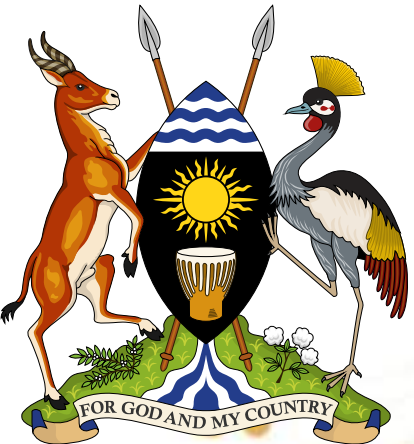


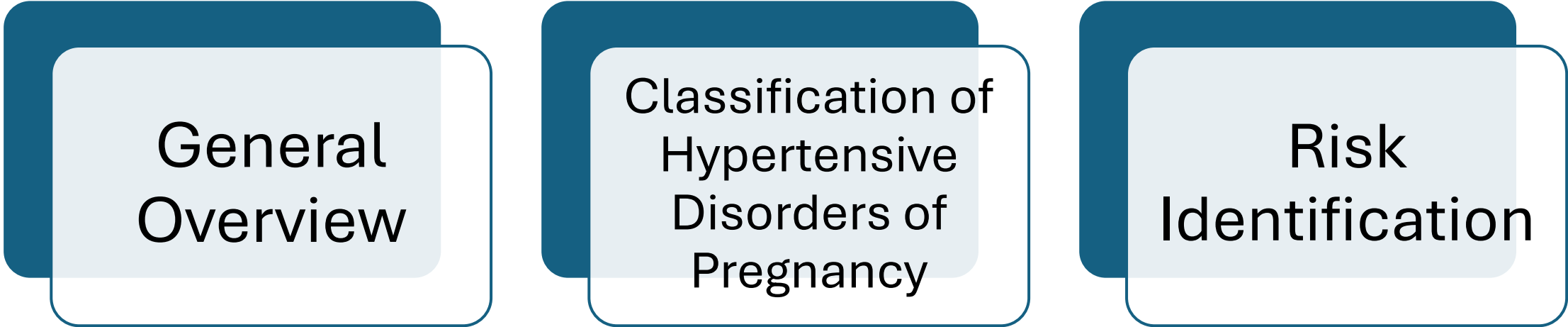
Hypertensive Disorders of Pregnancy



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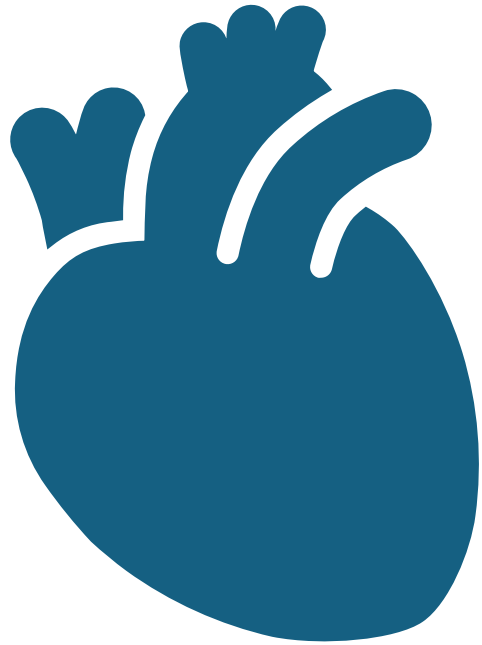
Presentation Outline



General
Overview

Classification of
Hypertensive
Disorders of
Pregnancy

Risk
Identification



Definitions

Hypertension/High Blood pressure-

Hypertension (high blood pressure) is when the pressure in your blood vessels is too high (140/90 mmHg or higher).

BP must be taken at least 4hrs apart- Pt relaxed and seated in chair with feet on the floor and arms resting at heart level

Blood Pressure Measurement



Pregnancy Hypertensive Disorders

Hypertensive disorders of pregnancy are among the leading causes of maternal & foetal morbidity & mortality

Efforts to promote prevention, proper diagnosis & treatment are needed to reverse trend

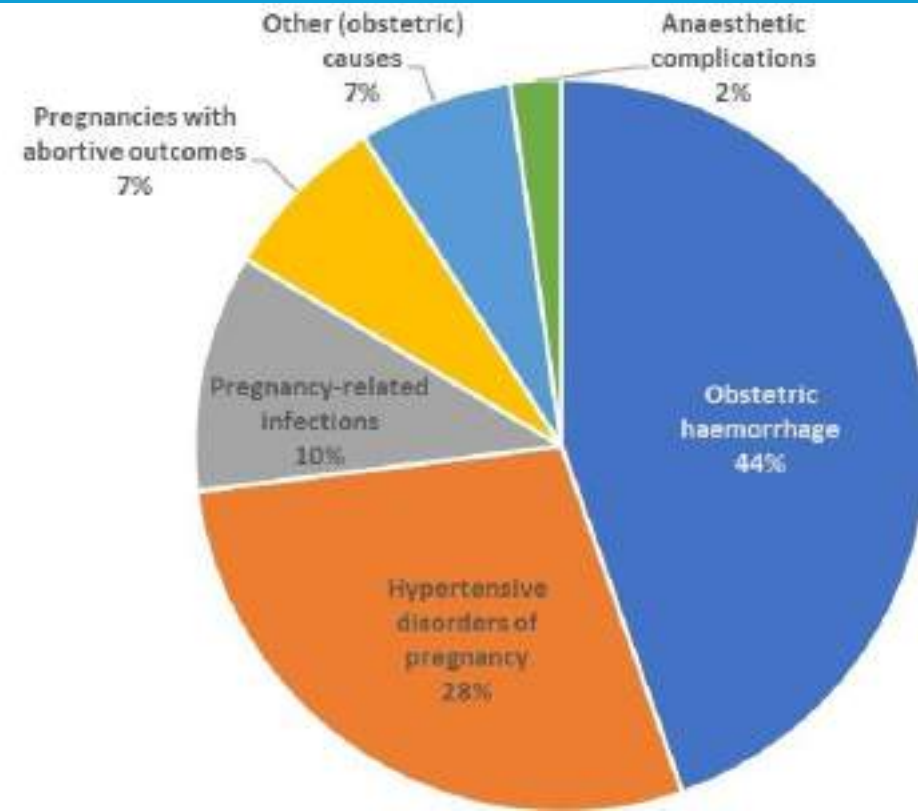
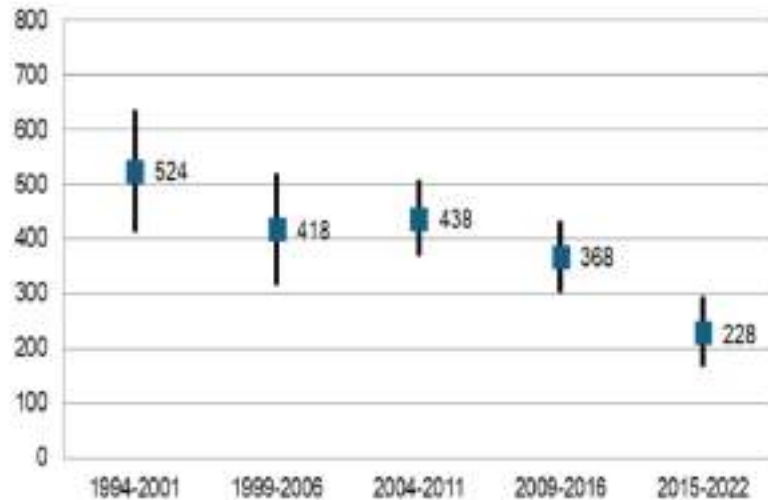
The 4 major hypertensive disorders of pregnancy are:

- Chronic hypertension
- Gestational hypertension
- Pre-eclampsia / Eclampsia / HELLP syndrome
- Pre-eclampsia superimposed on chronic hypertension

Maternal Mortality

Figure 16.3 Trends in pregnancy related mortality ratio (PRMR) with confidence intervals

Figure 16. 3 *Pregnancy-related deaths per 100,000 live births*



	Classification of Hypertensive Disorders of Pregnancy				
	Probable Diagnosis	Systolic (mm Hg)		Diastolic (mm Hg)	Other Signs and Symptoms
	Normal range	90-139	and	60-89	
	Chronic Hypertension	≥140	and/or	≥90	Pre-pregnancy or < 20 weeks of pregnancy No Proteinuria
	Gestational Hypertension	≥140	and/or	≥90	≥ 20 weeks of pregnancy No features of pre-eclampsia No proteinuria No systemic signs and symptoms
	Pre-eclampsia without severe features	≥140 but ≤ 159	and/or	≥90 but ≤ 109	After 20 weeks of pregnancy Proteinuria ≥2+ on dipstick or ≥ 300 mg of protein/24-hour urine collection but protein may also be negative in case of non proteinuric I No organ dysfunction (no symptoms or abnormal laboratory and u/s findings)
	Pre- Eclampsia with severe features	≥160	and/or	≥110	Any degree of hypertension with or without proteinuria and/or organ dysfunction which may manifest in the presence of the following symptoms Headache, nausea, vomiting Blurred vision Oliguria Upper abdominal pain Pulmonary oedema Abnormal Labs (CBC, RFT, LFTs and uric acid) U/S findings)
	Eclampsia	≥140	and/or	≥90	Convulsions or Coma (unconscious) No other neurological cause of convulsions May or may not have severe pre- eclampsia features

Chronic (preexisting) Hypertension

- Hypertension diagnosed before pregnancy or before 20 weeks of gestation
- Or hypertension diagnosed during pregnancy & persists for at least 12 weeks post-delivery
- It can be primary or secondary to a variety of medical disorders

Gestational Hypertension

- New onset of hypertension after **20 weeks** of gestation in a previously normotensive individual

AND

- No proteinuria
- No severe features of preeclampsia or no evidence of end organ damage
- That is: no thrombocytopenia, renal insufficiency, elevated liver transaminases, pulmonary oedema, cerebral or visual symptoms etc.

Preeclampsia

- Preeclampsia is a multisystem progressive disorder Characterized by new onset of hypertension **after 20 weeks of gestation** or postpartum in a previously normotensive mother

AND

- Proteinuria (≥ 300 mg per 24-hour urine collection or protein: creatinine ratio ≥ 0.3 , or urine dipstick reading $\geq 2+$)

OR

- In the absence of proteinuria, new-onset hypertension with new onset of any of the severe features pre-eclampsia : thrombocytopenia, renal insufficiency, pulmonary oedema etc

Pre-eclampsia classification

Current classification

Previous classification

Pre-eclampsia with severe features

Mild pre-eclampsia

Pre-eclampsia without severe features

Severe pre-eclampsia

Classification of pre-eclampsia cont'd

Pre-eclampsia can also be subclassified further into:

Based on timing of onset

- Early-onset pre-eclampsia (with delivery at $<34+0$ weeks of gestation)
- Late-onset pre-eclampsia (with delivery at $\geq 34+0$ weeks of gestation)

Based on gestation age

- Preterm pre-eclampsia (with delivery at $<37+0$ weeks of gestation)
- Term pre-eclampsia (with delivery at $\geq 37+0$ weeks of gestation)
- Postpartum pre-eclampsia

Pre-eclampsia with severe features

- Any of these findings in a patient with preeclampsia:
 - Systolic BP ≥ 160 mmHg or diastolic BP ≥ 110 mmHg on ≥ 2 occasions
 - Doubling of serum creatinine concentration in absence of other renal disease
 - Impaired liver function as indicated by elevated liver transaminases at least twice upper limit or severe persistent RUQ or epigastric pain unresponsive to medication & not accounted for by alternative diagnoses, or both
 - Progressive renal insufficiency (serum creatinine >1.1 mg/dL or 90 $\mu\text{mol/L}$)



Pre-eclampsia with severe features cont'd

- Thrombocytopenia (platelet count $<100,000/\mu\text{L}$) with or without DIC, hemolysis
- Pulmonary oedema ($\text{SPO}_2 < 90\%$)
- Persistent cerebral or visual disturbances
- Neurological complications*
- Uteroplacental dysfunction (IUGR, abnormal umbilical artery Doppler wave form or stillbirth)

*Including eclampsia, altered mental status, blindness, stroke, hyperreflexia when accompanied by clonus, severe headaches, & persistent, visual scotomata

Chronic hypertension with superimposed preeclampsia*

- Any of these findings in a patient with chronic hypertension:
 - A sudden increase in BP that was previously well-controlled
 - Or an escalation of antihypertensive therapy to control BP
 - New onset of proteinuria
 - Or sudden increase in proteinuria in a patient with known proteinuria before or early in pregnancy

*Precise diagnosis is often challenging. High clinical suspicion is warranted due to increase in maternal & foetal-neonatal risks associated with superimposed preeclampsia



Chronic hypertension with superimposed preeclampsia with severe features

- Any of these findings in a patient with chronic hypertension and superimposed preeclampsia:
 - ✓ Systolic BP ≥ 160 mmHg or diastolic BP ≥ 110 mmHg despite escalation of antihypertensive therapy
 - ✓ Thrombocytopenia (platelet count $< 100,000/\text{microL}$)
 - ✓ Impaired liver function as indicated by elevated liver transaminase $> 2X$ normal or severe persistent RUQ or epigastric pain unresponsive to medication & not accounted for by alternative diagnoses, or both

**Chronic
hypertension with
superimposed
preeclampsia with
severe features
cont'd**

- New-onset or worsening renal insufficiency
- Pulmonary oedema
- Persistent cerebral or visual disturbances

Eclampsia

- ❑ In a patient with preeclampsia, generalized seizures that cannot be attributed to other causes.
- ❑ Note that some mothers have normal blood pressures after convulsions.
- ❑ The belief that pre-eclampsia progresses from “mild” to “severe” to eclampsia is not always true
- ❑ Mothers can convulse without warning & with non severe BP

HELLP Syndrome

A subtype of Preeclampsia.

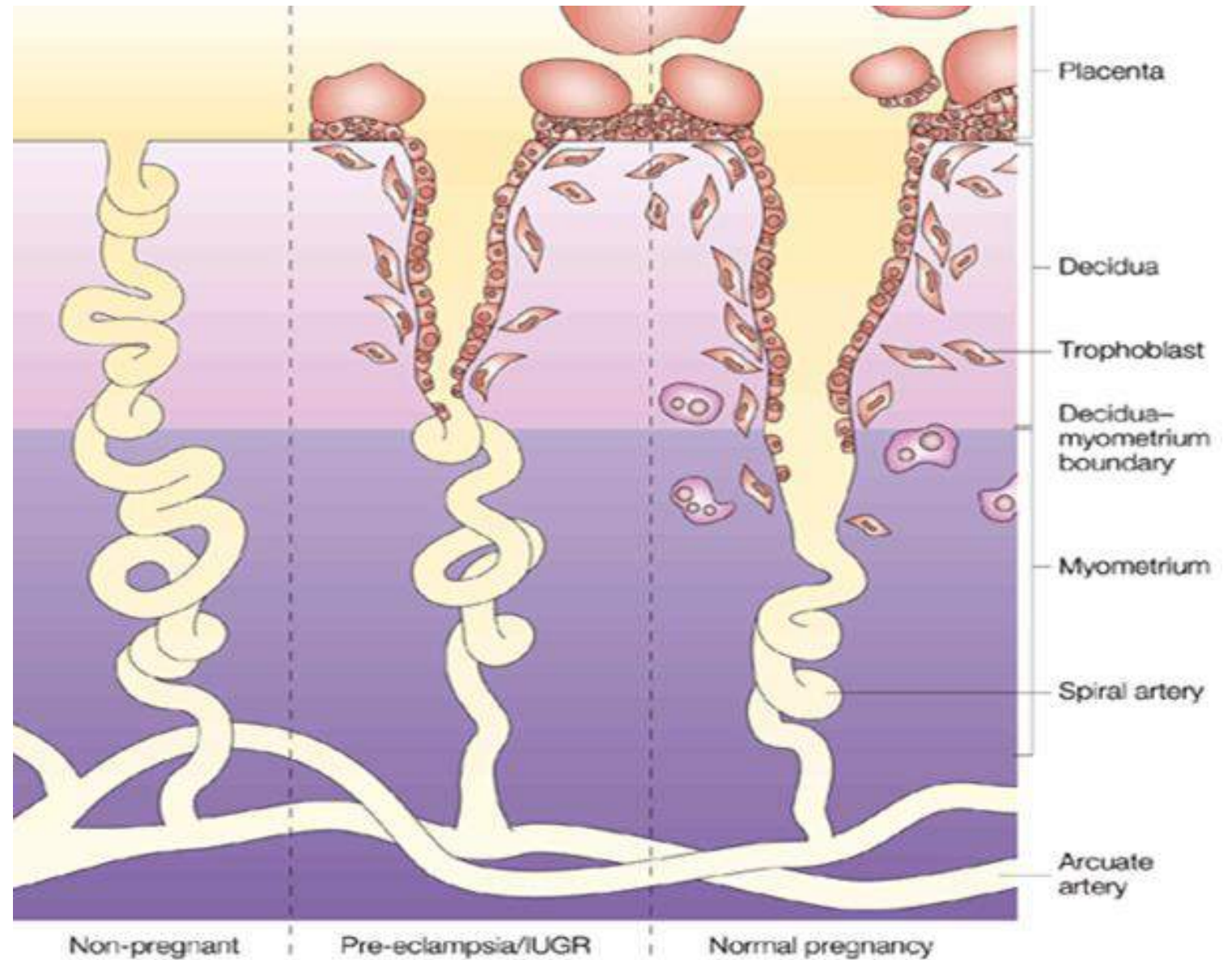
HTN, CNS dysfunction, and/or renal dysfunction may also be present

Associated with-
Hemolysis, **E**levated **L**iver
enzymes, **L**ow **P**latelets

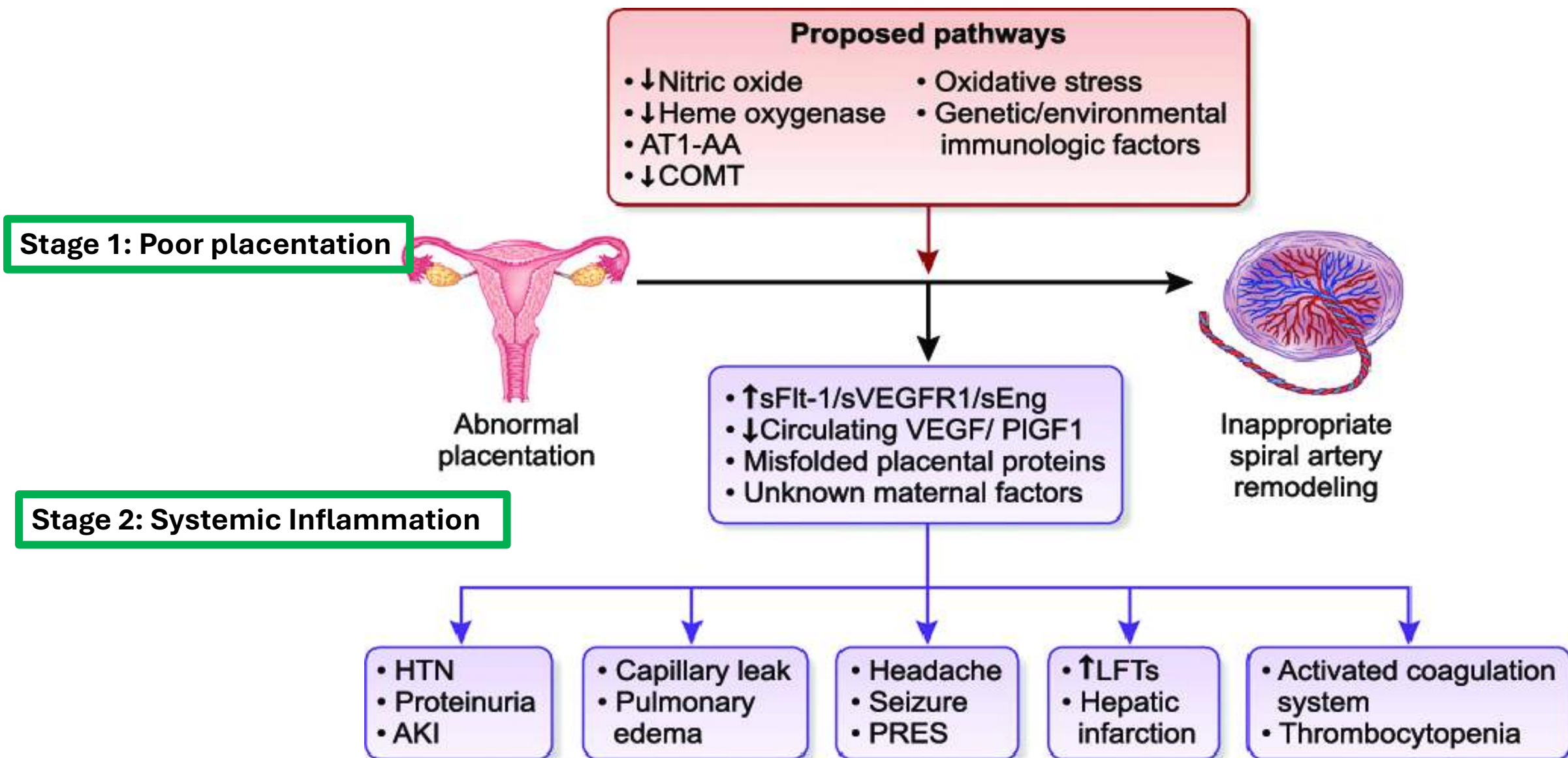


Snippet into the Pathophysiology

Defective Placentation and Systemic Vascular Damage



Pre-eclampsia : a two stage disorder



Risk factors for preeclampsia

High risk factors

Previous pregnancy with preeclampsia, especially early onset and with an adverse outcome

Multifetal gestation

Chronic hypertension

Type 1 or 2 diabetes mellitus

Chronic kidney disease

Autoimmune disease with potential vascular complications (antiphospholipid syndrome, systemic lupus erythematosus)

Moderate risk factors

- Nulliparity
- Obesity (body mass index >30 kg/m²)
- Family history of preeclampsia in mother or sister
- Previous adverse pregnancy outcome e.g., stillbirth, IUGR, abruption placentae etc.
- Advanced maternal age (≥ 35 years)
- Interval >10 years between pregnancies
- Change of partner
- In vitro conception



Thank you for listening