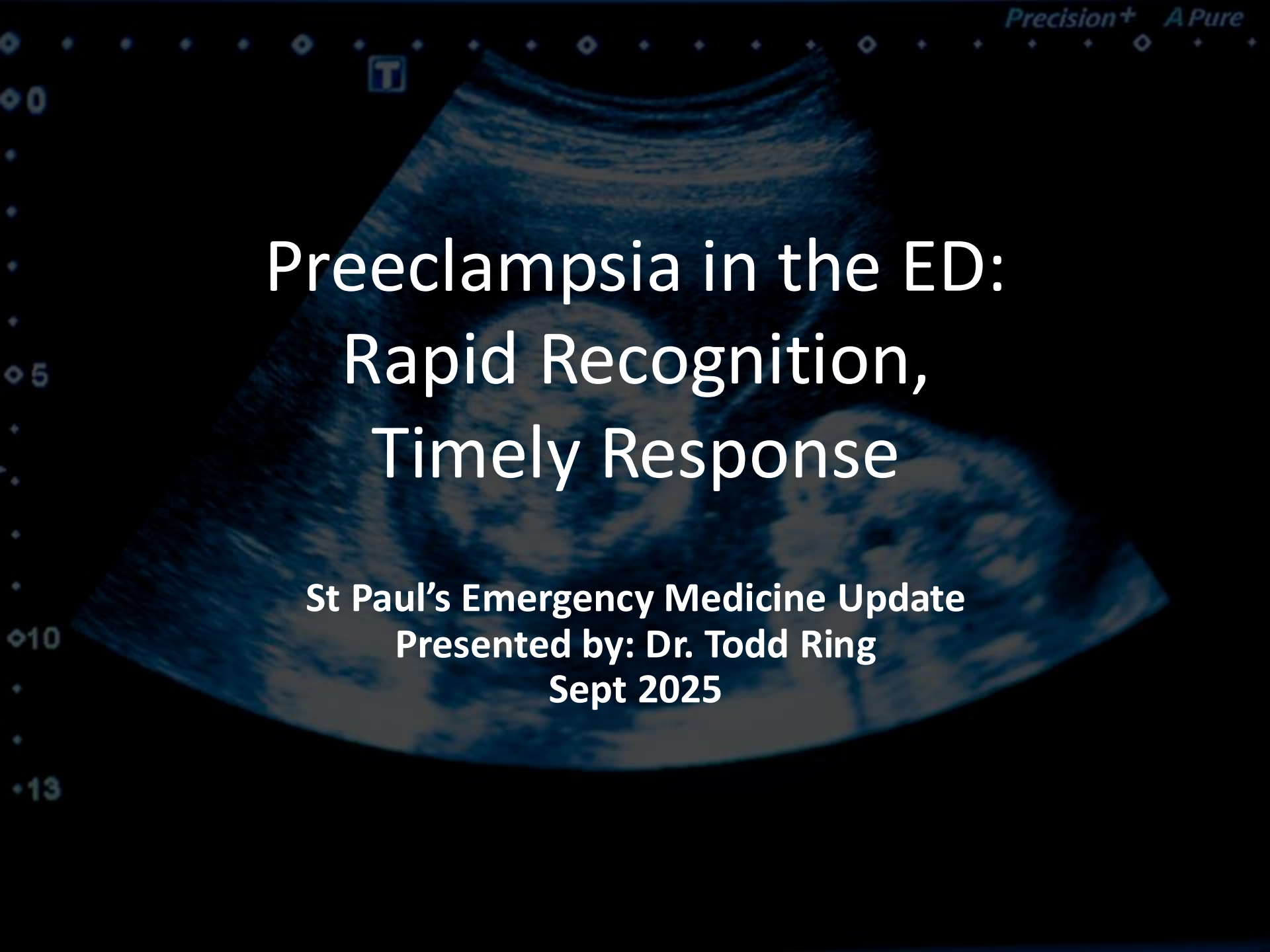


Preeclampsia in the ED: Rapid Recognition, Timely Response

St Paul's Emergency Medicine Update
Presented by: Dr. Todd Ring
Sept 2025

Presenting today's topic from the unceded territories of the Líl̓wat Nation and the Sḵwx̱wú7mesh Úxwumixw

For our Team at Emergency Care BC, acknowledging that we are on the traditional territories of First Nations communities across our province is an expression of cultural humility – and an understanding that we are privileged to use and share this land – in addition to recognizing our duty and desire to provide culturally safe care to First Nations, Inuit, and Métis people across BC.

EMERGENCY CARE BC
Provincial Health Services Authority

Disclosure

- Medical Director ECBC
- No other conflict of interest

Disclaimer

EMERGENCY CARE BC
Provincial Health Services Authority

In alignment with PHSA fiscal responsibilities regarding travel, no PHSA funding was used to support ECBC participation at St. Paul's Emergency Medicine conference.

ECBC remains committed to improving emergency medicine care provincially and looks forward to increased in-person presence at future events.

emergencycarebc.ca/spemu2025

Notice of Recording

EMERGENCY CARE BC
Provincial Health Services Authority

This session is being recorded
to explore AI's role in increasing the efficiency of knowledge translation.

Click the QR to access session tools and resources.
Watch for a summary of this session supported by AI coming soon.

emergencycarebc.ca/spemu2025

Objectives

Recognize	Initiate	Apply
Recognize clinical presentation and diagnostic criteria of preeclampsia	Initiate ED-based management and stabilization of preeclampsia/ eclampsia and severe HTN	Apply Canadian guidelines in ED workflows

Main Take-Aways

- Clear antenatal emergency care pathways
  - ED/L&D
- Consider preeclampsia in any pregnant/immediate post partum patient
  - Elevated BP (SBP ≥ 140 or DBP ≥ 90) and *any* end organ dysfunction
- Early BP management to prevent complications
  - ED aggressive treatment of severe HTN (SBP ≥ 160 or DBP ≥ 110)
- MgSO4 4gm IV eclampsia prophylaxis/treatment

Clinical Case: ED Presentation

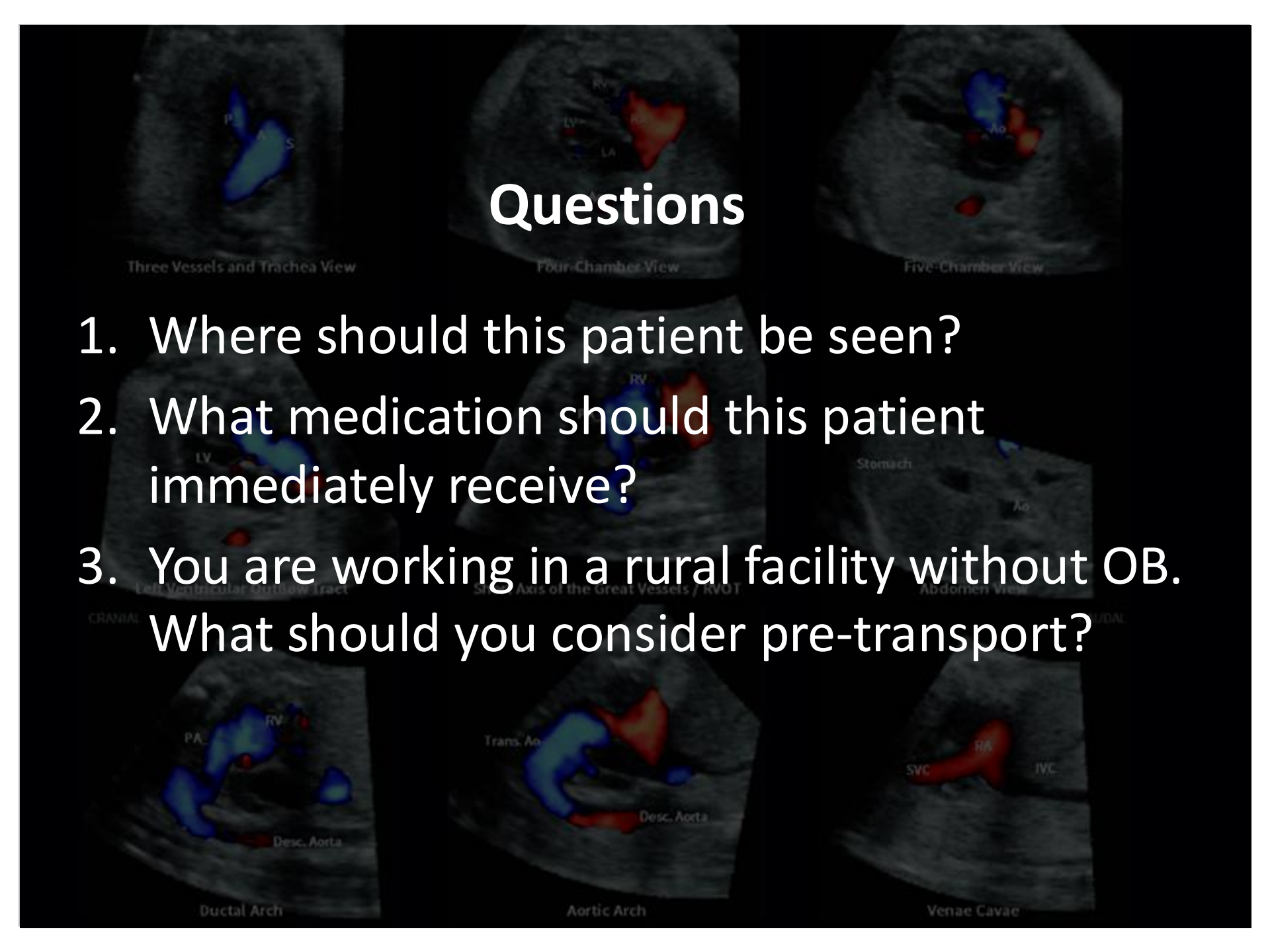
28-year-old G1P0 at 32 weeks gestation presents with:

- Severe headache and visual disturbances
- BP: 165/100 mmHg
- HR: 92 bpm, afebrile
- Mild right upper quadrant tenderness
- No prior diagnosis of hypertension

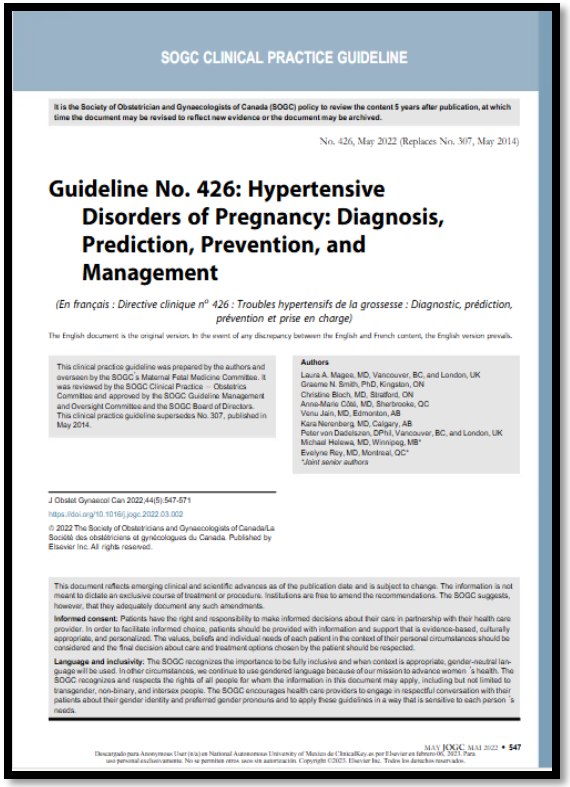
Triage nurse asks:
Should we triage patient to ED or to L&D?

Questions

1. Where should this patient be seen?
2. What medication should this patient immediately receive?
3. You are working in a rural facility without OB. What should you consider pre-transport?



SOGC Guideline & HTN Canada



SOGC CLINICAL PRACTICE GUIDELINE

It is the Society of Obstetrician and Gynaecologists of Canada (SOGC) policy to review the content 5 years after publication, at which time the document may be revised to reflect new evidence or the document may be archived.

No. 426, May 2022 (Replaces No. 307, May 2014)

Guideline No. 426: Hypertensive Disorders of Pregnancy: Diagnosis, Prediction, Prevention, and Management

(En français : Directive clinique n° 426 : Troubles hypertensifs de la grossesse : Diagnostic, prédiction, prévention et prise en charge)

The English document is the original version. In the event of any discrepancy between the English and French content, the English version prevails.

This clinical practice guideline was prepared by the authors and overseen by the SOGC's Maternal Fetal Medicine Committee. It was reviewed by the SOGC Clinical Practice – Obstetrics Committee and approved by the SOGC Guideline Management and Oversight Committee and the SOGC Board of Directors. This clinical practice guideline supersedes No. 307, published in May 2014.

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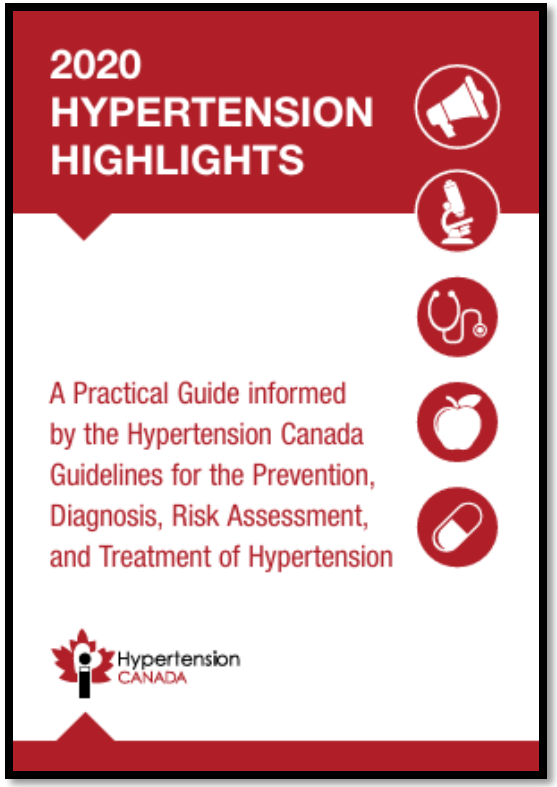
J Obstet Gynaecol Can 2022;44(5):547-571
https://doi.org/10.1016/j.jogc.2022.03.002

This document reflects emerging clinical and scientific advances as of the publication date and is subject to change. The information is not meant to dictate an exclusive course of treatment or procedure. Institutions are free to amend the recommendations. The SOGC suggests, however, that they adequately document any such amendments.

Informed consent: Patients have the right and responsibility to make informed decisions about their care in partnership with their health care provider. In order to facilitate informed choice, patients should be provided with information and support that is evidence-based, culturally appropriate, and personalized. The values, beliefs and individual needs of each patient in the context of their personal circumstances should be considered and the final decision about care and treatment options chosen by the patient should be respected.

Language and inclusivity: The SOGC recognizes the importance to be fully inclusive and when context is appropriate, gender-neutral language will be used. In other circumstances, we continue to use gendered language because of our mission to advance women 's health. The SOGC recognizes and respects the rights of all people for whom the information in this document may apply, including but not limited to transgender, non-binary, and intersex people. The SOGC encourages health care providers to engage in respectful conversation with their patients about their gender identity and preferred gender pronouns and to apply these guidelines in a way that is sensitive to each person 's needs.



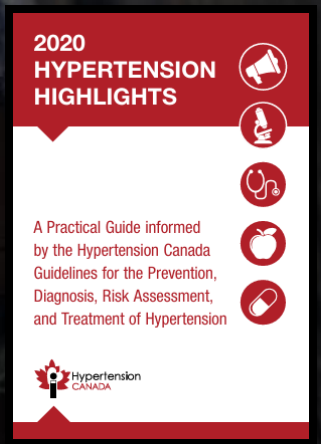
2020 HYPERTENSION HIGHLIGHTS

A Practical Guide informed by the Hypertension Canada Guidelines for the Prevention, Diagnosis, Risk Assessment, and Treatment of Hypertension

Hypertension CANADA

Hypertension

- Hypertension SBP ≥ 140 or DBP ≥ 90
  - Transient/white coat and masked
  - Severe HTN SBP ≥ 160 or DBP ≥ 110
- Proteinuria
  - Definitive testing: random urine PCR; ACR or 24h protein
  - Urine dipstick: ≥ 2+ protein



Hypertensive Disorders of Pregnancy

Chronic HTN

Preexisting HTN or BP>140/90 mm Hg before 20 wks of gestation, or persist >12 wks post partum

Gestational HTN

New HTN (BP>140/90 mm Hg) after 20 wks of gestation
No end organ dsyfunction

Preeclampsia

Gestational HTN + Proteinuria.
Low platelets, High LFTs, Pulm edema, visual disturbances

Eclampsia

Preeclampsia + seizures during pregnancy or within 10 days post partum

Diagnostic Criteria

- **BP ≥140/90 mmHg on 2 occasions, 4h apart**

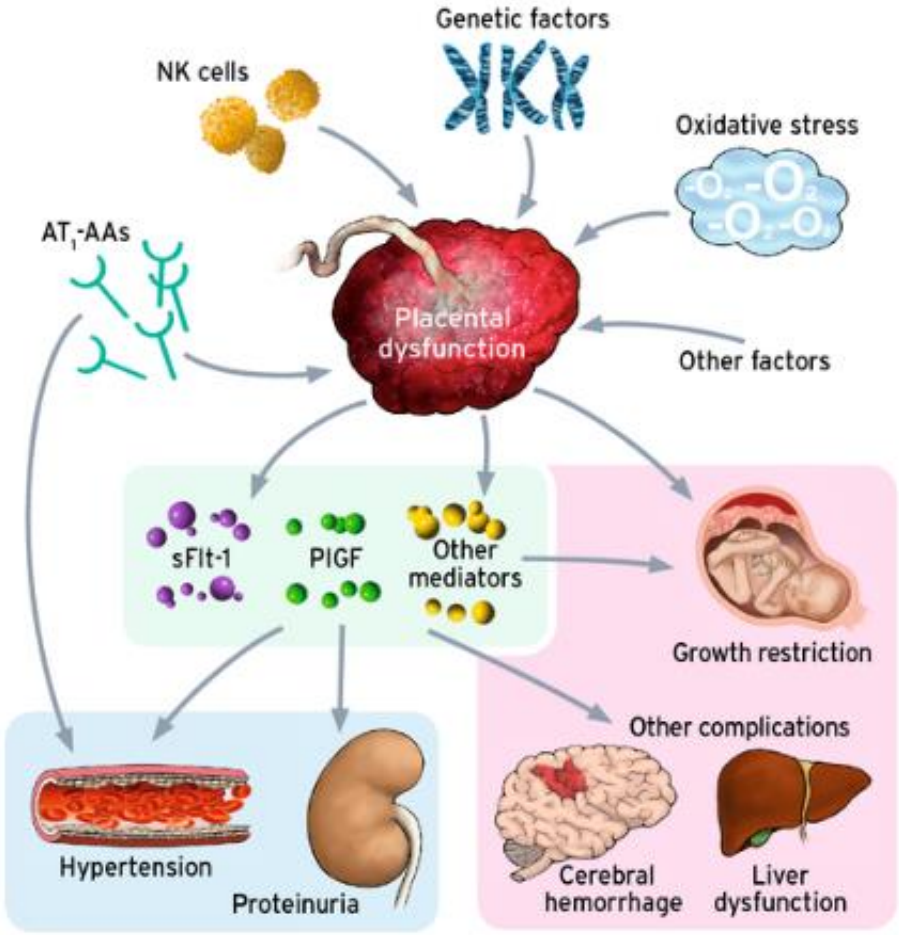
AND one of the following:

- **Maternal**
  - **Proteinuria (≥0.3g/day or PCR ≥30 mg/mmol)**
  - **Platelets <100**
  - **Creatinine >90 µmol/L**
  - **Elevated AST/ALT**
  - **CP/Pulmonary edema**
  - **CNS symptoms**
- **Uteroplacental**
  - **FGR/oligohydramnios/abnormal umbilical artery doppler/angiogenic marker imbalance**

Why It Matters

- Preeclampsia affects ~5% of pregnancies
- Significant contributor to maternal morbidity and mortality
- EDs are critical access points for undiagnosed or worsening cases

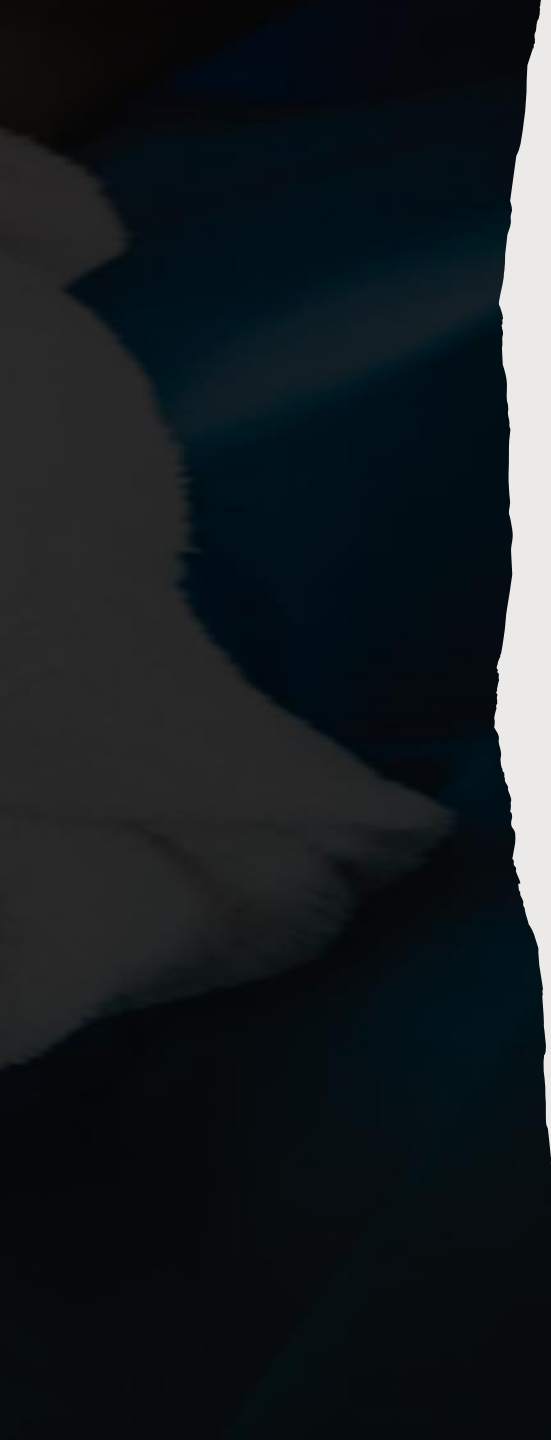
Pathophysiology



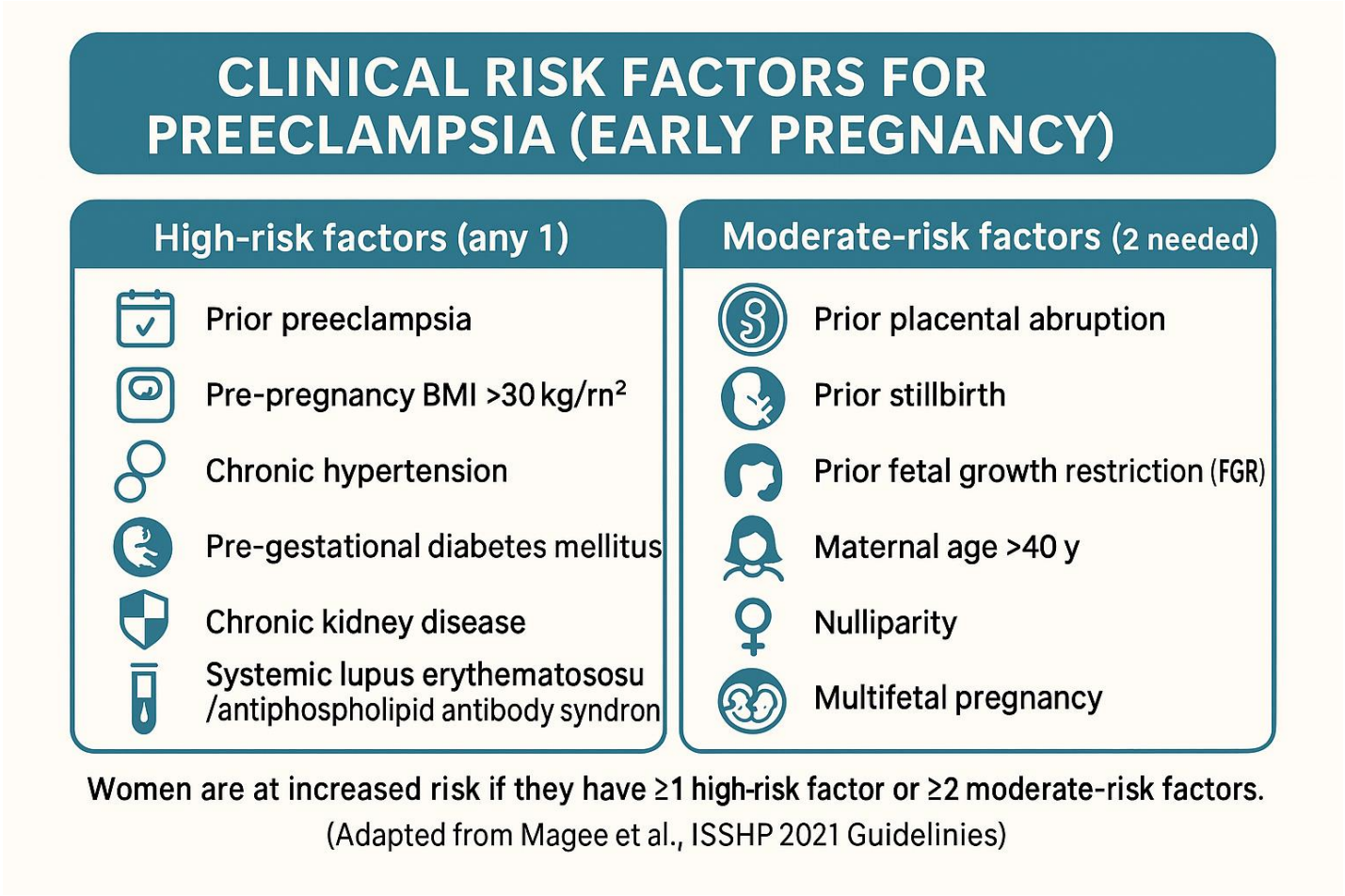
- **Abnormal placentation**
- **Placental under-perfusion/ ischemia**
- **Maternal endothelial dysfunction**
- **Complications:**
  - **Maternal: HTN, vasospasm, platelet aggregation**
  - **Fetal: hypoperfusion**

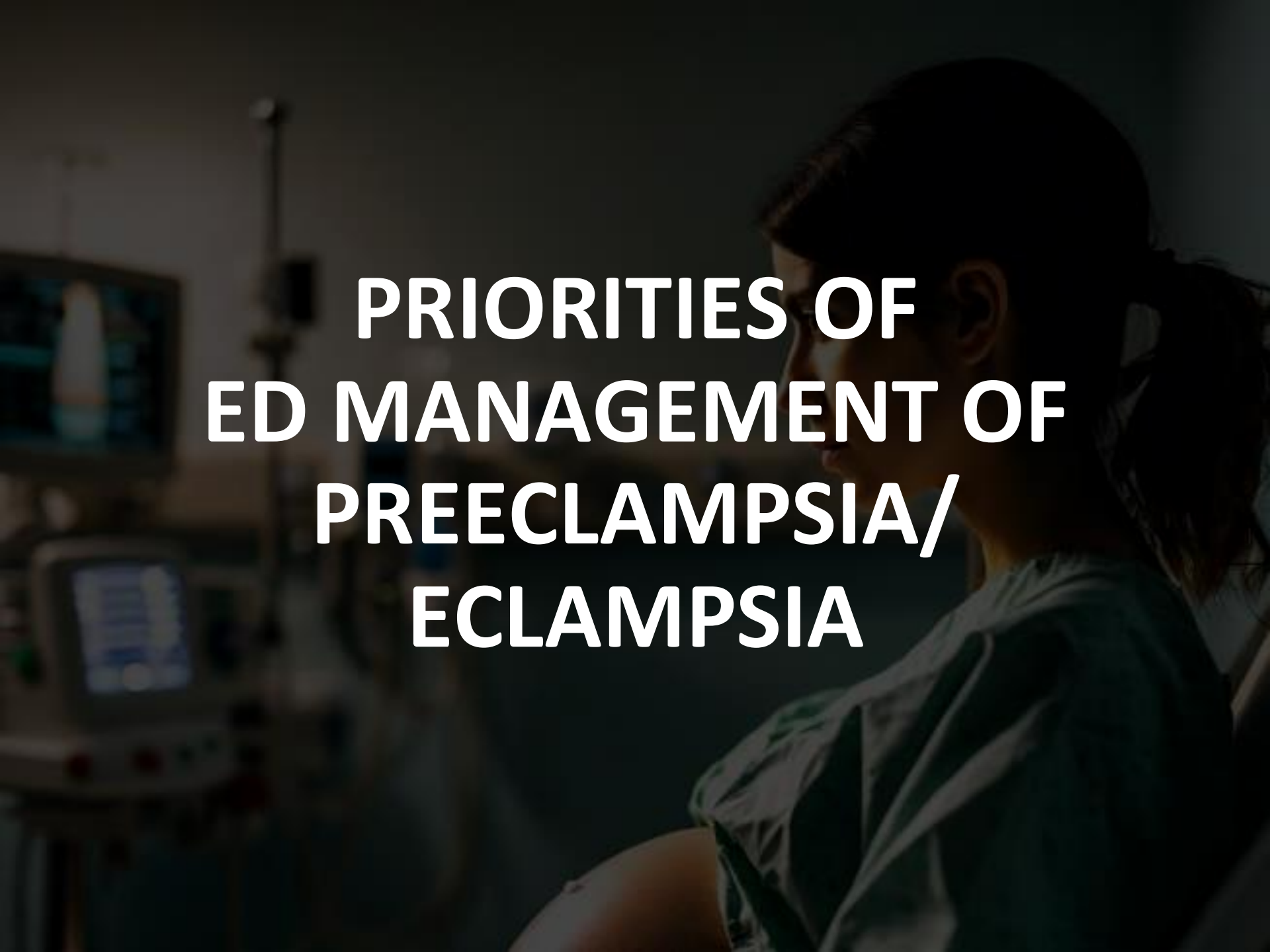
When to Suspect Preeclampsia?

- Pregnant ≥20 weeks or up to 6 weeks postpartum with:
  - New or worsening hypertension
  - Headache, vision changes, RUQ pain
  - Dyspnea, edema, seizure, altered LOC



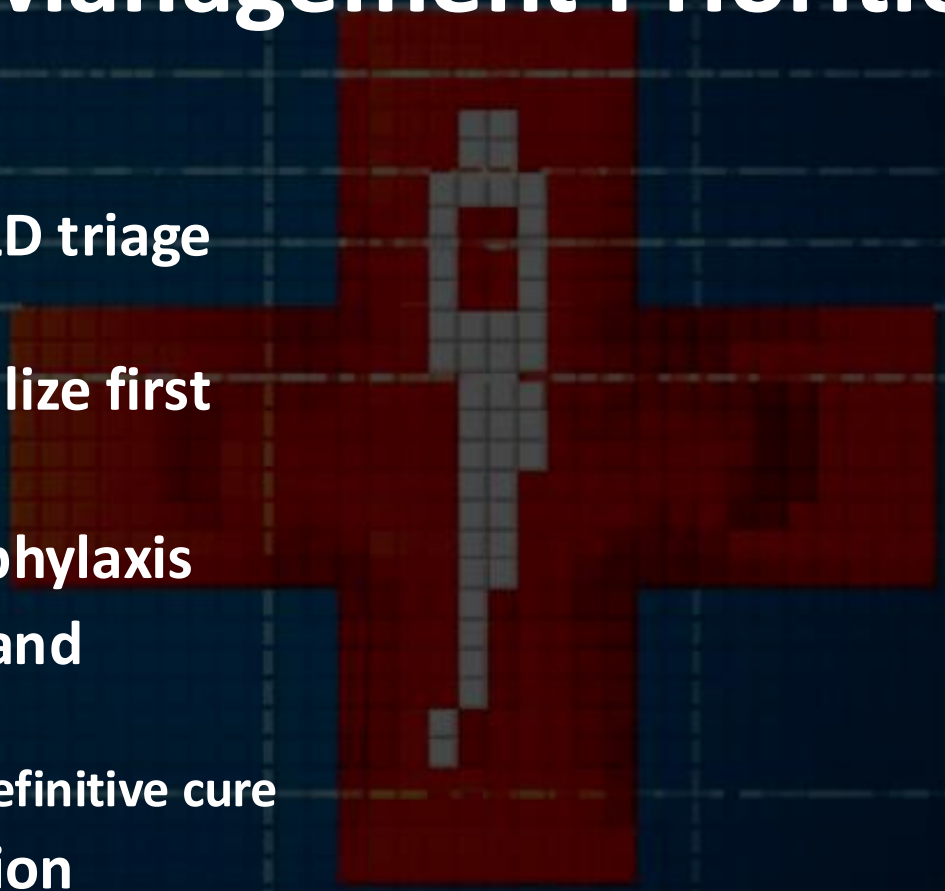
Risk Factors





PRIORITIES OF ED MANAGEMENT OF PREECLAMPSIA/ ECLAMPSIA

ED Management Priorities



- Clear ED/L&D triage guideline
- ABCs – stabilize first
- BP control
- Seizure prophylaxis
- OB consult and admission
  - Delivery definitive cure
- Transportation consideration

PERINATAL SERVICES BC REVIEW: ED/L&D GUIDELINES

Perinatal Services BC
Provincial Health Services Authority

Provincial Health Services Authority
Province-wide solutions. Better health.

Perinatal Triage Guidelines

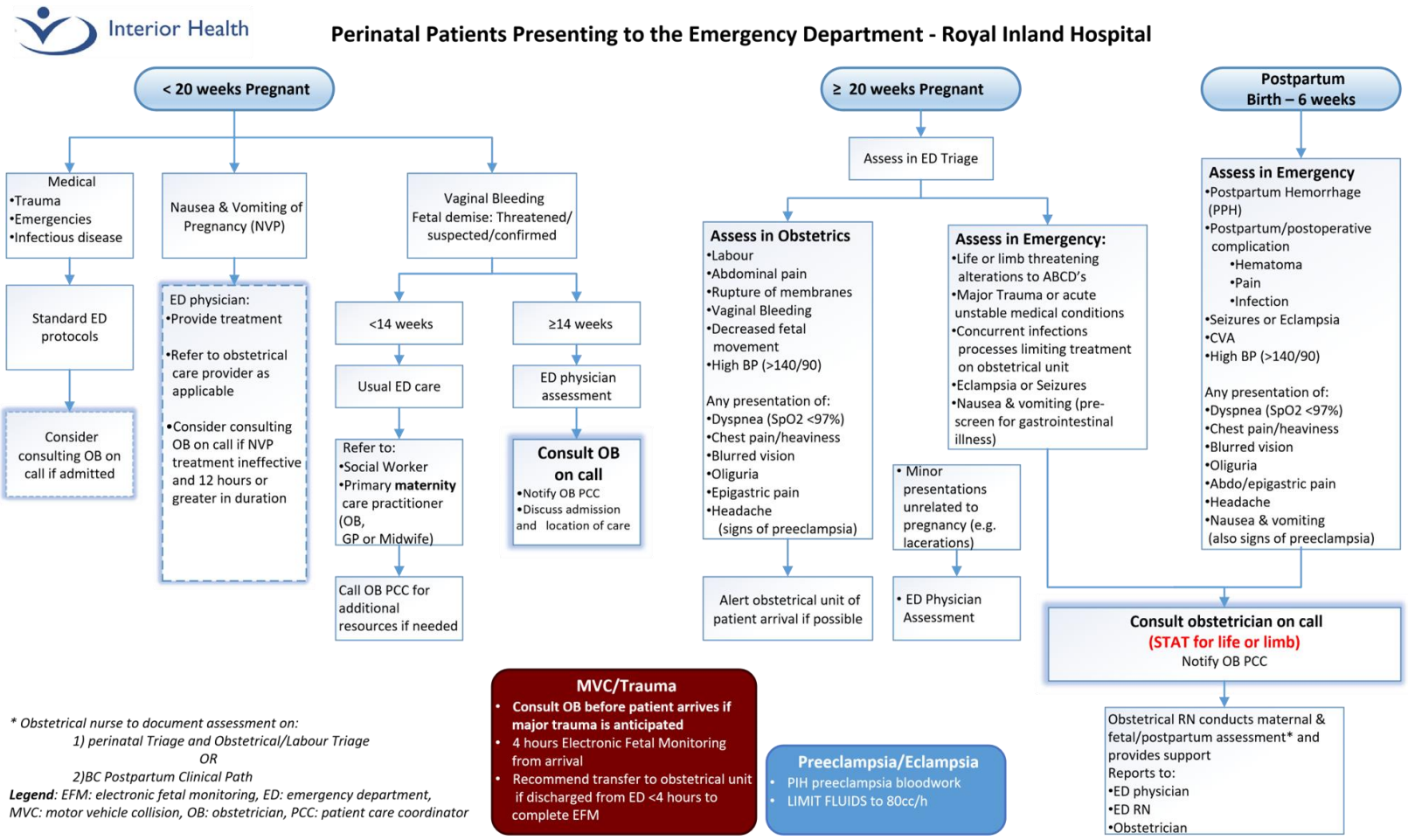


Figure 2. Suggested dose titration of antihypertensive therapy for urgent control of hypertension in pregnancy[a].

Drug	Caution	T 0 min	T 30 min	T 60 min	T 90 min	T 120 min	T 150 min	T 180 min
Labetalol (oral)	• Contraindicated in patients with uncontrolled asthma or heart failure	200 mg	—	200 mg	—	200mg	—	Use alternative from a different drug class[d]
Labetalol (IV intermittent)	• Caution with hypoglycemic unawareness in diabetes	10–20 mg	20–40 mg[b]	40–80 mg	40–80 mg	40–80 mg	40–80 mg[c]	
Labetalol (IV infusion)	• May cause neonatal bradycardia and neonatal hypoglycemia and warrants newborn screening	0.5–2 mg/min	→	→	→	→	→[d]	
Nifedipine (oral capsule swallowed whole, *not* bitten or	• May cause maternal headache and tachycardia	5-10 mg	10 mg	—	10 mg	—	10 mg	
Methyldopa (oral)	• Onset of action may be delayed	1000 mg	—	—	—	—		
Hydralazine (IV)	• May increase risk of maternal hypotension, and maternal and fetal tachycardia	5 mg	5–10 mg	5–10 mg[e]	5–10 mg[e]			

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[a] When severe hypertension has resolved, switch to routine oral medication.

[b] Double the initial dose of labetalol IV.

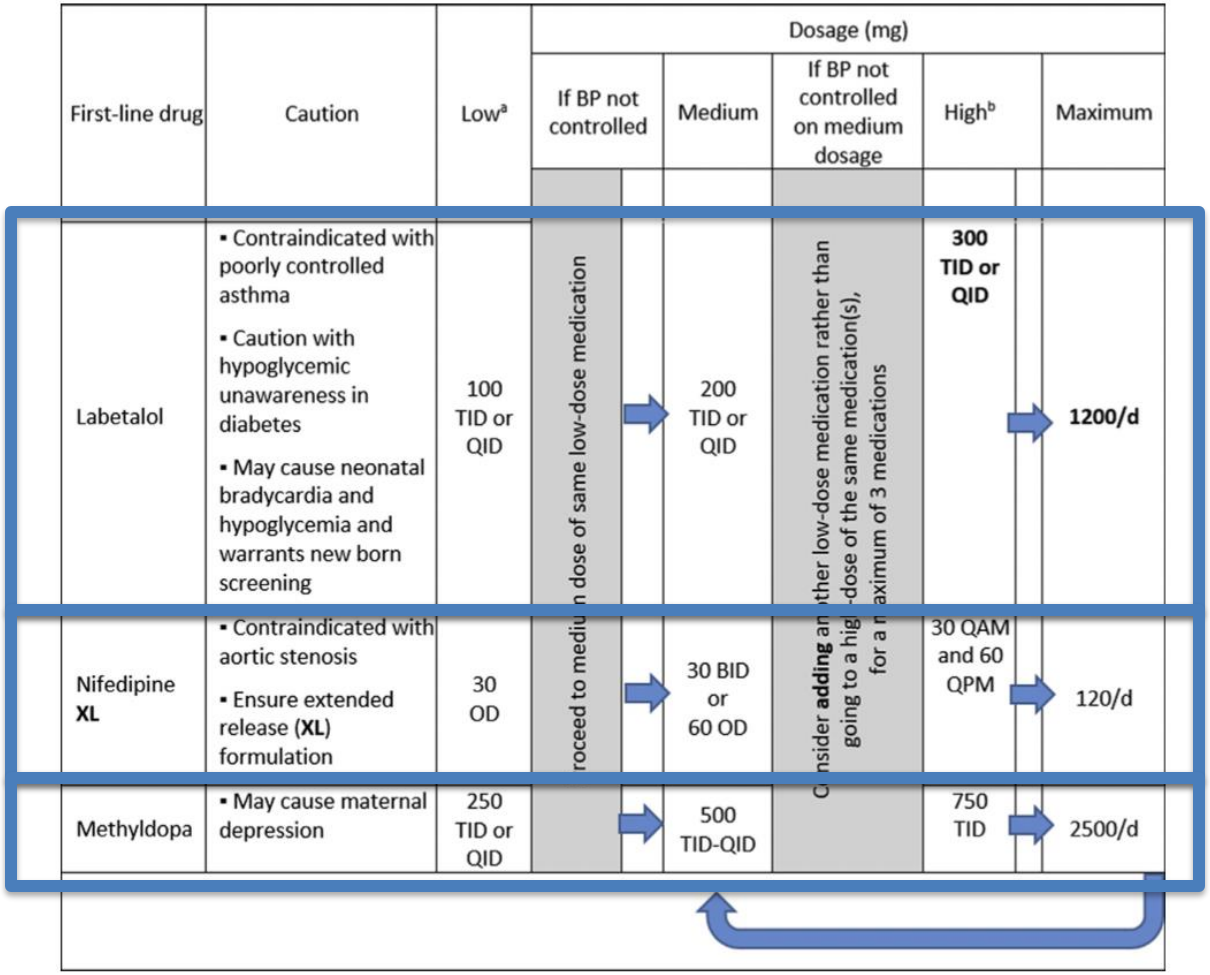
[c] Do not exceed the maximum dose of IV labetalol, which is 300 mg total in a treatment course.

[d] If nifedipine or hydralazine were the initial drug used, choose oral labetalol or oral methyldopa as the alternative.

[e] Do not exceed the maximum dose of IV hydralazine of 20 mg.

IV: intravenous.

Figure 1. Maintenance therapy and suggested dose titration of antihypertensive therapy for non-urgent control of hypertension in pregnancy.



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[a] Starting doses are higher than generally recommended for adults, given more rapid clearance in pregnancy.

[b] When a medication is at high (or maximum) dosage, consider using a different medication to treat any severe hypertension that may develop.

Source: adapted from ALARM 27th Edition ALARM Manual, Table 8 of the SOGC 2014 guideline and Magee et al.[136]

OD: once daily; TID: 3 times daily; QAM: every morning; QID: 4 times daily; QPM: every evening.

Figure 3. Magnesium sulphate dosage and monitoring.

Dosage[35, 136]	IV administration	Combined IV and IM administration[a]
Loading dose	4 g $MgSO_4$ IV in 100 mL normal saline solution, infused over 20 min using an infusion device	4 g $MgSO_4$ IV in 100 mL normal saline solution, infused over 20 min using an infusion device *and* 5 g IM into *each* buttock (for a total of 10 g), every 4 h
Maintenance	1 g/h IV in normal saline solution, using an infusion device	5 g IM into *one* buttock every 4 h
Duration	Until 24 h after last eclamptic seizure or birth, whichever is later	
Monitoring	**Observations**	**Signs of toxicity[b]**
Maternal		
Upon completion of loading dose	Reflexes	Decreased or absent
Every 30 min	BP	Lower
	Respiratory rate	Lower or cardiac arrhythmias
	Pulse oximetry	<12/min for 15 min
Every hour	Urine output[d]	O_2 saturation <94% for 15 min
	Reflexes	<30 mL/h for 4 h[e]
Symptoms[f]	Central nervous system (e.g., excessive drowsiness, slurred speech)	Decreased or absent
	Neuromuscular (e.g., muscle weakness)	
Fetal		
≥26 wk	Continuous cardiotocography	
<26 wk	Intermittent FHR auscultation every 30 min	

Reproduced with permission from Magee LA, Brown MA, Hall DR, et al. The 2021 International Society for the Study of Hypertension in Pregnancy classification, diagnosis & management recommendations for international practice. Pregnancy Hypertens. 2021;27:148-69.[134]

[a] Administration can be switched to IV dosing by starting 1 g/h (without a loading dose) when the next dose of IM magnesium sulphate is due.

[b] Monitoring of serum magnesium levels is not necessary unless there is deep tendon and renal function or signs of toxicity.

[c] If toxicity is suspected, cease the $MgSO_4$ infusion and take blood for serum Mg level. If toxicity is clear, administer calcium gluconate 10% (10 mL in 100 mL normal saline solution IV over 3 min).

[d] Foley catheterization is recommended.

[e] Decreased urine output is included because it increases the risk of toxicity.

[f] Symptoms of toxicity should be distinguished from well-known side effects, which include flushing of the skin, a metallic taste in the mouth, sweating, nausea and vomiting, heaviness in the chest, palpitations, and lowering of the BP initially.

BP: blood pressure; FHR: fetal heart rate; $MgSO_4$: magnesium sulphate; O_2: oxygen.

MgSO4 4gms IV then 1gm/h

Transport: MgSO4 4gm IV and 5gm IM each buttock followed by 5gm IM one buttock q4h

Figure 3. Magnesium sulphate dosage and monitoring.

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Maintenance	1 g/h IV in normal saline solution, using an infusion device	5 g IM into *one* buttock every 4 h
Duration	Until 24 h after last eclamptic seizure or birth, whichever is later	

Monitoring	Observations	Signs of toxicity[b]
Maternal		
Upon completion of loading dose	Reflexes	Decreased or absent
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	Respiratory rate	<12/min for 15 min
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	Reflexes	Decreased or absent
Symptoms[f]	Central nervous system (e.g., excessive drowsiness, slurred speech)	
	Neuromuscular (e.g., muscle weakness)	
Fetal		
≥26 wk	Continuous cardiotocography	
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[b] Monitoring of serum magnesium levels is not necessary unless there is decreased renal function or signs of toxicity.

[c] If toxicity is suspected, cease the $MgSO_4$ infusion and take blood for serum Mg level. If toxicity is clear, administer calcium gluconate 10% (10 mL in 100 mL normal saline solution IV over 3 min).

[d] Foley catheterization is recommended.

[e] Decreased urine output is included because it increases the risk of toxicity.

[f] Symptoms of toxicity should be distinguished from well-known side effects, which include flushing of the skin, a metallic taste in the mouth, sweating, nausea and vomiting, heaviness in the chest, palpitations, and lowering of the BP initially.

BP: blood pressure; FHR: fetal heart rate; $MgSO_4$: magnesium sulphate; O_2: oxygen.

Treatment of Preeclampsia

- Delivery only cure
- SOGC no longer defines as “severe preeclampsia”
- Need to consider maternal and fetal well being and gestational age in decision to deliver

Timing of Delivery

	Viability to 33^6 weeks	34^0— 36^6 weeks	≥ 37^0 weeks
Chronic HTN	Expectant	Expectant	Offer at 38^0; advise at 40^0
Gestational HTN	Expectant	Expectant	If HTN arose at $<37^0$ • offer at 38^0; • advise at 40^0 If HTN arises at ≥37^0 initiate delivery
Preeclampsia	Expectant	34^0— 35^6 Discuss (maternal benefit vs. fetal risk) 36^0 – 36^6 Initiate delivery	Initiate delivery

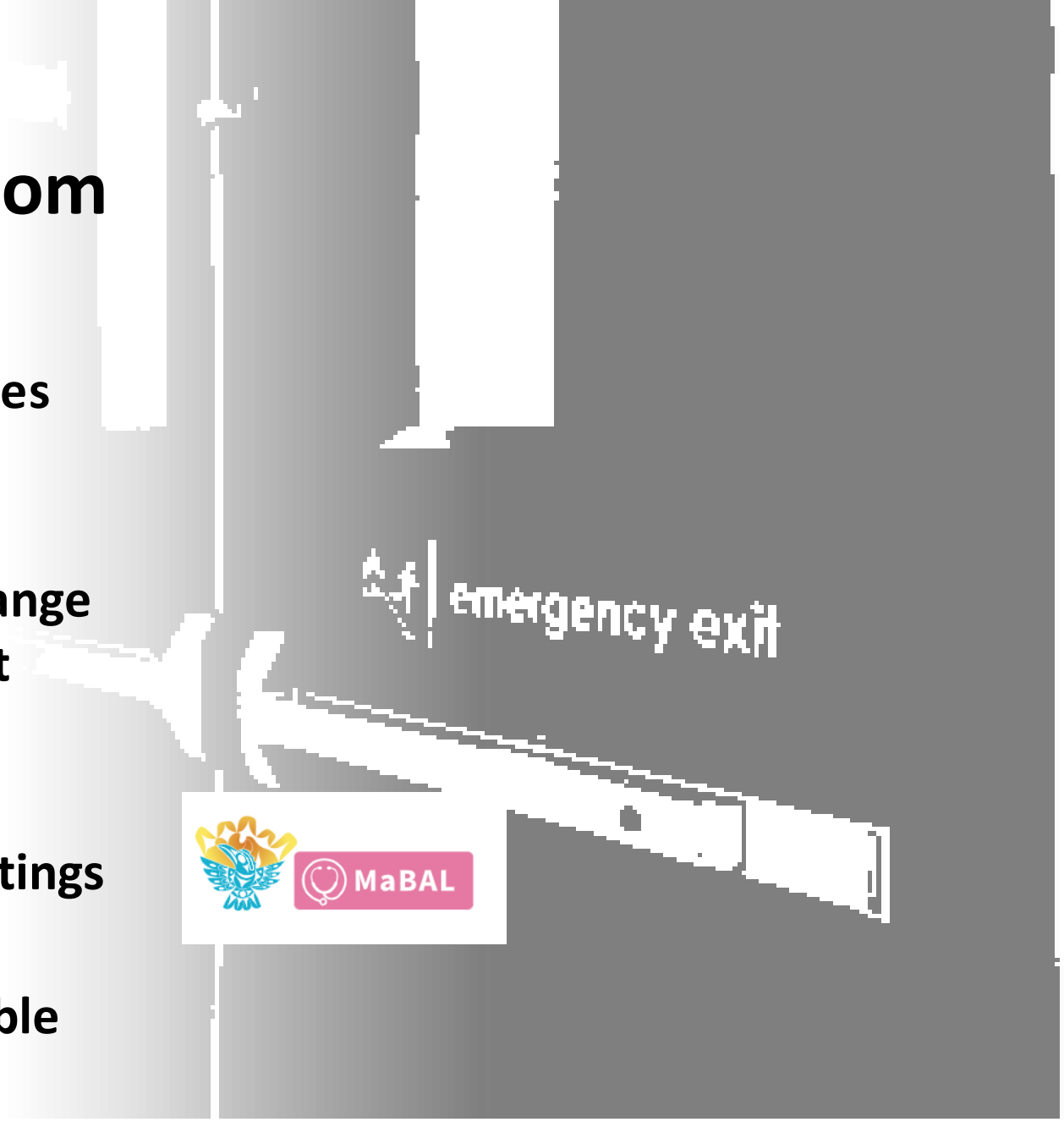
Adopted from Table 6: SOGC Guideline #26 2022

Workup in the ED

- Labs: CBC, electrolytes, creatinine, LFTs, urinalysis
- Urine protein/creatinine ratio
- ECG, chest X-ray if respiratory or cardiac symptoms
- Head CT if neurologic symptoms or seizures

Disposition from the ED

- All suspected cases → OB consult + admission
- Stabilize and arrange transfer if OB not onsite
- Protocols for rural/remote settings
- Consider fetal monitoring if viable gestation



Transport

Transport Checklist for Women with Preeclampsia (Condensed)	
Factor	**Key Actions**
Maternal stabilized	BP <160/110, antihypertensives given, IV access consider Foley, patient responsive/intubated if required
Fetal status	Document FHR (present/absent); if present, no delivery indication for transport
Eclampsia prophylaxis	$MgSO_4$ (5 g IM each buttock or IV), Calcium gluconate available
Skilled provider	Monitor BP & reflexes hourly, manage seizures ($MgSO_4$. airway, ventilation), monitor SpO_2, document FHR before/after transport
Meds available	Nifedipine 5 mg cap / Labetalol 200 mg tab / $MgSO_4$.4 g IV
Confirm with receiving centre	Tocolysis if needed, antenatal steroids if <34·6 weeks

Adopted from Box 3: SOGC Guideline #26 2022

Special Considerations

- Postpartum preeclampsia: up to 6 weeks postpartum
- Eclampsia: seizures may be first sign
- HELLP syndrome can occur without hypertension
- Magnesium + BP meds should be available in all EDs

Clinical Case: ED Presentation

- 28-year-old G1P0 at 32 weeks gestation presents with:
  - Severe headache and visual disturbances
  - BP: 165/100 mmHg
  - HR: 92 bpm, afebrile
  - Mild right upper quadrant tenderness
  - No prior diagnosis of hypertension

Triage nurse asks: Should we triage patient to ED or to L&D?

Questions

1. Where should this patient be seen?
   a. Emergency department
   b. Labor and delivery
   c. Who cares just call OB

Questions

2. What medication should this patient immediately receive?
   - MgSO4 4 gm IV followed by 1gm IV/h

     or
   - MgSO4 4gm IV followed by 5gm IM each buttock

     and
   - Labetolol 10 – 20 mg IV or Labetolol 200mg po

Questions

3. You are working in a rural facility without OB. What should you consider pre-transport?

a. Maternal stabilized
b. Fetus stabilized
c. Prophylaxis given
d. Provider
e. Meds available
f. Receiving center

5 TAKE HOME SUMMARY POINTS

1. Think preeclampsia in any pregnant/postpartum patient with systemic symptoms
2. Use BP + one organ dysfunction for diagnosis
3. Start magnesium and antihypertensives early
4. Communicate with OB and arrange timely disposition
5. Implement ED-specific protocols


Questions?

ED QUICK REFERENCE CHECKLIST

Suspect in pregnant ≥20 weeks or ≤6 weeks postpartum
with headache, vision changes, RUQ pain, dyspnea, edema, seizures

BP ≥140/90 on 2 occasions plus one of

- proteinuria
- low platelets
- renal/liver dysfunction
- pulmonary edema
- CNS symptoms

Start IV magnesium sulfate
(4g load, then 1g/hr)

Consult OB early and arrange admission or transfer