

# Seizures in labour

## Intrapartum Care Conference

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**John Snelgrove, MD MSc FRCSC**  
Maternal-Fetal Medicine, Mount Sinai Hospital  
Assistant Professor, Obstetrics & Gynaecology, IHPME  
University of Toronto

## Disclosures

John Snelgrove has no conflicts of interest to report

## Objectives

1. **Develop a differential diagnosis** for seizure in labour
2. **Outline the diagnostic workup** for a new-onset seizure
3. **Review treatment** for eclamptic and non-eclamptic seizures in labour

*...all in 10 minutes or less!*

## Case 1

37 G1P0 at 39+4, uncomplicated preg, PMHx nil  
Spontaneous labour, good progress to 7cm  
“Bad headache” occipital, blurred vision, epigastric pain  
Vitals: afebrile, BP 138/88, HR 110

MD and RN entered room—witnessed seizure:

- generalized tonic-clonic movements
- lasted ~30 seconds
- occurred again 5 mins later

***What is this condition?***

## Eclampsia

- New onset generalized tonic-clonic seizure or coma
- GA>20 weeks
- Often (*but not always!*) preceded by signs/symptoms of preeclampsia
  - Hypertension
  - Proteinuria
  - Bloodwork abnormalities
  - RUQ abdominal pain 20%
  - Visual disturbances 20%
  - **Headache 50%**

## Take home points 1 & 2

1. New onset seizure in a pregnant/postpartum person = **ECLAMPSIA until proven otherwise**
2. Eclamptic seizure can occur with or without severe antecedent signs/symptoms of preeclampsia.

## Eclampsia management

1. Expedite delivery (regardless of GA)
2. Prevent further seizures:
  - MgSO<sub>4</sub> 4g IV bolus, followed by 1-2g /hr infusion
  - MgSO<sub>4</sub> 10g IM if no IV
3. Treat hypertension
  - Labetalol 10-20mg IV
  - Hydralazine 5mg IV
4. Identify & treat associated conditions / complications
  - Intracranial hemorrhage
  - PRES

Guideline No. 426. JOGC 2022.

## Case 2

36 G1P0 at 31+2, Hx Roux-en-Y gastric bypass, poor nutritional intake

Seizure at home—witnessed by partner

- Unresponsiveness, tonic posturing, post-ictal confusion
- Focal (complex partial)

MgSO<sub>4</sub> started

MRI brain: normal

Labs:

- Arterial pH 7.12 (low!), bicarb 8 (low!), AG 15 (high), serum ketones ++

**Metabolic acidosis:** euglycemic DKA + starvation ketoacidosis

***Should she be delivered?***

## Metabolic seizure

- Diabetic ketoacidosis (DKA) most common, other causes exist
- Suspect when:
  - Sz not characteristic of eclampsia, no other signs/symptoms
  - Neuroimaging “normal”
  - Lab abnormalities (blood gas, blood glucose, electrolytes, ketones)
  - Hx diabetes (**T1DM**>T2DM>GDM)
- **Do NOT deliver** until underlying cause treated!
  - Generally true for non-eclamptic causes of seizure
  - Delivery is not the “cure” (unlike eclampsia)
  - Delivery based on maternal, fetal assessment

## Take home points 3 & 4

3. Seizures that are uncharacteristic of eclampsia (e.g. focal, not associated with hypertension/other symptoms)—look for metabolic and other causes
4. Delivery is not indicated until maternal stability achieved, may not be indicated at all

## Non-eclamptic seizure workup

- **History** + exam, vitals
- Labs:
  - **Blood glucose**
  - Arterial blood gas
  - Electrolytes, lactate, serum ketones
  - CBC, Cr, LFTs, INR, urine protein/PCR/ACR
- Neuroimaging—mass, lesion, bleed, trauma:
  - CT head
  - MRI brain
  - Vascular imaging (e.g. MV—cerebral venous thrombus, CTA—ICH)
- Toxicology screen
- Infectious workup
  - Lumbar puncture

*Start workup with most likely cause based on **history, initial exam, vitals***

## Take home point 5

5. Thorough work-up is needed for any new-onset seizure. Prioritize investigations based on initial history, exam, vitals

## Case 3

38 G3P2 at 21+0, PMHx nil, 2 previous uncomplicated SVD

1<sup>st</sup> episode seizure at home—witnessed by partner

2<sup>nd</sup> seizure in L&D—witnessed by RN

- Unresponsiveness, clenched teeth, post-ictal confusion
- Focal (complex partial)

Code blue called, MgSO<sub>4</sub> started, transfer to ICU

Vitals: afeb, 126/78, HR 92

CT, MRI, MRV brain: normal

Labs: normal

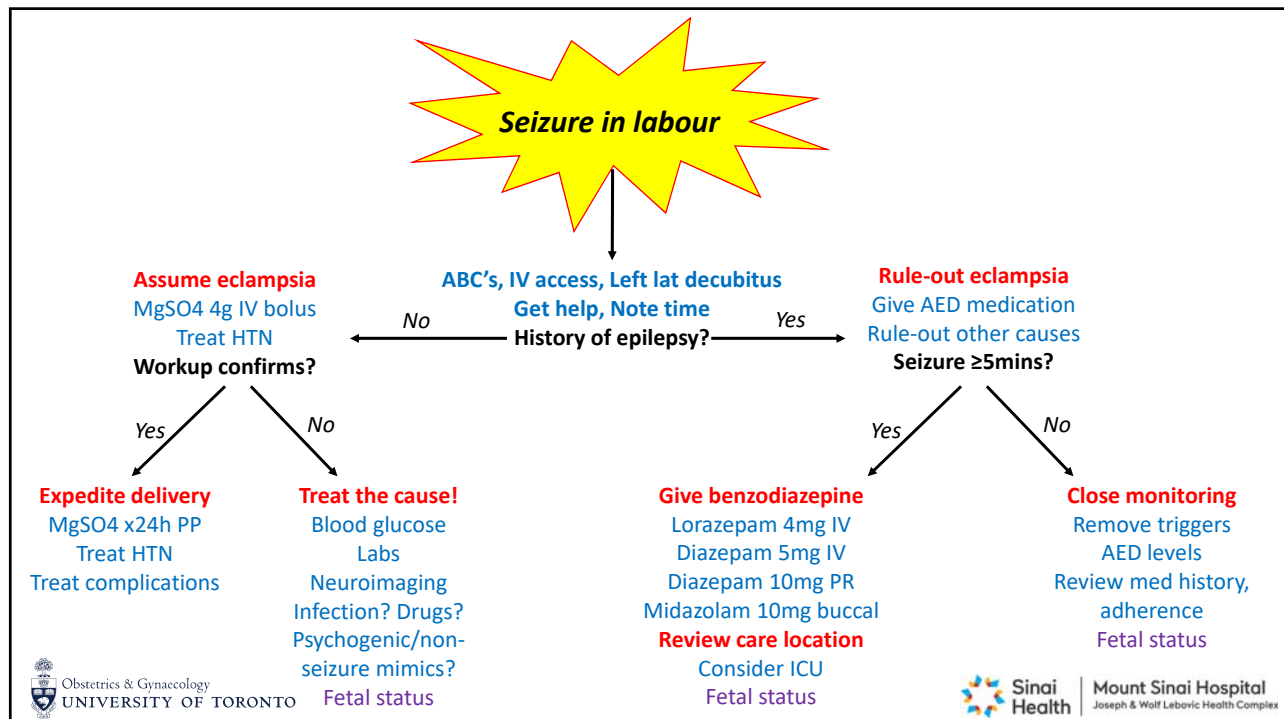
**What are next management steps?**

## Epilepsy

- Eclampsia and other metabolic, vascular, structural, infectious, trauma causes must all be **ruled-out**
- Assess maternal wellbeing—location of care? ICU, L&D, ward
- Neurology consultation
- Initiate antiepileptic medication
  - May require loading dose
  - Levetiracetam (Keppra), lamotrigine (Lactimal) 1<sup>st</sup> line maintenance agents in pregnancy
- EEG to assist diagnosis

## Take home points 6 & 7

6. Pre-existing seizure disorder (ie. epilepsy) is the most common cause of seizure in pregnancy/labour
  - Lower seizure threshold in pregnancy (triggers, dehydration, hormonal)
  - AED medication dilution (blood volume increase, missed doses, adherence issues)
7. New-onset epileptic seizures are rare but do occur (2.5% of epilepsy patients have first seizure during pregnancy)



## Take-home points 8-10

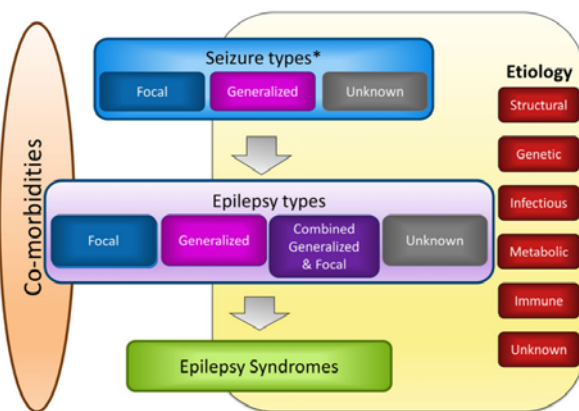
8. Epilepsy in pregnancy needs close monitoring by Neurologist—serial AED levels and med titration
9. Any new onset seizure needs Neurology consult
10. Eclampsia is a risk factor for development of a future seizure disorder, although absolute risk is very low

## *Take Home Points*

1. New onset seizure is **eclampsia until proven otherwise**
2. Eclamptic seizure can occur without severe signs/symptoms of preeclampsia.
3. Look for metabolic and other causes
4. for *non-eclamptic* seizure, **delivery is not indicated** until maternal stability achieved
5. Thorough work-up needed for any new-onset seizure
6. Most common cause of seizure in pregnancy/labour is pre-existing epilepsy
7. New-onset epileptic seizures are rare but do occur
8. Epilepsy in pregnancy: monitoring by Neurologist, serial AED levels, med titration
9. Neurology consult needed for any new-onset seizure
10. Eclampsia is a risk factor for future seizure disorder



## Helpful resources



### ILAE 2017 Classification of Seizure Types Basic Version <sup>1</sup>

<b>Focal Onset</b>		<b>Generalized Onset</b>	<b>Unknown Onset</b>
Aware	Impaired Awareness	<b>Motor</b> Tonic-clonic Other motor	<b>Motor</b> Tonic-clonic Other motor <b>Non-Motor</b>
<b>Motor Onset</b>		<b>Non-Motor (Absence)</b>	
<b>Non-Motor Onset</b>			<b>Unclassified <sup>2</sup></b>
focal to bilateral tonic-clonic			

<sup>1</sup> Definitions, other seizure types and descriptors are listed in the accompanying paper & glossary of terms

<sup>2</sup> Due to inadequate information or inability to place in other categories

ILAE Classification of the Epilepsies  
 Scheffer IE et al. Epilepsia 2017;58(4):512-521.  
<https://www.ilae.org/guidelines/definition-and-classification/ilae-classification-of-the-epilepsies-2017>

## Epilepsy in Pregnancy

Green-top Guideline No. 68  
June 2016

### 7.2 What is the optimum management of epileptic seizures in labour?

Every obstetric unit should have written guidelines on the management of seizures in labour. ✓

Seizures in labour should be terminated as soon as possible to avoid maternal and fetal hypoxia and fetal acidosis. Benzodiazepines are the drugs of choice. D

Continuous fetal monitoring is recommended in women at high risk of a seizure in labour, and following an intrapartum seizure. ✓

Any seizure lasting more than 5 minutes is unusual and represents a high risk of progressing to convulsive status epilepticus, a life-threatening medical emergency which affects around 1% of pregnancies in WWE.<sup>82</sup> Treatment should be initiated as soon as reasonably possible before status epilepticus and pharmacoresistance is established.<sup>83,84</sup>

Evidence level 2-

## SOGC CLINICAL PRACTICE GUIDELINE

It is the Society of Obstetricians 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

Figure 2. Suggested dose titration of antihypertensive therapy for urgent control of hypertension in pregnancy<sup>a</sup>.

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	—	
Labetalol (IV intermittent)	• Caution with hypoglycemic unawareness in diabetes	10–20 mg	20–40 mg <sup>b</sup>	40–80 mg	40–80 mg	40–80 mg	40–80 mg <sup>c</sup>	
Labetalol (IV infusion)	• May cause neonatal bradycardia and neonatal hypoglycemia and warrants newborn screening	0.5–2 mg/min	→	→	→	→	→ <sup>d</sup>	
Nifedipine (oral capsule swallowed whole, not bitten or punctured)	• 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 <sup>e</sup>	5–10 mg <sup>e</sup>			

Use alternative from a different drug class<sup>a</sup>

SOGC 2022.

## References

- **RCOG Green-top guideline No. 68:** Epilepsy in Pregnancy. RCOG 2016. Available at: [https://www.rcog.org.uk/media/rzldnacf/gtg68\\_epilepsy.pdf](https://www.rcog.org.uk/media/rzldnacf/gtg68_epilepsy.pdf)
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