Preconception care

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Goal of Preconception care (PCC)

The goal of preconception care is to reduce maternal and children mortality and severe morbidity and reduce the burden of congenital disorders on individuals, families and the community.

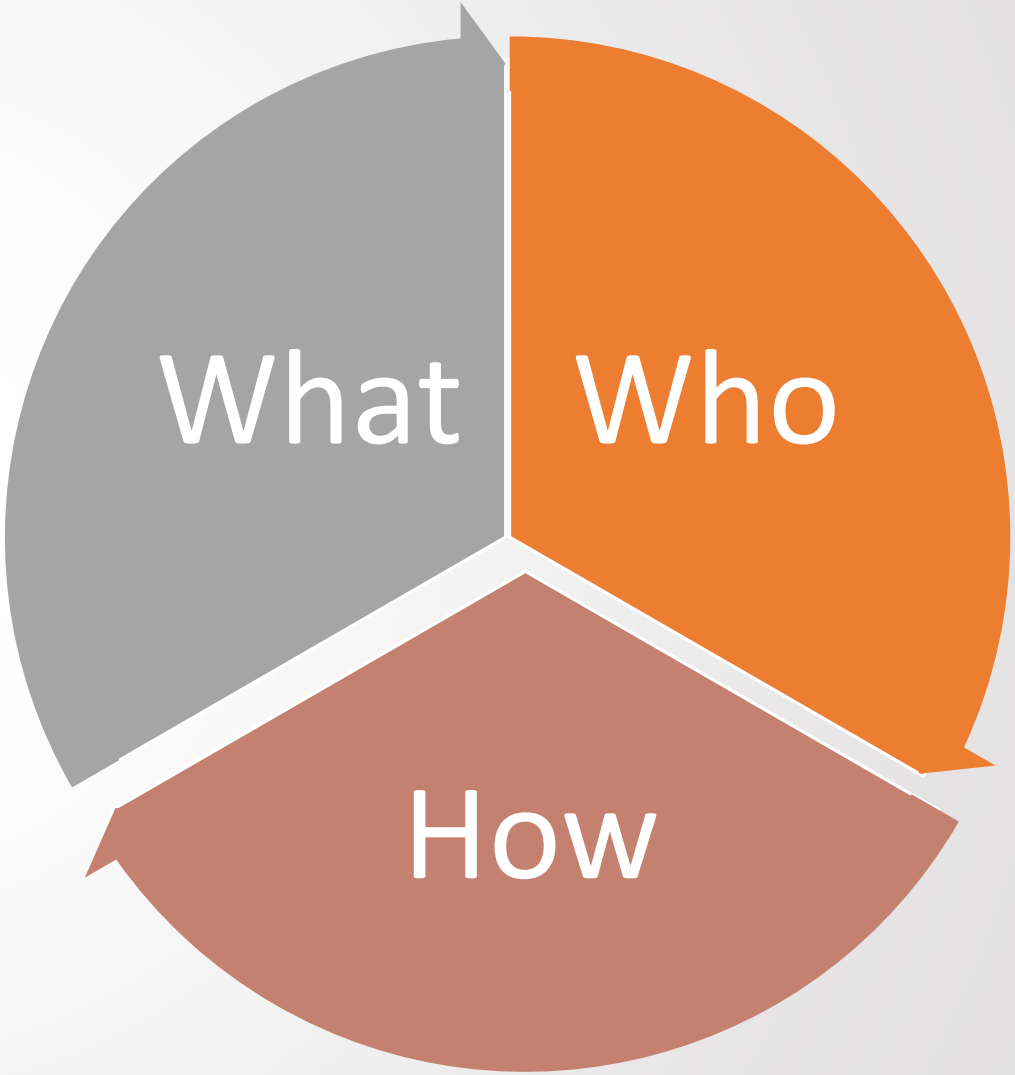
Definition of Preconception Care (PCC)

Any intervention provided to women and couples of childbearing age, regardless of pregnancy status or desire, **before pregnancy**, to improve health outcomes for women, newborns and children.

PCC interventions involve risk screening through a thorough family and personal history and medical assessment, education and motivational counselling, prevention and management steps for conditions known to influence the pregnancy outcome for both mother and baby and to refer to specialists whenever indicated.

Implementing PCC

- **What** are the evidence based, cost effective, affordable and sustainable interventions??
- **How:** In order to reduce mortality and severe morbidity in mother and baby, PCC should be integrated into the national health system
- **Who** provides PCC?? These interventions require the active engagement of trained health professionals in different disciplines



Role of health care providers in the context of preconception care and counseling

- Provide information on how to maximize the chances for a couple to have a healthy baby
- The ability to recognize high risk families and refer them to specialized centers
- The ability to provide premarital and prescreening counseling and counseling consanguineous couples

Preconception Care program

A national preconception care and health promotion program can make a significant contribution to reduce maternal mortality and severe morbidity and to maximise the chance of the couple to have a healthy baby.

Criteria for selection of core preconception care interventions (WHO recommendation)

- Evidence based and high impact
- Cost effectiveness / benefit
- Burden in the area
- Feasibility
- Affordability
- Sustainability
- Acceptability, culturally sensitive
- Impact on maternal, pregnancy and newborn health outcomes

PCC interventions

PCC interventions involve

- risk screening through a thorough family and personal history and medical assessment
- education and motivational counselling
- prevention and management steps for conditions known to influence the pregnancy outcome for both mother and baby and to refer to specialists whenever indicated

PCC core interventions recommendations

1- History taking

- **Take a family history** of any known congenital disorders and conditions like diabetes, hypertension, other chronic diseases including disability and mental disorders
- **Take the personal history including** demography: age, education, occupation, consanguinity
- **Take the personal medical, surgical and Obstetric/Gynaecology history**: seizure disorders, diabetes, hypertension, thyroid disease, sexually transmitted infections [STIs], mental disorders, domestic violence and history of poor perinatal outcomes. Ask about vaccination status for Tetanus & diphtheria [Td], Rubella and hepatitis
- **Ask about behaviour aspects such as** smoking, intake of prescription medications, self-medication [over the counter], folic acid intake, *physical exercise*, *alcohol intake, illicit drugs**
- **Ask about use of Contraception**
- **Ask about any hazardous environmental exposures such as**: second-hand smoking, insecticides, pesticides, air pollution

** Interventions in italics are optional*

2- Medical assessment

- Physical examination, body mass index [BMI], vital signs
- Mental health (depression), Patient Health Questionnaire-2 (PHQ-2,- three screening questions)
- History and pedigree construction to detect couples with high risk for genetic diseases
- CBC, ABO Blood grouping and Rhesus
- Screening and testing for hemoglobinopathies: sickle cell disease and beta thalassemia
- Fasting blood sugar and when available [HbA1c]. Glucose tolerance test done if there is a family history of diabetes
- Syphilis screening
- Hepatitis screening
- *Dental Care*

** Interventions in italics are optional*

3- Counseling and education

- Counselling on the importance of early entry into antenatal care
- Explaining the importance of preconception intake of folic acid and of a healthy diet
- Counselling and education on avoiding tobacco, alcohol, and substance use
- Avoiding teratogenic infections [rubella, toxoplasmosis, cytomegalovirus, varicella]
- Avoiding medication contraindicated in pregnancy
- Counselling consanguineous couples on the risks of congenital anomalies
- Sharing information on existing screening programme services in the country
- Counselling on healthy lifestyle and healthy reproductive life planning
- Follow up and referral of couples with identified risks including genetic conditions

WHO, EMRO

4- Prevention and management: at the individual level

- Supplementing folic acid
- Management and /or referral of identified medical conditions such as: chronic diseases, communicable diseases, mental and substance use disorders, genetic disorders, etc.
- Management or referral for identified risk behaviours such as tobacco, alcohol and drugs use, etc.
- Vaccination against rubella [if not vaccinated and at least four weeks before pregnancy]
- Vaccination against tetanus and diphtheria using Td vaccine
- Vaccination against hepatitis B [if there is no confirmed history of previous vaccination]
- Vaccination against influenza
- Promote and provide family planning services and healthy reproductive life planning

WHO, EMRO

4- Prevention and management: at the population level

- Flour fortification (folic acid and iron)
- Iodization of salt (hypothyroidism)
- Promoting child vaccination: health education on the prime importance of child vaccination according to national schedule
- Health education on the importance of HPV vaccine, especially in pre-marriage counseling or with newly married women

Feasible interventions for the primary prevention of congenital disorders

Intervention	Expected result
Folic acid supplementation (400 mcg/day) and flour fortification	50-70% of neural tube defects could be prevented
Optimum management of diabetes and other maternal conditions such as epilepsy, hypertension	2-10% reduction of certain congenital malformations and improving pregnancy outcome
Management and avoidance of teratogenic infections, of teratogenic drugs and medications, and cessation of tobacco and alcohol intake	Reduction of congenital malformations and of abnormal fetal growth
Immunisation against Rubella, varicella and hepatitis B	Reduction of congenital malformations related to teratogens and of abnormal fetal growth

PCC should be integrated into the national health system by adopting and integrating the core interventions

- Primary health care services
- Non-communicable maternal and child health clinics
- Family planning and birth spacing clinics
- Premarital counseling clinics
- Adolescent health centers/clinics
- Mental health clinics

Objectives of Preconception counseling for prevention of congenital disorders

1

- Reducing disorders related to advanced parental age such as Down syndrome, and autosomal dominant disorders due to new dominant mutation
- Reducing the occurrence of congenital abnormalities such as neural tube defects related to folate deficiency, and mental deficiency due to iodine deficiency, by promoting healthy nutrition for women of reproductive age
- Reducing the occurrence of hereditary disorders in high risk families through genetic counseling

2

- Providing information on the implications and availability of carrier screening and testing for common disorders such as the hemoglobinopathies and G6PD deficiency
- Preventing congenital rubella syndrome by immunization
- Reducing mortality and chronic handicap due to rhesus hemolytic disease through routine prenatal screening

3

- Reducing congenital abnormalities and stillbirths by better control of maternal diabetes prior to and during pregnancy
- Reducing the risk of miscarriage, congenital abnormality and fetal growth retardation through avoidance of smoking during pregnancy
- Avoiding congenital abnormalities caused by certain infections such as syphilis and toxoplasmosis, through prevention, early detection and prompt treatment
- Minimizing exposure to industrial and domestic teratogens before and during pregnancy

Specific PCC interventions

Folate and Folic Acid Intake

All women of reproductive age should be advised to:

- ingest 0.4mg (400µg) of synthetic folic acid daily from
- fortified foods and/or supplements and to consume a
- balanced, healthy diet of folate-rich food.
- Women with a history of neural tube defects should be counseled to take a larger dose of folic acid, up to 4mg.

Immunizations

- Ask about immunization for Rubella, Hepatitis B and Tetanus.
- Those who do not recall taking these vaccinations should be vaccinated before pregnancy for Rubella and hepatitis B.

Hepatitis C

- Screen high-risk women if feasible.
- Women who are positive for hepatitis C and desire pregnancy should be counseled to understand the risks and uncertainties.
- Treatment should be considered before going into pregnancy.

Toxoplasmosis and cytomegalovirus infections

- Women should be counseled about ways to prevent infections during pregnancy.
- For women who are diagnosed to have converted to positive for toxoplasmosis during pregnancy, treatment should be offered.

Weight assessment

- Calculate BMI of the woman.
- Women with BMIs > 26kg/m2 should be counseled about the risks to their own health and to future pregnancies.
- Women with a BMI < 19.8kg/m2 should be counseled about the risks to their own health and the risks to future pregnancies. Assess for eating disorders.
- Counsel and encourage the adoption of healthy life styles.

Syphilis

- Screen all women for syphilis at the preconception visit, and women who are infected and their spouses should be treated.

Tobacco and substance use

- All women should be assessed for use of tobacco at each encounter with the healthcare system; women who smoke should be counseled to stop smoking, specifically when planning pregnancy.
- Counsel on avoiding passive exposure to smoking.
- Ask about alcohol, and illicit drug use and counsel on the risks and the importance of cessation .

Chronic Maternal Disease

- For women with chronic medical conditions such as diabetes and hypertension, preconception care should include diagnosis and optimum care before and during pregnancy to reduce the risks of adverse maternal and baby outcomes.
- Preconception care might include advice modifying the treatment of the condition.
- Patients could be referred for specialist counseling and management if indicated.

Medication Use

- A Review all medications (prescribed and over-the-counter) used by a patient. Patients on medications should be advised as to what to do with their medication regimen during pregnancy.
- Refer to a specialist when needed.

History of previous abortions and preterm births

Obtain pregnancy history

- Identify the cause of preterm/low birth weight in previous pregnancy if possible and offer management for conditions that can recur in a next pregnancy.
- Women with 3 or more consecutive early abortions should have a work-up to identify a cause.

History of previous stillbirth

- Identify the cause and counsel accordingly.
- Risk factors that can be modified before the next pregnancy should be addressed.
- Still births with congenital disorders may indicate a high risk of recurrence. Couples should be referred to a genetic counselor.

To assess for genetic diseases

- A three generation family tree should be obtained for both members of the couple, with the goal of identifying known genetic disorders, congenital malformations, developmental delay and intellectual disability.
- If a genetic disease is suspected, refer the couple to a genetic counselor clinical geneticist. The ideal timing for genetic investigation and counseling is before a couple attempts to conceive.

Preconception/ premarital screening for genetic disease

In populations with high rates of beta thalassemia and sickle cell anemia, premarital or preconception screening to identify both couple carriers is recommended.

All couples should receive prescreening counseling.

Couples identified to be at high risk should be referred for specialist counseling.

Conclusions

- The aims of the PCC program to reduce maternal and child mortality and severe morbidity could be accomplished through targeting the current main causes leading to mortality and morbidity.
- Preconception care is essential for improving maternal, neonatal and child health in countries where the disease burden and levels of congenital disorders and their influencing factors are high.