

Preconception Care in Women with Diabetes

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Abstract:

For women of reproductive age preconception care is a crucial component. The main goal of preconception care is to provide screening, detection and management of medical conditions that might affect future pregnancies. Preconception care is defined as a care that aim to identify and modify risks during pregnancy and improves pregnancy outcome through prevention and management. It is not only a single visit to a health-care provider but it will include full facilities of preventive and primary care services for women before a pregnancy or between pregnancies Improved preconception care is also a mandatory component for women with diabetes. Not only for women but men also need improvement of the knowledge, attitudes and behaviors related to reproductive health to maintain an ideal preconception health. For a good pregnancy out come proper preconception counseling, good glycemic control, screening and management of diabetic complications is essential.

Key words: Diabetes, reproductive health preconception care

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Introduction

In 2015, there were an estimated 1995 million women with diabetes. By 2030, this number is expected to rise to 3133 million.¹ As the prevalence of both obesity and diabetes in women of childbearing age continue to rise in all regions, so will the prevalence of hyperglycaemia in pregnancy. Global estimate of hyperglycemia of pregnancy shows that 16.2% women with hyperglycemia in pregnancy give of live birth.¹

Table I. Global estimates of hyperglycaemia in pregnancy, 2015

Total live births to women aged 20-49 years	129.4 million
Hyperglycaemia in pregnancy	
Global prevalence	16.2% of live births
Number of live births affected	20.9 million
Proportion of cases due to other types of diabetes first detected in pregnancy	7.4%
Proportion of cases due to diabetes detected prior to pregnancy	7.5%

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In South-East Asia the age adjusted prevalence of hyperglycemia of pregnancy among women of 20-49 yrs is 26.3%.¹ While caring for women with diabetes few definitions needs to be clarified as-

Preconception: Health status and risks before any pregnancy,

Periconception: Immediately before conception through organogenesis,

Interconception: Period between pregnancies,

Preconception Care: Interventions to identify and modify biomedical, behavioral and social risks to a woman's health or pregnancy outcome through prevention and management.

It is very alarming that 50% of all pregnancies are unplanned. So, proper preconception care actually involves giving protection, managing conditions, avoiding exposures known to be teratogenic in order to achieve an optimal outcome of pregnancy for the woman, her child and her family.

'Three Tier' approach helps to improve preconception/interconception health include general awareness public health campaigns, social marketing, information at every touch point and routine health promotion "Every woman, Every time" Specialty care.²

Table II. Why invest in preconception care? (According to WHO)³

Preconception care has a positive effect on a range of health outcomes. Among others, preconception care can:	<ul style="list-style-type: none"> • reduce maternal and child mortality • prevent unintended pregnancies • prevent complications during pregnancy and delivery • prevent stillbirths, preterm birth and low birth weight • prevent birth defects • prevent neonatal infections • prevent underweight and stunting • prevent vertical transmission of HIV/STIs • lower the risk of some forms of childhood cancers • lower the risk of type 2 diabetes and cardiovascular diseases later in life
Gaps and substantial	Even where strong public health programmes are in place across the life-course, they do not guarantee that women enter pregnancy in good health
Examples of successful preconception care initiatives are available to inform policy-makers	There is growing experience in implementing preconception care initiatives both in high-income countries, such as Bangladesh, the Philippines and Sri Lanka (1)

Why do we need Preconception Care?

Most critical time for fetus is day 17–56 when organs, limbs, skeletal, CNS forming. Exposure to environmental risks harmful to embryo when woman may not realize she is pregnant. In case of unplanned pregnancies adverse outcomes are more including major birth defects, fetal alcohol syndrome, low birth weight, preterm delivery and different complications of pregnancy.

Preconception care needs always to be a multi-disciplinary team approach including endocrinologist, obstetrician, diabetes educators and the patient is the most active member of the team

Components of preconception care

1. Physical assessment
2. Risk Screening: Reproductive awareness, environmental toxins/teratogens, nutrition/folate, genetics, substance use, medical conditions/medications, Infections/vaccinations, Psychosocial concerns
3. Vaccinations
4. Counseling
5. Optimal glycemic control in preconception period

Dysglycemia in pregnancy have adverse effects on the fetus as in 1st trimester it increases the risk of fetal malformations and in 2nd and 3rd trimester there is increased risk of macrosomia and metabolic complications. For this reason preconception care in diabetic women should include:

1. Preconception counseling: It should provide consistent information to all women of childbearing age (13-49yrs) regarding risk of hyperglycemia in preconception period, pregnancy planning, establishing optimal glycemic target and effective use of contraceptive until the glycemic target is achieved for 3-6 months. Proper counseling should include the risk and prevention of congenital anomalies, fetal and neonatal complications of maternal diabetes, effects of pregnancy on maternal diabetic complications, risks of obstetrical complications that occur with increased frequency in diabetic pregnancies and effective contraception until glycemia is well controlled and the use of emergency contraception.
2. Glycemic control: Attain a preconception HbA^{1c} of ≤6.5% (or A1C as close to normal as can safely be achieved) to decrease the risk of: spontaneous abortion, congenital anomalies, pre-eclampsia, progression of diabetic complications in pregnancy.

To optimize the glycemic target education about medical nutrition therapy (MNT), self-monitoring of blood glucose (SMBG), self-administration of insulin and self-adjustment of insulin doses (Diabetes self-management skills), education about hypoglycaemia and physical activity is mandatory.

3. Management of complication: Screening and management of complications as nephropathy, neuropathy and retinopathy must be done as a component of preconception care as diabetic retinopathy, nephropathy, autonomic neuropathy (especially gastroparesis), and coronary artery disease (CAD) can be affected by or can affect the outcome of pregnancy.
4. General pre pregnancy care: Correction of body weight, anemia, nutritional correction addition as vitamin and folic acid supplementation are also required.

Table III. Recommended Daily Allowance for women of childbearing age

Folic acid	400 µg
Vitamin D	600 IU
Calcium	1000 mg
Iron	15 -18 mg
Iodine	150 mg

Initial visit of Preconception care

This should include details of-

Medical & obstetric history including duration and type of diabetes, history of acute and chronic complications, diabetes management including insulin regimen, OAD, SMBG, diet, physical activity, concomitant medical conditions and medications, thyroid disease, pregnancy history; contraceptive use and support system, including family and work environment.

Physical examination should include blood pressure measurement (including postural drop), fundoscopy, cardiovascular examination, neurological examination

Laboratory evaluation including HbA1C measurement, serum creatinine, albumin/creatinine ratio or 24 hour albumin excretion rate. (asUTP >400 mg/d are at risk for IUGR), TSH, FT4

Selection of antidiabetic therapy: Insulin is the gold standard, aspart or lispro can be used in pregnancy instead of regular insulin. Detemir may be used as an alternative to NPH. Oral antidiabetic drug is currently not recommended. Metformin in PCOS may improve fertility need to warn about possible pregnancy and Metformin is safe for ovulation induction in PCOS.

Follow-up: 1 to 2 months' intervals until glycemic target is achieved. If HbA1c is not achieved modification of the treatment regimen should be considered.

Glycemic Goals: Pre-meals capillary PG <5.3 mmol/L, 2hrs postprandial capillary PG <6.7 mmol/L, HbA1c <6.5% is the optimum glycemic target. Achieving a healthy weight is essential as obesity is associated with adverse pregnancy outcomes.

Preconception Checklist for Women with Pre-existing Diabetes (2013, Canadian Diabetes association guideline)

1. Attain a preconception HbA_{1c} of ≤7.0% (if safe)
2. Assess for and manage any complications
3. Switch to insulin if on oral agents
4. Folic Acid 5 mg/d: 3 months pre-conception to 12 weeks post-conception
5. Discontinue potential embryopathic drug as
 - ü ACE-inhibitors/ARB (prior to or upon detection of pregnancy)
 - ü Statin therapy

Preconception Care: Special considerations

Untreated CAD is associated with a high mortality rate during pregnancy and exercise tolerance should be normal while planning pregnancy.

Exposures known to be teratogenic or otherwise harmful in early pregnancy: Alcohol, tobacco, illicit Drugs, medications, many antiseizure medications, oral anticoagulants and environmental toxins will impair pregnancy outcome.

All women of reproductive age should be up to date on their immunizations, especially the (DPT) Tetanus-diphtheria-pertussis and (MMR) measles, mumps, and rubella vaccines. They should be screened annually for medical, lifestyle, and occupational risks for other infections and be offered indicated immunizations and counseling.

Every woman of reproductive age should receive information and counseling about all forms of contraception and the use of emergency contraception that is consistent with the reproductive life plan and risk of pregnancy. Screening for anemia and UTI should be done in all women seeking preconception care.

Conclusion

A multidisciplinary team work is essential for preconception care. Maternal glycemic control is crucial to improving pregnancy outcomes. Management is simple and just requires awareness and organisation. Along with physicians diabetes educators, also have pivotal role in proving preconception care.

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