

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20242848>

## Review Article

# Fundamentals of prenatal care: a comprehensive guide to essential visits, screenings, and key guidelines for a healthy pregnancy

Fiza Amin<sup>1\*</sup>, Tavseef Ahmad Tali<sup>2</sup>, Huda Amin<sup>3</sup>, Rifat Ara<sup>1</sup>

<sup>1</sup>Department of Gynaecology and Obstetrics, Skims Medical College, Bemina, Srinagar, Jammu and Kashmir, India

<sup>2</sup>Department of Radiation Oncology, SKIMS, Soura, Srinagar, Jammu and Kashmir, India

<sup>3</sup>Department of Medicine, GMC Baramulla, Baramulla, Jammu and Kashmir, India

**Received:** 13 August 2024

**Revised:** 14 September 2024

**Accepted:** 16 September 2024

### \*Correspondence:

Dr. Fiza Amin,  
E-mail: [fizamink@gmail.com](mailto:fizamink@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

Prenatal care is essential for a healthy pregnancy and the best outcomes for both the mother and the baby. This page provides a thorough review of the key prenatal checkups, screenings, and guidelines that are required for effective prenatal care. It describes the standard schedule of prenatal visits, including the essential assessments and evaluations performed at each visit. The page also discusses several screenings and diagnostic tests that are widely used to monitor fetal development and mother health, such as blood tests, ultrasounds, and genetic screenings. Furthermore, it discusses standard guidelines and best practices for sustaining a healthy pregnancy, including nutrition, exercise, and lifestyle changes. This review is a great resource for healthcare practitioners and expectant parents, as it synthesizes current guidelines and recommendations.

**Keywords:** Prenatal care, Health, Pregnancy

## INTRODUCTION

Prenatal care is an essential component of maternal and fetal health, aimed at ensuring a healthy pregnancy, preventing difficulties, and preparing for a successful delivery. Numerous research and guidelines highlight the impact of prenatal care in reducing maternal and newborn morbidity and mortality. Effective prenatal care involves regular medical check-ups, timely screenings, and adherence to evidence-based guidelines to monitor and support the health of both the pregnant individual and the developing fetus. This care can begin even before pregnancy with a pre-pregnancy care visit to a health care provider.<sup>1,2</sup>

A pre-pregnancy care visit is an important step that can help women prepare for a healthy pregnancy even before conception. By taking certain proactive measures, women can increase the likelihood of a healthy pregnancy and the birth of a healthy baby. One key step is developing a plan

for their reproductive life, which involves thinking about when they want to have children and how many they plan to have. Increasing daily intake of folic acid, a B vitamin, to at least 400 micrograms is another essential step, as it helps prevent birth defects of the brain and spine. Ensuring immunizations are up to date is equally important to protect both mother and baby from infectious diseases.<sup>3,4</sup>

Women should also focus on managing chronic medical conditions such as diabetes, which can complicate pregnancy if left uncontrolled. Additionally, it is important to avoid harmful habits like smoking, drinking alcohol, and using drugs, all of which can negatively impact a pregnancy. Achieving and maintaining a healthy weight is another critical aspect of pre-pregnancy care, as both underweight and overweight conditions can increase the risk of pregnancy complications. Understanding one's family health history, as well as that of the partner, can provide valuable insights into potential genetic conditions that could affect the baby. Lastly, addressing mental health

concerns, such as depression or anxiety, before pregnancy is important for the well-being of both mother and child. Seeking support for any mental health issues can help ensure a more positive pregnancy experience.<sup>5</sup>

## ESSENTIAL PRENATAL VISITS

### *First trimester*

Prenatal visits are crucial for tracking the progress of pregnancy and managing any emerging issues. The first trimester of pregnancy, spanning weeks 1 to 12, is a critical period marked by the initial prenatal visit. During this visit, healthcare providers conduct a comprehensive medical history, physical examination, and initial laboratory tests to ensure both the mother's and baby's well-being. The medical history review includes assessing past pregnancies, any existing chronic conditions, medications the patient may be taking, and the family history of genetic disorders. The physical examination typically includes checking vital signs, a pelvic examination, and an evaluation of uterine size to confirm the progress of the pregnancy.

Laboratory tests are also performed during this initial visit. These include blood tests to determine the mother's blood type and Rh factor, as well as screenings for potential conditions such as anemia and infections, including HIV, syphilis, and hepatitis B. In many cases, an early ultrasound is conducted to confirm the viability of the pregnancy, estimate the gestational age, and check for the possibility of multiple gestations.<sup>6</sup>

For women who are at higher risk of genetic disorders, genetic counseling may be advised. During genetic counseling, healthcare providers may discuss testing options like non-invasive prenatal testing (NIPT) and chorionic villus sampling (CVS) to assess the health of the fetus and identify any genetic abnormalities early on, in accordance with guidelines such as those from the American college of obstetricians and gynecologists (ACOG, 2021).

### *Second trimester*

The second trimester of pregnancy, covering weeks 13 to 27, involves routine visits typically scheduled every four weeks. These visits are crucial for monitoring both maternal and fetal health. In terms of maternal health, healthcare providers focus on tracking blood pressure, assessing weight gain, and addressing any symptoms the mother may experience, such as back pain or leg swelling, which are common during this stage of pregnancy. For fetal health, healthcare providers assess fetal growth and monitor the baby's heart rate using tools like Doppler ultrasound.<sup>7</sup>

One of the most significant milestones during the second trimester is the anatomy ultrasound, usually conducted around the 20-week mark. This detailed scan allows

healthcare professionals to evaluate the baby's development and check for any structural abnormalities. Additionally, the ultrasound helps assess the location of the placenta and the levels of amniotic fluid, both of which are important for ensuring a healthy pregnancy, as per the guidelines of the American college of radiology (2022).

Screenings during this trimester also include testing for gestational diabetes, typically performed between 24 and 28 weeks. The glucose challenge test is used to identify individuals at risk for developing gestational diabetes, a condition that can impact both maternal and fetal health. Managing this condition early on is critical to avoiding complications, as emphasized by the American diabetes association (2023).

During the second trimester, typically between weeks 15 and 20, pregnant women may undergo the quad screen, a blood test that measures four specific markers: alpha-fetoprotein (AFP), human chorionic gonadotropin (hCG), estriol, and inhibin-A. These markers help assess the risk of certain chromosomal abnormalities, including Down syndrome (trisomy 21) and trisomy 18. The levels of these substances in the mother's blood, combined with other factors like maternal age and gestational age, provide valuable information to healthcare providers about the likelihood of these conditions. While the quad screen does not provide a definitive diagnosis, it helps identify pregnancies that may need further testing, such as amniocentesis or detailed ultrasounds, to confirm any abnormalities.<sup>8</sup>

### *Third trimester*

In the third trimester, spanning weeks 28 to 40, prenatal visits become more frequent, with appointments scheduled every two weeks starting at 28 weeks and weekly from 36 weeks onward. These routine visits are crucial for closely monitoring both maternal and fetal health as the pregnancy progresses. Fetal monitoring during this period includes tracking fetal movements, checking the baby's heart rate, and conducting non-stress tests if necessary to ensure the baby is responding well to movements.

For the mother, healthcare providers screen for potential complications like preeclampsia, a condition marked by high blood pressure and signs of organ damage. Providers also assess for any early signs of labor and discuss birth plans and preparations to ensure the mother feels ready for delivery.<sup>9</sup>

One important screening during the third trimester is the group B streptococcus (GBS) test, usually performed between 35 and 37 weeks. This test helps identify whether the mother is a carrier of GBS bacteria, which can be passed to the baby during labor. If GBS is detected, antibiotics are administered during labor to prevent the transmission of the bacteria to the newborn, reducing the risk of infection, as recommended by the centers for disease control and prevention (2023).

**Table 1: Stages of trimester.**

Stages	Practical actions	Considerations
<b>First trimester</b>	<ul style="list-style-type: none"> <li>-Start taking prenatal vitamins with folic acid.</li> <li>-Schedule your first prenatal visit.</li> <li>-Begin tracking any symptoms or changes in your body.</li> </ul>	<ul style="list-style-type: none"> <li>-Be mindful of common early pregnancy symptoms like nausea and fatigue.</li> <li>-Confirm and document important health history.</li> </ul>
<b>Second trimester</b>	<ul style="list-style-type: none"> <li>-Attend anatomy ultrasound and screenings.</li> <li>-Begin preparing for baby's needs (e.g., start a registry).</li> <li>-Monitor your weight and any swelling.</li> </ul>	<ul style="list-style-type: none"> <li>-Plan for and discuss birthing options and preferences.</li> <li>-Address any new symptoms with your healthcare provider.</li> </ul>
<b>Third trimester</b>	<ul style="list-style-type: none"> <li>-Finalize your birth plan and hospital bag.</li> <li>-Attend childbirth and breastfeeding classes.</li> <li>-Schedule and attend weekly prenatal visits.</li> </ul>	<ul style="list-style-type: none"> <li>-Watch for signs of preterm labor and know when to contact your healthcare provider.</li> <li>-Prepare your home for baby's arrival.</li> </ul>
<b>Throughout pregnancy</b>	<ul style="list-style-type: none"> <li>-Stay hydrated and maintain a balanced diet.</li> <li>-Engage in moderate exercise as advised.</li> <li>-Keep all prenatal appointments and screenings.</li> </ul>	<ul style="list-style-type: none"> <li>-Ensure you have support system in place.</li> <li>-Regularly communicate with your healthcare provider about any concerns/ changes.</li> </ul>

### **Screenings and tests**

Prenatal screenings and tests designed to identify potential health issues early, allowing for timely intervention:

#### **Genetic screening**

Genetic screenings, such as NIPT and CVS, provide information about the risk of genetic disorders. NIPT, a non-invasive method, analyzes fetal DNA from maternal blood to assess the risk of conditions such as Down syndrome and trisomy 18. CVS involves taking a sample of placental tissue to test for genetic abnormalities.

#### **Blood tests**

Certain tests are essential during pregnancy to evaluate maternal health and identify potential risks that could affect both the mother and the baby. A key test is the Complete Blood Count (CBC), which helps assess for anemia and other blood disorders. Anemia, characterized by low red blood cell levels, can cause fatigue and other complications during pregnancy, so identifying and managing it early is crucial for the mother's well-being.<sup>10</sup>

Another critical test is determining the mother's blood type and Rh factor. Knowing the blood type helps manage potential Rh incompatibility, a condition that arises when a mother with Rh-negative blood is carrying a Rh-positive baby. If untreated, this incompatibility can lead to complications such as hemolytic disease in the newborn. Early identification allows for appropriate interventions, such as administering Rh immunoglobulin, to prevent these complications and ensure a healthy pregnancy.

#### **Urinalysis**

Regular urinalysis is used to detect signs of urinary tract infections, proteinuria (which can indicate preeclampsia), and other abnormalities.

### **Fetal monitoring**

Assessing fetal well-being during pregnancy involves several methods to ensure the baby is growing and developing healthily. One common method is the Doppler ultrasound, which measures the fetal heart rate and blood flow through the umbilical cord and other major vessels. This test helps evaluate whether the baby is receiving enough oxygen and nutrients from the placenta, which is crucial for proper growth.

Another important tool is the non-stress test (NST), which monitors the fetal heart rate in response to the baby's movements. By tracking these patterns, healthcare providers can assess the baby's oxygenation levels and overall health. If the heart rate increases appropriately with movement, it's a sign that the baby is well-oxygenated and healthy. Both the Doppler ultrasound and NST are essential in ensuring fetal well-being, especially in the later stages of pregnancy.<sup>11</sup>

#### **Additional diagnostic tests**

In certain cases where there are concerns about fetal development or maternal health, additional diagnostic tests may be recommended to gain more insight into potential issues. One such test is amniocentesis, which involves taking a sample of the amniotic fluid surrounding the baby. This test is typically performed between 15 and 20 weeks of gestation and is used to detect genetic conditions such as Down syndrome, trisomy 18, and other chromosomal abnormalities. Amniocentesis can also assess the baby's lung maturity later in pregnancy and check for infections or other concerns.

Another important test is CVS, which is usually done earlier in pregnancy, between 10 and 13 weeks. CVS involves taking a small sample of placental tissue to test for genetic abnormalities. Like amniocentesis, CVS helps identify chromosomal disorders, but it can be performed earlier, allowing parents to obtain crucial information

about the baby's health sooner in the pregnancy. Both tests are typically recommended for women with higher risks of genetic conditions or abnormal screening results.<sup>12</sup>

## **COMMON GUIDELINES FOR MAINTAINING A HEALTHY PREGNANCY**

In addition to regular prenatal visits and screenings, several guidelines and practices can help ensure a healthy pregnancy:

### ***Nutrition***

A well-balanced diet rich in essential nutrients is crucial for supporting both maternal and fetal health throughout pregnancy. One of the most important nutrients is folic acid, which plays a key role in preventing neural tube defects in the developing baby. The recommended daily intake of folic acid for pregnant women is between 400 and 800 micrograms, which can be obtained through supplements and foods like leafy greens, fortified cereals, and citrus fruits.<sup>13</sup>

Iron is another critical nutrient, as it helps prevent anemia by supporting the production of additional red blood cells needed during pregnancy. Iron-rich foods include lean meats, beans, spinach, and fortified cereals, all of which contribute to maintaining adequate iron levels in the mother's body.

Calcium is essential for the development of the baby's bones and teeth. Pregnant women are encouraged to consume calcium-rich foods such as dairy products like milk, cheese, and yogurt, as well as leafy greens like kale and broccoli. Ensuring proper intake of these nutrients supports a healthy pregnancy and promotes optimal development for the baby, as highlighted by the national institutes of health.

### ***Exercise***

Regular physical activity helps manage weight gain, improve mood, and reduce the risk of gestational diabetes and preeclampsia. Safe exercises during pregnancy include walking, swimming, and prenatal yoga.<sup>14</sup>

### ***Avoiding harmful substances***

Pregnant individuals should avoid substances that could potentially harm the developing fetus to ensure a healthy pregnancy and baby. Alcohol consumption is particularly concerning, as no safe level has been established during pregnancy.

Abstinence from alcohol is strongly recommended to prevent potential developmental and health issues in the baby, as highlighted by the centers for disease control and prevention.

Tobacco use is another major risk factor during pregnancy. Smoking is associated with a range of negative outcomes, including preterm birth, low birth weight, and respiratory problems for the newborn. The American lung association emphasizes the importance of avoiding tobacco to mitigate these risks and promote a healthier pregnancy and birth outcome.

### ***Mental health***

Addressing mental health is a vital aspect of overall well-being during pregnancy. Effective management of mental health concerns, such as anxiety, depression, or stress, can significantly impact both the mother's and baby's health. One supportive option is counseling, where professional therapy can provide strategies and support for managing these conditions. Therapy helps individuals work through their emotions, develop coping mechanisms, and improve their mental health.

Support groups also offer valuable assistance by connecting pregnant individuals with others who are experiencing similar challenges. These groups provide a space for sharing experiences, offering mutual encouragement, and gaining emotional support. Engaging in both counseling and support groups can help ensure a more balanced and positive pregnancy experience.<sup>15</sup>

### ***Education and preparation***

Prenatal education plays a crucial role in preparing individuals for labor, delivery, and postpartum care, helping to ensure a smoother transition into parenthood. Childbirth classes are an essential component, providing comprehensive information about the labor process, pain management strategies, and various delivery options. These classes equip expectant parents with the knowledge and skills needed to navigate the birthing process confidently and make informed decisions about their care.

Breastfeeding classes are another important aspect of prenatal education, offering guidance on effective breastfeeding techniques and addressing common challenges that new mothers may face. These classes help prepare individuals for the practical aspects of breastfeeding, ensuring they are well-informed and supported as they begin this important aspect of infant care. Both types of classes contribute to a more positive and well-prepared experience for labor, delivery, and the early postpartum period.<sup>16</sup>

## **DISCUSSION**

Prenatal care is a multidimensional strategy that focuses on the health and safety of both the mother and the fetus throughout the pregnancy. The organized schedule of prenatal visits enables regular monitoring and timely interventions, which are critical for managing potential problems and encouraging healthy outcomes.<sup>17</sup> Recent advances in prenatal screening technologies,



including as NIPT, have considerably increased the capacity to detect chromosomal abnormalities earlier, lowering the need for invasive treatments and enabling for more informed decision-making.<sup>18</sup> Furthermore, the integration of electronic health records and telemedicine has improved accessibility and efficiency of prenatal treatment, enabling better patient information management and remote consultations.<sup>19</sup> Despite these advances, discrepancies in prenatal care access and quality remain a concern. Socioeconomic considerations, regional location, and structural disparities can all have impact on quality of prenatal treatment. To address these inequities, dedicated measures must be made to improve healthcare access, raise awareness, and support underrepresented people.<sup>20</sup>

## CONCLUSION

To summarize, a complete approach to prenatal care includes regular monitoring, timely testing, and adherence to recommendations to guarantee the best possible outcomes. Continued research, technological improvements, and initiatives to decrease healthcare inequities are critical to improving prenatal care and supporting health and well-being of all pregnant people.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

## REFERENCES

- World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: WHO; 2016. Available at: <https://www.who.int/publications/i/item/9789241549912>. Accessed on 15 July 2024.
- American College of Obstetricians and Gynecologists' Committee on Practice Bulletins-Obstetrics. Neural Tube Defects: ACOG practice bulletin, no. 187. *Obstet Gynecol.* 2017;130(6):12.
- Centers for Disease Control and Prevention. Prepregnancy health care and pregnancy planning. National Center on Birth Defects and Developmental Disabilities. Available at: <https://www.cdc.gov/ncbddd/pregnancygateway/preconception.html>. Accessed on 15 July 2024.
- JAMA Health Forum. Association of prenatal care services, maternal morbidity, and perinatal mortality with the advanced maternal age cutoff of 35 years. *JAMA Network.* 2022.
- Driscoll AK, Gregory ECW. Prepregnancy body mass index and infant outcomes by race and Hispanic origin: United States, 2020. *Natl Vital Stat Rep.* 2021;70(16):1-8.
- Sharma S, Jones M, Patel K, Ahmed M, Brown L, Garcia A. Ultrasound in Early Pregnancy. *J Obstet Gynaecol.* 2017;37(2):234-40.
- Society for Maternal-Fetal Medicine (SMFM). Gestational Diabetes: Screening and Diagnosis. *Am J Obstet Gynecol.* 2021;224(4):10.
- American College of Obstetricians and Gynecologists. Screening for Fetal Chromosomal Abnormalities: ACOG Practice Bulletin, No. 226. *Obstet Gynecol.* 2020;136(4):10.
- Duley L. Pre-eclampsia, eclampsia, and hypertension. *BMJ Clin Evid.* 2011;2011:1402.
- Benson CS, Shah A, Frise MC, Frise CJ. Iron deficiency anaemia in pregnancy: A contemporary review. *Obstet Med.* 2021;14(2):67-76.
- Lohana RU, Khatri M, Hariharan C. Correlation of non stress test with fetal outcome in term pregnancy (37-42 Weeks). *Int J Reprod Contracept Obstet Gynecol.* 2013;2:639-45.
- Alfirevic Z, Navaratnam K, Mujezinovic F. Amniocentesis and chorionic villus sampling for prenatal diagnosis. *Cochrane Database Syst Rev.* 2017;9(9):CD003252.
- Greenberg JA, Bell SJ, Guan Y, Yu YH. Folic Acid supplementation and pregnancy: more than just neural tube defect prevention. *Rev Obstet Gynecol.* 2011;4(2):52-9.
- Dipietro L, Evenson KR, Bloodgood B, Sprow K, Troiano RP, Piercy KL, et al. Benefits of Physical Activity during Pregnancy and Postpartum: An Umbrella Review. *Med Sci Sports Exerc.* 2019;51(6):1292-302.
- Al-Mutawtah M, Campbell E, Kubis HP, Erjavec M. Women's experiences of social support during pregnancy: a qualitative systematic review. *BMC Pregnancy Childbirth.* 2023;23(1):782.
- Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. *Cochrane Database Syst Rev.* 2016;12(12):CD006425.
- Peahl AF, Novara A, Heisler M, Dalton VK, Moniz MH, Smith RD. Patient Preferences for Prenatal and Postpartum Care Delivery: A Survey of Postpartum Women. *Obstet Gynecol.* 2020;135(5):1038-46.
- Jayashankar SS, Nasaruddin ML, Hassan MF, Dasrilsyah RA, Shafiee MN, Ismail NAS, et al. Non-Invasive Prenatal Testing (NIPT): Reliability, Challenges, and Future Directions. *Diagnostics (Basel).* 2023;13(15):2570.
- Fernandes BA, Alves B, Matosinhos AC. The use and role of telemedicine in maternal fetal medicine around the world: an up-to-date. *Health Technol.* 2023;13:365-72.
- Ladak Z, Grewal N, Kim MO, Small S, Leber A, Hemani M, et al. Equity in prenatal healthcare services globally: an umbrella review. *BMC Pregnancy Childbirth.* 2024;24(1):191.

**Cite this article as:** Amin F, Tali TA, Amin H, Aral R. Fundamentals of prenatal care: a comprehensive guide to essential visits, screenings, and key guidelines for a healthy pregnancy. *Int J Reprod Contracept Obstet Gynecol* 2024;13:2987-91.