Guidelines For Testing During Pregnancy

WHEC Practice Bulletin and Clinical Management Guidelines for healthcare providers. Educational grant provided by Women's Health and Education Center (WHEC).

Prenatal care is health care for the safe pregnancy and childbirth and healthy outcomes for both mother and child. It includes medical care, screening tests, answers to patients' questions and concerns. It also helps to find social support and community resources, when needed. Getting early and regular prenatal care may increase person's chances of having a healthy baby and regular prenatal care. If patient has a pre-existing medical condition or if a medical condition develops during pregnancy, it can be detected early and managed appropriately. Some healthcare providers may offer telehealth visits when in-person services, (like physical exams or laboratory tests) are not needed. For average-risk pregnancies, patients may need only periodic in-person visits as long as no complications develop. For pregnancies at higher than average risk, patients may need to have prenatal care more often. Use of the term "tailored prenatal care" means a plan, which is geared specifically towards individual patient; some obstetricians and gynecologists also recommend group prenatal care, which offers the chance to learn more about pregnancy in a group of other pregnant women. This gives patients an opportunity to talk about health and information needed, with their healthcare providers and best approach for your care.

The purpose of this document is to promote equitable care by focusing on upstream drivers that often contribute to the disproportionate maternal morbidity and mortality rates seen among marginalized populations. Women's Health and Education Center (WHEC) recommends that healthcare providers also screen for social drivers of health, including race, ethnicity, gender-identity, education, and employment. This helps to address them through two key approaches: ***assistance***, which entails providing resources; and ***adjustment***, which entails modifying care delivery to be more accessible. Assistance can take many forms, such as referrals, partnerships with community organizations, and resource lists. Adjustment can include use of streamlined visit schedules, telemedicine, and group-care to reduce through shared decision-making can improve patients' care experience and trust in the health care system, particularly for the patients who are below the poverty-line, migrants and marginalized groups.

Examples (Not Requirement) of Appropriate Patient-care by Level*

Level	Example (Not Requirement)
Accredited birth centers	Women with an uncomplicated term singleton vertex fetus who are expected to have an uncomplicated birth.
Level I	Low-risk women with uncomplicated pregnancies and women with higher-risk conditions such as the following: • Uncomplicated twin gestation. • Labor after cesarean. • Uncomplicated cesarean delivery. • Preeclampsia† • Well-controlled diabetes.

Level II	Any patient appropriate with level I care, plus higher-risk conditions such as the following: • Placenta previa with no previous uterine surgery. • Maternal medical conditions that require additional monitoring such as pre-gestation diabetes, poorly controlled asthma, or poorly controlled or complicated chronic hypertension. • Anticipated complicated cesarean delivery.
Level III	Any patient appropriate for level I care, plus higher-risk conditions as following: • Moderate maternal cardiac disease. • Suspected placenta accreta or placenta previa and previous uterine surgery. • Suspected placenta percreta. • Adult respiratory distress syndrome or other conditions that require ventilatory support antepartum or postpartum. • Acute fatty liver of pregnancy. • Coagulation disorders. • Complex hematologic or autoimmune disorders. • Expectant management of preeclampsia with severe features remote from term.
Level IV	Any patient appropriate for level III care, plus higher-risk conditions or complications such as the following: • Severe maternal cardiac conditions. • Severe pulmonary hypertension. • Pregnant woman who require neurosurgery or cardiac surgery. • Pregnant women in unstable condition and in need of an organ transplant.

Table 1. *This list provides a series of examples and it is **not** intended to serve as a comprehensive or definitive list of conditions appropriate to manage at each level. Some conditions present across a range of severity and depending on the severity, geography, and availability of resources. It may be appropriate to care for some patients at a level different from what is listed above. Facilities with input from their obstetric care providers, should individualize the types of conditions or complications that they are capable of caring for based on the actual resources available for their level of care, as well as other considerations such as location, availability of transport, access to readily available resources in the local or regional area, and coordination with other centers.
†Preeclampsia with severe features may warrant transfer to a higher-level facility. Delivery or expectant management of a woman with preeclampsia with severe features is best accomplished in a setting with resources appropriate for maternal and neonatal care.

Prenatal Recommendations - Designing Patient's Prenatal Care Plan Step by Step

Prenatal care is one of the most widely used preventive care services in the United States (US), yet prenatal care delivery recommendations have remained largely unchanged since 1930. COVID-19 forced rapid changes in prenatal care delivery, highlighting the need the need to revisit prenatal care recommendations. These include patients' medical, social, and structural determinants of health and preferences to create comprehensive tailored prenatal care plans for their patients with more flexibility around – visit frequency & monitoring, telemedicine and support services. Screen for medical, social, and structural determinants at the start of pregnancy to guide care planning and connection to resources.

Medical Determinants of Health

Menstrual history; Pregnancy history; Medical history; Patient and Patient and Partner Genetic Risk; Teratogen exposure; Infection history; Immunizations and Medications.

Social and Structural Determinants of Health

Material Needs: Financial and tangible.
Psychological Needs: Mental health, cognitive ability, esteem/agency.
Social Needs: Relationships, community, sense of belonging or discrimination.
Demographic Characteristics: Age, education, race, ethnicity, immigration status, and place of residence.

Monitoring in Pregnancy

Monitoring in pregnancy can be completed remotely. Patients must have access to reliable, high-quality devices for home use.

For telemedicine or office visit – during the First, Second and Third Trimesters; monitor

1. Blood Pressure; 2. Weight; 3. Fetal Heart Tone and 4. Fundal Height.

Recommended at least four, **in-person.** visits during pregnancy, these cannot be delivered remotely. These are:

First Visit: History and Physical exam; First trimester labs; Genetic testing; and Influenza and other vaccines (if needed and/or required).
28th Week Visit: Third-trimester labs (CBC, diabetic screen); Tdap vaccine (If needed and/or required); Rho (D) immunoglobulin (as needed in Rh negative patients).
36th Week Visit: Group B streptococcus test; Assessment of fetal presentation.
39th Week visit: Delivery Planning.

Options for Prenatal Care Plans

Based in patient's medical, social and structural determinants of health and preferences – patients without medical conditions or pregnancy complications can select a less intense visit schedule, such as:

1. First Visit at 6 weeks (in-person); 16 weeks and 22 weeks (can be telemedicine or office); 28 weeks (in-person); 32 weeks (telemedicine or office); 36 weeks (in-person); 38 weeks (telemedicine or office); 39 weeks (in-person).

Patients with medical conditions or pregnancy complications should have a more intense in-person visit schedule. Such as:

1. In-Person visits: 6 weeks; 28 weeks; 36 weeks and 39 weeks.
2. Telemedicine or Office visits: 16 weeks, 22 weeks, 30 weeks, 32 weeks, 34 weeks, 37 weeks, 38 weeks, 40 weeks.

Routine Pregnancy Tests

Several routine laboratory tests are done early in pregnancy, including

- CBC (complete blood count),
- Blood type and Rh factor,
- Urinalysis and urine culture.

Also pregnant women typically are tested for specific diseases and infections early in pregnancy, including:

- Rubella,
- Hepatitis B and hepatitis C,
- Human immunodeficiency virus (HIV),
- Other Sexually transmitted infections (STIs),
- Tuberculosis (TB).

Tests done later in pregnancy

- **Glucose screening test** – a high blood sugar level may be a sign of gestational diabetes, which can cause problems during pregnancy. This test is usually done between 24 to 28 weeks of pregnancy. This test can also be done in first trimester of pregnancy if patient has risk facts for diabetes or had gestational diabetes in a past pregnancy. http://www.womenshealthsection.com/content/obsidp/obsidp006.php3

- **Screen test for group B strep (GBS)** – it is one of many bacteria that live in body. It usually does not cause serious illness in adults, and it is not an STI. The test for GBS is called a culture. It is done between 36 and 38 weeks of pregnancy. For this test, a swab is used to take a sample from vagina and rectum. If the results show that GBS is present, antibiotics should be given through an intravenous (IV) line once labor has started. This is done to help protect the fetus from being infected. http://www.womenshealthsection.com/content/obsidp/obsidp006.php3

Genetic Testing for Birth Defects

Screening of birth defects begins by assessing the risk factors. If there is risk factor, genetic counselling may be requested. Most babies with birth defects are born to couples without risk factors. But the risk of birth defects is higher when certain factors are present. Risk include:

- Having a personal or family history of birth defects,
- Belong to certain groups, such as Ashkenazi Jews,
- Being 35 years or older,
- Having diabetes before pregnancy.

Screening and Diagnostic Tests for Birth Defects: When done during pregnancy, screening tests can tell the changes that the fetus may be at risk for certain common birth defects. A screening test cannot tell whether the fetus actually has a birth defect. There is no risk to the fetus from screening tests. Diagnostic tests: It can detect many, but not all, defects caused by defects in a gene or chromosomes. Patients and providers can choose to have diagnostic tests instead of or

in addition to screening tests. Some diagnostic tests carry risks, including a small risk of pregnancy loss.

Prenatal Genetic Testing Chart

<table>
<tr><th>Screening Tests</th><th>Diagnostic Tests</th></tr>
<tr><td>First Trimester screening
Timing 10 to 13 weeks,
Blood test plus NT ultrasound,
Screens for Down syndrome and trisomy 18</td><td rowspan="4">Chorionic Villus Sampling (CVS)
Timing 10 to 13 weeks,
Tests fetal cells in a sample of chorionic villi;
Detects Down syndrome, trisomy 13, trisomy 18, and inherited disorders for which you request testing but not NTDs.</td></tr>
<tr><td>Second Trimester Screening (quad screen)
Timing 15 – 22 weeks,
Blood test
Screens for Down syndrome, trisomy 18, and NTDs</td></tr>
<tr><td>Standard Ultrasound Exam
Timing 18 to 22 weeks
Screens for some physical defects</td></tr>
<tr><td>Integrated screening and sequential screening
Timing 10 – 22 weeks,
Combines 1st trimester and 2nd trimester screening test results in various ways.
Screens for Down syndrome, trisomy 13, trisomy 18, and NTDs.</td></tr>
<tr><td>Cell-free DNA Screening
Timing 10 weeks and beyond,
Blood test,
Screens for Down syndrome, trisomies 13, 18, and sex chromosome abnormalities.</td><td rowspan="2">Amniocentesis
Timing 15 weeks and greater,
Tests fetal cells in a sample of amniotic fluid.
Detects Down syndrome, trisomy 13, trisomy 18, inherited disorders for which you request testing and certain types of NTDs.</td></tr>
<tr><td>Carrier Testing
Timing can be done at any time but is ideally performed before pregnancy.
Tests use blood or tissue samples (tissue from inside the cheek),
Detects whether you, your partner, or both carry a mutation in a gene for a certain genetic disorder.</td></tr>
</table>

Table 2. Abbreviations – NT: nuchal translucency; NTD: neural tube defect.
Screening Tests: can tell you the chances that the fetus will have certain genetic disorders.
Diagnostic Tests: can tell you whether the fetus (baby) actually has certain genetic disorders**. Note:** check your local and state laws regarding the timing and availability of prenatal genetic testing.

Why do we conduct genetic testing in the first place?

Some questions below are to guide you towards the answers that might be right for your patients.

- Patients who have a family history of genetic conditions, or they may be older than 35 years – would seem to be good candidates for genetic testing during pregnancy. In fact, *every pregnant* woman is a candidate for genetic testing. But that does not mean every woman wants to be tested.
- Genetic counselors are a wonderful who can guide you through this thought process, and help you make a decision, which might be helpful to the patients and families to deal with the babies with genetic defects.
- The patients and families, wish to know if their baby will have a genetic defect like Down syndrome. This advance notice gives parents-to-be time to line up extra medical resources, determine where best to deliver, and connect with other families who have a child with that disorder. Other women may consider having an abortion if they receive a positive test result from genetic testing.

Patients can choose to get all the available prenatal genetic tests; or can decide against testing entirely; or might decide somewhere in between. There is no right or wrong answer. The best decision is the one that is right for the patient – a personal decision.

Non-Invasive Prenatal Genetic Testing for Fetal Abnormalities (cell-free DNA testing)
http://www.womenshealthsection.com/content/obs/obs034.php3

Genetic Counseling and Genetic Screening
http://www.womenshealthsection.com/content/obs/obs026.php3

Risk of Trisomy 21 or Any Chromosomal Abnormalities at Delivery

Maternal Age at Term	Trisomy 21	Any Chromosomal Abnormality†
20 years	1/1480	1/525
25 years	1/1350	1/475
30 years	1/940	1/384
35 years	1/353	1/178
40 years	1/85	1/62
45 years	1/30	1/18

Table 3. †Abnormalities include trisomy 18 and trisomy 13, sex-chromosome abnormalities except 47XXX, and other clinically significant chromosomal abnormalities.

Carrier Screening for Cystic Fibrosis (CF): A blood or saliva test determines if the patient and her partner are carriers for this genetic disease that affects breathing and digestion. Both parents must be a carrier for their child to get CF.

Additional Testing during Pregnancy

Glucose tolerance test: If the 1-hour glucose challenge screening is above a certain level, additional test may be ordered. After 8 hours before the test, the patient must fast, blood is drawn for fasting blood sugar level. Then patient will consume a sugary drink, and blood will be taken every hour for 3 hours to see how the body reacts to sugar. If abnormal – gestational diabetes is diagnosed.

Non-stress Test: This test is performed in the third trimester (28 weeks or later) to monitor the fetus's health. A belt placed around the belly measures the fetal heart rate while the fetus is at rest and while the fetus is moving or kicking. This test can determine if the getting enough oxygen.

Biophysical Profile (BPP): This test given in the third trimester of pregnancy, monitors the fetus's breathing, movement, muscle tone, and heart rate as well as the amount of amniotic fluid to determine fetal wellbeing. The BPP includes an ultrasound test and non-stress test.

Contraction Stress Test (CST): The contraction stress test helps to see how the fetal heart rate reacts when the uterus contracts. The contraction stress test sometimes is used if other test results are positive or negative.

Guidelines for Diagnostic Imaging during Pregnancy

Imaging studies are important adjuncts in diagnostic evaluation of acute and chronic conditions. However, confusion about the safety of these modalities for pregnant and lactating women and their infants often results in unnecessary avoidance of useful diagnostic tests or the unnecessary interruption of breastfeeding. Ultrasonography and magnetic resonance imaging (MRI) are not associated with risk and are the imaging techniques of choice for the pregnant patient, but they should be used prudently and only when used in expected to answer a relevant clinical question or otherwise provide medical benefit to the patient. With few exceptions, radiation exposure through radiography, computed tomography (CT) scan, or nuclear medicine imaging techniques is at a dose much lower than the exposure associated with fetal harm. If these techniques are necessary in addition to ultrasonography or MRI or are more readily available for the diagnosis in question, they should not be withheld from pregnant patient. Breastfeeding should not be interrupted after gadolinium administration.

Effects of Gestational Age and Radiation Dose of Radiation-Induced Teratogenesis

Gestational Period	**Effects**	**Estimated Threshold Dose***
Before implantation (0 – 2 weeks after fertilization)	Death of embryo or no consequence (all or none)	50 – 100 mGy
Organogenesis (2 – 8 weeks after fertilization)	Congenital anomalies (skeleton, eyes, genitals) Growth restriction	200 mGy
Fetal Period	**Effects**	**Estimated Threshold Dose***
8 -15 weeks	Severe intellectual disability (high risk)† Intellectual deficit; Microcephaly	60 – 310 mGy 25 IQ-point loss / 1,000 mGy 200 mGy
16 – 25 weeks	Severe intellectual disability (low risk)	250 – 280 mGy

Table 4. *Data based on results of animal studies, epidemiologic studies of survivors of the atomic bombings in Japan, and studies of groups exposed to radiation for medical reasons (e.g. radiation therapy for carcinoma of the uterus); †Because this is a period of rapid neuronal development and migration.

Ultrasonography

Ultrasound imaging should be performed efficiently and only when clinically indicated to minimize fetal exposure risk using the keeping acoustic output level As Low As Reasonably Achievable (commonly known as ALARA) principle. Ultrasonography involves the use of sound waves and is not a form of ionizing radiation. **There have been no reports of documented adverse fetal effects for diagnostic ultrasonography procedures, including duplex Doppler imaging.** The U.S. Food and Drug Administration (FDA) limits the spatial-peak temporal average intensity of ultrasound transducers to 720 mW/cm2. At this intensity, the theoretical increase in temperature elevation for the fetus may be as high as 2ºC (35.6ºF). however, it is highly unlikely that any sustained temperature elevation will occur at any single fetal anatomic site. The risk of temperature elevation is lowest with B-mode imaging and is higher with color Doppler and spectral Doppler applications. When used in this manner and with machines that are configured correctly, ultrasonography does not pose a risk to the fetus or the pregnancy.

Magnetic Resonance Imaging (MRI)

The principal advantage of MRI over ultrasonography and computed tomography (CT) is the ability to image deep soft tissue structures in a manner that is not operator dependent and does not use ionizing radiation. There are no precautions or contraindications specific to the pregnant woman. MRI is similar to ultrasonography in the diagnosis of appendicitis, but when MRI is readily ava, it is preferred because of its lower rates of non-visualization. Although there are theoretical concerns for the fetus, including teratogenesis, tissue heating, and acoustic damage, there exists no evidence of actual harm. With regard to teratogenesis, there are no published human studies documenting harm, and preponderance of animal studies do not demonstrate risk. **In considering available data and risk of teratogenicity, the American College of Radiology concludes that no special consideration is recommended for the first (versus any other) trimester in pregnancy.**

Unlike CT, MRI adequately images most soft tissue structures without the use of contrast. However, there are diagnostic situations in which contrast enhancement is of benefit. Two types of MRI contrast area available: 1) gadolinium-based agents, and 2) superparamagnetic iron oxide particles. Gadolinium-based agents are useful in imaging of the nervous system because they cross the blood-brain barrier when this barrier has been disrupted, such as in the presence of tumor, abscess, or demyelination. Although gadolinium-based contrast can help define tissue margins and invasion in the setting of placental implantation abnormalities, non-contrast MRI still can provide useful diagnostic information regarding placental implantation and is sufficient in most cases. Gadolinium use should be limited to situations in which the benefits clearly outweigh the possible risks.

If contrast is to be used, gadolinium is recommended. The water solubility of gadolinium-based agents limits their excretion into breast milk. Less than 0.04% of an intravascular dose of gadolinium contrast is excreted into the breast milk withing the first 24 hours. Of this amount, the infant will absorb less than 1% from his or her gastrointestinal tract. Therefore, breastfeeding should not be interrupted after gadolinium administration.

Ionizing Radiation including X-Rays

Commonly used for the evaluation of significant medical problems or trauma, X-ray procedures are indicated during pregnancy or may occur inadvertently before the diagnosis of pregnancy. In addition, it is estimated that a fetus will be exposed to 1 mGy of background radiation during pregnancy. The risk to a fetus from ionizing radiation is dependent on the gestational age at the time of exposure and dose of radiation. If extremely high-dose exposure (in excess of 1 Gy) occurs during early embryogenesis, it most likely will be lethal to the embryo. However, these dose levels are not used in diagnostic imaging. In humans, growth restriction, microcephaly, and intellectual disability are the most common side effects from high-dose radiation exposure. A 10 – 20 mGy fetal exposure may increase the risk of leukemia by a factor of 1.5-2.0 over a background rate of approximately 1in 3,000. Thus, pregnancy termination should not be recommended solely on the basis of exposure to diagnostic radiation. There is no risk to lactation from external sources of ionizing radiation (diagnostic X-rays).

Computed Tomography (CT)

Use of CT and associated contrast material should not be withheld if clinically indicated, but a thorough discussion of risks and benefits should take place. In evaluation of acute processes such as appendicitis or small-bowel obstructions, the maternal benefit from early and accurate diagnosis may out-weigh the theoretical fetal risks. Oral contrast agents are not absorbed by the patient and do not cause real or theoretical harm. The use of intravenous contrast media aids in CT diagnosis by providing for enhancement of soft tissues and vascular structures. The contrast most commonly used for CT is iodinated media, which carries a low risk of adverse effects (e.g. nausea, vomiting, flushing, pain at injection site) and anaphylactic reactions. Despite the lack of known harm, it is generally recommended that contrast only be used if absolutely required to obtain additional information that will affect the care of the fetus or woman during pregnancy. Lactating women who receive intravascular iodinated contrast have been advised to discontinue breastfeeding for 24 hours.

Nuclear Medicine Imaging

Nuclear studies such as pulmonary ventilation-perfusion, thyroid, bone, and renal scans are performed by “tagging” a chemical agent with a radioisotope. This type of imaging is used to determine physiologic organ function of dysfunction rather than to delineate anatomy. Hybrid systems, which combine the function of nuclear imaging devices with CT, improve the quality of information acquired and can help to correct artifacts produced by nuclear medicine imaging alone. In pregnancy, fetal exposure during nuclear medicine studies depends on the physical and biochemical properties of the radioisotope. Technetium 99m is one the most commonly used isotopes and is used for brain, bone, renal, and cardiovascular scans. Its most common use in pregnancy is in ventilation-perfusion lung scanning for detection of pulmonary embolism. In general, these procedures result in an embryonic or fetal exposure of less than 5 mGy, which is considered a safe dose in pregnancy. The half-life of this radioisotope is 6 hours, and it is a pure gamma ray emitter, which minimizes the dose of radiation without compromising the image. All these factors support the safety of technetium 99m at 5 mGy when indicated in pregnancy.

Not all radioisotopes can be used safely during pregnancy. Radioactive iodine (iodine 131) readily crosses placenta, has a half-life of 8 days, and can adversely affect the fetal thyroid, especially if used after 10 – 12 weeks of gestation. Whether for diagnostic or therapeutic treatment purposes, iodine 131 should **not** be used during pregnancy. If a diagnostic scan of the thyroid is essential, technetium 99m is the isotope of choice. Radionuclide compounds are excreted into breast milk in varying concentrations and for varying periods of time. In addition, rates of excretion of the same compound can vary between patients. Some specific nuclear materials excreted into breast milk can have deleterious effects, consultation with experts on breastfeeding and nuclear medicine are recommended.

Should Patients be Tested for Syphilis?

Syphilis in pregnancy is growing problem across the world. It is a serious infection that is usually spread by sexual contact. During pregnancy, syphilis can pass to a fetus and causes premature birth, miscarriage, and stillbirth. It can also cause lifelong health issues for a baby or death of a baby soon after birth. It is important to get tested while patient is pregnant. Women's Health and Education Center (WHEC) recommends these three testing times:

- At the first prenatal care visit;
- In the Third Trimester;
- At the time of delivery.

Substance Abuse during Pregnancy

Routine screening should rely on validated screening tools, such as questionnaires, including 4Ps, NIDA Quick Screen, and CRAFFT (for women 26 years or younger). Given the unique needs of pregnant women with the substance abuse, healthcare providers will need to consider modifying some elements of prenatal care – such as expanded sexually transmitted infection testing, additional ultrasound examinations to assess fetal weight and or fetal anomalies.

Opioid: its use in pregnancy has escalated dramatically in recent years, paralleling the epidemic observed in the general population. To combat the opioid epidemic, all health care providers need to take an active role. Pregnancy provides an important opportunity to identify and treat women with substance abuse disorders. Substance use disorders affect women across all racial and ethnic groups and all socioeconomic groups, and affect women in rural, urban, and suburban populations. Therefore, it is essential that screening be universal. Screening for substance use should be part of comprehensive obstetric care and should be done at the first prenatal visit in partnership with the pregnant woman. Infants born to women who used opioids during pregnancy should be monitored for neonatal abstinence syndrome by a pediatric care provider. Early universal screening, brief intervention (such as engaging a patient in a short conversation, providing feedback and advice), and referral for treatment of pregnant women with opioid use and opioid use disorder improve maternal and infant outcomes. In general, a coordinated multidisciplinary approach without criminal sanctions has the best chance of helping infants and families.
http://www.womenshealthsection.com/content/gynmh/gynmh013.php3

Marijuana: Its use is linked to health concerns. The guidance from the ACOG, CDC, and WHO advise to stop using marijuana during pregnancy.
http://www.womenshealthsection.com/content/obs/obs035.php3

Tobacco: Smoking during pregnancy increases the risk of health problems for developing babies. These include preterm birth, low birth weight, and birth defects on the mouth and lips. Smoking during and after pregnancy also increases the risk of sudden infant death syndrome (SIDS). Additionally, e-cigarettes and other tobacco products containing nicotine are not safe during pregnancy. Quitting all forms of tobacco products is best for the patients and their babies.

Alcohol: There is no known safe amount of alcohol use during pregnancy or while trying to get pregnant. There is also no safe time during to drink. All types of alcohol are equally harmful, including all wines and beer. If a woman is drinking alcohol during pregnancy, it is never too late to stop. Fetal alcohol spectrum disorders (FASDs) are a group of conditions that can occur in a person exposed to alcohol before birth. FASDs are preventable if a baby is not exposed to alcohol before birth.
http://www.womenshealthsection.com/content/gynmh/gynmh011.php3

Summary

Tailored prenatal care delivery for pregnant individuals shows that healthcare professionals can individualized care delivery for average or low-risk patients, so that they have fewer in-person visits and use other care modalities. The goal of this new guidance is to promote equitable care by focusing on upstream drivers that often contribute to the disproportionate maternal morbidity and mortality rates seen among marginalized populations. Women's Health and Education Center (WHEC) recommends that healthcare providers screen for social drivers of health, including race, ethnicity, gender identity, education, and employment, and help address them.

Tailored care does not mean less care. This approach can significantly reduce travel time, reduce racial health inequalities and disparities in care that exist for patients living in rural areas or lack of maternity care specialists. Additionally, while telemedicine has been shown to improve access to care and reduce travel burden and the need for childcare or time off from work, some institutions may not have the infrastructure to accommodate telemedicine appointments. Future research will be needed to assess the impact of this new approach in real-world settings to fully understand the effect on care delivery and pregnancy outcomes and ensure that there are no unintended consequences for marginalized people.

Suggested Reading & Resources

1. Women's Health and Education Center (WHEC)
   Normal Values in Pregnancy
   http://www.womenshealthsection.com/content/obs/obs025.php3
   Neural Tube Defect Screening
   http://www.womenshealthsection.com/content/obs/obs022.php3
   Immunization during Pregnancy
   http://www.womenshealthsection.com/content/obs/obs016.php3

Prevention of GBS in newborns
http://www.womenshealthsection.com/content/obs/obs037.php3

2. World Health Organization (WHO)
   Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice (3rd edition)
   https://www.who.int/publications/i/item/9789241549356

3. National Institute of Health (NIH)
   Pregnancy
   https://www.nichd.nih.gov/health/topics/pregnancy

4. American College of Obstetricians and Gynecologists (ACOG)
   Changes During Pregnancy
   https://www.acog.org/womens-health/infographics/changes-during-pregnancy

5. Centers for Disease Control and Prevention (CDC)
   Substance Abuse during Pregnancy
   https://www.cdc.gov/maternal-infant-health/pregnancy-substance-abuse/index.html
   E-Cigarettes and Pregnancy
   https://www.cdc.gov/maternal-infant-health/pregnancy-substance-abuse/e-cigarettes.html