



YOUR
MIRACLE
IN MAKING

YOUR MIRACLE IN MAKING

Editor: Dr Himanshu Bavishi

© Dr Himanshu Bavishi
BAVISHI FERTILITY INSTITUTE
Next to Adani CNG & Gajarawala Flats,
Paldi # Roads, Paldi,
Ahmedabad-380007 India.
Phone: 079-40404646, 98795 72298

First Edition: June 2017

Price: Rs 450

ISBN: 978-81-932743-2-3

Published by:
Pugmarks Mediaa,
119, Swami Vivekanand Marg,
Allahabad 211003 (UP), India
Ph: 9956285988 Email: bhargavavicky@rocketmail.com

Cover Design: Raj Bhagat

Design: Team IVF India

Printed at:
Vavo Prints, Bai Ka Bagh, Allahabad 211003 (UP)

Disclaimer:-
Every attempt is done to provide latest and correct scientific information, in this book. However, every pregnant lady should take advice from her treating doctor about her pregnancy care. Every individual and even pregnancy is different and show different signs and symptoms as well as care. This book is for general information purpose only.

What do you think about this book? If you have any queries or suggestions, please write to us: drbavishi@ivfclinic.com

Brief introduction to the contributors



DR. HIMANSHU BAVISHI

M.D. (Ob & Gyn)

He is a senior Obstetrician and Gynecologist practicing since the last 30 years. As an infertility & IVF specialist he has a vast experience of managing pregnancies and child birth, particularly for precious and high risk pregnancies. He is a co-founder of World recognised and India's leading Fertility Institute – Bavishi Fertility Institute.

DR. FALGUNI BAVISHI

M.D. (Ob & Gyn)

She is a senior Obstetrician and Gynecologist practicing since 29 years. She is an infertility and IVF specialist with special skills and knowledge of intricate and high technology IVF Lab procedures. She is the co-founder of – Bavishi Fertility Institute.

Brief introduction to the contributors

DR. PARTH BAVISHI

M.D. (Ob & Gyn)

A young and dynamic specialist he joined the family institute "Bavishi Fertility Institute." After his master degree in Ob & Gy he did his fellowship in Foetal Medicine and Obstetric Ultrasound.

He has obtained special training at Diamond Institute for infertility and Menopause, USA and Hiroshima Assisted Reproductive Technique Institute, Japan. He is working with Bavishi Fertility Institute since 2012.

DR. JANKI BAVISHI

M.S. (Ob & Gyn)

An enthusiastic and sincere specialist she joined the family Institute "Bavishi Fertility Institute." She obtained her master's degree from one of the oldest medical college and biggest hospital of Asia, B. J. Medical College. After Master Degree in Ob & Gy, she has contributed enormously to Bavishi Fertility Institute since 2013. She did her speciality infertility training at Diamond Institute for Infertility and Menopause, USA and Hiroshima Assisted Reproductive Technique Institute, Japan.



Brief introduction to the contributors



DR. PURVI SHAH

M.B.B.S., D.G.O.

Fellowship in Obstetric ultrasound

A dynamic gynaecologist with 14 years experience and having special training and fellowship in Fetal Medicine. She is a part of the dynamic team of Bavishi Fertility Institute since the last nine years.



DR. BINAL SHAH

MBBS, DGO



DR. LEKSHMY RANA

MD, DGO, MRCOG



DR. SUSHIL SHINDE

MBBS, MS



DR. SONALI TAWDE

MBBS, MS, DNB

Consultant Gynaecologists & IVF Specialists

About Bavishi Fertility Institutes



FACILITIES

Spread over 7 stories and 21,000 Sq. Ft. of space, BFI, has separate floors for different departments.

• INFERTILITY

BFI offers all treatment options including, Endoscopy (Laparoscopy – Hysteroscopy), IUI, IVF, ICSI, Assisted hatching, Blastocyst culture, PGS, PGD, Egg/Embryo/Sperm donation, Egg/

THE INSTITUTE

Bavishi Fertility Institute, Ahmedabad was established in 1986, as a maternity hospital. Continuous expansion and modernization has made it one of the most prestigious fertility institute of India and the World. Today, BFI is one of India's biggest fertility institute and does one of the highest numbers of infertility treatment procedures and IVF treatment cycles.

A strong team of more than 100 experienced, qualified and dedicated people, including 18 consultants, embryologists, IVF program coordinators, counsellors, nurses and supporting staff, help BFI maintain very high standard of quality and care. Together we achieve a very high success rate and patient satisfaction. Our ethics and transparency coupled with commitment and innovation match with our motto - "TECHNOLOGY • TRUST" The BFI team is ideal combination of EXPERIENCE AND ENTHUSIASM COUPLED WITH WISDOM AND VISION.

Embryo/Sperm freezing and Surrogate mother.

• FOETAL MEDICINE AND HIGH RISK PREGNANCY

Dedicated foetal medicine unit has years of experience in managing high risk and complicated pregnancies, i.e. twins, triplets or higher order multiple gestations, hypertension, gestational diabetes, growth restricted fetuses,



- preterm labour pain, etc.
- We offer following services for at risk foetus.
- Prenatal diagnosis of genetic anomalies.
- Prenatal diagnosis of foetal anomalies.

- Prenatal treatment of foetal anomalies.
- Foetal therapy including intrauterine foetal therapies
- Foetal surveillance

BAVISHI FERTILITY INSTITUTE, MUMBAI

Established in October 2010, BFI MUMBAI is located at one of the most well connected-central and posh areas of Mumbai-Ghatkopar East. BFI Mumbai, offers all fertility services of the same standards under direct supervision of BFI Ahmedabad. To increase the convenience of people of Mumbai, BFI Mumbai has 5 sub centres at Borivali, Vileparle, Andheri, Dadar, Vashi and Thane. Couples can get all services at these sub centres. Women alone can easily continue

their treatment making it much more convenient and sustainable. A team of 4 fertility expert gynecologists - Dr. Lekshmy Rana, Dr. Sushil Shinde, Dr. Sonali Tawade, Dr. Riddhi Doshi take care of the centres along with a team of embryologist, counsellors, nurses and support staff. Dr. Falguni Bavishi and Dr. Himanshu Bavishi regularly visit BFI Mumbai to take care of ovum pick up, embryo transfer, consultation & monitoring of all operations. BFI has shifted to a bigger and better facility in 2017.

BAVISHI BHAGAT FERTILITY INSTITUTE, DELHI

Bavishi Bhagat Fertility Institute, Delhi, is state of ART-IVF center promoted by Bavishi Fertility Institute Ahmedabad and Delhi's experienced and expert gynecologist Dr. Upasana Bhagat. The institute is located at an ultra modern multi specialty 100 bed hospital, Bhagat Chandra Hospital. Established in September 2009, Bavishi Bhagat Fertility Institute is located in a prime area of Delhi, Dwarka. It is in proximity to domestic and International airport. BBFI Delhi offers

all fertility services of the same standards as BFI Ahmedabad. Senior consultant Dr. Upasana Bhagat along with a dedicated team is taking care of the centre. Dr. Himanshu Bavishi regularly visits BBFI Delhi for ovum pick up, embryo transfer, and smooth functioning of the institute. BBFI offers all fertility treatments under one roof. Located in the capital of India, BBFI Delhi is also becoming a preferred destination for IVF treatment from people across the globe.

BAVISHI PRATIKSHA FERTILITY INSTITUTE, KOLKATA

BAVISHI PRATIKSHA FERTILITY INSTITUTE, is state-of-art IVF center promoted by Bavishi Fertility Institute, Pratiksha Group of Hospitals and Srishti Hospitals. The ultra-modern Institute is spread across more than 8000 sq feet and two floors and is located in a prime area of Kolkata. BPFI, Kolkata offers all fertility services of world class standards and care. A qualified team of consultants, embryologists and other staff take care of

patient's needs. The centre is designed and made as per the highest standards of medical care and focused on specific needs of infertility management services. BPFI offers various, most reasonable 'Value for money' price packages to suit the budget of every couple. BPFI Kolkata is the preferred destination for fertility treatment for couples of West Bengal and other neighbouring states and countries.

BAVISHI FERTILITY INSTITUTE, SURAT

Bavishi Fertility Institute Surat, was established in 2009. It is located in a prime area of Surat, near the railway station in Param Doctor House. A qualified team of Dr. Usha Patoliya, Dr. Bipin Patoliya and Dr. Harsha Umrethiya take care of the patients of Surat and it's vicinity, under the dedicated supervision of Dr. Himanshu Bavishi, Dr. Falguni

Bavishi and their team of Bavishi Fertility Institute, Ahmedabad.

BFI Surat, offers all fertility services with the latest technology under one roof. The centre is designed and made as per the highest standards of medical care and focused on specific needs of infertility management services.

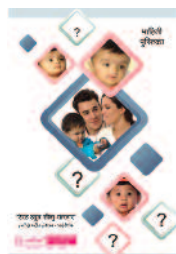
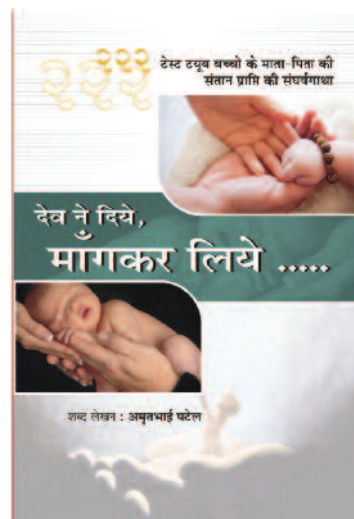
PUBLICATIONS

- FOR MEDICAL FRATERNITY
IUI book written by Dr. Falguni and Dr. Himanshu Bavishi for consultant gynaecologist and pathologist for Assisted Reproductive Technique called IUI. 3rd edition was published in 2007
- FOR PEOPLE

Dev Na Didhela Mangine Lidhela: A unique and first of its kind book of life stories of parents of 222 IVF babies written by parents themselves!
Vighna Dod : Book discusses various dilemma, stress, psychological aspects and more related to infertility treatment. Written by Shri Amrutbhai Patel who has passed through this painful journey of infertility treatment.

- PATIENT INFORMATION SERIES
Small booklet written in simple and

easy language on various infertility problems and treatment options, available in Gujarati, Hindi, English, Marathi & Bengali.



EDUCATIONAL ACTIVITIES

- ◆ FOR MEDICAL FRATERNITY
 - BFI has organized many training sessions on various subjects for gynaecologists and other doctors.
 - BFI has organized many national and international level conferences, CMEs, workshops and round table meets.
- ◆ FOR PEOPLE
 - Interactive patient counselling seminars
 - Jan Jagruti Abhiyan

Guidance, Inspiration and Solace' through its massive 'Parivar Milan' Abhiyaan and many more activities.

- DIVYA SANTAN Parivar
A unique concept for the first time in India, of support group by successful couples for couples trying to conceive.
- Thousands of people have benefitted from this mission in more than 694 events across India, till June 2016.

SOCIAL SERVICES

- DIVYA SANTAN SANSTHAN and patient support group, DIVYA SANTAN PARIVAR
 - 'Parivar Milan'
- Education and research
 - Jan Jagruti Abhiyan "Public Awareness Programs"
 - Bavishi Fertility Institute supports DIVYA SANTAN SANSTHAN for all its activities for providing 'Information

Awards & Milestones



Award Form IMA: Dr. Himanshu Bavishi is the first IVF specialist to get "Excellence in the Field of Medicine" award from Indian Medical Association, Gujarat State Branch for his pioneering work in the field of infertility



Won the 2017 "Excellence in IVF" Award from "MY FM" Divya Bhaskar Group. Again become the first Fertility Institute of Ahmedabad to win this prestigious award.



Technical support:- Bavishi Fertility Institute joined hands with Diamond Institute for infertility and menopause, New Jersey, USA for setting

of world class IVF centre in Ahmedabad. The diamond Institute has constantly supported Bavishi Fertility Institute on technology and training as well as scientific and public awareness programmes.



In 2008 live birth with vitrified frozen egg happened for the first time in India at Bavishi Fertility Institute. Bavishi Fertility Institute proudly claimed first live birth of India with frozen egg (Vitrified oocytes). Very few live births were recorded world over till that date. Now Bavishi Fertility Institute has successfully delivered babies through frozen egg of patients, donor and even with testicular sperm. Bavishi Fertility Institute's pioneering concept of "Egg Bank" is now well established.



Bavishi Fertility Institute received "Socrates award - Rose of Paracelsus" from Europe Medical Association on 3rd July 2017, at Lucerne Switzerland, at an event organised by Europe Business Assembly.



Pioneered in Surrogacy in India

To help infertile couples who cannot become parents without the help of surrogacy, Bavishi Fertility Institute pioneered Surrogacy treatment in India. Bavishi Fertility Institute become first institute of India to treat European couple for surrogacy in 1999. Dr. Himanshu Bavishi is founder president of "Indian Society for Third Party Assisted Reproduction"– INSTAR.



First IVF Babies Meet – 2004

For first of its kind, awareness programme, Bavishi Fertility Institute organized "IVF Babies Meet" in 2004, to break the myths and spread awareness about the modern technology. More than 100 IVF babies conceived at Bavishi Fertility Institute, participated.

ALL INDIA FERTILITY & IVF SURVEY-2017

TIMES OF INDIA

(JRC Copyright Survey)

RANKED NO. 1 IN 2016 & NOW

AGAIN IN 2017

BAVISHI FERTILITY INSTITUTE
AHMEDABAD



WEST ZONE & AHMEDABAD

AHMEDABAD
Ranked No.
3
in
ALL INDIA

MUMBAI INSTITUTE
Ranked No.
3
in
MUMBAI

Ranked No.
6
in
WEST ZONE

PREFACE

"A safe pregnancy and genius child do not just happen" but it is a collective effort of conscious, well informed, actively involved parents and their medical service providers. In spite of rapid developments, science has not been able to produce life. Bringing a new life to this world is no less than a miracle. When you are bringing a new life to the world, it is very very special for you, your family, your near ones and dear ones, your society, nation and the world. Pregnancy is the most enjoyable phase in the life of a woman. Mood, atmosphere and attitude of the whole family changes. A lot of preparations are to be done for the new arrival. Correct scientific information in concise, easy to understand and utilizable format empowers pregnant women. Correct and scientific knowledge on physical and emotional changes, common symptoms and remedies, ideal nutrition, child development, proper ante and postnatal care and child birth is an essential tool and helps a would be mother cope with the changes as they evelope in a pregnancy. The book is a compilation of the latest information of medical science and the wisdom of ancient sciences

like "Garbh Sanskar" with its modern relevance.

Through the inclusions of easy-to-understand terms, accurate medical information, real-life scenarios of conditions that could occur during pregnancy (and how to handle them), this book gives pregnant women the power to maximize their chances of having a successful pregnancy, delivery and ultimately, a healthy baby.

Bavishi Fertility Institute is a premiere fertility treatment institute of India and the world. We have vast experience of treating pregnancies, more importantly high risk and precious pregnancies. We value the importance of safe journey of pregnancy and child birth, and have hence done the hard work to help maximum couples and families to fulfill their dream of a complete family, safely and make their journey of Parenthood enjoyable and fulfilling. "Your Miracle In Making", published in four languages - English, Gujarati, Hindi and Marathi, is a book very meticulously prepared for, the "to be parents".

This book gives you all information you need about your pregnancy.



INDEX

1.	Pregnancy at a glance	17
2.	Diagnosis of pregnancy	20
3.	Pregnancy week by week	22
4.	Food and nutrition in pregnancy	38
5.	Antenatal visits	45
6.	Blood tests and Ultrasound scans during pregnancy	48
7.	High risk in pregnancy	55
8.	Complications and warning signs in pregnancy	59
9.	Health in pregnancy	61
10.	Precautions in pregnancy	66
11.	Choosing where to have a baby	72
12.	Feeling and bonding between mother and fetus	74
13.	Labour and birth	77
14.	Preparation for breast feeding	78
15.	Exercises in pregnancy	84
16.	Medicines in pregnancy	88
17.	Preparing for a new born baby	90
18.	Checklist for hospitalization	92
19.	Warning signs in new borns	94
20.	Pregnancy & working women	96
21.	Baby shower	100
22.	Garbh Sanskar	102
23.	Fatherhood	106
24.	Customs and beliefs	110
25.	Postnatal care	114
26.	Cord blood stem cell preservation	120
27.	Newborn screening	121
28.	Immunization Schedule	122

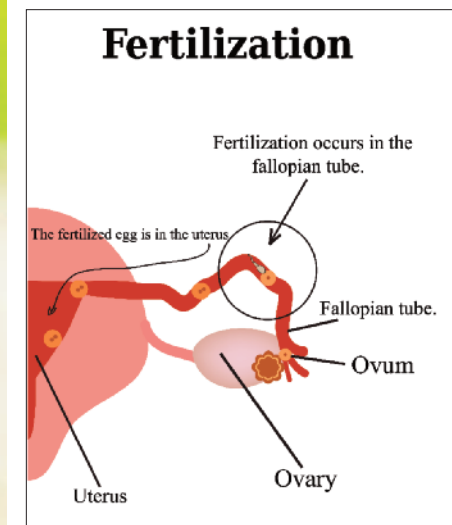
CHAPTER 01

PREGNANCY AT A GLANCE

Whenever one thinks of pregnancy, fertilization is a basic need. Conception is the process that begins with fertilization of an egg with sperm and ends with implantation of an embryo in mother's uterus.

Natural Conception

A woman conceives around the time when she is ovulating, i.e. when egg has been released from her one of the ovaries.



During intercourse (sex) sperms are ejaculated from a man's penis into a woman's vagina. In one ejaculation, there may be millions of sperm but most of sperm leaks out with semen out of vagina but some starts to swim up through cervix. In an ovulating woman,

cervical fluid facilitates sperm transportation into fallopian tube. Fertilization takes place in fallopian tube.

Within 4-6 days of fertilization, the embryo (fertilized egg) moves slowly down through the fallopian tube to uterus and it is already growing. The embryo attaches itself to uterus, it is called **implantation**. After implantation, the embryo – pregnancy produces hormones which support pregnancy. Hormonal release from an embryo prevents uterus lining (endometrial) from being shed. This is the reason why a woman misses her period when she is pregnant. During pregnancy hormone levels change.

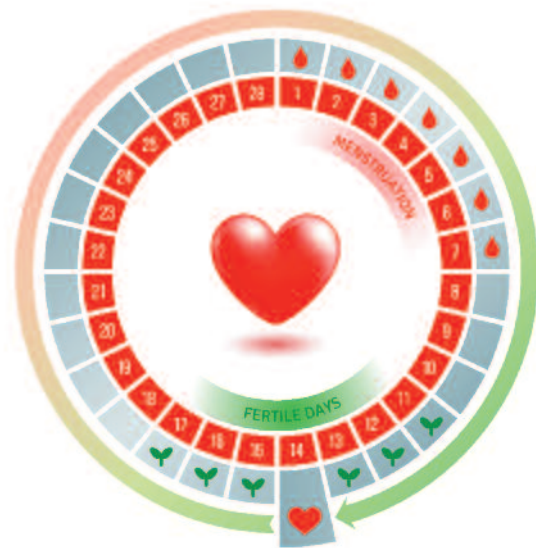
This increase in hormone level may cause following effects :-

- You may have mood swings
- Feel easily irritable
- Feel nausea, vomiting
- Heaviness in epigastrium (upper abdomen) / acidity
- Uneasiness etc.

But these effects become less prominent, disappear or change slowly around 3 months of pregnancy.

Best time to get pregnant

A woman is most likely to get pregnant if she has intercourse (sex) within 24 hours of ovulation. Ovulation usually takes place at around 14th day of



normal regular 28 days of cycle. An egg lives for about 12-24 hours after its release. During which it should be fertilized by a sperm. A sperm can live up to 72 hours in a woman's body.

Sperm will decide - a boy or a girl

Every cell of the body has 46 chromosomes (tiny thread like structures carrying about 2000 genes). Sperm and egg have half number of chromosomes (23 chromosomes each). After fertilization embryo has 46 chromosomes, 23 from father and 23 from mother. Female egg always contains X chromosome, whereas male sperm can have either X chromosome or Y chromosome. Hence, when egg & sperm meet, sperm decides a boy (XY) or a girl (XX).

A healthy pregnancy keeps everybody happy

Whenever you start thinking about

pregnancy or trying for pregnancy, try to be healthy from beginning even before pregnancy and maintain your health before, during and after pregnancy.

Remember that, it can take a year to be pregnant. It is a good idea to consult a doctor when you try for a pregnancy for evaluation of your health and optimize your nutrition. If you are trying from 1 year or more and if you do not get result then consult your doctor soon to find out the reason for not conceiving.

You may visit your doctor particularly so,

- If your age is more than 30 years
- You have had any previous illness
- Any operation in your pelvis
- Any health issue with your husband etc.

There are few things to be taken care of to help you to stay on healthy side.

• Start changing your dietary habit and schedule. Include more healthy food in your diet. Avoid eating outside unhealthy and junk food.

• Exercise: It is very important to control your weight before getting pregnant as it will help you to stay in shape during pregnancy. Weight reduction can lower your risk of miscarriage and has been proven to help reduce pregnancy and labor complications.

• Educate your self about pregnancy, body changes during it, stages of pregnancy and labour, delivery / birth, when to consult a doctor.

• Talk to your doctor or relatives to get knowledge and their experience about pregnancy. Share their experience of parenthood.

• Visit your dentist before you get

pregnant for dental check up. Brush your teeth daily.

• Stop smoking and taking alcohol.

• Ask your hubby to join you on new habit change. Let him know about changes you get, your emotions every time and let him enjoy his fatherhood too.

• Develop habit of reading books and literature that bounds good and calm to your mind and soul. Avoid watching violent shows and movies. Develop habit of listening light music.

• Take rest whenever you can. Even a nap is refreshing.

• Join a class of prenatal yoga or prenatal exercise.

• Avoid chemicals that could possibly harm to your body which may be present at your work place, at your home or anywhere.

• Whenever you visit medical or paramedical person, tell them that you are pregnant. This can prevent exposure to harmful tests and chemical.

• Daily drink 6 to 8 glasses of water.

• Add 300-500 calories a day while pregnant.

• Know about signs of premature labour and its warning signs to call doctor.

• Take a breast feeding class to help and prepare your self for it.

• Keep your bag ready to go to birth center or hospital.



CHAPTER 02

DIAGNOSIS OF PREGNANCY

The beginning of pregnancy may be detected in a number of different ways either by medical testing or by without medical testing.

These are some symptoms that can signify pregnancy which can most women experience.

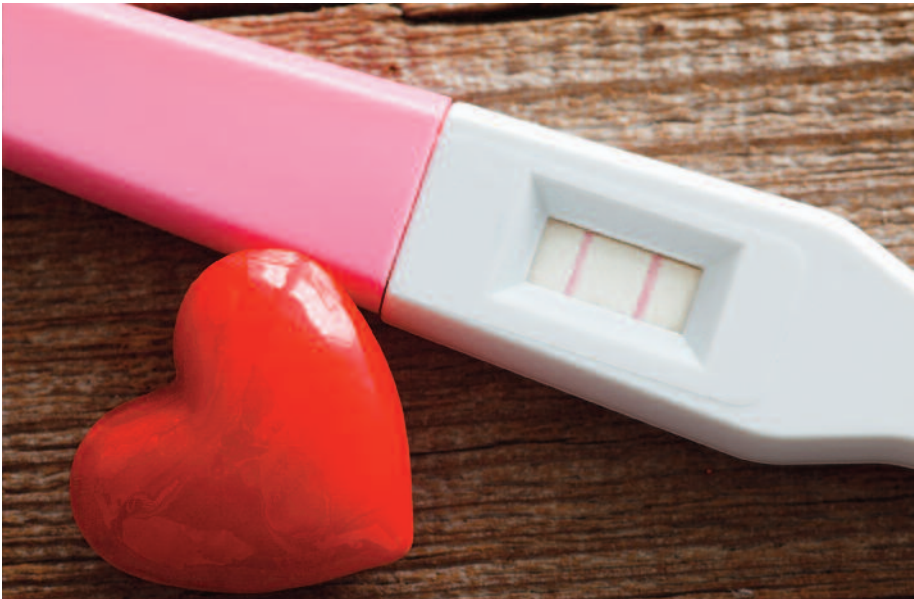
- Like nausea, vomiting, excessive tiredness, fatigue.
- Craving for certain food that normally not considered as a favorite food.
- Frequent urination.
- Missed menstrual period.
- There are some blood and urine test that can detect pregnancy 12 days after implantation.

Blood test is more accurate than urine

- Blood test is Serum Beta HCG level. It is

most accurate. It may be done in serial. Home pregnancy test is urine test.

- You can check your morning urine sample in strip. In that if you are pregnant then you get 2 lines.
- Ultrasonography - but it can be useful 3 - 4 weeks after fertilization.
- It can detect small Gestational sac as early as 4-5 weeks by transvaginal ultrasound.
- It can detect G.Sac (a bag of water in which the pregnancy develops) with Yolk sac as early as 5 wks.
- It can detect embryo as early as 5 wks 3 days.
- It can detect fetal heartbeat as early as 6 wks.



PREGNANCY

FIRST SIGNS AND SYMPTOMS



The most common signs and symptoms are



MISSED MENSTRUAL PERIOD



BREAST CHANGES



NAUSEA AND VOMITING



FREQUENT URINATION



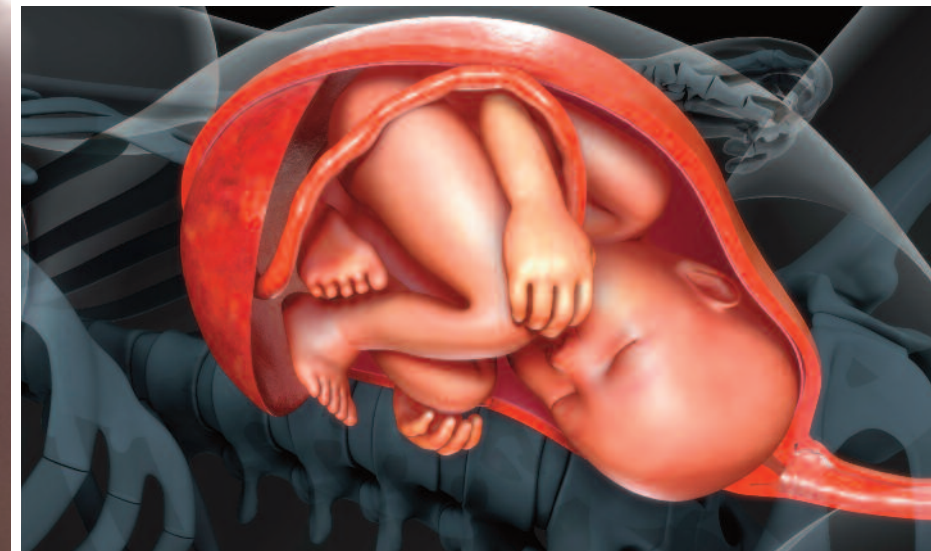
FATIGUE



IMPLANTATION BLEEDING



CHAPTER 03 PREGNANCY WEEK BY WEEK



In previous chapter you have gone through how you became pregnant and then you have confirmed your pregnancy.

Now we are sure that there are few things in your mind that are:

- 1) What is your current week/age of pregnancy?
- 2) How your baby may look like in the womb today?
- 3) How much your baby may weigh and in length at present stage of pregnancy?

Some of the common terminology:

Embryo: From conception to 8th week

Fetus: From 9th week to till birth of baby

Gestational age (Menstrual age): Starts from 1st day of your LMP (Last

menstrual period).

Mostly used by doctors.

Average gestational age at delivery is 40 weeks.

Ovulatory age (Fertilization age):

Starts from the day you conceive.

Average ovulatory age at delivery is 38 weeks.

Trimester: There are 3 trimester in pregnancy. Each trimester consists of 13 weeks.

Lunar months: A pregnancy lasts an average of 10 lunar months (28 days each) hence 280 days in total.

Due date calculation: Your doctor will always calculate your due date from the 1st day of your LMP. For instance 9 months +7 days in your 1st day of LMP. The average length and weight of baby

varies from baby to baby and one pregnancy to other.

Umbilical cord: The umbilical cord is a baby's lifeline. It is the link between you and your baby. Blood circulates through the cord, carrying oxygen and food to the baby and carrying waste away.

Placenta: The placenta is attached to the lining of the uterus and separates your baby's circulation from your circulation. In the placenta, oxygen and food from your bloodstream pass into your baby's bloodstream and are carried to your baby along the umbilical cord. Antibodies that give resistance to infection pass to your baby in the same way. Alcohol, nicotine and other drugs can also pass to your baby this way.

Amniotic Sac: Inside the uterus, the baby floats in a bag of fluid called the amniotic sac. Before or during labour, the sac or 'membranes' break and the fluid drains out. This is known as the 'water' bag leakage.



Heart beat run between 80 and 150 times per minute and internal organs begin forming

6 weeks Pregnancy

Changes in fetus:

- From crown (top of the head) to rump (bottom of buttocks) your baby measures 2-4 mm or 0.08-0.16 inch, the size of small lentil.
- Heart is size of poppy seed and beating on its own.
- Your baby has its own blood stream with blood circulating already.
- Within 5 months more than 100s of billions of neurons are formed in the brain.
- Embryos are 10,000 times larger than egg.

Changes in you:

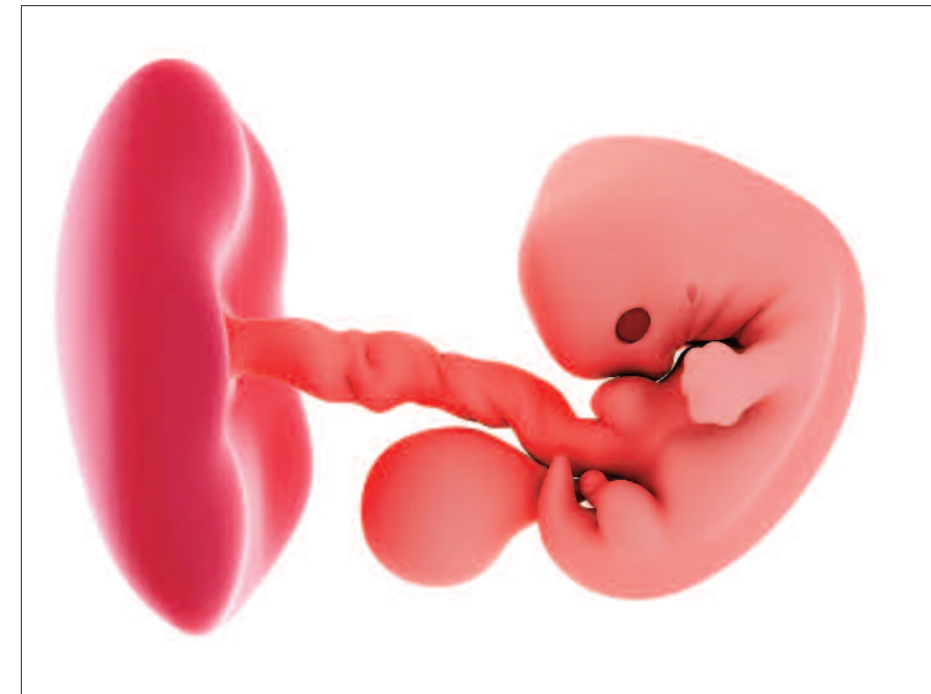
- You may loose some weight due to not eating well and nausea.
- Abdominal changes are not apparent.
- The areolas darken to brownish circle of patches around the nipples.
- Bluish vein may seen under the skin of breasts.
- You may be prone to fatigue and nausea.

7 weeks Pregnancy

Changes In Fetus:

- From crown to rump your baby measures 4 - 5 mm or 0.16 - 0.20 inches, size of small raspberry.
- Beating heart is seen.
- Baby's intestine, heart chambers and brain hemisphere are formed.
- Eyes and nostrils are formed.
- Small protruding buds are also seen that develops in ears and limbs.
- The skull is still transparent and brain is growing fast.

Changes in you:



- Weight gain is still less.
- In many patient it may be lost due to nausea, vomiting and inadequate food.
- You may have symptoms like nausea, vomiting, fatigue, indigestion, constipation etc.
- Mucus plug (sticky discharge) is also established in cervix and it may come out from vagina. If it is not associated with itching or foul smelling then it is normal (physiological).
- You may have dreams and fantasies about your baby and these are true beginnings of your emotional bonding.

8 weeks Pregnancy

Changes in fetus:

- From crown to rump your baby measures 14-20 mm or 0.50-0.75 inches, size of pinto bean (type of *Rajama*).
- Now your baby graduates from embryo to fetus.
- All main internal organs are present.
- Baby has recognizable human face with nostrils, lips & mouth with tongue.
- This baby is covered with skin but is

- still translucent.
- Baby has started moving inside the uterus but you will not be able to feel it.
- Toes & fingers begin to form. Paddle shaped feet & hands are present.
- Baby's eyelid begins to form and until it completes the eye will appear open.
- Digestive tract is growing



The brain cells are developing. Eyes and ears are becoming noticeable, hands and feet are emerging from developing arms and legs.

continuously.

- 10 Dental buds have formed in each jaw.
- Heart function is fully developed with pumping approximately 150/Beat per minute.
- Umbilical cord is clearly visible.

Changes in you:

- Uterus is size of a tennis ball.
- Because of hormonal changes you may have mood swing similar to premenstrual tension.
- Your metabolic rate is increasing 10-25%.
- Your uterus tightens, contracts and relaxes throughout pregnancy but you may not feel it.
- You may have constipation.
- You may have insomnia, nausea, vomiting.

9 weeks Pregnancy

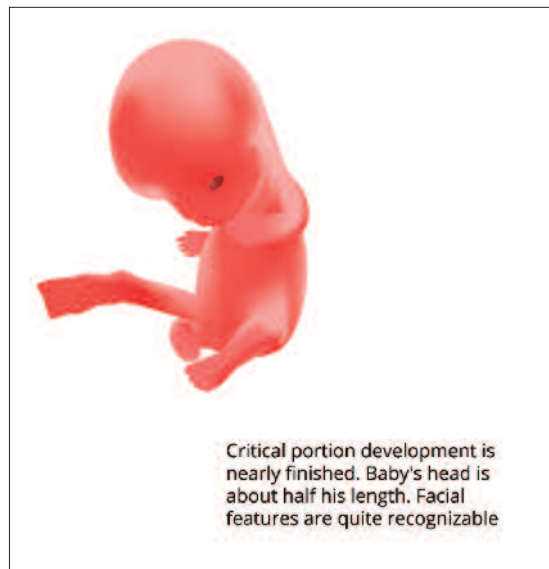
Changes in fetus:

- From crown to rump your baby measures 22-30 mm or 1-1.25 inches, size of green olive.
- Baby looks like tadpole and more human.
- Hands and feet continue to grow along the fingers, toes and elbows.
- Internal organs such as ovaries, testes, pancreas, intestine, gall bladder and anus have formed but we can not make out external genitalia.

Changes in you:

- Your waist line may start to thicken.
- Your HCG level is at peak in this week.
- Your first trimester's symptoms may continue.
- Your belly's shape may change. You

- may have increased vaginal discharge that is normal in pregnancy.
- You may have metallic taste in your mouth.



10 weeks Pregnancy

Changes in fetus:

- From crown to rump your baby measures 31-42 mm or 1.25-1.75 inches.
- Baby has started to put on weight.
- Your baby's weight is approx 5 gm or 0.18 oz.
- Prenatal test CVS (Chorionic Villous Sampling) usually conducted from this week to 12th week.
- You can come to know about many congenital malformations that occur during embryonic period.
- All vital organs have formed.
- Tail has disappeared totally.
- Finger and toes are no longer webbed.
- Skeleton, bones are starting to form.
- Rapid brain development is taking

place with almost 2,50,000 neurons being produced every minute.

Changes in you:

- You may or may not gain few kg. (kilogram) of weight by now, but you may lose weight due to nausea and vomiting.
- Abdominal changes are still not apparent.
- You may have spotting or brownish discharge that is called implantation bleeding. If excessive, consult your doctor.
- You may have tender breast, mild cramps in lower abdomen.



11 weeks Pregnancy

Changes in fetus:

- From crown to rump your baby measures 44 - 60 mm or 1.50 - 2.50 inches, size of peanut.
- Fetus weight is 8 gm or 0.3 oz.
- Baby increases 30 fold and tripple in length.

- Blood vessels in placenta are multiplying to keep up with nutrients supply to fetus.
- External genital shows obvious differences but it would be more complete after 13 weeks.
- Baby can open mouth and close his fist, baby can suck thumb. Heartbeat is 120-160/BPM.

Changes in you:

- Some woman experience glowing skin while other suffer from acne.
- Some feel changes like hair and nail growth and hair loss.
- You have leg cramps that are most common but it is not harmful. It is due to mineral and vitamin deficiency or it may be due to your leg is not able to tolerate the weight of a pregnant uterus.
- You may have mood swings also.

12 weeks Pregnancy

Changes in fetus:

- From crown to rump your baby measures 60 mm or 2.50 inches, size of plum.
- Fetus weight is 14 gm or 0.5 oz.
- It is end of first trimester.
- Baby is active, moving in the uterus.
- Baby is swallowing amniotic fluid, can pass urine which constitutes amniotic fluid.
- Baby has wrist, ankles, elbows, fingers and toes with nails and can make a fist.
- Baby's head is quite large in proportion to body.
- Baby is floating in amniotic fluid that is approximately 100 ml.

Changes in you:



- Baby's vocal cord forms.
- Baby is hiccupping now, so this will strengthen diaphragm and prepare respiratory system for breathing.
- Kidneys can make urine & bone marrow is making white blood cells for fighting against infection after birth.
- All the baby's organs, nerves, muscles are formed and now start to function together.
- Baby's eyelids are fused together and will not reopen till 30 weeks to protect developing eyes.

Changes in you:

- You will feel better and less sick.
- Your shoes are beginning to feel tight.
- You may have chances of getting urinary tract infection very frequently.

- Your risk of miscarriage drops significantly.
- You may develop black line (dark) on your abdomen called linea nigra which will fade after birth.
- You may gain 10% of total pregnancy weight or you may lose also.
- You may have frequency of urination, bleeding gums due to hormonal changes.
- Now your uterus will grow up just about the pelvic cavity so, you may have less pressure on your bladder.
- Your breast size increases.

13 weeks Pregnancy

Changes in fetus:

- From crown to rump your baby measures 65-78 mm or 3 inches.
- Fetus weight is 20 gm or 1 oz.



HOW BIG IS MY BABY



WEEK 4



WEEK 8



WEEK 12



WEEK 16



WEEK 20



WEEK 24



WEEK 28



WEEK 32



WEEK 36



WEEK 40

So ensure good liquid intake.

WHAT TO KEEP IN MIND DURING PREGNANCY:

As your baby is totally dependent on you for all its need, so you should eat properly, rest enough and stay as healthy as possible throughout pregnancy.

About food

1. Avoid fatty & greasy food, carbonated drinks, junk food & processed meals.
2. Eat slowly.
3. Take healthy balanced diet & fresh food.
4. Take plenty of water, juices and fiber food to avoid constipation.
5. Take frequent small meals, 5-6 times per day, that relaxes your Stomach and maintain your sugar level rather than eating full at a time.
6. You may take all types of fruits and dry-fruits.
7. Take high protein diet like sprouted moong, black gram, rajma etc. and chickies etc.
8. You need additional 300 calories/day during pregnancy.
9. Avoid junk food or outside food.
10. Take biscuits or bhakhari before rising in the morning.
11. If you still feel nausea and vomiting you can try a trick- Soak cucumber in water for 10 minutes and then have.

About Habits and hygiene

1. Avoid lying flat on your back, try propping yourself to avoid heartburn.
2. Try to sleep in lateral positions.
3. Remain stress free
4. You can do yoga, walking, swimming etc, if you don't have any problem.

5. You can listen soothing soft music or read inspiring books.

6. If you want to do hair dye/hair color, you can do it, but you may not get proper result because of hormonal changes. It is not harmful to fetus.

7. Avoid smoking, tobacco chewing



throughout pregnancy.

8. Remain hygienically clean and wash your hand with soap each and every time before you eat.

9. Restrict tea and coffee intake.

10. Avoid polluted air.

11. You may feel the size of your cloth have changed gradually .

12. Don't wear too tight cloths.

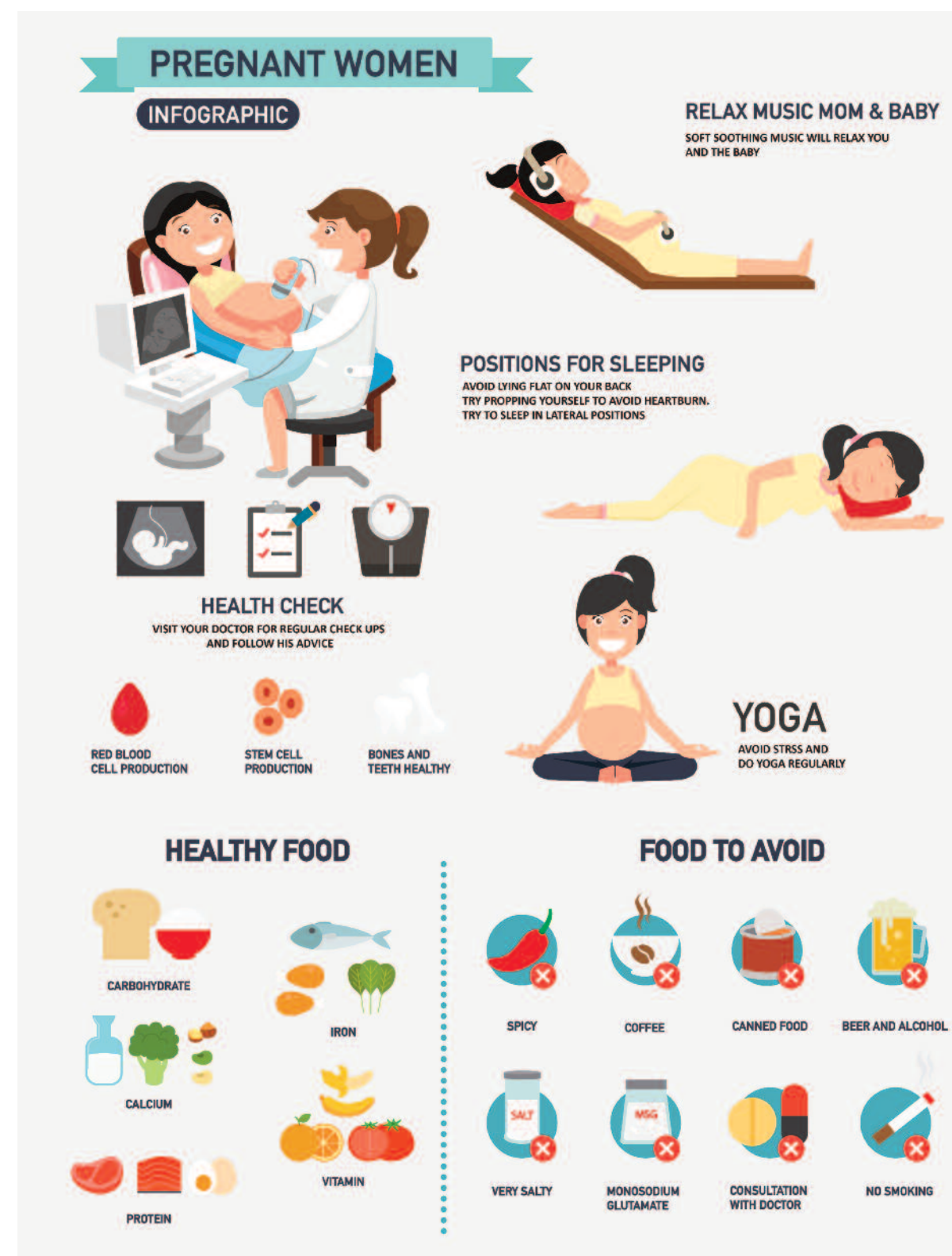
13. Your entire blood circulation system increases during pregnancy, so you may feel dizziness, dehydration, headache, sweaty & flushed feeling.

14. You have to visit doctor regularly.

15. If you have swelling on your leg contact your doctor and keep your leg elevated.

16. If you have pain in abdomen, watery discharge consults your doctor.

17. You should check for checklist of hospitalization.





14 weeks Pregnancy

Changes in fetus:

- From crown to rump your baby measures 78-85 mm or 3-4 inches.
- Fetus weight is approx. 20 gm or 1 oz.
- Reproductive organs of the baby are developed.
- Thyroid gland begins its function.
- Baby's skin is very thin, head hair and eyebrows are growing.
- Bone marrow has begun to produce blood cells which were previously produced by yolk sac.
- Now your baby is yawning, stretching or wiggling her toes and fingers, but you can not feel all these movements.

Changes in you:

- Some women have started to produce

colostrum or premilk.

- Your all first trimester symptoms may end up or you feel better than earlier.
- You can feel your uterus just above the pelvic region.

15-22 weeks Pregnancy

Changes in fetus:

- Baby is growing faster than any other time in their life.
- Head and body are more in proportion.
- The face becomes much more defined and nails, eyebrows and eyelashes are beginning to grow.
- Your baby has their own individual fingerprint, footprint, the finger nails and toenails are growing and hand can grip.
- At 22 weeks your baby is covered in very fine soft hair called lanugo.
- Muscle tissue and bone continue to form, creating more complete skeleton.
- Skin begins to form.
- Meconium develops in your baby's intestinal tract. It is first bowel movement.
- Sucking motion with mouth is developing.
- More active baby and feel fluttering.
- Baby is covered by fine, downy hairy lanugo, a greasy substance called vernix that protects the skin.
- Eyebrows, eyelashes, fingernails, toenails, have formed. Your baby can scratch itself.
- Baby can hear and swallow.
- Size approx. 10 - 11 cm (at 15 wks) to 27 - 30 cm (at 22 wks), weight approximately 100 (at 15 wks) - 500 (22 wks) gm.

Week 22



Changes in you:

- You may have gained weight approx. up to 4 kg.
- You can feel your baby's movement for 1st time after 20 - 22 wks and if it is your second pregnancy, you will feel earlier approx. at 16-18 week.
- Your first trimester symptoms have almost gone up at except you can have occasional nausea due to acidity.
- At first you feel fluttering/bubbling or slight shifting movement.
- Sometimes you will see a bump that is clearly hand/foot.
- Now height of your uterus grown up to just below the navel.

23-30 weeks Pregnancy

Changes in fetus:

- Baby is now moving about vigorously and responds to touch and sound.
- Baby is swallowing small amount of amniotic fluid and is passing urine in amniotic fluid.
- Your baby may get hiccup and you can

feel it by a jerk.

- Your baby also follows a pattern of waking and sleeping. And it may be different from you.
- Your baby's heartbeat can be heard through stethoscope now.
- Your baby may also be covered by vernix, greasy substance that disappears after birth.
- From 26 week, your baby has a chance of survival, if it is born.
- Bone marrow begins to make blood cells.
- Taste buds form on your baby's tongue.
- Real hairs begin to grow on your baby's head.
- Lungs are formed but not working.
- Baby's reproductive organs begin to set their proper place.
- At 26 week your baby's eyelids open for 1st time.
- Your baby is in size of 11 to 17 inch in length and weight is up to approximately 500 gms at 23 weeks to 1.7 kg at 30 week.

Changes in you:

- You have gained weight and it is approx. 1 kg per month.
- Height of your uterus grows up to just above the level of navel.
- You feel lots of movement of fetus at this time.
- You may have acidity problem as uterus is growing.
- You have swelling in legs & hands, it is common in pregnancy but you have to check your B.P. (Blood pressure)
- You may have stretch marks on your tummy or thighs. Your breast size has increased.

Week 36



31-36 weeks Pregnancy

Changes in fetus:

- Baby is continuously growing.
- Skin becomes smooth and lanugo disappears but vernix gets thickened.
- Regular talking, reading and singing to yourself while you are pregnant will help you to bond with your baby before birth.
- Baby gains weight by half pound/week
- Bones are fully formed but soft.
- Baby's kicks are very forceful.
- As baby is growing very fast, baby has less space to move around so you can feel only stretching and wiggles like movement at the end of 35 weeks.
- Now baby can open and close eyes and sense changes in light.
- Lungs are not fully formed but breathing movement occurs.

- Baby's body begins to store minerals and vitamins.
- Your baby measures 16-19 inches in length and weight approximately 1.5 kg to 2.6 kg.

Changes in you:

- Height of uterus reaching up to chest just below the ribs.
- You have discomfort in breathing, pain around lower ribs, swelling in legs and hands.
- Some times you have stretch marks on your abdomen and thighs.
- You may have itching on your abdomen due to stretching of skin.
- You can feel tightening and relaxation of your uterus.
- You have to go frequently for urination.

37-40 weeks Pregnancy

Changes in fetus:

- From crown to rump your baby measures approximately 19-21 inches and weight approximately 2.8 kg to 3.5 kg.
- Baby is considered full term.
- Baby's organs are ready to function on their own.
- Your baby may turn into head down position for birth.

Changes in you:

- Swelling in leg may increase.
- Frequency of urine is also increasing as your baby's head is engaging in pelvic cavity.
- You may feel contraction and relaxation of uterus.
- You may have back pain.



HUMAN EMBRYO EVOLUTION



Height and weight chart of fetus

Gestational age	Length (US)	Weight (US)	Length (cm)	Mass (g)
	(crown to rump)		(crown to rump)	
8 weeks	0.63 inch	0.04 ounce	1.6 cm	1 gram
9 weeks	0.90 inch	0.07 ounce	2.3 cm	2 grams
10 weeks	1.22 inch	0.14 ounce	3.1 cm	4 grams
11 weeks	1.61 inch	0.25 ounce	4.1 cm	7 grams
12 weeks	2.13 inches	0.49 ounce	5.4 cm	14 grams
13 weeks	2.91 inches	0.81 ounce	7.4 cm	23 grams
14 weeks	3.42 inches	1.52 ounce	8.7 cm	43 grams
15 weeks	3.98 inches	2.47 ounces	10.1 cm	70 grams
16 weeks	4.57 inches	3.53 ounces	11.6 cm	100 grams
17 weeks	5.12 inches	4.94 ounces	13 cm	140 grams
18 weeks	5.59 inches	6.70 ounces	14.2 cm	190 grams
19 weeks	6.02 inches	8.47 ounces	15.3 cm	240 grams
20 weeks	6.46 inches	10.58 ounces	16.4 cm	300 grams
	(crown to heel)		(crown to heel)	
20 weeks	10.08 inches	10.58 ounces	25.6 cm	300 grams
21 weeks	10.51 inches	12.70 ounces	26.7 cm	360 grams
22 weeks	10.94 inches	15.17 ounces	27.8 cm	430 grams
23 weeks	11.38 inches	1.10 pound	28.9 cm	501 grams
24 weeks	11.81 inches	1.32 pound	30 cm	600 grams
25 weeks	13.62 inches	1.46 pound	34.6 cm	660 grams
26 weeks	14.02 inches	1.68 pound	35.6 cm	760 grams
27 weeks	14.41 inches	1.93 pound	36.6 cm	875 grams
28 weeks	14.80 inches	2.22 pounds	37.6 cm	1005 grams
29 weeks	15.2 inches	2.54 pounds	38.6 cm	1153 grams
30 weeks	15.71 inches	2.91 pounds	39.9 cm	1319 grams
31 weeks	16.18 inches	3.31 pounds	41.1 cm	1502 grams
32 weeks	16.69 inches	3.75 pounds	42.4 cm	1702 grams
33 weeks	17.20 inches	4.23 pounds	43.7 cm	1918 grams
34 weeks	17.72 inches	4.73 pounds	45 cm	2146 grams
35 weeks	18.19 inches	5.25 pounds	46.2 cm	2383 grams
36 weeks	18.66 inches	5.78 pounds	47.4 cm	2622 grams
37 weeks	19.13 inches	6.30 pounds	48.6 cm	2859 grams
38 weeks	19.61 inches	6.80 pounds	49.8 cm	3083 grams
39 weeks	19.96 inches	7.25 pounds	50.7 cm	3288 grams
40 weeks	20.16 inches	7.63 pounds	51.2 cm	3462 grams
41 weeks	20.35 inches	7.93 pounds	51.7 cm	3597 grams
42 weeks	20.28 inches	8.12 pounds	51.5 cm	3685 grams

The growth of the fetus and the percentile of the ultrasound sonogram during pregnancy is dependent on many factors such as genetic, placental and maternal factors.

Weeks	10th%tile	Average	90th%tile
20	275	412	772
	314	433	790
22	376	496	826
	440	582	882
24	498	674	977
	558	779	1138
26	625	899	1362
	702	1035	1635
28	798	1196	1977
	925	1394	2361
30	1085	1637	2710
	1278	1918	2986
32	1495	2203	3200
	1725	2458	3370
34	1950	2667	3502
	2159	2831	3596
36	2354	2974	3668
	2541	3117	3755
38	2714	3263	3867
	2852	3400	3980
40	2929	3495	4060
	2948	3527	4094
42	2935	3522	1098
	2907	3505	4096
44	2885	3491	4096

CHAPTER 04

FOOD & NUTRITION IN PREGNANCY

Nutrition and pregnancy refers to nutritional intake and dietary planning before, during and after pregnancy. The expecting mom should be very calm and peaceful, also focused on what they should do for a healthy pregnancy. Eating healthy during pregnancy will help your baby to develop and grow and will help to keep you fit and well. You don't need to go on a special diet but make sure that you eat a variety of different foods everyday in order to get right balance of nutrients that you and your baby need. You might feel more hungry than normal but you do not need to "Eat for two" even if expecting twins or triplets.

GOOD ROUTINE FOOD FOR VEGETARIANS

What should include in your daily food to label it as balanced diet?

1. Fruits and vegetables:



They provides vitamins, minerals and fibers which helps in

digestion and prevents constipation. Eat at least five portions of fresh, frozen, dried or juiced fruit and vegetables each day, after washing them carefully. Better to eat raw or lightly cooked vegetables.

2. Foods and beverages which are

rich in fat:



puddings and sugar containing drinks. You should eat only a small amount of these foods. As sugar contains only calories without providing nutrition to body. Frequent consumption of such food may cause tooth decay and weight gain. Try to reduce or avoid food that is high in saturated fat and have foods rich in unsaturated fat.

3. Rice, potatoes, bread and other starchy foods:



These food types contain

carbohydrate which is satisfactory to stomach without containing too much calories. These are also important source of vitamins and fibers. Such other foods are oats, maize, millet, sweet potatoes, pastas etc. such food should be main part of every meal.

4. High Protein Diet:

For this you can take Sprouted Mung,





Chana (Black Gram), Muth, Rajama etc... at least one

bowl per day.

You can take any Kinds of Chhikies like Gound nut (Shing) chikkies, Dry fruits chikkies, Dalia's chikkies etc. preferably made from jaggary rather than sugar. These foods are main source of proteins. One should eat moderate amount each day.

5. Milk and dairy products:



Milk and its products like butter milk, paneer, and yoghurt

are important. They contain calcium and other nutrients needed by a baby. Whenever take milk, remove cream from it or use skimmed or low fat variety milk. You can use low fat paneer, yogurt.

6. Healthy drinks and snacks during pregnancy:



In addition to other food and fluids, drink 8 to 10 large glasses (at least 2-3 liters) of water a day. A refreshing alternative is a glass of chilled filtered water with a twist of lime or mint. There are some other healthy

drinks that can be tried i.e. coconut water, lime juice, skimmed milk, banana shake.

It is best to prepare milk shakes and juices at home and drink them immediately. This reduces risk of any spoiling or contamination. Also be careful while buying drinks from roadside vendors as it is difficult to judge its hygiene and freshness. There are some tasty and healthy snacks that you would like to take during pregnancy i.e. grilled paneer tikka (low fat paneer), fruit and vegetable bhelupuri, dhokla or khandvi, sweet potato chat, steamed or sautéed corn or corn chat, upma, mixed vegetable idly, batata poha, Khakhara, shing- chana, Sev- mamra, popcorn etc.

Try to limit or decrease intake of deeply fried or more ghee, butter rich snacks. It is better to use plant oils rather than animal fat that are high in saturated fat. Be guided by your appetite but beware of emotional eating that could make you over eat at a time.

IMPORTANT ELEMENTS

1. Requirement of folic acid during pregnancy:

It is recommended to take daily folic acid supplement of 400 mcg started before pregnancy (prenatally) and for at least first 12 weeks of pregnancy. It is required to protect your unborn baby against developing neural tube defects, such as spina bifida.

Following are some good sources of folic acid (foliate):

- Green leafy vegetables like spinach (palak), fenugreek leaves (methi), corianders (green dhania), radish



(mulo), mustard greens, mint (phudina), lettuce, etc.

- Pulses like Bengal gram (chana), soya beans, chick peas (vatana), kidney beans (Rajama) etc.
- Vegetables like beetroot, peas, cabbage, French beans (fanshi), lady's finger (bhinda), bottle guard (dudhi), carrot (gajar), corn (makai) etc.
- Fruits like pomegranate (dadam), guava (jamfal), oranges, sweet lime (mosambi), strawberry etc.
- Dry fruits and nuts like almonds, peanuts (moongfali), walnuts etc.

2. Other vitamins and mineral:

A. Vitamin D:

Vitamin D is needed to keep bones healthy and to provide baby enough vitamin D. Vitamin D regulates amount of calcium and phosphate in body which keep bones and teeth healthy. Many vegetarian mothers may have deficiency of vitamin D. The best source of vitamin D is sunlight. The time of exposure to sun light to get vitamin D is different for different person as it depends on skin type, time of the day and a year.

B. Iron:

Deficiency of iron lead to anemia (low hemoglobin) which causes weakness and easily fatigability. Food rich in iron includes green leafy vegetables, jaggery, beetroot, Carrots, Millets, dry fruits (Figs, Black kismis) dates, etc. it is also supplied in form of tablets and syrups throughout pregnancy by a doctor.

C. Vitamin C:

It helps to absorb iron. Citrus fruits and vegetables like orange, sweet lime,

amala, broccoli, potatoes, tomatos, and some pure fruit juices are good source of vitamin C.

D. Calcium:

Calcium is needed for making baby's bones and teeth. Milk and milk products, fruits like banana, dry fruit like fig and apricot, almond etc are good source of calcium. It is also supplied in tablet form by a doctor during and after pregnancy.

E. Omega 3 fatty acid:

BAD FOODS

Food to be avoided or restricted during pregnancy :-

1. Caffeine: Caffeine is naturally present in lots of food like coffee, tea, chocolates etc. it is also added in some soft drinks and energy drinks, certain cold and flu remedies. Higher level of caffeine may cause miscarriage and low birth weight baby. You don't need to cut caffeine out completely but, its use should not be more than 200 mg per day.

Caffeine contents in foods and drinks :-

- 1 mug of tea - 75 mg
- 1 mug of filter coffee - 140 mg
- 1 mug of instant coffee - 100 mg
- 1 can of cola - 40 mg
- 50 gm bar of plain chocolate - up to 50 mg

So you can calculate your caffeine intake accordingly.

2. Smoking:

Each cigarette contain about more than 4000 chemicals. Every cigarette you smoke harms your baby in your womb, by restricting necessary oxygen supply to your baby. So your baby's heart has to beat harder, every time you smoke.



So it is a must to stop smoking. Both you and your baby will be benefitted immediately by clearing carbon monoxide (poisonous gas) from body and bringing oxygen level normal.

Passive Smoking

What is passive smoking?

Passive smoking is the inhalation of smoke, called second hand smoke (SHS) or environmental tobacco smoke by persons other than intended active smoker.

Passive smoking increased the risk of still birth by almost one-quarter (23 per cent) and was linked to a 13 per cent increased risk of congenital birth defects. The findings underline the importance of discouraging expectant fathers from smoking around their pregnant partners and warning women

of the potential dangers of second-hand smoke both pre-conception and during pregnancy.

The researchers say fathers who smoke should be more aware of the danger they pose to their unborn child and that since it currently remains unclear when the effects of the second-hand smoke begins it is important to protect women from passive smoking both before and during pregnancy.

3. Alcohol:

Whenever a mother drinks, alcohol passes from her blood to baby through placenta. Baby's liver is the last organ to develop fully and does not mature until the latter half of the pregnancy. So your baby

can not accept or digest alcohol like you can. In early days of pregnancy too much alcohol intake can result in miscarriage. Excessive intake of alcohol during pregnancy leads to some foetal abnormalities like restricted growth, facial abnormalities, learning and behavioral disorders.

4. Medications:

It is preferred that whenever you are trying for the pregnancy or already pregnant, talk to your doctor regarding each medication that you are taking regularly. Your doctor will decide whether it is required to change it or stop it. Even some pain killers are also harmful to your baby's health but some are safe. So do not take any medicine without asking your doctor.

CHAPTER 05

ANTENATAL VISITS

Pregnancy, labor & birth of a child are important milestones in a couple's life. Regular medical care, understanding the unknown events during pregnancy can make child birth an extremely enriching and joyful event.

Women's health, behavior, diet, habits and drug or illness affects the baby's development, hence you should take good care of your health and most important is to go for regular checkup with your doctor.

Minimum visits during pregnancy for rural non affording patients

- At least 3 visits during whole pregnancy.
- > **1st visit:** before 20 weeks (before 5 months)
- > **2nd visit:** 20-30 weeks (between 5-7 months)
- > **3rd visit:** 34-37 weeks (around 8-9 month)

In Regular patients it should be like this:

- *Routine schedule:*
- > **Up to 13 weeks:** every 15-20 days
- > **13 to 28 weeks:** every 4 weeks
- > **29 to 36 weeks:** every 15 days
- > **Thereafter:** weekly
- *In high risk pregnancy:*
- > **1st trimester up to 13 weeks:** every 15 day or early whenever required
- > **14-26 weeks:** every 4 weeks
- > **26-34 weeks:** Every 15 days or earlier whenever required according to sonography finding or high risk factor
- > **34 weeks onwards:** weekly

WHAT SHOULD BE DONE IN EACH AND EVERY VISIT?

1st visit: It should be after your missed period.

- Check for weight, Blood Pressure, pulse.
 - Confirmation of pregnancy by urine test or blood test or by sonography.
 - *In sonography see for*
 - Presence of pregnancy
 - Health of pregnancy
 - Number of pregnancy
 - Location of pregnancy (intra or extra uterine pregnancy)
 - GS (a bag of water in which pregnancy develops)
 - YS (Yolk Sac)
 - Fetal pole and Fetal heart beat
- It should be done by only TVS (internal sonography).

- Give folic acid supplementation. Give symptomatic treatment.
- Counselling about good health and nutrition

2nd visit: 6-7 WEEKS

- Check weight, BP and physical examination.
- In sonography see for GS, YS, fetal number and shape, heartbeat, fetal pole, size & chorionicity.
- Advice for same medicines like folic acid, progesterone supplement if required and symptomatic treatment.
- Counselling about diet, health, travelling.
- Reassurance for pregnancy symptoms.
- Basic blood test for antenatal profile-

Hb, Sugar, Blood Group, HIV, HBsAg, Thalesemia screening.

- Give appointment for next visit.

3rd visit: 9-10 WEEKS

- Check weight, B.P. (blood pressure) and physical examination.
- In sonography see for GS, YS, shape, heartbeat, fetal pole, size and chorionicity.
- Advice for same medicines like folic acid, progesterone supplement if required and symptomatic treatment.
- In case of high risk pregnancy give monitoring chart for blood pressure in case of hyper tension, sugar chart for Diabetes Mellitus/Gestational diabetes mellitus (GDM).
- Counselling about diet, health, travelling.
- Reassurance for pregnancy symptoms.
- Prescribe appropriate medicine.
- Follow up date for next visit after 15-20 days

4th visit: 11-13 WEEKS

- Check weight, B.P. and physical examination.
- In Aneuploidy scan sonography (NT scan- scan for markers of certain chromosomal anomalies) to detect earliest abnormalities in fetus.
- Blood test like double marker for screening of Down's syndrome and other genetic syndrome.
- **NIPT** (non invasive pre natal testing) - It is screening blood test to rule out high risk of fetus for genetic chromosomal abnormality in high risk cases.
- It is done between 9 weeks to 20 weeks of pregnancy.
- It is more sensitive (99%) than other non invasive tests (double marker, triple

marker). Because it is done from foetal DNA (approximately 10%) present in maternal blood. There is no risk of miscarriage due to procedures as compared to invasive procedures (aminocentesis and chorion biopsy etc).

• For this test, maternal blood is collected by special kit, then fetal DNA is separated from the sample and test is done from this fetal DNA.

- OS tightening if required in high risk pregnancy with Bad obstetric history (recurrent pregnancy loss) or in multiple pregnancies.
- CVS (Chorionic villous sampling) in case of prior genetic disease or significant fetal history of genetic disease or higher risk factor in present pregnancy.

- Continue same medicine. After 13 weeks add Iron, calcium, uterine relaxant if advised and protein powder supplementation.

- Tetanus Vaccine 1st dose.

5th visit: 16-18 WEEKS

- Check weight, B.P. and physical examination.
- In sonography see for Fetal growth, heart beat, placenta location, cervical length, liquor.
- Blood test for hemoglobin, sugar level, triple marker that is screening test for Down's syndrome and other genetic syndromes.
- Amniocentesis if there is high risk for fetus or any Family history of genetic disease, previous sibling affected with genetic disease.
- In pregnancy with Hypertension - Blood Pressure monitoring chart
- In Pregnancy with Diabetes-Sugar chart, Diabetic diet etc.



- In pregnancy with Thyroid disease- recheck thyroid hormone level and medicine accordingly
- In medicines continue Iron, calcium, uterine relaxant and protein powder supplementation.
- Counselling for proper diet, nutrition, health
- TT Vaccine if not given previously.

6th visit: 20-22 WEEKS

- Check weight, B.P. and physical examination.
- Generally it is period of 3D-4D anomaly scan intended to detect anomalies in fetus, fetus echo etc. and cervical length, uterine doppler.
- In pregnancy with Hypertension - Blood Pressure monitoring chart
- In Pregnancy with Diabetes-Sugar chart, Diabetic diet etc.
- In pregnancy with Thyroid disease- recheck thyroid hormone level and medicine accordingly
- Continue same medicine.
- Counselling for proper diet, nutrition, health.
- Counselling about stem cells preservation (deatils in later chapter).
- Counselling about where to deliver.
- Tetanus Vaccine 2nd dose.

7th visit: 26-28 WEEKS

- Check weight, B.P. and physical

examination.

- Look for growth of fetus, cervical length, placenta, liquor, doppler screening.
- Same Blood pressure chart, Sugar chart in respected patient.
- Counselling about nutrition, health.
- Inj. Steroids for fetal lung maturity.

8th visit: 30-32 WEEKS

- Check weight, B.P. and physical examination.
- Look for growth of fetus, cervical length, placenta, liquor, doppler screening.
- Blood test like hemoglobin, sugar test.
- HBA1C (average sugar level of 3 months), thyroid profile in high risk patient.
- Inj. Anti-D in case of Rh. negative.
- Same Blood pressure chart, Sugar chart in respected patient.
- Continue same medicine.
- Counselling about nutrition, health.

9th visit: 34-36 WEEKS

- Check weight, B.P. and physical examination.
- Look for growth of fetus, cervical length, placenta, liquor, doppler screening.
- Same Blood pressure chart, Sugar chart in respected patient.
- Continue same medicine.

CHAPTER 06

BLOOD TESTS AND ULTRASOUND SCANS DURING PREGNANCY

When the urine pregnancy test is positive, it's just the beginning of the tests and scans you will be offered during your pregnancy.

During your pregnancy, you'll be offered a range of tests, including blood tests and ultrasound baby scans. These tests are designed to help make your pregnancy safer, to check and assess the development and wellbeing of you and your baby, or to screen for particular conditions.

Weight and height

You'll be weighed at your booking appointment, & then regularly during your visits. Your height and weight will be measured so that your BMI (body mass index) can be calculated. Most women gain on an average 10 - 12.5 kg in pregnancy, most of it after they are 20 weeks pregnant. Much of the extra weight is due to the baby growing, but your body also stores fat for making breast milk after the birth.

Urine

You'll be asked to give a urine sample at your pregnancy checkups. Your urine is checked for several things, including protein or albumin. If this is found in your urine, it may mean that you have an infection that needs to be treated. It may also be a sign of pre-eclampsia. Pre-eclampsia affects 10% of pregnancies, and can be life threatening

if left untreated. It can cause the pregnant woman to have fits, and affect the baby's growth.

Blood pressure

Your blood pressure will be measured at every antenatal visit. A rise in blood pressure later in pregnancy could be a sign of pregnancy-induced hypertension. It's very common for your blood pressure to be lower in the middle of your pregnancy than at other times. This isn't a problem, but it may make you feel light-headed if you get up quickly.

Blood tests

As part of your antenatal care you'll be offered several blood tests. Some are advised to all women, and some are advised only if you might be at risk of a particular infection or inherited condition. All these tests are done to make your pregnancy safer or to check that the baby is healthy.

Below is an outline of all the tests that might be advised.

Blood group

It is must to know your blood group whenever you become pregnant.

Anemia

A full blood count, including hemoglobin and to check that you are not anemic. Anemia makes you tired and less able to cope with loss of blood when you give birth or face any





bleeding episode. If tests show that you're anemic, you'll be given higher than usual dose of iron and folic acid.

Infections

You may advised tests for :-

- **Susceptibility to rubella (German measles):** If you get rubella in early pregnancy, it can seriously damage your unborn baby.
- **Syphilis:** You may be tested for this sexually transmitted infection because it can lead to miscarriage and stillbirth if left untreated.

Hepatitis B: This virus can cause serious liver disease, and it may infect your baby if you're a carrier or you're infected during pregnancy. Your baby won't usually be ill but has a high chance of developing long-term infection and serious liver disease later in life. Your baby can be immunized at birth to prevent infection. If you have hepatitis B, you may be referred to a specialist.

- **Hepatitis C:** This virus can cause serious liver disease and there is a small risk it will pass on to your baby if you are infected. It can't be prevented at present. If you're infected, you'll be referred to a specialist, and your baby can be tested after it's born.

- **HIV (human immunodeficiency virus):** This is the virus that causes AIDS. HIV infection can be passed on to a baby during pregnancy, at delivery or after birth by breast feeding. As part of your routine antenatal care, you'll be offered a confidential test for HIV infection. If you're HIV positive, both you and your baby can have treatment and care that reduces the risk of your baby becoming infected.

Thyroid profile

Thyroid hormone levels are checked to detect any overt or subclinical hypothyroidism, which can affect the baby if not corrected.



Another blood test is offered at around 28 to 30 weeks to recheck hemoglobin.

Gestational diabetes screening

You will also be screened for gestational diabetes between 26 and 28 weeks of pregnancy with a glucose screening test. It can be HBA1C or GTT.

HBA1C is the test that tells us your average sugar level of 3 months. The GCT test is done in a clinic or medical laboratory and you will need to drink a sweet glucose drink, wait one hour and then have a blood test. If your test shows that you may be at risk of having high sugar level you will be asked to take a Glucose Tolerance Test (GTT). Many women who have a positive result will not have gestational diabetes.

Women with risk factors for diabetes may be offered the GTT first. For this test you will need to miss breakfast and then have a blood test before having a

glucose drink. You will then have blood tests at one hour and two hours after you have had the drink. If you test positive for gestational diabetes you will be given advice on how to manage your pregnancy to keep you and your baby healthy and you will be referred to an endocrinologist and diabetes specialist for advice.

Ultrasounds

Women are offered three to four ultrasounds during a normal pregnancy but some may require more for specific reasons. The ultrasounds that are offered to all pregnant women are:

First trimester ultrasound

A scan early in your pregnancy to check for

- Presence and diagnosis of pregnancy
- Fetal heartbeat
- Number of babies

Repeat scans may be done depending on the possibility of a miscarriage or

complications, or if you have a history of miscarriage.

11-13 wks Aneuploidy scan (Nuchal translucency scan)

The Nuchal translucency screening is done between 11 and 13 weeks of pregnancy. The scan is primarily a screening test for Down syndrome and other chromosomal conditions, though the sonographer will also take some measurements and checks your baby. The ultrasound is used to measure the thickness of the layer of fluid on the back of your baby's neck. This measurement is then combined with the result of a blood test which is done between 11 and 13 weeks and other factors such as your age, weight and number of weeks of pregnancy to provide an individual risk assessment. This result tells you if your baby has a low or high risk of Down syndrome. If you are considered high risk you will be offered genetic counseling to discuss your options.

3D-4D Anomaly Scan

This is a detailed ultrasound performed between 18 and 20 weeks of pregnancy which screens for structural or physical abnormalities in the brain, heart, spine and other important organs. You may also be offered other scans for medical reasons

Cardiac ultrasound (Fetal echo)

If you have diabetes, a family history of heart abnormalities, or a high Nuchal translucency thickness, a cardiac scan (fetal echo) is sometimes performed around 22 to 24 weeks. A detailed examination of your baby's heart and connecting blood vessels is performed by an experienced sonographer with

specific expertise in this area.

Third trimester ultrasound (Growth monitoring)

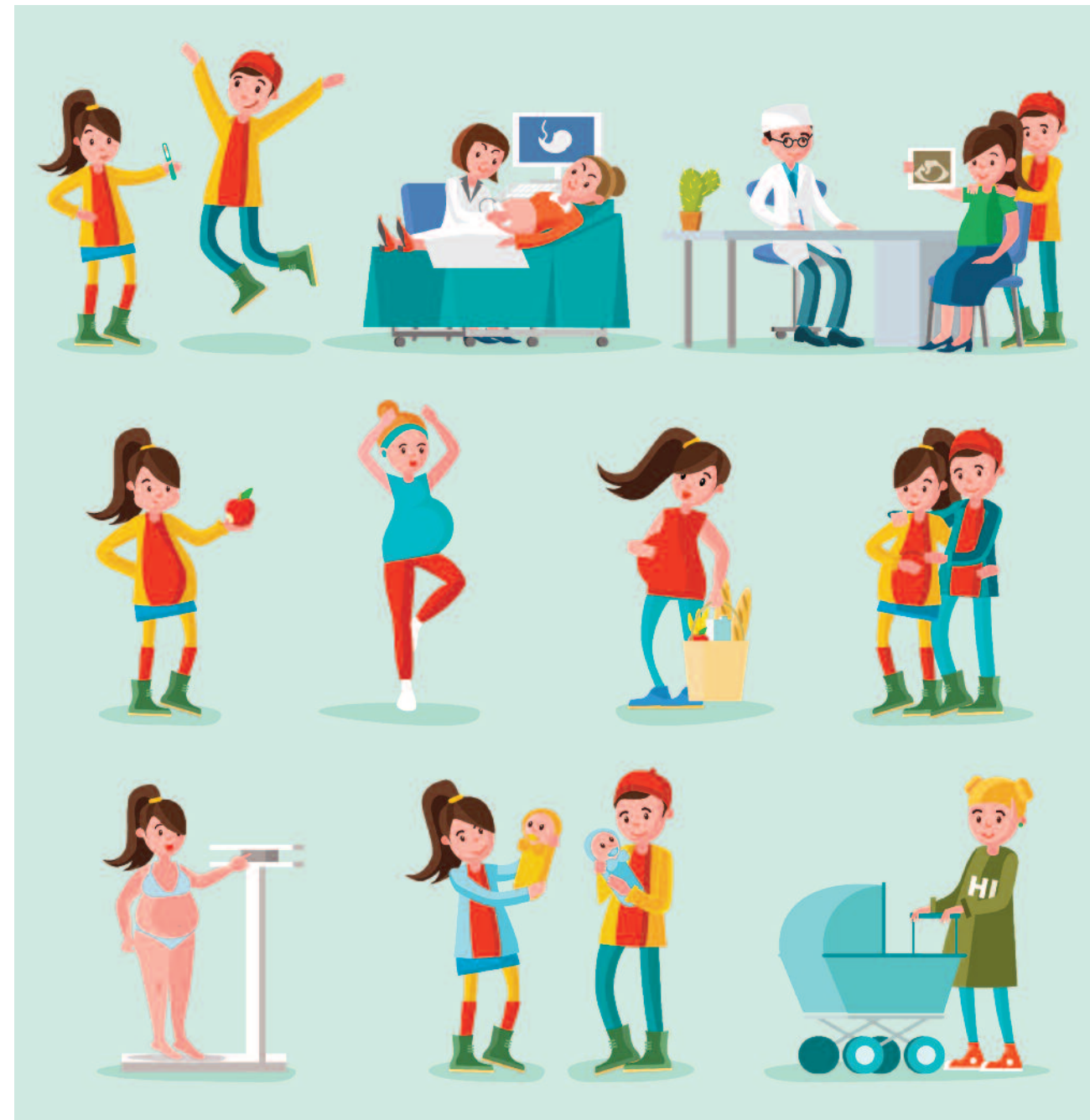
If you have had complications in previous pregnancies or have developed a problem during this current pregnancy, you may be offered other scans in your third trimester. If your placenta was found to be low at the time of the anomaly scan sometimes a check is recommended around 32 weeks. If you have gestational diabetes, pre-eclampsia or are pregnant with more than one baby you may be offered additional scans.

Chorionic Villous Sampling (CVS)

If earlier screening suggests that your baby has a high risk of genetic abnormalities, you may be offered a chorionic villous sampling (CVS). A CVS takes a part of the placental tissue. This is done while the tester is using an ultrasound to see your placenta. The test can be performed between the 10th and 14th weeks of pregnancy and carries a small risk of miscarriage.

Amniocentesis

You may also be offered an amniocentesis if a previous screening test shows that your baby has a high risk of some genetic disorders. An amniocentesis involves taking a sample of amniotic fluid (fluid around your baby) under sonography guidance and is usually performed between the 15th and 18th weeks of pregnancy. The test will give you almost 100 per cent certainty. This test carries a small risk of miscarriage. There is less risk for miscarriage with amniocentesis as compared to chorionic villous sampling.



CHAPTER 07

HIGH RISK PREGNANCY

Whenever there is increased risk to either mother or baby or both it is high risk pregnancy.

Risk factors for mother or baby may be existing before pregnancy or may develop during pregnancy. It is necessary to know all this factors so that pregnancy and delivery can be managed properly and both mother and baby can be taken care off. In India, higher rates of maternal and foetal mortality are due to inability to diagnose them in early stages, which requires more attention.

RISK FACTORS:

A. Maternal factor:

1. Mother's height less than 1.5 meters [5 feet].
2. Mother's weight less than 45.5 kgs [100 pounds]
3. Obesity.
4. Mother's age less than 20 years or
5. Mother's age more than 35 years.
6. Previous delivery by caesarean section.
7. Medical disorder existing before or during pregnancy like
 - High blood pressure
 - Diabetes mellitus
 - Severe anemia
 - Heart attack
 - Epilepsy
 - Psychiatric disorder
 - Kidney disorder
 - Heart valve problem
 - Asthma
 - Rheumatoid arthritis

- Lupus etc.

8. Drug use, alcohol or smoking addiction before or during pregnancy, medications like antidepressant, anticonvulsant drugs.

9. Mother having Rh negative blood group.

10. Problem in previous pregnancy like

- Preterm labour

- High blood pressure with edema

- Convulsions

- Retained placenta or post partum hemorrhage

11. Infectious disease during pregnancy like

- HIV

- Hepatitis c

- Syphilis

- Toxoplasmosis

- Chicken pox

12. Breech presentation at full term in primi gravida (1st pregnancy)

13. Placenta previa (low placenta covering internal os)

B. Factors related to Fetus:

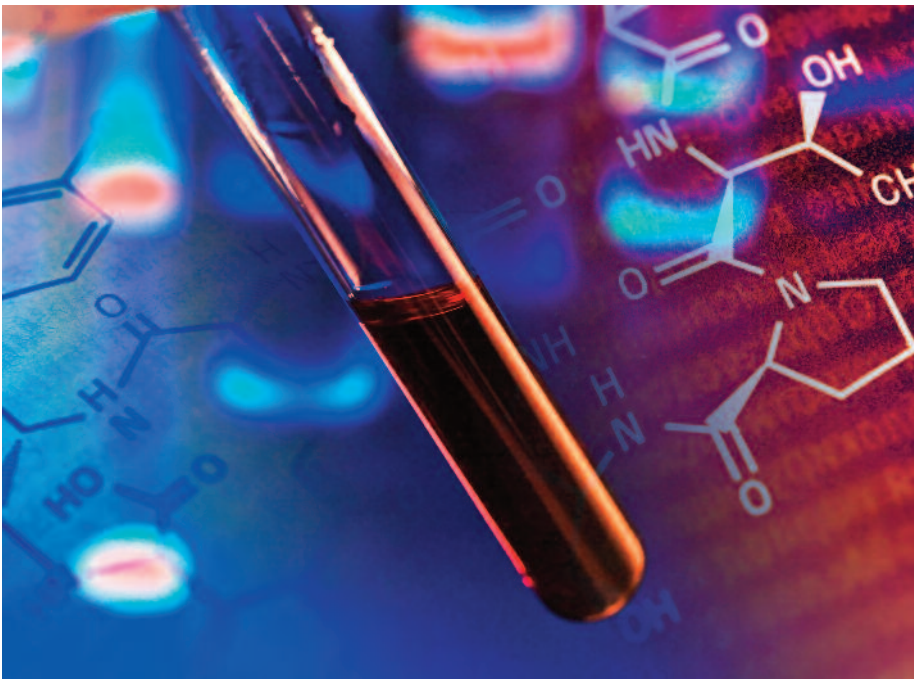
1. Possibility of congenital anomaly in ultra sound examination.

2. Fetal growth restriction or possibility of low birth weight.

3. Multiple pregnancy (twins, triplets, or more).

4. Past history of preterm delivery or foetal death in previous pregnancy.

These above mentioned factors may be harmful to mother or baby or both. So in such cases, proper antenatal, intra natal and post natal care of a mother



and baby by a doctor [obstetrician and gynecologist] and his experienced team is must. Every high risk pregnancy should be monitored and delivered at a tertiary center, well backed up with all technologies and NICU [neonatal intensive care unit]. Any maternal or neonatal complication can be taken care off and treated efficiently at such places.

In many high risk pregnancies related to neonatal causes, it may be easy to deliver mother at peripheral centre but, may be difficult to deal with new born. When it may require high quality and complicated immediate treatment which may not be available or possible at delivery centre. In certain cases everything is smooth and normal but new born may develop certain unexplained complications immediately after birth and parent may have to rush to tertiary centre for NICU but new born may not permit that much time. Immediate [initial 5 minutes after delivery] is the most critical period for a new born and is the time to interfere for survival of baby.

If we analyze this situation, it is clearly necessary that it is better to transfer baby to well occupied experienced centre when it is in uterus [in utero transport]. If baby is reached to such centre before delivery, it can be easily treated there after delivery. If the pregnancy is high risk and it is likely that, baby may need extra care and treatment. It is advisable to conduct such delivery at good, experienced and well equipped centers where mother and baby both can be taken care of.

C. IVF pregnancy itself is a high risk pregnancy:

There are so many unexplained factors which might have caused infertility may contribute to high risk pregnancy i.e.

- Age
- Obesity
- Diabetes
- Hypertension
- Previous major abdominal/pelvic surgery

It is a difficult to get pregnancy and hence any loss is much more important!

