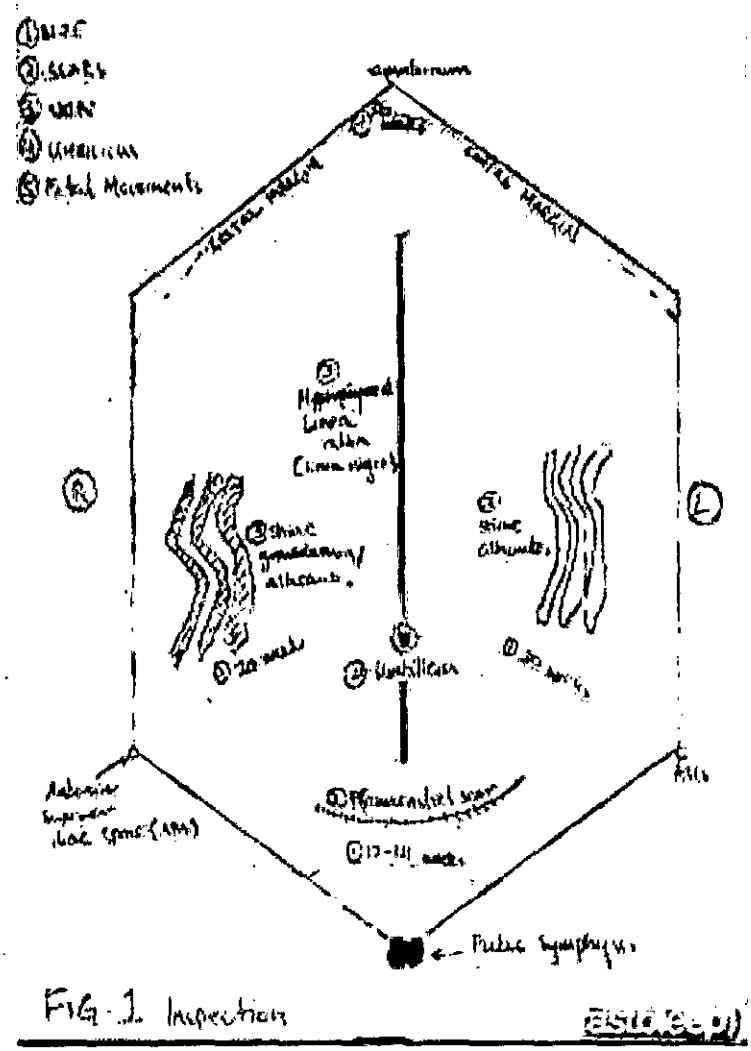


Figure 1. Signs to note on inspection

Skin Changes

Striae gravidarum, or stretch marks, are caused by pregnancy hormones of the current pregnancy. They appear red and inflamed and occur early in the pregnancy. Patients may complain of discomfort and pruritus around the area.

Striae albicantes are stretch marks from previous pregnancies. They appear as white and silvery. These stretch marks are more common in the lower abdomen, upper thighs and buttocks.

Linea nigra is the hyperpigmentation of the midline linea alba. Similarly, the hyperpigmentation is caused by the pregnancy hormones of the current pregnancy.

Fetal movements

Fetal movements are visible after 24 weeks–which can be used as a way to confirm viability of the fetus

Umbilicus

The umbilicus becomes flattened as the pregnancy progresses to term (*i.e.*, normal).

May become flattened and everted in multiple pregnancy and polyhydramnios.

III - PALPATION

Palpation of the pregnant abdomen must be gentle and careful, as pregnant woman can be quite sensitive about the health of the fetus. It is quite useful to start with a general palpation of the four quadrants of the abdomen. However, before you place your hands on the abdomen, always ask about areas of pain and tenderness. As a general rule: always palpate these areas last.

The palpation of the abdomen serves several purposes; by the end of palpation, you should be able to comment on:

- Fetal growth
- Liquor volume
- Multiple pregnancies
- Fetal lie and presentation

There are 4 steps in palpating the pregnant abdomen (also called Leopold's Manoeuvers) :

- First Manoeuver–fundal palpation

Using both hands, palpate the superior border of the fundus to determine the pole of the fetus in this part of the fundus.

Measuring the fundal height. This is the distance between the symphysis pubis and the superior border of the fundus. This should only be carried out after 20 weeks of gestation, approximately when the fundus reaches the level of the umbilicus.:

Palpate the superior border of the fundus using the ulnar border of your left hand.

Feel for the first bony prominence in the midline to identify the symphysis pubis. The fundal height is the distance between these two points (see Fig. 2). To avoid discrepancy and bias, always turn the tape measure upside down so that the blank side of the tape faces you.

Interpretation : the fundal height, in centimeters, is equal to the gestation in weeks. It is normal to find a difference of up to 3 cm (i.e. at 30 weeks of gestation, you should expect the fundal height between 27 to 33 cm).

Second Manoeuver – lateral palpation.

Palpate the patient's right side with your left hand and the patient's left side with your right hand.

Feel for the number of pregnancies.

Feel for the spine and back of the fetus to determine the fetal lie. This is usually the side of the uterus that feels "full". Remember that feeling for the fetus is analogous to feeling for an irregularly shaped mass suspended in a bag of water. It is not possible to feel fetal parts directly; hence, the "fullness" on one side of the uterus corresponds to the back of the fetus due to increase resistance.

Feel and estimate the amount of liquor. This step requires experience and can be difficult to gauge at first. However, as a general tip, if there is an excessive amount of fluid, the uterus will be tense and it will be quite difficult for you to feel for fetal parts.

Interpretation : After this step, you should be able to determine the number of pregnancies, the amount of liquor volume, and the lie of the fetus. The lie of the fetus refers to the position of the fetus in relation to the longitudinal axis of the uterus. Most pregnancies are longitudinal (99%) such that the head and the buttocks are palpable at each end of the uterus. If the fetus lies at a right angle to the axis of the uterus, then the fetus is in a transverse lie. If the head or buttocks are palpable on either side of the iliac fossae, then the fetus is in an oblique lie.

Third and Fourth Manoeuver–presentation palpation.

To determine the presentation of the fetus, two methods are used:

Using both hands, palpate the lower segment of the pelvis by pressing firmly on either side of the midline just above the symphysis pubis. Use your left hand on the patient's left side and your right hand on the patient's right side (*i.e.*, facing the end of the bed).

Using the thumb and index finger of the right hand, firmly grip the presenting fetal part between the fingers (Pawlik's grip). Note: this may cause pain and discomfort, so it is advisable to warn your patient beforehand.

Palpating the presenting part assumes that the fetal lie is longitudinal. By definition, the presenting part can be either breech or cephalic. In cephalic presentation, you can ballot the head by moving the head

slightly from side to side. The head is usually quite firm compared to breech. Breech is also harder to feel and cannot be balloted.

You should also comment on the engagement of the fetal head. This is measured by dividing the fetal head into fifths–if only two-fifths of the head is palpable in the abdomen, this indicates that the head is engaged into the pelvis; the widest diameter has descended into the pelvis. The level at which the head is just engaged (i.e. two-fifths), only the frontal sinciput and the posterior occiput is palpable above the pelvic brim.

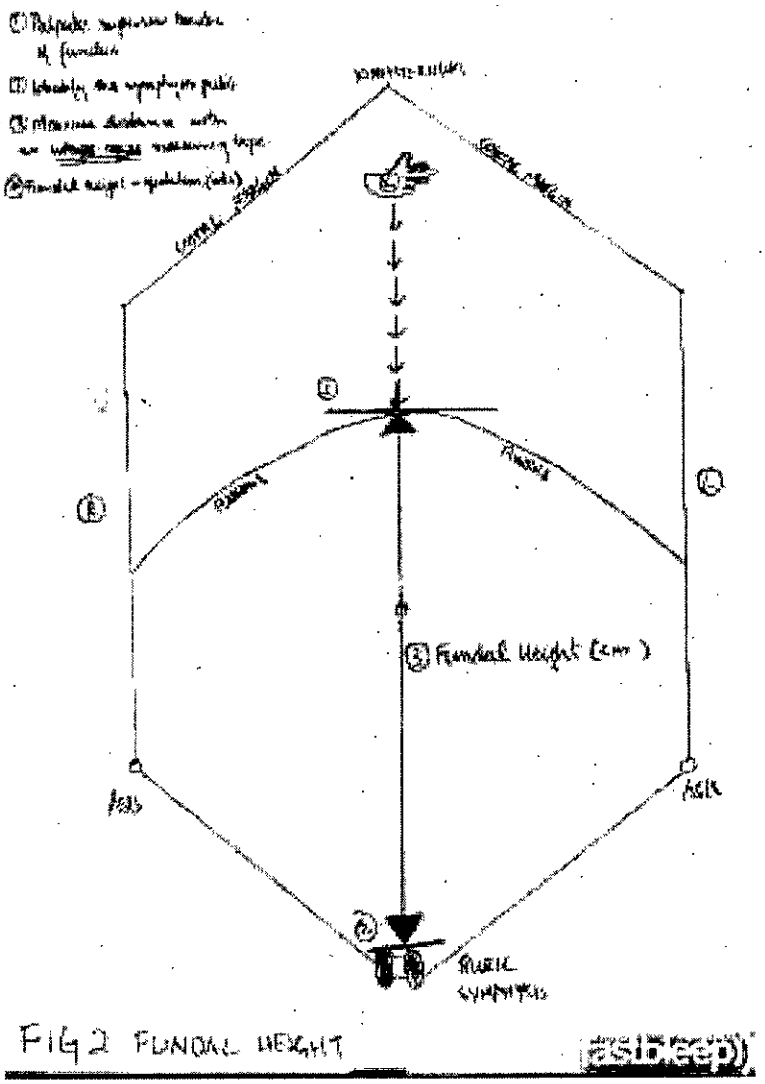


Figure 2. Measuring the fundal height

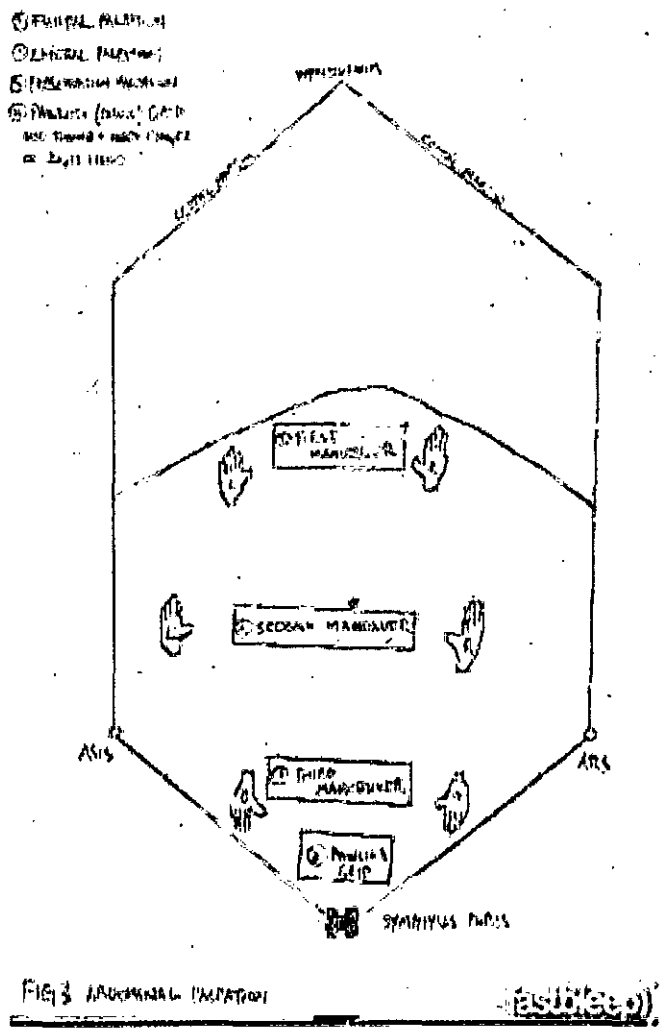


Figure 3. Abdominal palpation and the different maneuvers

IV - PERCUSSION AND AUSCULTATION

Percussion

There is no significance of percussion in the examination. However, if you suspect polyhydramnios, you can confirm by a showing a positive fluid thrill with a negative shifting dullness.

Auscultation

You will need a hand-held Doppler monitor or a Pinard stethoscope (see Fig. 4). It is recommended that you should use a Pinard stethoscope after 28 weeks.

Place the Doppler transducer or the Pinard stethoscope over the anterior shoulder, usually between the symphysis pubis and the umbilicus.

– Interpretation: the fetal heart rate is between 110-160 b.p.m. You can simultaneously feel for the maternal's radial pulse to distinguish between the two individuals.

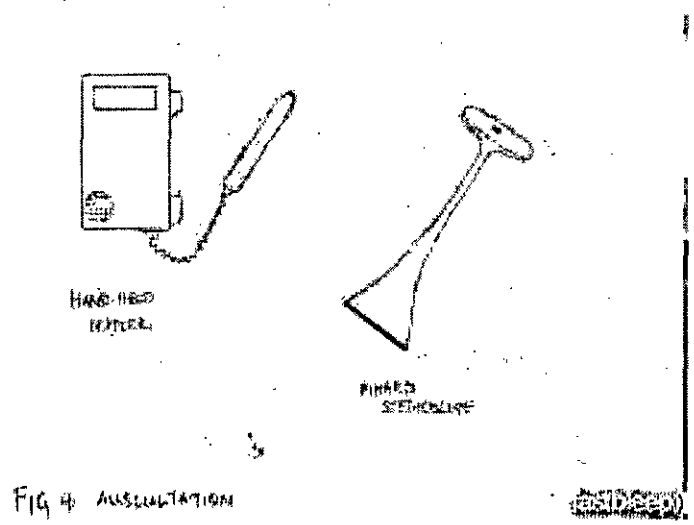


Figure 4. Hand-held doppler and a pinard stethoscope

V - INTERNAL EXAMINATION

Vaginal examination should only be carried out in later pregnancy to allow assessment of the favourability of the cervix for labour and delivery. In early pregnancy, vaginal examination not only increases the risk of ascending infection but also may cause antepartum haemorrhage (e.g., in the case of placentae praevia).

Inspect the vulva. Examine for any vaginal discharge and note any abnormalities such as varicosities.

Examine the vagina and cervix using a sterile Cusco's speculum through an aseptic technique.

Identify the cervix and determine:

Dilation of the cervix – assess using examining fingers. This is one of the examinations where knowing the breadth of your finger comes into use. Note the breadth of your index finger on your examining hand. Generally, it is about 1 – 1.5 centimeters.

Cervical length – normally, the cervix is about 3 – 3.5 cm. However, during labor, the cervix effaces and contracts, which shortens the overall length.

Consistency – describes the softness of the cervix: firm, medium, or soft.

Position – the position of the cervix changes during labour as it effaces and contracts. The cervix is pulled anteriorly as labour progresses.

Station – refers to the level of the presenting part in relation to the ischial spines. The station is negative if it is above the ischial spines and positive if it is below the ischial spines (e.g., -3 means that the level of the head is 3 cm above the ischial spines; whereas, +3 means the head is 3 cm below). The station of the presenting part should coincide with the engagement of the head determined in the Third Manoeuver.

Interpretation: the Bishop score, which encompasses the 5 characteristics mentioned, is used as an assessment tool to evaluate the favourability of the cervix for vaginal delivery. Be familiar with the Bishop scoring system, although it is unlikely that you will be asked to perform an internal examination of the vagina.

STEPS

Introduce yourself and clarify the patient's identity. Wash your hands. Explain what you would like to do and gain her consent.

For this station the patient should be lying on the bed, as flat as possible but in reality whatever is most comfortable for her. She should ideally be exposed from the pubic bone to below her breasts.

Try and put mum at ease. A few simple but friendly questions to help her gain your trust includes:

"how are you feeling?"

"do you know what you are having?"

"is this your first pregnancy?"

This shows the examiner that you can be caring, rather than jumping in hands first. As you become more skilled at this station you can incorporate these types of questions into your examination technique along the way.

Perform a general inspection of mum and her bump. Comment if she looks comfortable, does she have any abdominal striations or Linea Nigra, and whether she has previous operative scars e.g. previous caesarean section.

If greater than 24 weeks you can expect some foetal movements, comment if so. This shows you really are observing her closely.

Measure fundal height. Do this with a tape measure (disposable if available). Measure from the pubic symphysis to the top of her bump (fundus).

The length in centimetres roughly corresponds to how far along she is in weeks; i.e. 36cm roughly equals 36 weeks.

Check the lie of the baby by examining her bump. Remember to be gentle and warm your hands if they are cold. Here you are assessing

which way the baby is lying – this can be longitudinal, transverse or oblique.

Use both hands, one on each side of her bump and gently press. Remember to face mum while you are doing this.

Check the presentation of the baby to determine which end of the baby is "presenting". This should be cephalic but may be breech.

Place both hands at the base of her uterus, just above the pubic bone and apply quite firm pressure. Again face mum and warn her that this bit may be slightly uncomfortable. Hopefully the baby will be head down and may even be "engaged" in the pelvis. If you are very confident in this skill you may wish to offer the examiner how much the baby is engaged.

Auscultating the baby's heart. This is best heard over the baby's shoulder. If you have correctly identified the lie you should roughly know where this is. Put either your Doppler ultrasound or Pinard stethoscope over this area and listen. The baby's heart rate should be between 120-140bpm (ensure you are not incorrectly hearing the transmission of mum's, remember her's will be slower).

Cover mum up and thank her at this stage. Wash your hands.

Inform your examiner that for completeness you would like to check her blood pressure, and also perform urinalysis. If you have any concerns regarding the baby's heart rate you should suggest that a CTG should also be performed. You will not usually be asked to perform these extra skills as part of this station.

An extension to this station could be discussions regarding glucosuria or proteinuria, and/or elevated blood pressure. You should therefore be familiar with conditions such as gestational diabetes and pre-eclampsia.

ASSIGNMENT 7 : NUTRITIONAL REQUIREMENTS DURING PREGNANCY

INTRODUCTION

Nutrient needs can be defined as the amount of each nutrient required in the diet support optimal metabolism; function of cells, tissues, and organs; and the maintenance of adequate tissue stores. Four principal methods have been used to estimate nutrient requirements: evidence from epidemiologic studies relating intake to outcome, the factorial approach, balance studies and nutrient turnover.

A healthy diet during pregnancy is essential to provide all the nutrients needed by a mother and her growing baby. It is a common misconception that pregnant women need to "eat for two". In fact, most

of the additional nutrients needed during pregnancy can be obtained by selecting appropriate foods and eating a high quality nutrient-dense diet. However there are some specific recommendations, which include taking folic acid supplements in early pregnancy to reduce the risk of neural tube defects, such as spina bifida. It is also important for pregnant women to be adopt good food hygiene practices to minimize the risk of food poisoning from harmful bacteria and to avoid substances in foods and drinks that might be potentially harmful to them or their growing baby.

RECOMMENDED DIETARY SUPPLEMENTS

Apart from folic acid (400 mg/day) and vitamin D (10 mg/day), other vitamin and mineral supplements should not normally be necessary during pregnancy. However, if dietary intakes are thought to be inadequate, then a low dose multivitamin and mineral supplement can be taken as a safeguard. High dose supplements should be avoided, particularly those that contain vitamin A (retinol). There are now a number of specially formulated supplements available for pregnant women, and those planning to conceive.

NUTRIENT IN ENERGY (K.CAL)

NORMAL ADULT WOMAN VS PREGNANT WOMAN		
Sedentary	1875	2175
Moderate	2225	2525
Heavy	2925	3225
Protein (g)	50	65
Fat (g)	20	30
Calcium (mg)	400	1000
Iron (mg)	30	38
Vitamin A		
Retinol (mg)	600	600
(or)		
b carotene (mg)	2400	2400
Thiamine (mg)		
Sedentary	0.9	1.1
Moderate	1.1	1.3
Heavy	1.2	1.4
Riboflavin (mg)		
Sedentary	1.1	1.3
Moderate	1.3	1.5
Heavy	1.5	1.7
Niacin (mg)		
Sedentary	12	14

Moderate	14	16
Heavy	16	18
Pyridoxine (mg)	2.0	2.5
Ascorbic acid (mg)	40	40
Folic acid (mg)	100	400
Vitamin B12 (mg)	1	1

1. ENERGY

1. Energy requirement during pregnancy is increased because of the additional energy required for
2. Growth and activity of foetus
3. Growth of placenta and maternal tissues
4. Increase in maternal body size
5. Steady rise in BMR

For a reference Indian woman (ICMR 1990) weighing 50kg, the total energy cost of pregnancy has been estimated to be 73000 k.cal, This includes the energy required for deposition of 4 kg of body fat (36000 k.cal) to be utilized later during lactation. Considering the increased energy demand during lactation and beneficial effect of increased energy intake on birth weight of infants and also protein sparing action, an additional intake of 300 k.cal. per day during pregnancy is recommended.

2. PROTEIN

An additional protein intake of 15g/day *i.e.*, a total of 65g is recommended. The additional protein is essential for growth of the foetus development of placenta enlargement of uterus,mammary gland increased maternal blood volume formation of amniotic fluid preparation for labour, delivery, post partum period and lactation by maternal tissues.

3. FAT

ICMR expert committee has suggested an intake of 30g of visible fat/ day during pregnancy. This is based on studies indicating that linoliec acid requirements during this stage is 4.5 percentage of total energy. Of this, some of the essential fatty acid needs are met with by the invisible fat. Therefore an intake of 30g of visible fat has been suggested to meet the essential fatty acid needs.

4. CALCIUM

The calcium requirement for an adult woman is 400mg/day. During pregnancy the need increases to 1000mg/day.

The additional calcium is needed for the growth and development of bones as well as teeth of the foetus and also for the protection of calcium

resources of the mother to meet the high demand of calcium during lactation.

The amount of calcium deposited in the full grown foetus is around 30 g. Therefore an intake of 1 g calcium per day which meets the needs of the mother and the additional needs of pregnancy has been recommended by the ICMR. Inadequate intake of calcium results in the mobilization of calcium from mother bones resulting in demineralization of maternal bones and osteoporosis.

5. IRON

The requirement of iron increases from 30 mg/day to 38 mg/day during pregnancy.

The increased requirement of 8 mg/day is due to expansion of maternal tissues including red cell mass, iron content of placenta and blood loss during parturition. to build the iron store in foetal liver to last for atleast 4-6 months after birth. This is because the baby's first food milk is deficient in iron. Generally infants are born with a high level of iron, 18-22 g/ 100 ml.

6. IODINE

Due to increase in BMR, iodine needs are also enhanced during pregnancy.

7. ZINC

Deficiency of zinc adversely affects the outcome of pregnancy. Apart from being a component of insulin and enzyme systems, it also participates in the synthesis of DNA and RNA, playing a significant role in reproduction. Hence zinc deficiency leads to foetal mortality, foetal, malformations and reduced intra uterine growth rate. The risk of LBW babies doubles and preterm delivery increases three times due to low zinc intake during pregnancy.

8. SODIUM

The increase in extra cellular fluid increases sodium requirement. Hence restriction in diet may cause biochemical and hormonal changes.

When sodium level in blood drops (hyponatraemia), the kidney produces hormone renin which causes increased retention of sodium making it unavailable for normal body processes. When the system is overtaxed it results in sodium deficiency causing increased risk of eclempsia, prematurity and low birth weight infants. Normal sodium intake without restriction is advised during pregnancy.

Sodium is restricted when there is oedema or hypertension.

9. VITAMINS

Vitamin A

Vitamin A requirements during pregnancy have been computed based on the vitamin A content of liver of the newborn. The additional intake works out to 25 mg/day throughout pregnancy. Since this constitutes a very small fraction of the RDA for normal women, no additional allowance during pregnancy is suggested.

Vitamin D:

Vitamin D is essential as it enhances maternal calcium absorption. Its active form calcidiol and calcitriol can pass through placenta with ease and help in calcium metabolism of foetus. Since Vitamin D can be synthesised in adequate amounts by simple exposure to UV rays no recommendation for vitamin D has been made.

OTHER FAT SOLUBLE VITAMINS

Vitamin K is required for synthesis of prothrombin which is essential for normal coagulation of blood. A liberal vitamin K level in the mother's blood proves helpful in preventing neonatal haemorrhage. Hence it has become a routine to administer natural form of this vitamin by injection either to the mother before delivery or to the neonate soon after birth.

THIAMINE, RIBOFLAVIN, NIACIN

The RDA for thiamine, riboflavin and niacin is estimated on the same basis as for a normal adult woman ie., 0.5 mg/1000 kcal, 0.6 mg/1000 k.cal and 6.6 mg/1000 k.cal respectively. As the energy requirement increases during pregnancy, the requirement of these vitamins also increases correspondingly.

A HEALTHY MEAL PLAN FOR PREGNANCY

During your pregnancy, eating a variety of foods is beneficial to meet the needs for you and your baby. The Choose My Plate program reminds you that it is important to include foods from all groups to meet the additional needs. The choosemyplate.gov web site includes many resources for you during pregnancy and breastfeeding and also provides guides for feeding for preschoolers and older children.

Everyone's calorie needs are different. This chart shows what one serving includes from the choose my plate program. It also lists the minimum number of servings you should eat from each group every day. Your individual needs will be different. A registered dietitian can help you learn how many servings from each food group you should consume on a daily basis.

Food Group	Serving Size	Minimum Servings per Day
Grains (Breads, Cereals, Rice, Pasta)	1 ounce = 1 slice of bread, 1 cup of ready-to-eat cereal, or ½ cup of cooked rice, cooked pasta, or cooked cereal	at least 5 ounces every day
Vegetables	1 cup = 1 cup of raw or cooked vegetables or vegetable juice, or 2 cups of raw leafy greens	at least 2 ½ cups every day
Fruits	1 cup = 1 cup of fruit or 100% fruit juice, or ½ cup of dried fruit	at least 1 ½ cups every day
Dairy (Milk, yogurt, cheese)	1 cup = 1 cup of milk or yogurt, 1 ½ ounces of natural cheese, or 2 ounces of processed cheese	at least 3 cups everyday
Protein (Meat, Poultry, Fish, Meat Subs)	1 ounce = 1 ounce of meat, poultry or fish, ½ cup cooked dry beans, 1 egg, 1 tablespoon of peanut butter, or ½ ounce of beans, nuts or seeds	at least 5 ounces every day
Fats and Oils	1 teaspoon = 1 teaspoon oil, 1 tablespoon mayonnaise-based salad dressing, 1/3 ounce of nuts, ½ tablespoon peanut butter, 1 teaspoon margarine	at least 5 teaspoons everyday

Recommended Foods

When you are pregnant, your diet has to nourish you and the baby. For this reason, it is important to choose specific foods from each food group that will supply more vitamins and minerals. Use the points below to make the healthiest food choices for you and your baby.

- Choose bread and cereal products that are fortified with iron. Look at the Nutrition Facts Label to see how much iron is in a food product. These iron-fortified foods, along with your prenatal vitamin, will help meet the increased iron needs of pregnancy.
- Drink 8-12 cups of water and other beverages a day. Limit your intake of beverages that contain caffeine.
- Choose at least 1 fruit or vegetable that is a good source of vitamin C. Examples include :
  - Oranges
  - Orange Juice
  - Broccoli
  - Green, leafy vegetables
  - Most melons
  - 100% fruit juice that is fortified with vitamin C
- Include foods rich in folic acid (folate) in your diet daily. Examples include :
  - Leafy, dark green vegetables
  - Dried beans and peas
  - Citrus fruits and juices
  - Most berries
  - Fortified ready-to-eat cereals and cereal bars

- Choose at least 1 fruit or vegetable each day that is a good source of vitamin A. Examples include:
  - Leafy, dark green vegetables
  - Orange vegetables and fruits
  - Tomatoes and tomato products
- Choose foods that are high in fiber. These will help prevent constipation. Examples include :
  - Whole grain breads and cereal products
  - Fresh or frozen fruits and vegetables
  - Cooked beans, peas, and legumes

Foods Not Recommended

The following foods and beverages are not recommended during pregnancy.

Food Group	Food and Beverages To Be Avoided or Limited	
Beverages	Avoid:	
		Alcohol
	Limit:	
		Caffeine
		Herbal Teas
Fish, Meat, and Poultry	Avoid:	
		Raw or uncooked meats, fish (including sushi), poultry, or eggs
	Shark:	
		Swordfish
		King Mackerel
		Tilefish
	Limit:	
		All other fish should be limited to 12 ounces per week or less
Milk and Dairy Products	Avoid:	
		Raw and unpasteurized cheese and other dairy products such as the following cheeses: feta, brie, blue cheese, and Mexican cheeses
Other	Limit:	
		Sugar substitutes, unless otherwise advised by your doctor

To read more about Mercury content in fish and recommendations during pregnancy go to the Food and Drug Administration's website.

Other Items to Avoid :

Tobacco

Herbal supplements

Vitamin and mineral supplements that are NOT recommended by your physician, nurse, or midwife

A DAY MENU (SAMPLE)

Breakfast	2 cups fortified cereal
	8 ounces fat-free or 1% milk
	8 ounces orange juice
	Hot Beverage
Snack	Small bagel
	1-2 ounces hard cheese
Lunch	Whole sandwich with 3 ounces tuna*, lettuce, tomato, mayonnaise
	1 cup carrot and celery sticks
	Fresh apple
	8 ounces fat-free or 1% milk
Snack	8 ounces tomato or vegetable juice
Dinner	3-4 ounces roast beef
	1 cup mashed potatoes
	½ cup broccoli
	1 cup tossed salad with dressing
	Dinner roll
	½ c sliced peaches
	8 ounces fat-free or 1% milk
Snack	3 graham cracker sheets
	2 Tablespoons peanut butter
	8 ounces fat-free or 1% milk

ASSIGNMENT 8 : PROBLEMS A WOMAN MAY EXPERIENCE DURING PREGNANCY

INTRODUCTION

Your body has a great deal to do during pregnancy. Sometimes the changes taking place will cause irritation or discomfort, and on occasions they may seem quite alarming. There is rarely any need for alarm but you should mention anything that is worrying you to your maternity team. Below you will find some common discomforts that women can have at various stages of their pregnancy including cramps, headaches, stretch marks, swollen ankles.

Some women experience health problems during pregnancy. These complications can involve the mother's health, the fetus's health, or both. Even women who were healthy before getting pregnant can experience complications. These complications may make the pregnancy a high-risk pregnancy.

PROBLEMS A WOMAN MAY EXPERIENCE

Anemia

Anemia is having lower than the normal number of healthy red blood cells. Treating the underlying cause of the anemia will help restore the number of healthy red blood cells. Women with pregnancy related anemia may feel tired and weak. This can be helped by taking iron and folic acid supplements. Your health care provider will check your iron levels throughout pregnancy.

Urinary Tract Infections (UTI)

A UTI is a bacterial infection in the urinary tract. You may have a UTI if you have —

Pain or burning when you use the bathroom.

Fever, tiredness, or shakiness.

An urge to use the bathroom often.

Pressure in your lower belly.

Urine that smells bad or looks cloudy or reddish.

Nausea or back pain.

If you think you have a UTI, it is important to see your health care provider. He/she can tell if you have a UTI by testing a sample of your urine. Treatment with antibiotics to kill the infection will make it better, often in one or two days. Some women carry bacteria in their bladder without having symptoms. Your health care provider will likely test your urine in early pregnancy to see if this is the case and treat you with antibiotics if necessary.

Mental Health Conditions

Some women experience depression during or after pregnancy. Symptoms of depression are:

A low or sad mood.

Loss of interest in fun activities.

Changes in appetite, sleep, and energy.

Problems thinking, concentrating, and making decisions.

Feelings of worthlessness, shame, or guilt.

Thoughts that life is not worth living.

When many of these symptoms occur together and last for more than a week or two at a time, this is probably depression. Depression that persists during pregnancy can make it hard for a woman to care for herself and her unborn baby. Having depression before pregnancy also is a risk factor for postpartum depression. Getting treatment is important for both mother and baby. If you have a history of depression, it is important to discuss this with your health care provider early in pregnancy so that a plan for management can be made.

Hypertension (High Blood Pressure)

Chronic poorly-controlled high blood pressure before and during pregnancy puts a pregnant woman and her baby at risk for problems. It is associated with an increased risk for maternal complications such as preeclampsia, placental abruption (when the placenta separates from the wall of the uterus), and gestational diabetes. These women also face a higher risk for poor birth outcomes such as preterm delivery, having an infant small for his/her gestational age, and infant death. The most important thing to do is to discuss blood pressure problems with your provider before you become pregnant so that appropriate treatment and control of your blood pressure occurs before pregnancy. Getting treatment for high blood pressure is important before, during, and after pregnancy.

Gestational Diabetes Mellitus (GDM)

GDM is diagnosed during pregnancy and can lead to pregnancy complications. GDM is when the body cannot effectively process sugars and starches (carbohydrates), leading to high sugar levels in the blood stream. Most women with GDM can control their blood sugar levels by a following a healthy meal plan from their health care provider and getting regular physical activity. Some women also need insulin to keep blood sugar levels under control. Doing so is important because poorly controlled diabetes increases the risk of—

Preeclampsia.
Early delivery.
Cesarean birth.
Having a big baby, which can complicate delivery.
Having a baby born with low blood sugar, breathing problems, and jaundice.
Although GDM usually resolves after pregnancy, women who had GDM have a higher risk of developing diabetes in the future. Learn more about postpartum diabetes testing.

Obesity and Weight Gain

Recent studies suggest that the heavier a woman is before she becomes pregnant, the greater her risk of pregnancy complications, including preeclampsia, GDM, stillbirth and cesarean delivery. Also, CDC research has shown that obesity during pregnancy is associated with increased use of health care and physician services, and longer hospital stays for delivery. Overweight and obese women who lose weight before pregnancy are likely to have healthier pregnancies. Learn more about ways to reach and maintain a healthy weight before you get pregnant.

Infections

During pregnancy, your baby is protected from many illnesses, like the common cold or a passing stomach bug. But some infections can be harmful to you, your baby, or both. Easy steps, such as hand washing, and avoiding certain foods, can help protect you from some infections. You won't always know if you have an infection—sometimes you won't even feel sick. If you think you might have an infection or think you are at risk, see your health care provider. Read more about specific infections that can be harmful during pregnancy, and learn the symptoms and what you can do to keep healthy.

Hyperemesis Gravidarum

Many women have some nausea or vomiting, or "morning sickness," particularly during the first 3 months of pregnancy. The cause of nausea and vomiting during pregnancy is believed to be rapidly

rising blood levels of a hormone called HCG (human chorionic gonadotropin), which is released by the placenta. However, hyperemesis gravidarum occurs when there is severe, persistent nausea and vomiting during pregnancy—more extreme than "morning sickness." This can lead to weight loss and dehydration and may require intensive treatment.

ASSIGNMENT 9 :ANAEMIA COMPLICATING PREGNANCY

INTRODUCTION

Anemia is a medical condition in which there is not enough healthy red blood cells to carry oxygen to the tissues in the body. When the tissues do not receive an adequate amount of oxygen, many organs and functions are affected. Anemia during pregnancy is especially a concern because it is associated with low birth weight, premature birth and maternal mortality.

Women who are pregnant are at a higher risk for developing anemia due to the excess amount of blood the body produces to help provide nutrients for the baby. Anemia during pregnancy can be a mild condition and easily treated if caught early on. However, it can become dangerous, to both the mother and the baby, if it goes untreated.

SYMPTOMS AND SIGNS

Early symptoms of anemia are usually nonexistent or nonspecific (eg, fatigue, weakness, light-headedness, mild dyspnea during exertion). Other symptoms and signs may include pallor and, if anemia is severe, tachycardia or hypotension.

- Anemia increases risk of
- Preterm delivery
- Postpartum maternal infections
- Diagnosis
- CBC, followed by testing based on MCV value

Diagnosis of anemia begins with CBC; usually, if women have anemia, subsequent testing is based on whether the MCV is low (< 79 fL) or high (> 100 fL).

For microcytic anemias : Evaluation includes testing for iron deficiency (measuring serum ferritin) and hemoglobinopathies (using hemoglobin electrophoresis). If these tests are nondiagnostic and there is no response to empiric treatment, consultation with a hematologist is usually warranted.

For macrocytic anemias : Evaluation includes serum folate and B12 levels.

For anemia with mixed causes : Evaluation for both types is required.

TYPES OF ANEMIA DURING PREGNANCY

There are over 400 different types of anemia, but some are more prevalent in pregnancy.

The most commonly experienced types of anemia during pregnancy are :

IRON-DEFICIENCY ANEMIA

This is the leading cause of anemia in the United States, and consequently, the most common type of anemia during pregnancy. Approximately 15% to 25% of all pregnancies experience iron deficiency. Iron is a mineral found in the red blood cells and is used to carry oxygen from the lungs to the rest of the body, as well as helps the muscles store and use oxygen. When too little iron is produced, the body can become fatigued and have a lowered resistance to infection.

DIAGNOSIS

Measurement of serum iron, ferritin, and transferrin

Typically, Hct is = 30%, and MCV is < 79 fL. Decreased serum iron and ferritin and increased serum transferrin levels confirm the diagnosis of iron deficiency anemia.

Treatment

Usually ferrous sulfate 325 mg po once/day

One 325-mg ferrous sulfate tablet taken midmorning is usually effective. Higher or more frequent doses increase GI adverse effects, especially constipation, and one dose blocks absorption of the next dose, thereby reducing percentage intake.

About 20 % of pregnant women do not absorb enough supplemental oral iron; a few of them require parenteral therapy, usually iron dextran 100 mg IM every other day for a total of = 1000 mg over 3 wk. Hct or Hb is measured weekly to determine response. If iron supplements are ineffective, concomitant folate deficiency should be suspected.

Neonates of mothers with iron deficiency anemia usually have a normal Hct but decreased total iron stores and a need for early dietary iron supplements.

Prevention

Although the practice is controversial, iron supplements (usually ferrous sulfate 325 mg po once/day) are usually given routinely to

pregnant women to prevent depletion of body iron stores and prevent the anemia that may result from abnormal bleeding or a subsequent pregnancy.

FOLATE-DEFICIENCY ANEMIA

Folate refers to Folic Acid, which is a water-soluble vitamin that can help prevent neural tube defects during pregnancy. Folic Acid is a common supplement taken by pregnant women, but it can also be found in fortified foods such as cereals, leafy vegetables, bananas, melons, and legumes. A diet lacking folic acid can lead to a reduced number of red blood cells in the body, therefore leading to a deficiency.

Diagnosis

Measurement of serum folate

Folate deficiency is suspected if CBC shows anemia with macrocytic indices or high RBC distribution width (RDW). Low serum folate levels confirm the diagnosis.

Treatment

Folic acid 1 mg po bid

Treatment is folic acid 1 mg po bid.

Severe megaloblastic anemia may warrant bone marrow examination and further treatment in a hospital.

Prevention

For prevention, all pregnant women and women who are trying to conceive are given folic acid 0.4 to 0.8 mg po once/day. Women who have had a fetus with spina bifida should take 4 mg once/day, starting before conception.

HEMOGLOBINOPATHIES IN PREGNANCY

During pregnancy, hemoglobinopathies, particularly sickle cell disease, Hb S-C disease, and beta- and alpha-thalassemia, can worsen maternal and perinatal outcomes (for genetic screening for some of these disorders, see Table: Genetic Screening for Some Ethnic Groups).

Preexisting sickle cell disease, particularly if severe, increases risk of the following :

- Maternal infection (most often, pneumonia, UTIs, and endometritis)
- Pregnancy-induced hypertension
- Heart failure
- Pulmonary infarction

- Fetal growth restriction
- Preterm delivery
- Low birth weight

Anemia almost always becomes more severe as pregnancy progresses. Sickle cell trait increases the risk of UTIs but is not associated with severe pregnancy-related complications.

Treatment of sickle cell disease during pregnancy is complex. Painful crises should be treated aggressively. Prophylactic exchange transfusions to keep Hb A at = 60% reduce risk of hemolytic crises and pulmonary complications, but they are not routinely recommended because they increase risk of transfusion reactions, hepatitis, HIV transmission, and blood group isoimmunization. Prophylactic transfusion does not appear to decrease perinatal risk. Therapeutic transfusion is indicated for the following:

- Symptomatic anemia
- Heart failure
- Severe bacterial infection
- Severe complications of labor and delivery (e.g., bleeding, sepsis)

Hb S-C disease may first cause symptoms during pregnancy. The disease increases risk of pulmonary infarction by occasionally causing bony spicule embolization. Effects on the fetus are uncommon but, if they occur, often include fetal growth restriction.

Sickle cell–beta-thalassemia is similar to Hb S-C disease but is less common and more benign.

Alpha-thalassemia does not cause maternal morbidity, but if the fetus is homozygous, hydrops and fetal death occur during the 2nd or early 3rd trimester.

VITAMIN B12 DEFICIENCY ANEMIA

Vitamin B-12 is also a necessary vitamin for the body to have to help with the production of red blood cells. Although some women may consume enough B-12 in their diet, it is possible their body cannot process the vitamin, and this causes them to have the deficiency.

Causes Of Anemia During Pregnancy

The cause of anemia truly comes down to how many red blood cells are being produced in the body and how healthy they are. A fall in hemoglobin levels during pregnancy is caused by a greater expansion of plasma volume compared with the increase in red cell volume. This disproportion between the rates of increase for, plasma and erythrocytes has the most distinction during the second trimester.

The following are ways red blood cells can be affected and lead to anemia :

A lack of iron in the diet as a result of not eating enough iron-rich foods or the body's inability to absorb the iron being consumed.

Pregnancy itself because the iron being produced is needed for the woman's body to increase her own blood volume. Without an iron supplement, there is not enough iron to feed the blood supply of the growing fetus.

Heavy bleeding due to menstruation, an ulcer or polyp, or blood donation causes red blood cells to be destroyed faster than they can be replenished

Symptoms of Anemia During Pregnancy

Symptoms of anemia during pregnancy can be mild at first and often go unnoticed. However, as it progresses, the symptoms will worsen. It is also important to note that some symptoms can be due to a different cause other than anemia, so talking with your doctor is important.

Some common symptoms of anemia are :

- Weakness or fatigue
- Dizziness
- Shortness of breath
- Rapid or irregular heartbeat
- Chest Pain
- Pale skin, lips, and nails
- Cold hands and feet
- Trouble concentrating
- Treatment for Anemia During Pregnancy

Anemia during pregnancy can easily be treated by adding iron or vitamin supplements to your daily routine. Typically, this is all that is needed to reverse the effects of anemia. However, in very rare cases, women with severe anemia may need a blood transfusion. Talk with your doctor about which supplements might be necessary for you.

Prevention of Anemia During Pregnancy

Preventing anemia during pregnancy is as easy as changing, or making additions, to your diet. Medical professionals recommend a pregnant woman eat 30 mg (at least three servings) of iron each day.

Examples of iron-rich foods are :

- Lean, red meats and poultry
- Eggs

- Dark, leafy green vegetables (such as broccoli, kale, and spinach)
- Nuts and seeds
- Beans, lentils, and tofu

Because it can be a challenge to eat as much iron as is suggested during pregnancy, taking iron supplements is recommended in addition to consuming these foods. Foods that are high in vitamin C can actually help the body absorb more iron, so it is beneficial to make these additions as well.

Vitamin C rich foods include :

- Citrus fruits and juices
- Strawberries
- Oranges
- Kiwis
- Tomatoes
- Bell peppers

After delivery, blood volume and plasma levels are expected to return to normal. This may take care of any anemia concerns that develop later in pregnancy. This should not keep pregnant women from seeking care for anemia during pregnancy.

ASSIGNMENT 10 : GUIDELINES DEVELOPED FOR TREATMENT OF ANEMIA IN PREGNANCY

INTRODUCTION

During pregnancy, your body produces more blood to support the growth of your baby. If you're not getting enough iron or certain other nutrients, your body might not be able to produce the amount of red blood cells it needs to make this additional blood.

It's normal to have mild anemia when you are pregnant. But you may have more severe anemia from low iron or vitamin levels or from other reasons.

Anemia can leave you feeling tired and weak. If it is severe but goes untreated, it can increase your risk of serious complications like preterm delivery.

Here's what you need to know about the causes, symptoms, and treatment of anemia during pregnancy. Anemia is defined as a decrease in the oxygen carrying capacity of the blood due to decrease in amount of RBCs or haemoglobin or both.

I. When To Suspect / Recognize?

- WHO – Hemoglobin –11gm/dl or less

-Mild 8-11 gm/dl
-Moderate 5–7 gm/dl
-Severe below 5 gm/dl

- ICMR categories
  -Mild 10-10.9 gm/dl
  -Moderate 7-10 gm/dl
  -Severe below 7gm/dl
  -Very severe (decompensated) below 4gm/dl
- RBC < 3.2 million
- PCV < 33%

II. Incidence Of The Condition In Our Country

- Incidence-About one third of the global population (over 2 billion) are anemic
- CDC-Up to 56% of all women in India are anemic (Hb < 11 g/dl)
- NNMB, DLHS and ICMR surveys showed that over 70 percent of pregnant women are anemic

The World Health Organization (WHO) estimates that 42% of all women, and 65-75% of pregnant women in our country are anemic. In India, the second National Family Health Survey in 1998-1999 (NFHS-II) showed that 54% of rural women of childbearing age were anemic compared with 46% of women in urban areas. Kerala has only a 23% prevalence of anemia compared with 62% in many northeastern states of India.

III. Differentioal Diagnosis

- Nutritional
- Hemorrhagic
- Hemoglobinopathies
- Bone marrow disorder
- HIV
- Drug induced
- Tuberculosis
- Inherited disorders
- Anemia caused by inflammation, malignancy, chronic diseases & autoimmune disorders

IV. Optimal Diagnostic Criteria, Investigations, Treatment & Referral Criteria

Complete medical history and Physical examination is very important.

***Situation 1 : At Secondary Hospital/ Non-Metro situation: Optimal Standards of Treatment in Situations where technology and resources are limited**

(a) Clinical Diagnosis :

Sympt oms:

1. Weakness
2. Easy fatiguability
3. Lassitude
4. Dizziness or vertigo especially when standing
5. Headache
6. Irritability
7. Indigestion, loss of appetite
8. Breathlessness
9. Palpitations
10. Generalized swelling
11. Symptoms due to cause of anemia like yellowing of skin & mucous membranes, bleeding from rectum etc.

Signs:

1. Pallor
2. Icterus
3. Glossitis, stomatitis
4. Koilonychia
5. Tachycardia, systolic murmurs, bounding pulse
6. Fine crepitations at lung bases
7. Splenomegaly
8. Hepatomegaly
9. Edema

(b) Investigations:

- Hb%
- PCV
- Peripheral smear for immature cells, type of anemia and MP.
- Urine routine and microscopy, Urine C/S if required
- Stool for Routine and microscopy
- USG abdomen

(c) Treatment:

Although there are several different forms of anemia, this health profile will only address the three most common: iron-deficiency anemia, vitamin B12 anemia and folic acid deficiency.

Non-drug treatment

- Awareness/ Education
- Improvement of dietary habits-diet rich in Vit C, protein and iron, cooking in iron utensils, avoiding tea & coffee intake with meals & overcooking
- Food Fortification
- Social services such as improvement of sanitation & personal hygiene for eradication of helminthiasis
- Annual screening for those with risk factors
- Routine screening for anaemia & providing iron supplementation for adolescent girls from school days

Iron rich foods : Pulses, cereals, jaggery, Beet root, Green leafy vegetables, nuts, meat, liver, poultry, Egg, fish, legumes, dry beans, and dry fruits viz : dates, figs, apricots etc .

Drug treatment : Prophylaxis WHO recommendation

- 60 mg elemental iron and 0.25 mg folic acid daily
- To be given for 6 months in countries with prevalence < 40% & additional 3 months postpartum where the prevalence > 40%

GOVERNMENT OF INDIA RECOMMENDATION

- 100 mg elemental iron and 0.5 mg folic acid daily
- To be given in the second half of pregnancy and lactation for at least 100 days Ferrous sulphate is least expensive and best absorbed form of iron. It also allows more elemental iron absorbed per gram administered. If for some reason, this is not tolerated, then ferrous gluconate & fumarate are the next choice for iron therapy.

TREATMENT OF IRON DEFICIENCY HAS INCLUDED

- Oral iron
- Parenteral iron
- Blood transfusion
- Oral Iron
- First line therapy
- 200 mg FeSo4 (60 mg elemental iron) 2-3 times daily in conjunction with folic acid.
- If patient is non-compliant to oral therapy or if there is gastritis, then reduce doses & give it after meals or change over to ascorbic acid/ carbonyl iron or parenteral therapy.
- Diagnostic reevaluation if there is no significant clinical or haematological improvement within 3 weeks.

PARENTERAL THERAPY:

Indications:

- Hb less than 7g/dl and pregnancy > 30 weeks
- Malabsorption Syndrome
- Incapacitating side effects with oral iron

Preparations:

- Iron sucrose
- Iron dextran
- Iron sorbitol citrate

Total iron deficit (mg) = Amount of iron deficit + amount of iron to replenish stores Amount of iron deficit (mg)

= (Hb target- Hb initial) gm/dl × Body wt (Kg) × 2.2 + Stores

or (100-Hb initial)% × Body wt (Pounds) × 0.3 + Stores

where Stores (mg) = 50% of deficit or approx 1000 mg

Iron Sucrose Complex is considered to show a significant improvement of Hb and iron stores in pregnant women.

The target Hb may be taken as 11 gm % for the Indian population according to WHO guidelines.

- Deworming necessary :
  - Ibendazole 400 mg single dose
  - Mebendazole 500 mg single dose or 100 mg twice daily for 3 days
  - Levamisole 2.5 mg/kg single dose, best if a second dose is repeated on next 2 consecutive days
  - Pyrantel 10 mg/kg single dose, best if dose is repeated on next 2 consecutive days
  - To prevent recurrence, patients should be advised to use footwear, improve sanitation, and personal hygiene.
- Malaria prophylaxis in endemic area to be treated.

Treatment of Folic Acid/Vitamin B12 deficiency

? Tab. Folic acid 5 mg daily

Prophylactic–all woman of reproductive age should be given 400 mg of folic acid daily.

Preventive daily or intermittent iron or iron + folic acid supplementation taken by women during pregnancy reduces anaemia in mothers. There is evidence that taking iron or iron and folic acid daily or intermittently has a similar effect in reducing anaemia at term and improving haemoglobin concentrations in the mother.

- Vitamin B12 deficiency:
- Oral preparation of Vitamin B12 (not very effective)
- In Moderate cases-1000 mg of Parenteral Cynocobalamine every month
- In Severe cases 1000 mg/day for 1 week, following by weekly for 1 month

Referral criteria:

- Hb less than 5 gm % in all trimesters, less than 7 gm % if > 36 weeks.
- Cases not responding to treatment.
- Associated with medical disorders *e.g.*, leukaemias/ other obstetric complications.
- Haemolysis or evidence of bone marrow suppression.
- Other types of anemia (Sickle cell anemia, Thalasemia).
- Level II USG to rule out fetal complication/ compromise by CVS/ Amniocentesis.
- If any of the below suspected, as the below are common in pregnancy:

– **Maternal risks during Antenatal period :** Poor weight gain, preeclampsia, eclampsia, placenta previa, accidental haemorrhage, premature rupture of membranes, pre term labour, cardiac failure etc.

– **Maternal risks during Intranatal period :** Dysfunctional labour, accidental hemorrhage, shock, anesthesia risk, cardiac failure, if signs of respiratory distress.

– **Maternal risks during Postnatal period :** Postnatal sepsis, sub involution, embolism, PPH (primary, secondary).

Situation 2 : At Super Specialty Facility in Metro location where higher-end technology is available.

(A) Clinical Diagnosis : Same as situation 1

(B) Investigations :

- Same as situation 1, in addition
- CBC with peripheral smear
- Reticulocyte count
- Red cell indices
- LFT, RFT, LDH
- Coombs Test
- Iron studies
  - serum iron
  - serum iron binding capacity

– serum ferritin

- Hb electrophoresis
- Bone marrow aspiration/Biopsy

(C) Treatment : Same as situation 1

- Confirm iron deficiency anaemia
- Treatment of IDA includes
- Oral iron
- Parenteral iron
- Recombinant erythropoietin and
- Blood transfusion
- Inj. Iron Dextran (50 mg/ml elemental iron) 2 cc IM on alternate day after test dose × 10 injections by Z technique.
- **Blood Transfusion**

Packed cells to be transfused.

Indications

– Hb < 7 gm/dl & POG > 36 weeks
– Hb < 6 gm/dl & POG < 36 weeks
– CHF due to anaemia(exchange transfusion)
– Replenish blood loss due to APH/PPH
– Not responding to oral & parenteral therapy

- Diagnosis & management of sickle cell disease, Haemoglobinopathies, Pancytopenia in cases not responsive to iron.
- Manage congestive cardiac failure/PIH/Placenta Previa if associated/where indicated.

Megaloblastic Anemia

- VitB 12 or Folic Acid Supplementation

Labour Management

Oxygen and other measures to deal with heart failure and PPH to be kept ready.

- To cut short second stage by Outlet forceps/vacuum delivery of fetus.
- To routinely employ active management of third stage of labour.
- LSCS only for Obstetric Indications .

Postpartum Management :

- Iron should be continued till the patient restores her normal clinical & haematological state & for an additional 3 months for store replenishment.

- Dietary advice
- Effective method of contraception as per WHO guidelines & should not conceive for atleast 2 years giving time for iron stores to recover.
- Sterilization is preferred if the family is complete.

Resources Required for One Patient/Procedure (Patient Weight 60 Kgs)

(Units to be specified for human resources, investigations, drugs, and consumables and equipment. Quantity to also be specified)