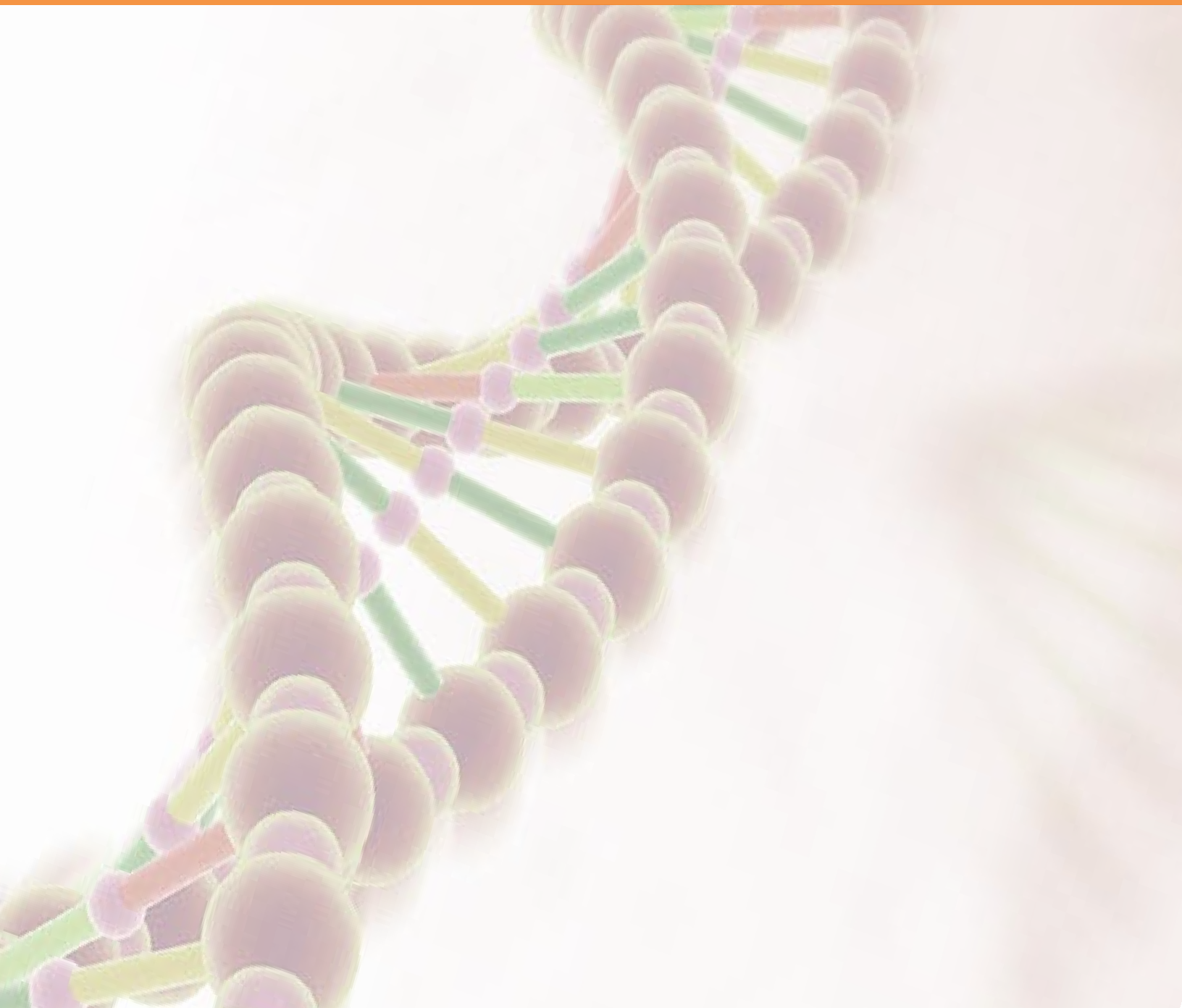
FOGSI

Good Clinical Practice Recommendations on PRECONCEPTION CARE



FOGSI
Good Clinical Practice Recommendations on Preconception Care-India

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1. Introduction

Preconception is a vital time to assess and identify various risks that could lead to adverse maternal and fetal outcomes (1). World Health Organization (WHO) defines it as the provision of biomedical, behavioral and social health interventions to women and couples before conception occurs (2). Preconception (PCC) care focuses on long-term as well as short-term improvement in women and child health through counseling and interventions. It is targeted at management and reduction of underlying risk factors responsible for poor maternal and child consequences (1, 2).

Unplanned pregnancy, maternal age, and undernutrition, iron deficiency anemia (IDA), vaccine-preventable diseases, sexually transmitted diseases (STDs), epilepsy, smoking, and alcohol use are the main causes of poor pregnancy outcomes globally (2). According to a consensus report, maternal undernutrition and IDA are responsible for at least up to 20% maternal mortality (3). The risk of perinatal death increases by 50% in babies born to mothers with <20 years compared to mothers with 20-29 years of age (3). Syphilis in pregnancy has been reported to result in about 305,000 fetal and neonatal deaths every year and leaves 215,000 infants at increased risk of dying from prematurity, low-birth-weight or congenital diseases (4). There is a 15-45% chance of HIV transmission from mother to newborn in the absence of intervention, shows a report (5). Dietz PM et al, in their cohort study, reveals that prenatal smoking accounts for 5–7 % of preterm birth; 13–19 %, LBW; 23–34%, sudden infant death syndrome; and 5–7 %, preterm-related deaths (6).

In a resource poor country like India, all the above risk factors lead to adverse pregnancy outcomes and add burden to health economy of the country. An analysis to estimate the impact of maternal and child undernutrition witnessed that stunting, severe wasting, and intrauterine growth restrictions (IUGR)-LBW were responsible for 0.6 million deaths and 24.6 million disability attributed life in years (DALYs) in babies below 5 years of age in India (7). An intensive healthcare approach is basically desirable to reduce the adverse pregnancy outcomes in order to obtain a paramount maternal as well as child health. Lack of healthcare precautionary measures in adolescence and delayed antenatal care are the gaps to be fulfilled in preconception care (8). Preconception care (PCC) fills the void in the continuum by warranting health promotion and timely mediation, so that women start with a healthy pregnancy and better health outcome.

Because of the recent focus on PCC as a tool for promoting the health of prospective parents and to reduce maternal and perinatal mortality and morbidity in India, the need for consensus on preconception care was perceived by FOGSI and took the initiative to develop the same. The current guidelines were developed by an ‘Expert panel’ of obstetricians, gynecologists, from across the country with vast experience. The strength of recommendations and quality of evidence were given as per the criteria in Table 1.

Table 1 Grading of recommendations

Grading of recommendations	
A	Strongly recommended
B	Weaker recommendation
Classification of level of evidence	
I	High-quality evidence backed by consistent results from well-performed randomized controlled trials or overwhelming evidence from well executed observational studies with strong effects
II	Moderate quality evidence from randomized trials
III	Low-quality evidence from observational evidence or from controlled trials with several serious limitations or recommendations endorsed by various authorities, position papers
IV	Not backed by sufficient evidence; however, consensus reached by expert panel group based on clinical experience and expertise

The quality of the evidence that supports the efficacy of the various components of preconception care varies greatly. The majority of sections do not have direct preconception intervention evidence and hence, most of the evidence comes from research that was done to associate various preconception components to pregnancy outcomes. Where there is strong evidence from multiple sources, which include randomized trials before pregnancy (e.g., folic acid, diabetes mellitus, etc.), graded accordingly. Few recommendations have been extrapolated from pregnancy guidelines or from data that were collected during pregnancy and other recommendations were based on studies of interventions that were delivered in primary care and not specifically delivered as part of preconception care.

Recommendations

1. Family planning & Contraception

- Avoiding unplanned and unwanted conception is an integral part of optimizing pregnancy outcomes and hence providing contraceptive advice when desired is the first step of preconceptional care. (Strength of recommendation: A; quality of evidence IV)
- The contraceptive options offered to a couple should take into a consideration their reproductive choices. They should be made aware of the importance of using effective contraception in preventing unintended pregnancies and avoiding unnecessary abortions. (Strength of recommendation: A; quality of evidence IV)
- A young couple should be advised about the ideal age of the first conception emphasizing on the need to avoid teenage pregnancies. Barrier methods or combined hormonal oral contraceptive can be offered in appropriately selected couples for the purpose of delaying the first conception. (Strength of recommendation: A; quality of evidence IV)
- Those who want advice on optimal spacing after childbirth should be offered various available methods of contraception, highlighting the benefits of long-acting reversible contraception (LARC) (e.g. copper and levonorgestrel intrauterine devices and progesterone implants). Intrauterine devices can also be offered to young or nulliparous women with proper counseling. (Strength of recommendation: A; quality of evidence IV).

- The couple should be counseled about regular follow-up after adopting any contraceptive method especially hormonal and intra-uterine devices to address any side effects and also to ensure correct usage of the method. (Strength of recommendation: A; quality of evidence IV)
- The couple should be counseled about the availability and the correct usage of different methods of emergency contraception. (Strength of recommendation: A; quality of evidence IV)
- The return to fertility following discontinuation of various contraceptive techniques should be informed to the couples wishing to postpone conception. There is no delay in return of fertility following discontinuation of the progestogen-only pill, combined hormonal contraceptives, intrauterine devices or progestogen-only implant. However, there can be a delay of up to 1 year in the return of fertility after discontinuation of depot medroxy progesterone acetate (DMPA). (Strength of recommendation: A; quality of evidence III)
- In women with an underlying medical condition such as heart disease, hypertension, epilepsy, HIV, diabetes and severe psychological illnesses, conception should not be advised until the underlying medical conditions have been optimized. (Strength of recommendation: A; quality of evidence III)

2. Nutrition

2.1. Folic acid

- All women of childbearing age should be recommended to take folic acid 0.4/0.5 mg daily, at least 1 month before conception to up to 3 months after conception to reduce the risk of neural tube defects (NTDs). (Strength of recommendation: A; quality of evidence I)
- All women of childbearing age who are at risk of NTDs should be recommended to take higher dose of folic acid i.e. 1 mg in patients at moderate risk of NTDs (family history of NTD in a first or second-degree relative, maternal diabetes (type I or II), maternal malabsorption syndrome), at least 1 month before conception to up to 3 months after conception. However, 4 mg folic acid daily is recommended in patients at high risk of NTDs (history of NTDs in women or their partners, or NTDs in previous pregnancy, hemolytic anemia, increased BMI (>30 kg/m^2), women with known MTHFR mutation, hemoglobinopathies (beta thalassemia), and medications affecting folate metabolism such as anti-convulsants), at least 1 month before conception to up to 3 months after conception. (Strength of recommendation: A; quality of evidence I)
- Methyltetrahydrofolate (MTHF) is as effective as folate according to the available trials and may have an advantage in patients with methylene tetrahydrofolate reductase gene mutation. However, more evidence needs to be generated in this regard. (Strength of recommendation: B; quality of evidence II)

o *The evidence for the role of multiple micronutrients supplementation along with folic acid is not very robust with some studies reporting no benefit at all to others reporting a marginal improvement in birth weight, preterm labor, and congenital malformations. (Strength of recommendation: B; quality of evidence I)*

o *The role of docosahexaenoic acid (DHA) in the first trimester is currently not very clear according to the available evidence and cannot be recommended for routine use. (Strength of recommendation: A; quality of evidence III)*

2.2. Anemia

- All women in preconception period should be screened for anemia with hemoglobin as a primary screening test and treated appropriately. (Strength of recommendation: A; quality of evidence III)
- Considering a very high incidence of anemia in India, weekly supplementation of 100 mg elemental iron and 500 µg folic acid with de-worming (Albendazole 400mg) should be recommended to all women in preconception period. (Strength of recommendation: A; quality of evidence III)

2.3. Optimal body weight management

- The ideal body mass index (BMI) should be considered as per following table :

Class	BMI
Underweight	<18 kg/m^2
Normal	18.0-22.9 kg/m^2
Overweight	23.0-24.9 kg/m^2
Obesity	>25 kg/m^2

- It is advisable to attain BMI 18-23 kg/m^2 prior to conception and healthcare providers should advise women about the measures to attain it. (Strength of recommendation: A; quality of evidence IV)

2.3.1 Overweight and Obesity

- Overweight and obese women in the preconceptional period should be counseled about the increased risk of adverse maternal and perinatal outcomes especially neural tube defects, macrosomia, preterm delivery, stillbirth, gestational diabetes, hypertensive and thromboembolic disorders. (Strength of recommendation: A; quality of evidence III)
- Focused counseling sessions combined with multi-pronged interventions consisting of nutritional modification along with aerobic and strength-conditioning exercises should be the first line approach to achieve the target weight loss. Emphasis on either or both (diet and exercise) should be individualized according to the patient profile. (Strength of recommendation: A; quality of evidence III)
- Irrespective of the pre-pregnancy weight, weight loss during pregnancy is not recommended and hence counseling during preconception should be done to achieve a realistic target of 5-10% over a period of six months. (Strength of recommendation: A; quality of evidence III)
- Bariatric surgery is suggested in women with BMI above 32.5kg/m^2 with comorbidities, and in women with BMI above 37.5 kg/m^2 without co-morbidities. Patients should be advised to avoid pregnancy for at least 12-18 months after the surgery. (Strength of recommendation: A; quality of evidence III)

2.3.2 Underweight

- Underweight women (BMI<18 kg/m^2) should be informed about the increased risk of adverse perinatal outcomes like preterm birth, low birth weight and increased risk of birth defects like gastroschisis. (Strength of recommendation: A; quality of evidence III)

- Health care providers should examine the food choices and provide nutritional advice to underweight women. (Strength of recommendation: A; quality of evidence IV)
- Underweight women should also be screened and treated for eating disorders like anorexia nervosa and bulimia. (Strength of recommendation: A; quality of evidence IV)
- Counseling about proper nutrition to maintain optimal BMI well before pregnancy should be provided as weight gain in pregnancy does not reduce the risks associated with the low pre-pregnancy BMI. (Strength of recommendation: A; quality of evidence IV)

3. Genetics

- A thorough history for presence of following factors needs to be taken to identify couples requiring genetical counseling (Strength of recommendation: A; quality of evidence III):
  - Consanguinity
  - A known or suspected hereditary disease in the patient or a family member; multiple family members with the same or similar disorders
  - Advanced parental age during a pregnancy which can predispose to aneuploidies (e.g. down's syndrome)
  - Teratogen exposure or infection (e.g. fever with rash or chicken pox exposure) during early pregnancy
  - Ethnic background associated with an increased prevalence of a heritable disorder (e.g. Thalassemia is a prevalent hemoglobinopathy in North India)
  - Presence of birth defects, chromosomal abnormality (Down's syndrome) , intellectual disability, developmental delay in a parent, a child, or the child of a family member
  - Recurrent pregnancy loss
  - Family history of early onset cancer or earlier than expected age of onset of a nonmalignant disorder
- A three-generation family medical history should be obtained from the couple with the objective of ascertaining known genetic disorders, congenital malformations, developmental delay/mental retardation, and ethnicity. (Strength of recommendation: A; quality of evidence III):
- In the presence of genetic disorders, the couple should be referred to an expert genetic counselor for special counseling on (Strength of recommendation: A; quality of evidence III):
  - Likelihood of developing disease (e.g. 25% for Autosomal recessive disorders like thalassemia)
  - Impact of the disease (degree of physical and mental disabilities in cases of genetic disorders like Down's syndrome)
  - Possibility of modification of either the impact or likelihood of disease (e.g. by prenatal diagnosis of thalassemia)
- Genetic testing can be offered in the preconceptional period for various disorders to quantify the risk and provide pertinent suggestions for modifying the outcome.

The types of testing could be (Strength of recommendation: A; quality of evidence III):

- Diagnostic
- Carrier Screening (e.g. thalassemia)
- Prenatal testing (e.g. thalassemia, hemophilia, Duchenne muscular dystrophy)
- Preimplantation testing (e.g. in couples with chromosomal translocations/X-linked disorders)
- New Born screening

4 Chronic medical conditions

4.1 Diabetes mellitus

- In the preconceptional period, all women should be screened for diabetes as per following WHO criteria (Strength of recommendation: A; quality of evidence I):
  - Fasting plasma glucose (FPG) ≥ 126mg/dL (FPG is defined as glucose estimated after no caloric intake for at least 8-12 hours) or
  - 2-hr plasma glucose ≥ 200 mg/dL
- All women with pregestational diabetes should be counseled on the diabetes self-management skills, the importance of maintaining good glycemic control before and throughout pregnancy, and about the strong benefits of long-term cardiovascular disease risk factor reduction. (Strength of recommendation: A; quality of evidence I)
- Women with preexisting diabetes mellitus should be advised to achieve the glucose level of 80–110 mg/dL (fasting) and an HbA1c goal of <6.5% before conception. (Strength of recommendation: A; quality of evidence IV)

Contraceptive advice

- Combined hormonal contraceptives and progesterone only contraceptives can be used in pregestational diabetics without vascular disease or with the disease of less than 20 years duration. Even Copper IUDs (Intrauterine Uterine Device) can be used with caution. (Strength of recommendation: A; quality of evidence III)

4.2 Thyroid diseases

4.2.1 Hypothyroidism

- A dietary intake of 150 µg/day of iodine is recommended to all women planning for pregnancy. (Strength of recommendation: A; quality of evidence III)
- Universal screening for thyroid dysfunction with thyroid stimulating hormone (TSH) is *desirable* considering the high incidence of thyroid disorders in India. However, case finding approach is an alternative which should target: symptomatic women, women from an area of known moderate to severe iodine insufficiency, or those who have a family or personal history of thyroid disease, type 1or type 2 diabetes, history of miscarriage, preterm delivery, history of head and neck radiation or morbid obesity (BMI>40). (Strength of recommendation: A; quality of evidence III)

- Women should be educated on adverse maternal (gestational hypertension and pre-eclampsia postpartum hemorrhage, abortion and preterm delivery), fetal and neonatal consequences (e.g. Impairment in IQ scores, neuropsychological development and learning abilities of hypothyroidism during pregnancy. (Strength of recommendation: A; quality of evidence IV)
- Women with overt hypothyroidism (TSH>2.5-3mIU/l with low FT4 levels or TSH>10mIU/L irrespective of FT4) should be treated, while women with subclinical hypothyroidism (serum TSH between 2.5 and 10mIU/L with normal FT4 concentration) detected during preconception should be further evaluated by anti-thyroid peroxidase antibodies to decide regarding the need for treatment .An endocrinologist should be involved in the management of these women. (Strength of recommendation: A; quality of evidence IV)
- Increase in levothyroxine (LT4) dose (by around 30%) at the time of confirmation of pregnancy is recommended for women with hypothyroidism. (Strength of recommendation: A; quality of evidence III)

4.2.2 Hyperthyroidism

- Disease condition should be optimized before conception. (Strength of recommendation: A; quality of evidence IV)
- The best modality of treatment should be decided upon based on the reproductive choices. Surgery is a better option as compared to radioactive iodine if pregnancy is planned in the next two years. (Strength of recommendation: A; quality of evidence III)
- If radioactive ablation therapy is used, pregnancy should be postponed for at least 6 months to adjust TSH levels to optimal. (Strength of recommendation: A; quality of evidence III)
- For the antithyroid drugs, propylthiouracil is the drug of choice for the first trimester of pregnancy because of the risk of embryopathy due to methimazole. However, prolonged usage of PTU is associated with hepatotoxicity and hence methimazole is the preferred drug after the first trimester. (Strength of recommendation: A; quality of evidence III)

4.3. Heart disease

- All women should have at least a basic clinical cardiac assessment in the preconceptional period and referred to a specialist if required. (Strength of recommendation: A; quality of evidence IV)
- Women with a known heart disease should be counseled about the consequences of the preexisting heart condition and the medications used, on pregnancy outcomes. (Strength of recommendation: A; quality of evidence IV)
- A detailed cardiac assessment prior to conception should be carried out to assess the baseline cardiac condition, to review the medications, to evaluate the requirement for corrective surgery and also to identify those women in whom pregnancy would not be advisable. A multidisciplinary approach with a close liaison between a cardiologist and the obstetrician is desirable. (Strength of recommendation: A; quality of evidence IV)
- Genetic counseling should be offered to women with congenital heart disease. (Strength of recommendation: A; quality of evidence III)

- A review of medications is advisable for the women with mechanical heart valves who are on anticoagulation therapy. Although Vit K antagonists are associated with a risk of embryopathy (5-10%), it is an anticoagulant with higher efficacy and better patient compliance. Switching over to heparin in the first trimester of pregnancy should be considered after weighing the risks and benefits of both the options. (Strength of recommendation: A; quality of evidence III)
- Women should be advised strongly against pregnancy in following conditions (Strength of recommendation: A; quality of evidence IV):
  - Severe pulmonary arterial hypertension of any cause
  - Severe systemic ventricular dysfunction
  - NYHA III–IV or LVEF <30%
  - Previous peripartum cardiomyopathy with any residual impairment of left ventricular function
  - Severe left heart obstruction
  - Marfan syndrome with aorta dilated >40 mm
  - Aortic dilatation > 50 mm in aortic disease associated with bicuspid aortic valve
  - Native severe coarctation

Contraceptive advice

- Effective contraception like progesterone only contraceptives should be offered to the women who are not desirous of fertility at the present time or have been advised to postpone pregnancy for optimization of the cardiac condition. (Strength of recommendation: A; quality of evidence IV):

4.4. Hypertension

- All women in the preconceptional period should be screened for hypertensive disorders especially those with previous hypertensive disorders in pregnancy, renal disease, autoimmune disorders or thrombophilias. (Strength of recommendation: A; quality of evidence IV)
- Women with pre-existing hypertensive disorders should be counseled about the associated increased risks during pregnancy and also about the possible need to change the antihypertensive regimen before planning a pregnancy. (Strength of recommendation: A; quality of evidence III)
- Women with hypertension for several years should be assessed for renal disease, ventricular hypertrophy, and retinopathy. (Strength of recommendation: A; quality of evidence IV)
- All women with preexisting hypertension should be advised to achieve a target blood pressure of 150/100 mmHg in the case of uncomplicated chronic hypertension and below 140/90 mmHg in the presence of target organ damage. (Strength of recommendation: A; quality of evidence III)
- Angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) in women planning a pregnancy. (Strength of recommendation: A; quality of evidence I)

Contraceptive advice

- Progestin-only contraception is recommended in patients with chronic hypertension till they are optimized. (Strength of recommendation: A; quality of evidence III)

4.5. Seizure disorders

- Women suffering from epilepsy should be counseled about the need to properly plan their pregnancies considering the risks of increased epileptic frequency in pregnancy, the potential effects of epilepsy and anticonvulsant drugs on pregnancy outcomes. (Strength of recommendation: A; quality of evidence III)
- Management of these women should be done by a multidisciplinary team including neurologists and gynecologists. (Strength of recommendation: A; quality of evidence III)
- Most of the commonly used anticonvulsants like phenytoin , valproate and carbamazepine have known teratogenic effects (major malformations), the risk of which increases with polytherapy
- Women should preferably be placed on anticonvulsant monotherapy at the lowest effective dose to control seizures. They should be informed about the hazards of self-withdrawal of medication (without consulting the neurologist) despite the potential risk of teratogenicity. (Strength of recommendation: A; quality of evidence III)
- It is recommended that the woman should be on a stable anticonvulsant regimen for at least 6 months (after dose modification or withdrawal) prior to conception. (Strength of recommendation: A; quality of evidence III)
- The woman should be started on folic acid supplementation of 4 mg per day for at least 1 month prior to conception until at least the end of the first trimester to prevent neural tube defects. (Strength of recommendation: A; quality of evidence I)
- However, it is recommended to continue folic acid throughout pregnancy for prevention of anticonvulsant induced megaloblastic anemia. (Strength of recommendation: A; quality of evidence IV)

Contraceptive advice

- Women taking enzymes-inducing anticonvulsants (e.g. carbamazepine, phenytoin, phenobarbitone, primidone, oxcarbazepine, topiramate, phenobarbital, and felbamate) should be informed about the risk of contraceptive failure with standard or low dose oral contraceptive pills and guided for using alternate methods of contraception. (Strength of recommendation: A; quality of evidence III)

4.6. Cancer

- Young patients diagnosed to have cancer should be explained about the established fertility preservation methods like sperm cryopreservation for an adult male, and embryo and oocyte cryopreservation for an adult female. (Strength of recommendation: A; quality of evidence III)
- Cancer survivors should be counseled on potential reproductive effects of cancer treatment and resultant effects on fertility and prospective pregnancy outcomes. (Strength of recommendation: A; quality of evidence III)
- Cancer survivors planning conception should be assessed for infertility or compromised fertility which would depend on the age, type of cancer, and treatment of cancer. (Strength of recommendation: A; quality of evidence III)

- Genetic counseling should be advised for women with a personal or family history of cancer with a known associated genetic mutation. (Strength of recommendation: A; quality of evidence III)
- Breast cancer survivor should be counseled to wait at least 2 years before conception to pass the period of highest risk for recurrence. (Strength of recommendation: A; quality of evidence III)
- Female cancer survivors treated with anthracycline chemotherapy, radiation to heart or surrounding tissues or both should be evaluated by a cardiologist prior to conception. (Strength of recommendation: A; quality of evidence III)
- A reliable non-hormonal contraceptive method should be used during treatment with a selective estrogen receptor modulators (SERM) for survivors of breast cancer. (Strength of recommendation: A; quality of evidence III)

4.7. Autoimmune diseases

- Symptoms of an autoimmune disease could improve, worsen, or remain unaffected when a woman becomes pregnant depending upon her specific autoimmune disease. Strength of recommendation: A; quality of evidence IV)
- Women with systemic lupus erythematosus (SLE) should be counseled that there is a high risk of maternal and fetal complications during pregnancy, including spontaneous abortion and premature delivery, intrauterine growth retardation (IUGR), and superimposed pre-eclampsia resulting from the disease process as well as due to the medications used for disease control. (Strength of recommendation: A; quality of evidence III)
- Women with SLE who wish to get pregnant should be advised to achieve quiescent SLE state for at least 6 months before conception. (Strength of recommendation: A; quality of evidence III)
- There is spontaneous amelioration of Rheumatoid arthritis (RA) during pregnancy and an increased risk of flare after delivery. (Strength of recommendation: A; quality of evidence III)
- Medications being used for RA/SLE should be reviewed before and during pregnancy. Drugs like methotrexate, leflunomide and cyclophosphamide are extremely teratogenic and should be avoided in women planning a pregnancy. (Strength of recommendation: A; quality of evidence III)

4.8. Asthma

- Asthmatic women who are planning for conception should be advised about the probable asthma aggravation with pregnancy and need for achieving asthma control prior to conception with suitable pharmacotherapy. (Strength of recommendation: A; quality of evidence III)
- Women should be counseled about the increased risk to herself and her fetus resulting from the disease and the medications (such as preterm) birth, low birth weight, very small and small for gestational age and congenital malformations). (Strength of recommendation: A; quality of evidence III)
- Inhaled medications; both B2 agonists and steroids are safe in pregnancy and should be used for disease control. (Strength of recommendation: A; quality of evidence III)
- A long-acting beta agonist like salmeterol can be added only if the disease is not controlled with maximal doses of inhaled corticosteroids. (Strength of recommendation: A; quality of evidence III)

- Oral corticosteroids (category C) are used for asthma exacerbations that do not respond to initial rescue therapies. (Strength of recommendation: A; quality of evidence III)

5. Infections

5.1 Infection screening protocol

- Universal preconception screening should be offered for: HIV, Syphilis and Hepatitis B (Strength of recommendation: A; quality of evidence III).
- Targeted preconception screening should be offered to women who are at high-risk for chlamydia, gonorrhea, tuberculosis, and toxoplasmosis. (Strength of recommendation: A; quality of evidence III):

Gonorrhea	History of previous gonorrhea infection, other STIs, new or multiple sexual partners, inconsistent condom use, and drug use, and residing in urban communities and communities with high rates of poverty
Tuberculosis	people who are affected within the past 2 years; people with personal contact with someone who has active TB; the elderly, children who are <4 years and who are exposed to high-risk patients
Toxoplasmosis	Lower socioeconomic status, residing in mud plastered houses, consumption of raw salad, drinking untreated water, owning pets
Chlamydia	History of STDs, new or multiple sexual partners, inconsistent condom use, sex workers and drug addicts

5.2 HIV

- All couples planning pregnancy should be offered HIV screening and counseling. (Strength of recommendation: A; quality of evidence III)
- All HIV positive couples should be counseled to practice effective dual contraception (condom and/or hormonal contraception and/or intrauterine devices) to prevent unintended pregnancy until the viral load is suppressed below the limit of detection. (Strength of recommendation: A; quality of evidence III)
- All HIV positive couples should be informed of the risk of transmission to the uninfected partner and the fetus. (Strength of recommendation: A; quality of evidence IV)
- The couple should be counseled about the need for initiation and continuation of combination antiretroviral therapy (cART). (Strength of recommendation: A; quality of evidence IV)
- For serodiscordant couples, in whom the woman is HIV-positive, it is preferable to attempt home insemination with the partner's sperm during ovulation for 3 to 6 months before considering other methods. If the male partner is HIV positive, then a referral to a fertility specialist should be considered and an option of sperm washing with intrauterine insemination should be given. (Strength of recommendation: A; quality of evidence III)
- Lifelong ART should be given to all HIV-infected pregnant and breastfeeding women. (Strength of recommendation: A; quality of evidence III)

6. Psychosocial issues and substance abuse

6.1 Psychiatric illnesses

- Healthcare providers should screen for depression, anxiety and other psychotic disorders like mania and schizophrenia by a personal or family history and presence of other social stressors like unwanted pregnancy, difficulty in accessing the primary care services, intimate partner violence and maltreatment (abuse or neglect) as a child or adolescent, low social economic status and lack of support system. (Strength of recommendation: A; quality of evidence III)
- The couple should be informed about the potential risks of an untreated illness; the risk of relapse during pregnancy and the risk to the fetus from the potential teratogenicity of the antipsychotic drugs. (Strength of recommendation: A; quality of evidence III)
- Appropriate treatment (avoiding teratogenic drugs such as lithium, valproic acid, and carbamazepine) for depression, anxiety, bipolar disorder and schizophrenia should be offered with a multidisciplinary approach for optimization of disease condition prior to conception. (Strength of recommendation: A; quality of evidence IV)

6.2 Substance Abuse

- Those women who show signs of alcohol, tobacco (smoking and smokeless tobacco), and illicit drugs usage dependence should be educated about the adverse impact on pregnancy outcomes. (Strength of recommendation: A; quality of evidence IV)
- Psychosocial and pharmacotherapeutic interventions should be instituted as appropriate for the cessation of tobacco use in pregnancy. (Strength of recommendation: A; quality of evidence III)

7. Vaccine preventable diseases

- Vaccination in preconception aims to prevent maternal affection, in-utero affection to the fetus, prevent perinatal transmission and also avoid complications in the neonates. The evidence for vaccination in preconception in improving outcome is available for Measles, Mumps, and Rubella (MMR) and hepatitis vaccines while the association is not very strong for the others.

Strongly Advisable

7.1 MMR vaccine

- Rubella infection during pregnancy may lead to stillbirth, a baby with congenital rubella syndrome or spontaneous abortion. (Strength of recommendation: A; quality of evidence III)
- All women in the preconceptional period should be screened for rubella infection and vaccinated if non-immune. (Strength of recommendation: A; quality of evidence III)
- Serological testing for rubella however is not absolutely essential before vaccinating all women. (Strength of recommendation: B; quality of evidence IV)
- The combination of MMR is preferred over rubella vaccine alone for the purpose of routine preconceptional vaccination. (Strength of recommendation: A; quality of evidence III)
- Because it is a live vaccine, women should be counseled not to become pregnant for 3 months after receiving the MMR vaccination. (Strength of recommendation: A; quality of evidence III).

- Accidental vaccination in pregnancy does not pose a substantial risk to the fetus and should not be strictly considered as an indication for termination of pregnancy.

7.2 HBV

- HBV vaccination should be offered to those at high-risk of infection like household contacts and sex partners of HBSAg-positive persons, HIV-positive women, those with a history of recent sexually transmitted infections, renal disease requiring hemodialysis, those receiving blood products and healthcare workers. (Strength of recommendation: A; quality of evidence III)

Desirable

7.3 HPV

- HPV vaccination is recommended for all women and girls (9-26 years of age) if not completed earlier, for decreasing the incidence of benign and malignant lesions of the cervix. (Strength of recommendation: B; quality of evidence III)
- As the procedures on the cervix are decreased due to a lesser number of cervical abnormalities resulting from HPV vaccine, this indirectly decreases the preterm births due to cervical incompetence. (Strength of recommendation: B; quality of evidence IV)
- HPV vaccination should preferably be completed prior to conception and pregnancy avoided for 1 month; however when a woman becomes pregnant while she is on HPV vaccination, then the rest of the HPV vaccine course should be completed after delivery. (Strength of recommendation: A; quality of evidence III)

7.4 Varicella

- Women should be screened for varicella immunity in the preconceptional period by taking a history of past infection or previous vaccination or by serology. (Strength of recommendation: A; quality of evidence III)
- All the non-immune women should be vaccinated and counseled to avoid pregnancy for a month. (Strength of recommendation: A; quality of evidence III)

7.5 Influenza

- Influenza vaccine is recommended for women who would be pregnant in the influenza season especially in those who are at high risk of influenza-related complications. It can be given in pregnancy. (Strength of recommendation: A; quality of evidence III)
- All influenza vaccines available are recommended with the exception of the live intranasal vaccine. (Strength of recommendation: A; quality of evidence III)

7.6 Tetanus, Diphtheria and Pertussis (TdaP)

- Women should be enquired about the completion of primary 4-dose childhood immunization schedule and adult booster dose in the past ten years. (Strength of recommendation: A; quality of evidence III)

- The Tdap can be offered in the preconceptional period if there is risk of exposure (pertussis). (Strength of recommendation: A; quality of evidence III)
- Tdap should be administered again during pregnancy in order to provide optimal protection to the baby during its first months of life. (Strength of recommendation: A; quality of evidence IV)

8. Preconceptional counseling in women with previous miscarriages

- Patients with recurrent miscarriages (two or more) should be evaluated in the preconceptional period by (Strength of recommendations A; quality of evidence III):

(i) Testing for Antiphospholipid Antibody Syndrome (APS) with anticardiolipin antibodies (ACL), lupus anticoagulant(LAC), and anti-beta 2 glycoproteins(anti B2GP) on two occasions, 12 weeks apart
(ii) Genetic counseling and karyotyping of parents in cases 3 or more miscarriages
(iii) Pelvic ultrasound and hysteroscopy for the diagnosis of genital abnormalities
(iv) Testing for syphilis
(v) Testing thyroid function and glucose monitoring/glycosylated hemoglobin (HbA1c) levels in those patients with a history of thyroid disease or diabetes mellitus, or clinical manifestations thereof.

- Women diagnosed to have APS can benefit from preconceptional aspirin and early initiation of prophylactic heparin therapy as soon as pregnancy is confirmed. (Strength of recommendation: A; quality of evidence I)
- Women in whom no cause could be found should be reassured and counseled about the favorable outcome (around 65%) with no intervention other than tender loving care (TLC). (Strength of recommendation: A; quality of evidence IV)

9. Thromboembolic disease

- Women of childbearing age with a personal or family history of thrombotic events should be screened for hereditary and acquired thrombophilias (Antiphospholipid Antibody Syndrome/APS) (Strength of recommendation: A; quality of evidence III)
- Women with only obstetric manifestations (one or more unexplained pregnancy loss of morphologically normal fetus at or beyond 10 wks; one or more premature births of morphologically normal neonate before 34wks because of eclampsia or severe preeclampsia / three or more unexplainable consecutive spontaneous abortions before 10 wks) without a personal or family history of thrombosis should be screened for APS but not for hereditary thrombophilia. (Strength of recommendation: A; quality of evidence III)
- Educate women of reproductive age with known thrombophilia about its associated risks in pregnancy, and regarding the risks and benefits of prophylactic anticoagulation. (Strength of recommendation: A; quality of evidence IV)
- Women diagnosed to have APS can benefit from preconceptional aspirin and early initiation of prophylactic heparin therapy as soon as pregnancy is confirmed in the first trimester of pregnancy. (Strength of recommendation: A; quality of evidence I)

- Women receiving life-long or long-term anticoagulation should be made aware of the importance of early diagnosis of pregnancy and the probable need to switchover from Vitamin K antagonists to heparin either before conception or immediately after diagnosis of pregnancy. (Strength of recommendation: A; quality of evidence III)

Contraceptive advice

- Because estrogens promote hypercoagulable states, combination oral contraceptive pills are contraindicated among women with thrombophilia. However, there are no contraindications to progestin- only methods, intrauterine devices (IUD), or barrier methods. (Strength of recommendation: A; quality of evidence III)

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Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
1.	Folic Acid Supplementation	Women at high risk of NTD: Family history of NTD, Previous NTD-affected pregnancy Multiple pregnancy, Haemolytic anemia, increased BMI (>30 kg/m2), Malabsorption syndrome, Women with known MTHFR mutation, Haemoglobinopathy (beta thalassemia), Insulin treatment for diabetes, on medications affecting folate metabolism such as anti-convulsants, infertility treatment, vitamin A analogs	• Folic acid prevents Neural tube defects in the fetus • Inadequate Folic acid can also cause megaloblastic anemia	• For all women: Folic acid 0.4/0.5 mg daily, one month before conception and 3 months post conception • All women of childbearing age who are at risk of NTDs should be recommended to take higher dose of folic acid i.e. 1 mg in patients at moderate risk of NTDs (family history of NTD in a first or second-degree relative, maternal diabetes (type I or II), maternal malabsorption syndrome), at least 1 month before conception to up to 3 months after conception. However, 4 mg folic acid daily is recommended in patients at high risk of NTDs (history of NTDs in women or their partners, or NTDs in previous pregnancy, hemolytic anemia, increased BMI (>30 kg/m2), women with known MTHFR mutation, hemoglobinopathies (beta thalassemia), and medications affecting folate metabolism such as anti-convulsants), at least 1 month before conception to up to 3 months after conception.
2.	Anemia	During preconception all women should be screened for anemia by checking hemoglobin level	• Anemia during pregnancy increases the risk of maternal mortality, perinatal mortality, low birth weight (LBW), preterm birth and lower Apgar score babies	• Weekly supplementation of 100 mg iron along with 500 µg Folic acid with de-worming (Albendazole 400 mg) is recommended for all women to prevent adverse maternal and fetal outcomes in the preconceptional period
3.	Weight management	BMI cut off for Asian Indians: Normal BMI: 18.0-22.9 kg/m^2, Overweight: 23.0-24.9 kg/m^2, Obesity: >25 kg/m^2	• Pre-pregnancy obesity: associated with increased risk of adverse maternal and perinatal outcomes especially neural tube defects, macrosomia, preterm delivery, stillbirth, gestational diabetes, hypertensive and thromboembolic disorders • Pre-pregnancy low BMI: associated with increased risk of adverse perinatal outcomes like preterm birth, low birth weight and increased risk of birth defects like gastroschisis	• Advisable to attain BMI 18-23 kg/m^2 prior to conception • Nutritional modification along with aerobic and strength-conditioning exercises should be the first line approach to achieve the target weight • Bariatric surgery is suggested in women with BMI above 32.5 kg/m^2 with comorbidities, and in women with BMI above 37.5 kg/m^2 without co-morbidities • Healthcare providers should examine the food choices and provide nutritional advice to underweight women

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
4.	Pregestational Diabetes Mellitus (PGDM)	• In the preconceptional period, all women should be screened for diabetes as per following WHO criteria : Fasting plasma glucose (FPG) ≥126mg/dL (FPG is defined as glucose estimated after no caloric intake for at least 8-12 hours) or 2-hr plasma glucose ≥ 200 mg/dL	• PGDM increases the risk of miscarriage, congenital fetal anomalies, and perinatal death	• All women should be counseled on the diabetes self-management skills, importance of management and maintaining good glycemic control before and throughout pregnancy, and about the strong benefits of long-term CVD risk factor reduction • All women with preexisting diabetes should be counseled to achieve an HbA1c goal of <6.5% before conception and a fasting glucose of 60-100mg/dL • Combined hormonal contraceptives and progesterone only contraceptives can be used in pregestational diabetics without vascular disease and disease of less than 20 years duaration. Even Cu IUDs can be used with caution
5.	Thyroid disorders in pregnancy	Universal screening can be desirable Case finding approach is an alternative and should target: symptomatic women, women from an area of known moderate to severe iodine insufficiency, or those who have a family or personal history of thyroid disease, type 1 or type 2 diabetes, history of miscarriage, preterm delivery, history of head and neck radiation or morbid obesity (BMI >40)	• Hypothyroidism during pregnancy is associated with adverse maternal (gestational hypertension and pre-eclampsia postpartum hemorrhage, abortion and preterm delivery), fetal and neonatal consequences. • Early identification of hyperthyroidism before pregnancy may allow a woman to optimize the disease condition before planning conception	Hypothyroidism • A dietary intake of 150 µg/day of iodine is recommended to all women planning for pregnancy • Women with overt hypothyroidism (TSH>2.5-3 mIU/l with low FT4 levels or TSH>10 mIU/L irrespective of FT4) should be treated, while women with subclinical hypothyroidism (serum TSH between 2.5 and 10 mIU/L with normal FT4 concentration) detected during preconception should be referred to an endocrinologist for further evaluation and management • Increase in levothyroxine (LT4) dose (by around 30%) at the time of confirmation of pregnancy is recommended for women with hypothyroidism

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
				Hyperthyroidism • Disease condition should be optimized before conception. • The best modality of treatment should be decided upon based on the reproductive choices. Surgery is a better option as compared to radioactive iodine if pregnancy is planned in the next two years • If radioactive ablation therapy is used pregnancy should be postponed for at least 6 months to adjust TSH levels to optimal • For the antithyroid drugs, Propylthiouracil is the drug of choice for the first trimester of pregnancy because of the risk of embropathy due to methimazole. However, prolonged usage of PTU is associated with hepatotoxicity and hence methimazole is the preferred drug after the first trimester
6.	Seizure disorders	History of epilepsy or seizure disorder should be elicited as a part of workup	• Women suffering from epilepsy should be counseled about the need to properly plan their pregnancies considering the risks of increased epileptic frequency in pregnancy, the potential effects of epilepsy and anticonvulsant drugs on pregnancy outcomes	• Women should preferably be placed on anticonvulsant monotherapy at the lowest effective dose to control seizures • It is recommended that the woman should be on a stable anticonvulsant regimen for at least 6 months (after dose modification or withdrawal) prior to conception • The woman should be started on folic acid supplementation of 4 mg per day for at least 1 month prior to conception until at least the end of the first trimester to prevent neural tube defects • Women taking enzymes-inducing anti-convulsants should be informed about the risk of contraceptive failure with standard or low dose oral contraceptive pills and guided for using alternate methods of contraception

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
7.	Hypertension	Screen all women for hypertensive disorders before pregnancy especially those with previous hypertensive disorders in pregnany, renal disease, autoimmune disorders or thrombophilias	• Associated with increased risk of hypertensive disorders of pregnancy, other organ dysfunctions, increased fetal risks of preterm birth, intrauterine growth retardation, fetal loss and abruption placenta • possible need to change the anti-hypertensive regimen before planning a pregnancy	•Women with hypertension for several years should be assessed for renal disease, ventricular hypertrophy, and retinopathy • All women with preexisting hypertension should be advised to achieve a target blood pressure of 150/100 mmHg in the case of uncomplicated chronic hypertension and below 140/90 mmHg in the presence of target organ damage • It is recommended to avoid ACEIs and ARBs in women planning pregnancy • Progestin-only contraception is recommended in patients with chronic hypertension till they are optimised
8.	Autoimmune Disorders	Symptoms of an autoimmune disease could improve, worsen, or remain unaffected when a woman becomes pregnant depending upon her specific autoimmune disease	• Pregnancies in women with SLE are at high-risk for maternal and fetal complications, including spontaneous abortion and premature delivery, intrauterine growth retardation (IUGR), and superimposed pre-eclampsia • There is spontaneous amelioration of RA during pregnancy and an increased risk of flare after delivery	• Women with SLE who wish to get pregnant should be advised to achieve quiescent SLE at least 6 months before conception Methotrexate and leflunomide are extremely teratogenic and should be discontinued in women planning a pregnancy
9.	Asthma	Women with poor asthma control should be encouraged to use effective birth control until symptomatic control is achieved.	• In asthmatic women who become pregnant, there is an increased risk of adverse outcomes such as preterm birth, low birth weight, very small and small for gestational age and congenital • They are more prone to exacerbation of asthma	• Inhaled medications; both Beta2 agonists and steroids are safe in pregnancy and should be used for disease control • A long-acting beta agonist like salmeterol can be added only if the disease is not controlled with maximal doses of inhaled corticosteroids • Oral corticosteroids (category C) are used for asthma exacerbations that do not respond to initial rescue therapies

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
10.	Psychosocial issues	Healthcare providers should screen for depression and anxiety and other psychotic disorders like mania and schizopheria by a personal or family history and presence of other social stressors like income below or near poverty level, difficulty in accessing the primary care services, intimate partner violence and maltreatment (abuse or neglect) as a child or adolescent, unwanted pregnancy and lack of support system	• Preconceptional depression is considerably associated with preterm births • Adolescent depression associated with an increased risk of miscarriages • Preconceptional psychotic or bipolar illness significantly increased the risk of a postpartum psychotic or bipolar event • There is an increased risk of relapse during pregnancy • There is increased risk of fetal teratogenicity from various antodepressants and antipsychotic drugs	• Appropriate treatment (avoiding teratogenic drugs) for depression, anxiety, bipolar disorder and schizophrenia should be offered with a multidisciplinary approach
11.	Substance abuse	Women should be screened for signs of alcohol, tobacco (smoking and smokeless tobacco), and illicit drugs usage dependence	• Smoking is Associated with diminished fertility and deferred conception, congenital birth defects including heart defects, musculoskeletal defects, gastrointestinal defects, miscarriage, preterm delivery, low birth weight and fetal growth restriction, still births and SIDS • Heavy alcohol consumption (>10 g/day or more than 3 alcoholic drinks a day) was found to increase the risk of low birthweight infants, small for gestational age infants, and preterm birth • Binge drinking (defined as more than five standard drinks on a single occasion) may affect neurodevelopmental outcomes in the baby • neurobiological effects of cannabis include effects on the child's behavior and mental health • Prenatal exposure to cocaine is considerably associated with preterm birth, low birthweight infants, and small for gestational age infant. • Heroin is associated with miscarriage, fetal growth restriction, preterm labour, and increased risk of infections such as HIV, hepatitis B, and hepatitis C	• Those women who show signs of alcohol, tobacco, and illicit drugs usage dependence should be educated about the adverse impact on pregnancy outcomes and efforts should be made to identify programs that would assist them to achieve cessation and long-term abstinence prior to conception

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
12.	Vaccination	Women seeking preconception care should be evaluated for vaccination status for Hepatitis B, Measles, mumps, rubella (MMR), Varicella, Tetanus, diphtheria, pertussis (Tdp), Hepatitis B and HPV	• Tdap vaccine leads to reduction in neonatal deaths • Measles is associated with spontaneous abortion, prematurity, and low birth weight and other birth defects • There is an association of mumps with first-trimester abortion • Rubella in pregnancy, especially in the gestational period of first 20 weeks, results in spontaneous abortion, stillbirth, or a baby with congenital rubella syndrome • There is a risk of perinatal transmission of HBV and infants with acute HBV infection in utero may have risks like low birthweight and prematurity • Chicken pox in pregnancy can cause fetal scarring of the skin and affected limb(s), limb deformities (hypoplesia), eye damage, low birth weight, brain atrophy and mental retardation, sometimes fetal death or spontaneous abortion • Influenza affected pregnant women will be at high risk of morbidity especially in the 2nd and 3rd trimesters and also with increased abortion rate which results in serious complications and hospitalization	• Tdap vaccine leads to reduction in neonatal deaths • Measles is associated with spontaneous abortion, prematurity, and low birth weight and other birth defects • There is an association of mumps with first-trimester abortion • Rubella in pregnancy, especially in the gestational period of first 20 weeks, results in spontaneous abortion, stillbirth, or a baby with congenital rubella syndrome • There is a risk of perinatal transmission of HBV and infants with acute HBV infection in utero may have risks like low birthweight and prematurity • Chicken pox in pregnancy can cause fetal scarring of the skin and affected limb(s), limb deformities (hypoplesia), eye damage, low birth weight, brain atrophy and mental retardation, sometimes fetal death or spontaneous abortion • Influenza affected pregnant women will be at high risk of morbidity especially in the 2nd and 3rd trimesters and also with increased abortion rate which results in serious complications and hospitalization Strongly Advisable MMR vaccine • All women in the preconceptional period should be screened for rubella infection and vaccinated if non-immune • Because it is a live vaccine, women should be counseled not to become pregnant for 3 months after receiving the MMR vaccination. HBV vaccination • It should be offered to those at high-risk of infection like household contacts and sex partners of HBSAg-positive persons, HIV positive women, those with history of recent sexually transmitted infections, renal disease requiring hemodialysis, those receiving blood products and healthcare workers

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
				Desirable HPV • HPV vaccination is recommended for all women and girls (9-26 years of age) if not completed earlier, for decreasing the incidence of benign and malignant lesions of the cervix. • HPV vaccination should preferably be completed prior to conception and pregnancy avoided for 1 month; however when a woman becomes pregnant while she is on HPV vaccination, then the rest of the HPV vaccine course should be completed after delivery Varicella • All the non-immune women should be vaccinated and counseled to avoid pregnancy for a month Influenza • Influenza vaccine is recommended for women who would be pregnant in the influenza season especially in those who are at high risk of influenza-related complications Tdap • The Tdap vaccine should be offered in the preconceptional period to enhance the passive immunity to tetanus and prevent pertussis in the new-born
13.	Recurrent Pregnancy loss	• Recurrent pregnancy loss is defined as 2 consecutive pregnancy losses prior to 20 weeks of gestation	• The risk of pregnancy loss in women without any previous fetal loss is 12% for the next pregnancy; whereas the percentage of recurrence risk for those with at least one, two and three prior fetal loss is 24, 26 and 32% respectively	Tests for RPL: • Testing for Antiphospholipid Antibody Syndrome (APS) with anticardiolipin antibodies (ACL), lupus anticoagulant (LAC), and anti-beta 2 glycoproteins(anti B2GP) on two occasions, 12 weeks apart • Genetic counseling and karyotyping of parents in cases 3 or more miscarriages • Pelvic ultrasound and hysteroscopy for the diagnosis of genital abnormalities • Testing for syphilis

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
				• Testing thyroid function and glucose monitoring/ glycosylated hemoglobin (HbA1c) levels in those patients with a history of thyroid disease or diabetes mellitus, or clinical manifestations thereof • Women in whom no cause could be found should be reassured and counseled about the favorable outcome (around 65%) with no intervention other than tender loving care (TLC)
14.	Thrombophilias	• Women of childbearing age with a personal or family history of thrombotic events should be screened for hereditary and acquired thrombophilias • Women with only obstetric manifestations (one or more unexplained pregnancy loss of morphologically normal fetus at or beyond 10 wks; one or more premature births of morphologically normal neonate before 34 wks because of eclampsia or severe preeclampsia/three or more unexplainable consecutive spontaneous abortions before 10 wks) without a personal or family history of thrombosis should be screened for APS but not for hereditary thrombophilia	• Pregnant women with thrombophilia develop venous thromboembolism (VTE) and placental complications such as pregnancy loss, preeclampsia, placental abruption, and intrauterine growth restriction (IUGR)	• Women diagnosed to have APS can benefit from preconceptional aspirin and early initiation of prophylactic heparin therapy in the first trimester of pregnancy • Women receiving life-long or long-term anticoagulation should be made aware of the importance of early diagnosis of pregnancy and the probable need to discontinue warfarin either before conception or immediately after diagnosis of pregnancy • Because estrogens promote hypercoagulable states, combination oral contraceptive pills are contraindicated among women with thrombophilia. However there are no contraindications to progestin- only methods, intrauterine devices, or barrier methods
15.	HIV	All couples planning pregnancy should be offered HIV screening and counseling	• All HIV positive couples should be informed of the risk of transmission to the uninfected partner and the fetus	• Initiation and continuation of cART • Effective Contraception until viral loads suppressed below the limits of detection. • For serodiscordant couples, in whom the woman is HIV-positive, it is preferable to attempt home insemination with the partner's sperm during ovulation for 3 to 6 months before considering other methods. If the male partner is HIV positive, then a referral to a fertility specialist should be considered and an option of sperm washing with intrauterine insemination should be given

Sr no	Preconception Aspect	Identify (Preempt)	Educate (Counsel)	Intervene (Cure)
16.	Infections (STI, Tubeculosis, Toxoplasmosis)	Universal preconception screening should be done: HIV, Syphilis and Hepatitits B Targeted preconception screening where women are at high-risk: Gonorrhea, Chlamydia, Tuberculosis, Toxoplasmosis	• These infections can cause subfertility/infertility, as well as congenital infection and medical and pregnancy complications	• Treatment of women with latent and active disease before pregnancy • Motivate to have monogamous- relationship • Condom usage • Screen partners
17.	Cancer	• Cancer survivors planning conception should be assessed for infertility or compromised fertility which would depend on the age, type of cancer, treatment of cancer. • Female cancer survivors who received anthracycline chemotherapy, radiation to the heart or surrounding tissues, or both should be evaluated by a cardiologist prior to conception	• Cancer survivors should be counseled on potential reproductive effects of cancer treatment and resultant effects on fertility and prospective pregnancy outcomes • cancer survivors should be educated about fertility preservation options	• Genetic counseling should be advised for women with a personal or family history of cancer with a known associated genetic mutation • A reliable nonhormonal contraceptive method should be used during treatment with a SERM
18.	Heart disease	• All women should have at least a basic clinical cardiac assessment in the preconceptional period and referred to a specialist if required • Identify conditions where pregnancy is contraindicated due to unacceptable risk of maternal mortality like: - Severe pulmonary arterial hypertension of any cause - Severe systemic ventricular dysfunction - NYHA III–IV or LVEF <30% - Previous peripartum cardiomyopathy with any residual impairment of left ventricular function - Severe left heart obstruction - Marfan syndrome with aorta dilated >40 mm - Aortic dilatation >50 mm in aortic disease associated with bicuspid aortic valve - Native severe coarctation.	• Women with a known heart disease should be counseled about the consequences of the preexisting heart condition and the medications used, on pregnancy outcomes	• A detailed cardiac assessment prior to conception should be carried out to assess the baseline cardiac condition, to review the medications, to evaluate the requirement for corrective surgery • Genetic counseling should be offered for women with congenital heart disease • Medication review should be done for the mechanical valve replacement patients who are on anticoagulation therapy • Effective contraception like progesterone only contraceptives should be offered to the women who are not desirous of fertility at the present time or have been advised to postpone pregnancy for optimization of the cardiac condition

Proforma for Preconception Care

Date: _____

I. Personal details

Name: _____ Age: _____

Partner's/Husband Name: _____ Age: _____

Address: _____ Religion: _____

Education: Women: _____ Partner/Husband: _____

Occupation: Women: _____ Partner/Husband: _____

Are you planning to become pregnant in next 3-6 months? YES ☐ NO ☐

II. Preliminary examination/ Women health

Weight _____ Height _____ BMI: U/N/O/Obese

(Normal (N): 18.0-22.9; underweight (U) <18.0; over weight (O): 23.0-24.9; Obese : (Ob) >25kg/m^2)

Waist circumference: _____ BP: _____ CVS Examination: (S1S2/Murmur)

III. Lifestyle

Food Habits:

Do you follow a special diet? (Vegetarian, diabetic, any other cautions food intake)	YES ☐ NO ☐
Do you eat raw or undercooked food (Meat, other items)?	YES ☐ NO ☐
Are you doing any physical activity/exercise?	YES ☐ NO ☐

Addiction and substance abuse:

Do you smoke cigarettes or use tobacco products?	YES ☐ NO ☐
Are you exposed to second hand smoke/passive smoke?	YES ☐ NO ☐
Do you drink alcohol?	YES ☐ NO ☐
Do you use recreational/street drugs (cocaine, opiates, heroine, meth/ice, marijuana or pain pills)	YES ☐ NO ☐
Frequency?	YES ☐ NO ☐

IV. Reproductive history/health

Do you have any problems with your menstrual cycle?	YES ☐ NO ☐
Date of last pap smear: _____	

Do you have any of the following?

History of fever with rashes:	YES ☐ NO ☐
h/o Recurrent vaginal discharge or genital ulcers:	YES ☐ NO ☐
How many times have you been pregnant and number of full term births? _____	
When was your last pregnancy? _____	
Have you been treated for infertility?	YES ☐ NO ☐
Have you suffered from any prior pregnancy events?	YES ☐ NO ☐

Preterm Birth ☐ Stillbirth ☐ Induced abortions/ Miscarriages/ RPL (>3) ☐ Preeclampsia ☐
Caesarean births ☐ Congenital anomalies ☐ High/low birth weight ☐ Multiple pregnancy ☐

Have you ever have surgery on your uterus, cervix, ovaries, or tubes? YES ☐ NO ☐

V. Medication history:

Do you take folic acid and multivitamin supplementation?	YES ☐ NO ☐
Presently are you taking any medication prescribed/OTC?	YES ☐ NO ☐
Are you undergoing any other complementary and alternative therapy?	YES ☐ NO ☐
Anti-epileptics:	YES ☐ NO ☐
Blood thinners (aspirin, warfarin, pain medication):	YES ☐ NO ☐
Antidiabetic/anti hypertensives:	YES ☐ NO ☐
Anxiety or depression medications	YES ☐ NO ☐

VI. Immunization status: Have you ever been vaccinated for?

Rubella/Hepatitis B/Influenza/TDaP (Tetanus, Diphtheria, B Pertussis) /
MMR (Measles, Mumps and Rubella)/Varicella/HPV /Flu virus

VII. Home environment and Social stress:

Do you

• Feel emotionally supported at home?	YES ☐ NO ☐
• Have help from relatives and / or friends?	YES ☐ NO ☐
• Feel you have workplace stress?	YES ☐ NO ☐
• Feel are socially isolated (newcomers, language barriers)?	YES ☐ NO ☐
• Feel you have serious money/financial worries?	YES ☐ NO ☐
• In a stable relationship?	YES ☐ NO ☐
Have you experianced intimate partner/domestic violence?	YES ☐ NO ☐
Have you enrolled in any health insurance schemes?	YES ☐ NO ☐
Do you have pets?	YES ☐ NO ☐
Have any contact with soil, cat litter or sandboxes?	YES ☐ NO ☐

VIII. Medical/Family history:

Do you ever have below medical conditions?

Anemia: YES ☐ Epilepsy: YES ☐ Seizure: YES ☐
psychological problems (depression, anxiety schizophrenia, mood disorders): YES ☐
diabetes mellitus: YES ☐ thyroid and other endocrine diseases: YES ☐
cancer: YES ☐ HIV and other STIs: YES ☐
thrombophilia: YES ☐ asthma: YES ☐ renal disease: YES ☐
autoimmune diseases (Rheumatoid arthritis, scleroderma, lupus etc): YES ☐
polycystic ovary syndrome (PCOS): YES ☐ Hemoglobinopathy: YES ☐
surgeries: YES ☐ dental problems: YES ☐ any other: ☐

IX. Medication history:

Was yours a consanguineous marriage? YES ☐ NO ☐

Do you or your family or partner's family have a history of below listed genetic disorders?

- Developmental delays, learning disabilities: YES ☐ NO ☐
- Congenital anomalies (spine, NTDs, heart, kidney): YES ☐ NO ☐
- Bleeding disorders: YES ☐ NO ☐
- Tay-sachs disease: YES ☐ NO ☐
- Muscular dystrophy: YES ☐ NO ☐
- Sickle cell disease: YES ☐ NO ☐
- Down syndrome: YES ☐ NO ☐
- Mental retardation: YES ☐ NO ☐
- Cystic fibrosis: YES ☐ NO ☐
- Phenylketonuria (PKU) : YES ☐ NO ☐
- Others:

X. Preconception lab investigations:

Mandatory investigations:

Complete blood count (CBC) ☐	Blood grouping and Rh type ☐	Rubella IgG ☐
Blood glucose (fasting & post prandial) ☐	VDRL ☐	Hepatitis B (HBSAg) ☐
HIV ☐		

Optional screening:

TSH (thyroid) (As indicated)/ Hb electrophoresis (as indicated)/ HbA1c (If sugars deranged)

For Husbands/Partners: HIV, VDRL

(Final Risk assessment: High/low risk/No risk)