Hypertension & Diabetes Mx

What GPs should know when managing woman of child-bearing age

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Maternal Fetal Medicine

Disclaimer

- No declarations to make
- Not affiliated to parties with Financial Interests
- No conflict of Interest

Why this matters:

- Diabetes and hypertension are among the most common medical disorders managed by GPs
- It causes severe complications in pregnancy.
- Many women conceive while already on chronic medication.
- Some common drugs are **teratogenic** &/or fetotoxic.
- Early organogenesis occurs before first antenatal visit.
- GPs are often first contact for:
  - family planning
  - repeat chronic prescriptions
  - pregnancy planning & confirmation
  - chronic disease optimisation
- **Message:** Mx optimization – especially of DM & Hpt should
- occur **before conception**

Prevalence - Women Planning Pregnancy

- **Hypertension:**
- Age 20–29: ~5–10%
- Age 30–39: ~12–20%
- Higher if obese, prior preeclampsia, HIV, CKD, family history.

- **Diabetes:**
- Age 20–29: ~1–3%
- Age 30–39: ~4–8%
- Much higher if obese or prior gestational diabetes.
- Many cases remain undiagnosed, especially early Type 2 diabetes and prediabetes.

Learning Objectives

By the end of this session, we should be able to:

- Recognise unsafe antihypertensive and diabetic drugs in pregnancy
- Switch to safer alternatives before conception
- Counsel women using contraindicated medicines
- Provide contraception advice until safe transition is completed
- Mx and follow-up mothers who had complications of DM & HPT in pregnancy
- Educate patients properly on their chronic care Mx

It is said that:

Many congenital risks occur before a booking visit

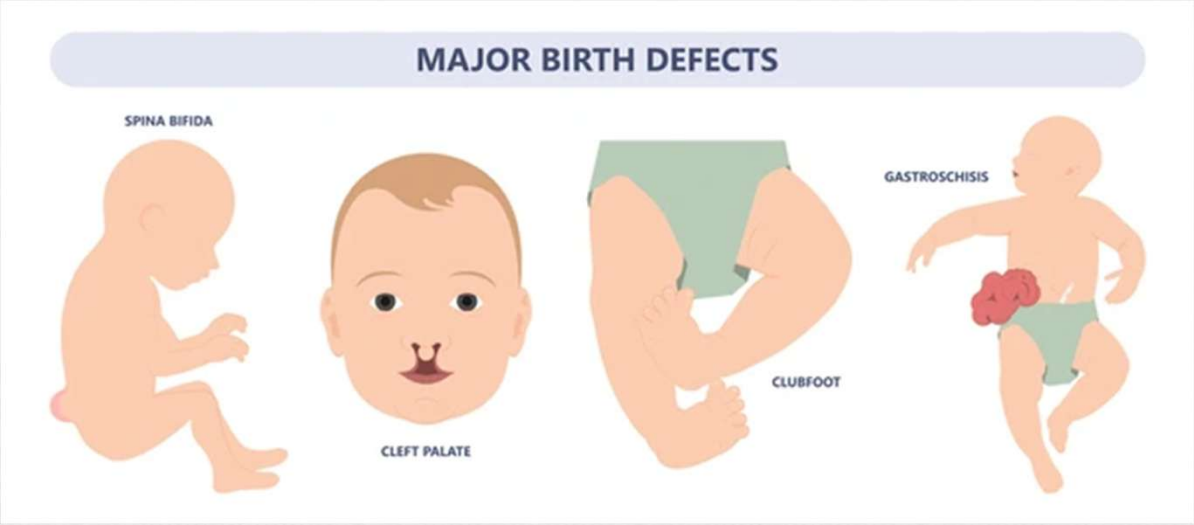
Also that:

The repeat chronic prescription is often where prevention care starts.

Risks of HPT & DM in Pregnancy

- Placental transfer of many drugs
- First trimester = structural malformations risk
- 2nd/3rd trimester = growth, renal, CNS, fetal function effects
- Maternal disease itself also harmful

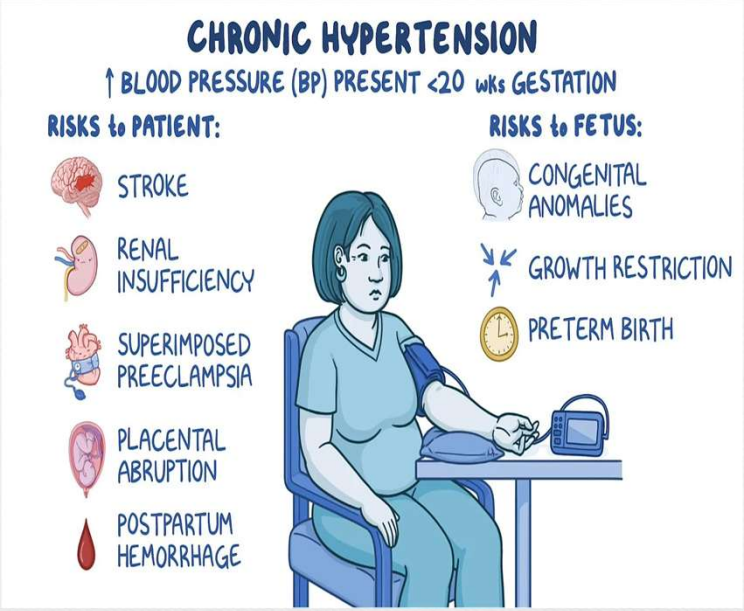
Balance: untreated disease vs. medication & adverse risk to fetus



Chronic Hpt : Why Control Matters

Poorly controlled hypertension increases risk of:

- Preeclampsia
- Placental abruption
- Eclampsia & HELLP syndrome
- Fetal growth restriction
- Prematurity
- Stroke
- Maternal renal injury
- Stillbirth



Case Example

- 35-year-old female G2 P0 M1
- Ht: 168 cm; Wt: 99.5kg; Black ethnicity; works as Admin clerk
- had ? Miscarriage at +/- 28 weeks due to ?PET
- was told by OBGYN not to fall pregnant and had Mirena inserted 4 years ago
- After miscarriage she was put on:
  - Prexum Plus 10/5mg od
  - Atenolol 50mg od
  - Serdep 100mg od
- married for 5 years & now wished to conceive.

How will you manage your patient?

- ..

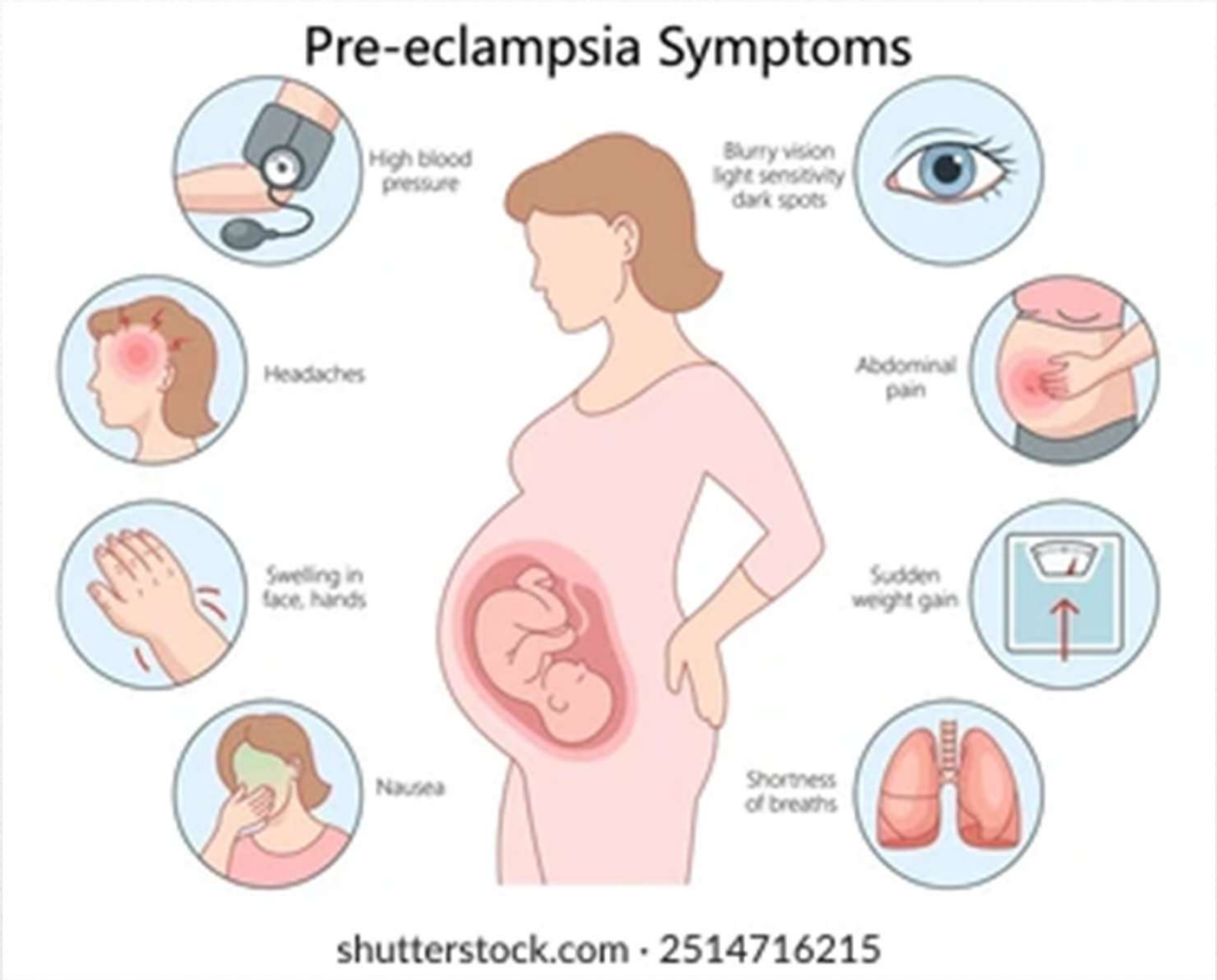
Diff. Classification of Hpt in Pregnancy

- **Gestational Hypertension**
  - Sustained hypertension after 20w of pregnancy without any other organ involvement. Returns to normal in 3m pp
- **Preeclampsia**
  - Sustained hypertension after 20w of pregnancy with evidence of other organ involvement. Returns to normal in 3m pp
- **Chronic Hypertension with Preg**
  - Hypertensive before 20w. 95% is Essential Hypertension Includes “White Coat Hypertension”
- **Preeclampsia superimposed on Chronic Hpt**

Systems involved in Preeclampsia

- **Renal**
  - Significant proteinuria (>300 mg in 24 hours or P:C > 0.30)
  - S Creat >90
  - Oliguria
- **Hepatic**
  - Elevated transaminases (AST or ALT >70)
  - Epigastric or RUQ pain
- **Hematological**
  - Thrombocytopenia (<100)
  - Hemolysis
  - DIC

- **CNS**
  - Eclampsia or stroke
  - Hyperreflexia with sustained clonus
  - Severe headache or visual disturbance
- **Cardiovascular**
  - Pulmonary oedema
- **Placental**
  - IUGR
  - Abruption


Pre-eclampsia Symptoms
High blood pressure
Blurry vision
light sensitivity
dark spots
Headaches
Abdominal pain
Swelling in face, hands
Sudden weight gain
Nausea
Shortness of breaths
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Renal Disease in Pregnancy

- Responsible for about 5% of chronic hypertension
- Causes include:
    - chronic or recurrent infection
    - glomerulonephritis
    - renal artery stenosis
- Must be assessed by creatinine clearance (CC) which doubles in normal pregnancy
- When CC falls below 50% the prognosis is very bad
- Monitoring for superimposed pre-eclampsia can be difficult if there is chronic proteinuria – then S. Urates and dopplers are only option
- Some females should be advised **NOT** to conceive

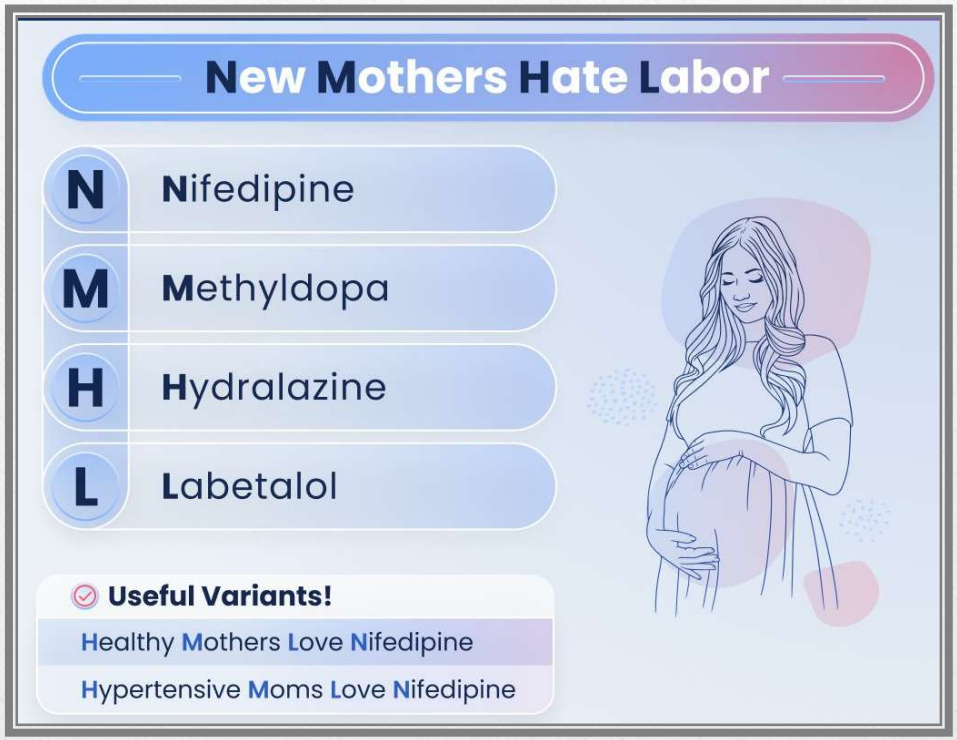
Rare causes of hypertension

- Coarctation of the aorta
    - Sometimes the clue is to measure BP in both arms
    - There is a systolic murmur that can be heard in the back
- Phaeochromocytoma
    - Paroxysms of symptomatic hypertension
    - The clue to diagnosis is to think of it
    - Associated with high levels of catecholamines
- Hyperaldosteronism
    - Also known as Conn's disease

Hpt drugs safe in Pregnancy

- **Methyldopa**
  - Most tested 0.5-2g / d in 2-3 divided doses
  - Discontinue post partum due to depression
- **Labetalol**
  - 200-1200 mg/d in 2 divided doses
  - Preferred if baseline pulse > 100/mt
  - C/I in Asthma, CCF, DM, & Bradycardia
- **Long acting Calcium Channel Blockers (Nifedipine)**
  - 20-120 mg/d of slow release drug in 1-2 divided doses
  - S/E Tachycardia, palpitations, headaches, facial flushing
  - Never sub-lingual

- **Hydralazine**
  - Initial: 10 mg PO q6hr for 2-4 days; may increase gradually
  - by 10-25 mg/dose every 2-5 days up to 50 mg PO q6hr
- **Amlodipine**
  - 5-20 mg/d – Data just out and not totally recommended by all



Drugs C/I for Pregnancy

- **ACE inhibitors**
  - Enalapril
  - Lisinopril
  - Ramipril
- **ARBs**
  - Losartan
  - Valsartan
  - Candesartan
- **Direct renin inhibitor**
  - Aliskiren

Why ACE Inhibitors & ARBs C/I

Fetopathy (especially 2nd/3rd trimester)

- Fetal renal failure
- Oligohydramnios
- Pulmonary hypoplasia
- Skull ossification defects
- Limb contractures
- Neonatal hypotension
- Fetal death

Avoid throughout pregnancy

Drugs to avoid:

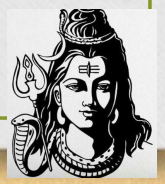
- Thiazides
  - Reduces plasma volume
  - Oligohydramnios
  - IUGR / SGA
- Selective Beta blockers
  - IUGR / SGA
  - Labetalol preferred
- Spironolactone
  - Androgenic concerns

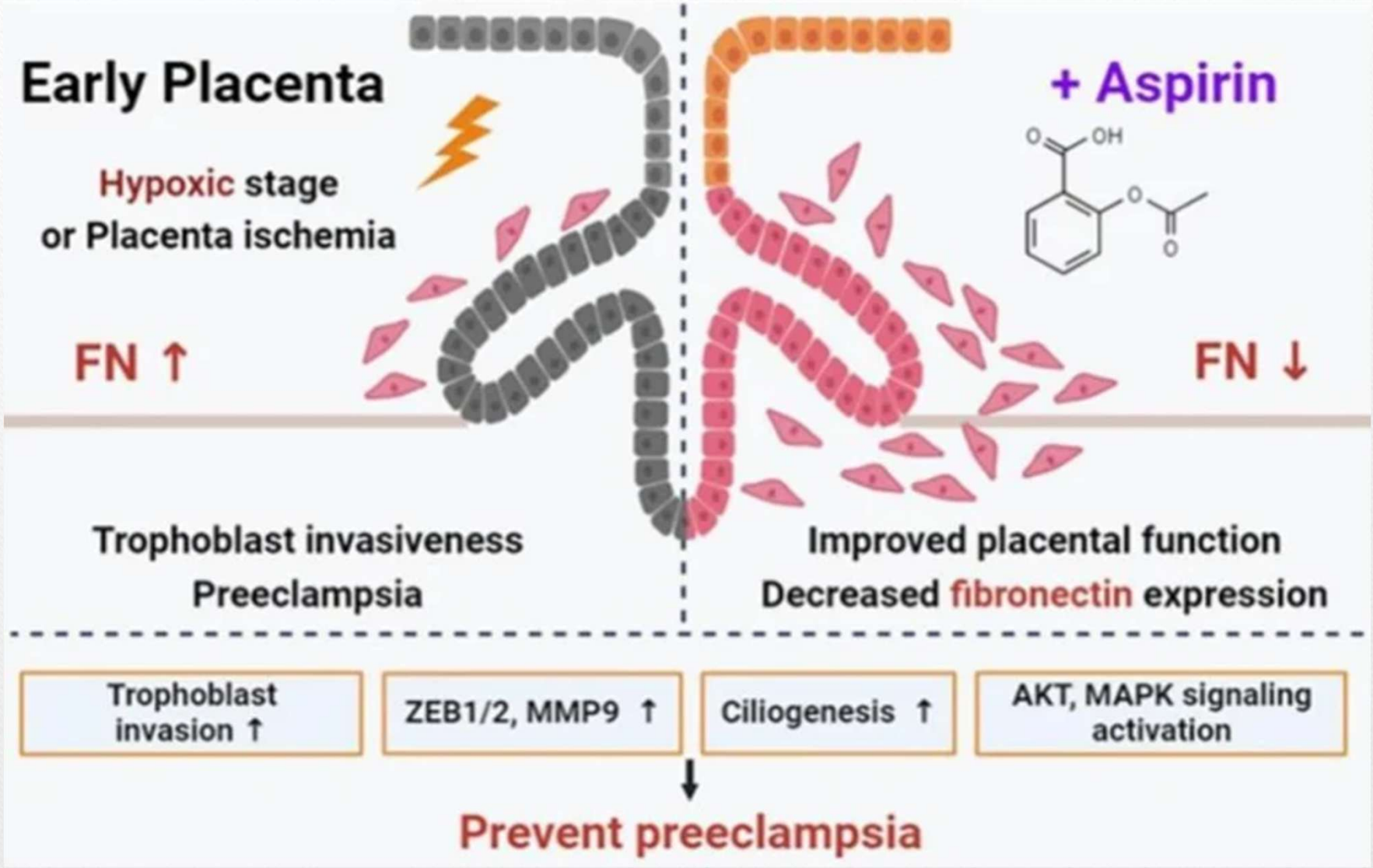
GP follow-up after Pre-eclampsia

- Mild pre-eclampsia near term has a low recurrence risk
  - Unless there is a new partner or a long gap >10 years to the next pregnancy
- Severe pre-eclampsia prior to 34w has a 50- 66% recurrence risk
- Most recover by 12w but **all** these patients are at increased lifetime risk of hypertension, cardiac & renal related diseases
- Avoid NSAIDs & nephro-toxic drugs

Can Preeclampsia be predicted and prevented?

- Pre-conceptual care
- Identifying the patient at risk
- Early pregnancy testing
- Prevention strategies
    - **Especially the role of low dose Aspirin prophylaxis**




Early Placenta
Hypoxic stage
or Placenta ischemia
FN ↑
+ Aspirin
FN ↓
Trophoblast invasiveness
Preeclampsia
Improved placental function
Decreased fibronectin expression
Trophoblast invasion ↑
ZEB1/2, MMP9 ↑
Ciliogenesis ↑
AKT, MAPK signaling activation
Prevent preeclampsia

Screening Protocol / Prophylaxis

(depends on *a priori* risk)

- Prediction: Preeclampsia
- Prediction: Trisomy's
- Prediction: Preterm birth
- Prediction: Fetal growth restriction
- Prediction: Fetal macrosomia
- Prediction: Gestational diabetes
- Prediction: Miscarriage
- Prediction: Stillbirth
- Management: SGA
- Management: Fetal anaemia
- Assessment: Nuchal translucency
- Assessment: Fetal growth
- Assessment: Birth weight
- Assessment: Fetal Doppler

By 13 weeks – ability to detect:

- Down's syndrome (T21) - 99.5%
- Edward's syndrome (T18) - 95%
- Patau's syndrome (T13) - 95%
- Anencephaly - 98%
- Open Spina bifida - 94%
- Closed Spina bifida & NTDs - 90%
- Incompetent cervix - 88%
- **Diabetic Risk assessment - 99%**
- **Predict (early onset) PET - 91%**

Primary PET Prophylaxis (Risk Score)

High Risk (3)

- Pre-gestational DM
- Chronic Hpt
- Thrombocytopenia
- Chr. Renal Disease
- Auto-immune Diseases (SLE; APLAS; RA)
- Assisted Reproduction (OD or Surrogacy)

Moderate Risk (2)

- Hypothyroidism
- F/h/o PET
- Gestational DM
- BMI >= 35
- Multiple pregnancy
- Previous PET

Low risk (1)

- Age >35
- Age <19
- Anaemia <10g%
- BMI >= 30
- Primigravida
- Mother SGA
- F/h/o Cardiac disease
- PCOS
- Preg interval > 7 years
- IVF / ICSI Assisted preg
- MAP >= 85mmHg
- Dyslipidaemias
- Weight gain in preg

If score is >/= 3
Start PET Prophylaxis before 17 wks
Aspirin 150mg/d (Ecotrin 2 nocte)

Case Study:

- Confirm pregnancy intention
- Keep IUCD in-situ till optimization of Hpt Mx
- Stop ACEi/ARB before conception
- Switch to nifedipine/labetalol/methyldopa
- Baseline creatinine, urine protein, ECG if needed
- Weight optimization
- Behavior modification
- Remove IUCD when disease Mx optimized
- Low-dose aspirin later, if indicated

Hypertension

Source:

The FIGO Textbook of

Pregnancy Hypertension

An evidence-based guide to monitoring, prevention and management

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Resource:

- Fetal Medicine Foundation:

https://fetalmedicine.org/

- Better Obs:

https://sasog.co.za/betterobs/

- Federation of Obst & Gynae Societies of India

https://www.fogsi.org/

DM in Pregnancy: Why Control Matters

Poor control increases:

- Miscarriage
- Congenital anomalies
- Macrosomia
- Shoulder dystocia
- Preeclampsia
- Polyhydramnios
- Stillbirth
- Neonatal hypoglycaemia

- **HbA1c optimisation before conception is critical**

Diabetes Drugs SAFE / PREFERRED

First Line

- Insulin — gold standard
  - Basal long acting + Metformin
  - Basal bolus with basal long acting & pre-prandial short acting
  - Biphasic (not optimal)

Commonly Used

- Metformin — widely used in T2DM, PCOS, GDM
- Should be used together with Insulin and not stopped

Oral Agents to STOP Before Pregnancy

- Sulfonylureas e.g. Gliclazide, glibenclamide
- SGLT2 inhibitors e.g. Empagliflozin, dapagliflozin
- DPP-4 inhibitors e.g. Sitagliptin
- GLP-1 agonists e.g. Semaglutide, liraglutide
- Thiazolidinediones / TZDs e.g. Pioglitazone

Why These Drugs Are Problematic

- **SGLT2 inhibitors**
  - Fetal kidney development concern
- **GLP-1 agonists**
  - Limited human data
  - Animal reproductive toxicity signals
- **Sulfonylureas**
  - Neonatal hypoglycaemia risk
  - Placental transfer concerns
- **Pioglitazone / GLP-1 agonists**
  - Insufficient safety data

Semaglutide / Weight-loss Drugs

Semaglutide
Tirzepatide

- Increasingly common in reproductive-age women.

Advise planned discontinuation before conception (drug-specific washout may be required).

Preconception Plan for Diabetes

- Discuss pregnancy intention annually
- Aim HbA1c near target before conception
- Switch unsafe oral agents early
- Start insulin if needed
- Folic acid (high dose if indicated locally)
- Retinal review
- Renal assessment
- Thyroid check in T1DM

Contraception

Strongly advise reliable contraception

- **Highly effective**
  - Levonorgestrel intrauterine system
  - Copper IUD
  - Implant (irregular bleeding)
- **Effective**
  - Injectable contraception
  - Combined oral contraceptive (if medically eligible)

Choose based on BP, obesity, smoking, age, thrombosis risk

Case 2

32-year-old on:

- Losartan
- Metformin
- Empagliflozin

Wants pregnancy in 6 months

Mx plan:

- Stop losartan → switch nifedipine/labetalol
- Stop empagliflozin
- Continue metformin / consider insulin
- Optimise HbA1c
- Folic acid
- Use contraception until stable

Red Flags

Urgent referral if:

- BP ≥160/110
- Proteinuria
- Severe headache
- Visual symptoms
- Hypoglycaemia recurrent
- DKA symptoms
- Reduced fetal movement
- Growth concern

Preconception chronic care optimization
is
Antenatal care started early

Thank You