



**មជ្ឈមណ្ឌលជាតិគាំពារមាតា និងទារក**  
National Maternal and Child Health Center

# **ទិវាសល្យសាស្ត្រ សម្ព័ន្ធ និងរោគស្រ្តី លើកទី៣**

**ប្រធានបទ: «ពង្រឹង និងបង្កើនសេវាព្យាបាល ថែទាំ សង្រ្គោះ ប្រកបដោយគុណភាព»**

## **Management of Brain Injury in Eclampsia patients at ICU department of NMCHC 2024**



**Dr. LOEM HONG DESARMU ICU department, NMCHC**

**ថ្ងៃទី៤-៥ ខែកញ្ញា ឆ្នាំ២០២៥**  
**សណ្ឋាគារភ្នំពេញ**

1. Introduction
2. Problems affecting
3. Differential diagnosis
4. Case I review
5. Case II review
6. Case III review
7. Take home message
8. References

# I. WHO systematic analysis. Lancet Glob Health. 2025

- ▶ Pre-eclampsia affects 2–8% of pregnancies worldwide.
- ▶ There are around 46 000 maternal deaths due to pre-eclampsia per year and around 500 000 fetal or newborn deaths .
- ▶ Pre-eclampsia and eclampsia are responsible for approximately 10% of maternal deaths in Asia and Africa, and 25% in Latin America.
- ▶ Pre-eclampsia and eclampsia contribute significantly to maternal and perinatal morbidity and mortality.
- ▶ Pre-eclampsia incidence in Cambodia is 2.34 per 1,000 deliveries (WHO Multicounty Survey 2011)

# Number of Pre-eclampsie in NMCHC 2024



## II. Problems affecting

- ▶ Eclampsia (seizures) → brain damage
- ▶ HELLP syndrome (hemolysis, elevated liver enzymes, low platelet count)
- ▶ organ damage (kidneys, liver, brain)
- ▶ placental abruption
- ▶ preterm birth
- ▶ fetal growth restriction
- ▶ maternal and fetal death.

# Review

- ▶ **Eclampsia** is a seizures (convulsions) in a pregnant woman (20 weeks or after birth within 48 hours) described as a tonic-clonic seizure which may cause an abrupt loss of consciousness less than a minute at onset.

## Seizure can cause brain damage?

“Place the patient in a safe place or position and give the designated rescue medication if there have been more than 2-3 seizures in 24 hours or if a seizure lasts longer than 5 minutes. Call 911 if injury, cyanosis, or continued seizure longer than 10 minutes.”

## III. Differential diagnosis

- Epilepsy
- Tetanus
- Brain tumor
- Aneurysm of the brain
- Medication- or drug-related seizures
- Others

## IV. Case I review

Mme.H S 22 F , G1P0A0 (32weeks)admit to ED for multiple tonic clonic convulsion from Cheychumneas reference hospital

Total 17 times (at home 15 and hospital 2 times)

- Prodromal each convulsion (severe headache and visual disturbance)
- General edema and high BP

## Clinical examination in ED

- Appearance : **confusion , agitate, general edema**
- Vital sign:
  - BP : **168/107 mmHg**
  - HR : 130/min
  - RR: 25/min
  - Temps: 37.5 C
  - SpO2: 95%
  - BCF: **160/min**
- Neurological:
  - **Convulsions**
  - Unconscious
  - headache and visual disturbance
  - No motor deficiency
  - Pupils : reactif
- Pulmonary
  - Spontaneous respiratory
  - Polypnea
  - crackles in both lower lungs

## Blood test :

- WBC : 16.6
- Hb : 10.7, Hct : 32.7
- Plt : 292, aPTT : 24 sec, PT : 100%
- ASAT : 27, ALAT : 15
- Proteinuria **3+**, Glucose Negative

## Hypothesis diagnosis

**Eclampsia 8 months pregnancy + AFD  
(acute fetal distress)**

► **Indication :**

**Emergency C-section**

# In OT

- General anesthesia by fast induction
- Extraction fetal in 2mn
- F = 2800g
- Apgar 3-5-6
- Stable HDM in 1 hour arrive in ICU

## ICU- D0

VS:

- BP : 140/90 mmHg
- HR: 140/min
- Mechanical Ventilation (VAC)
- SpO<sub>2</sub>: 99%
- Temps: 37 C
- Urine : > 0.5ml/kg/h

## MENAGEMENT:

- Infusion LR 100ml + Hydralazine 2 A in 24h
- Ceftriaxone
- Metronidazole
- Gentamycine
- Paracetamol
- Cimetidine
- Morphine
- MgSO<sub>4</sub>
- Thiopental (IVSE)
- Loxen (IVSE)
- Nocuronium
- Propofol

# ICU- D1

VS:

- BP : 130/90 mmHg
- HR: 140/min
- Mechanical Ventilation

(VAC)

- SpO<sub>2</sub>: 99%

GDS :

- pH: 7.35
- PCO<sub>2</sub>: 34.8
- PO<sub>2</sub>: 207
- sO<sub>2</sub>: 100%
- HCO<sub>3</sub>: 25,5
- Nacl: 133

Imagine:

- Chest Rx  
(Pneumonie Vs Artéfact de mouvement?)

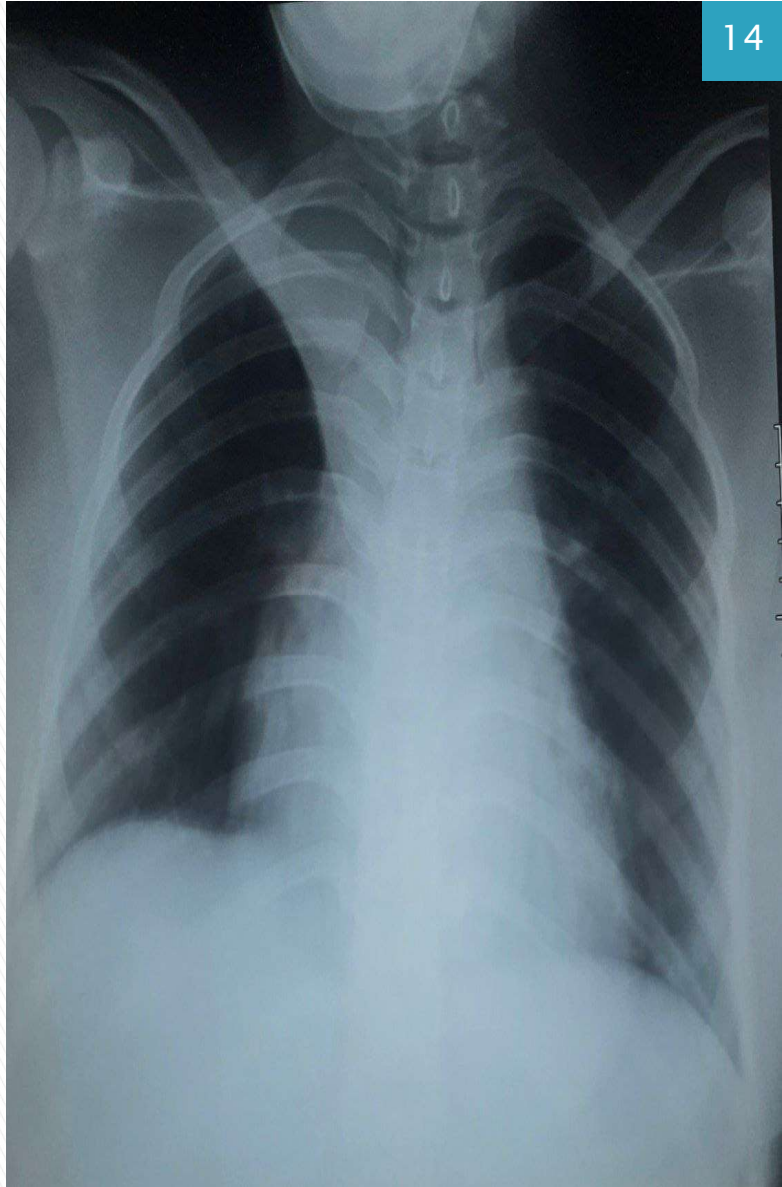
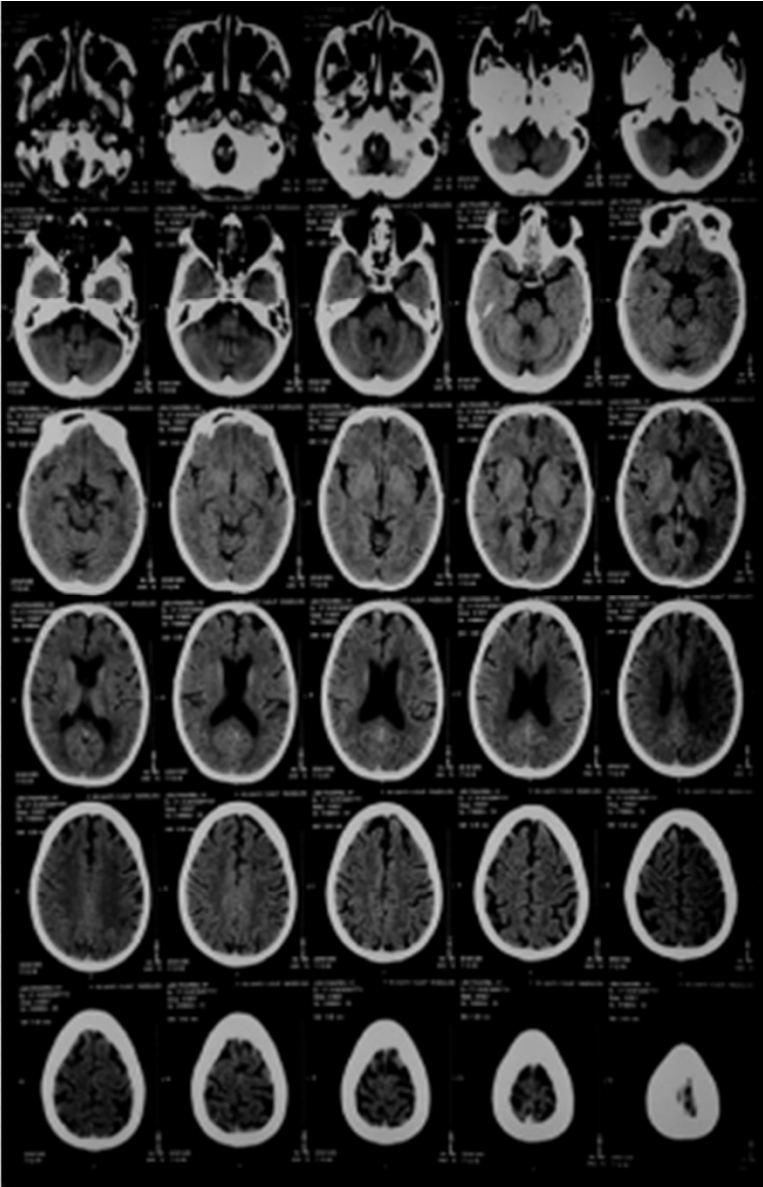
- Brain scan : limit normal

MENAGEMENT

Extubate 36h after C-section

- Infusion 1000ml + Hydralazine
- Ceftriaxone
- Azithromycine
- Bromhexine
- Cimetidine
- Nebulisation (Pulmicort, Berodual, NSS)
- Paracetamol
- Nifedipine
- kinésithérapie respiratoire





## D2

- BP: 140/100
- HR: 101/min
- RR: 18/min
- Temps: 37
- SpO2: 98%

## D3

- BP: 125/80
- HR: 120/min
- RR: 16/min
- Temps: 37.5
- SpO2: 97%

## D4

- BP: 150/110
- HR: 140/min
- RR: 17/min
- Temps: 37
- SpO2: 95%

# D5

72h after extubation

- BP: 74/32 mmHg
- HR: 115/min
- RR: 28/min
- Temps: 37 C
- SpO2: 92%( O2=15L/min )
- Very altered
- **confuse et agitate**
- GCS: 9/15 (Y2,V3,M4)
- T&C: palor
- SDRA
- **Signes de lutte respiratoire**
- **Râles sibilants et Encombrement bronchiques**
- HD instable
- Tachycardia sinusal

À 15h 30 mn GDS

- pH: 7.12
- PCO2: 80
- PO2: 82
- sO2: 99%,
- HCO3: 26,5
- NaCl 128

À 17h00mn GDS

- pH: 7.28
- PCO2: 40
- PO2: 200
- sO2: 99%,
- HCO3: 26,5
- Nacl 130

MENAGEMENT

- Fast induction to intubate
- Mechanical Ventilation

(VAC)

- FIO2: 100 %,
- VT: 400 ml
- RR 25
- I:E 1:2
- PEP 5 mmH2O

1h after

- BP: 149/95 mmHg
- HR: 95/min
- RR: 25/min sous VM
- Temps: 37 C
- SpO2: 100% sous VM



## D6

- BP: 150/100 mmHg
- HR: 113/min
- RR: 15/min
- Temps: 37.5 C
- SpO2: 100%
- GA awake
- Consciousness
- GCS: 15/15 (Y4,V5,M6)
- Respiration Spontaneous
- Dyspnea ↓↓↓
- Encombrement bronchial ↓↓↓
- HD stable
- IVC: 14 mm

## GDS

- pH: 7.47
- PCO2: 34.8
- PO2: 207
- sO2: 100%,
- HCO3: 25,5
- NaCl: 133

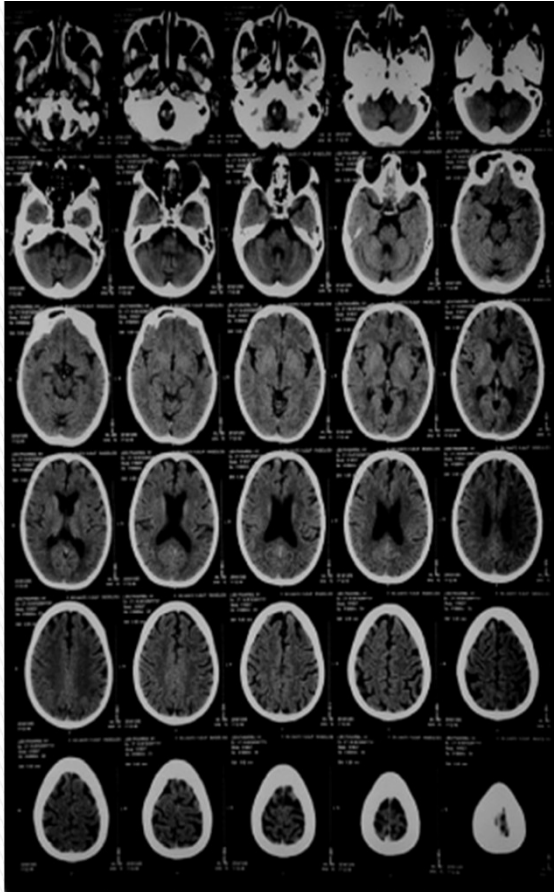
## MENAGEMENT ( D5-6-7-8-9): 5 days

Extubate 15 hours after intubation

- PIV LR 1000ml + Hydralazine
- Ceftriaxone
- Metronidazole
- Paracetamol
- Bromhexine
- Nebulisation (Pulmicort, Berodual, NSS)
- Omeprazole
- Nifedipine
- Furosemide

Additional for QD

- Solumedrol 125mg
- Cerebrolysin 30ml (3amp)+ NSS 100ml infusion in 30mn
- B-complex 2amp + NSS 100ml infusion



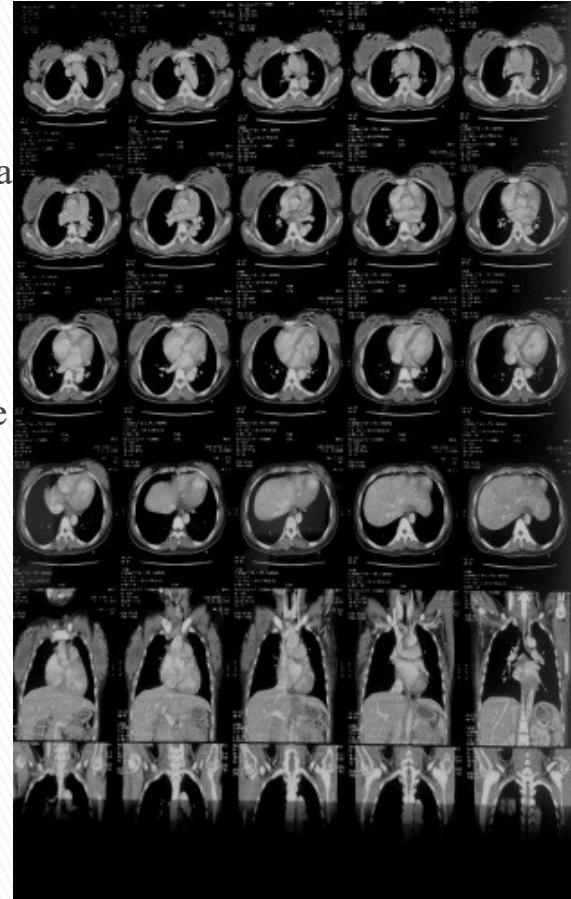
- Scanner Thoracique avec Injection

Présence des bulles aires (Emphysème) au niveau de la région rétro sternum, péri médiastinal, para cervicale latéral gauche et trachéale.

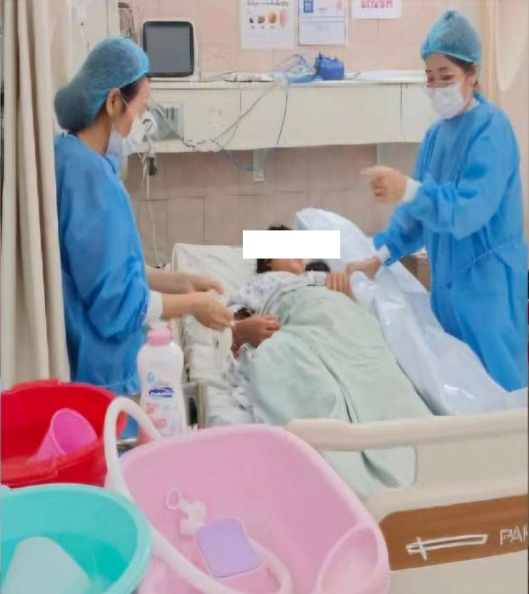
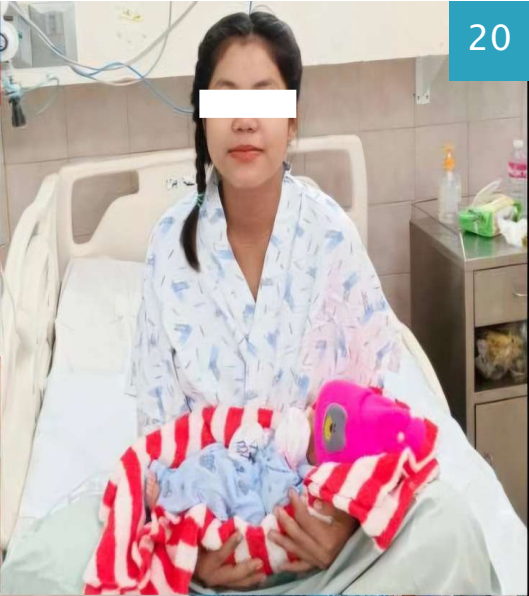
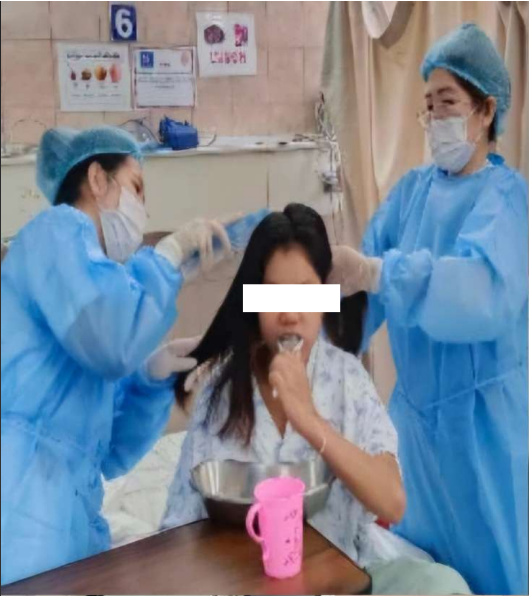
Pas de lésion active ou masse tumorale aux deux champs pulmonaire visible ce jour

- Scanner Cérébral avec Injection

Aspect scanner cérébral normal dans la limite de sans injection du produit de contraste.



ARDS or SDRA by central cause  
brain injury



## V. Case II review

Mme. K S, 39 years old, G3P1A1, (36 weeks) admit to ED for 5 times of tonic clonic convulsion from Sensok, PP (sent by her relatives).

- Vomiting and high BP

## Clinical examination in ED

- Appearance : weakness, lower limbs edema
- Vital sign:
  - BP : 188/137 mmHg
  - HR : 125/min
  - RR: 25/min
  - Temps: 37.5 C
  - SpO2: 95%
  - BCF: 167/min
- Neurological:
  - Convulsions
  - Unconscious
  - headache and visual disturbance
  - No motor deficiency
  - Pupils : reactif
- Pulmonary
  - Spontaneous respiratory
  - Mild dyspnea

## Blood test :

- WBC : 18.1
- Hb : 10.1 , Hct : 30.9
- Plt : 118, aPTT : 31.7 sec, PT : 79.3%
- ASAT : 36, ALAT : 75
- Proteinuria 3+, Glucose Negative

## Hypothesis diagnosis

### Eclampsia 36 weeks of pregnancy

#### ▶ Indication :

### Emergency C-section

## ICU- D0

VS:

- BP : 160/98 mmHg
- HR: 125/min
- Mechanical Ventilation (VAC)
- SpO2: 99%
- Temps: 37 C
- Urine : 4ml/kg/h

## MENAGEMENT:

- Infusion LR 100ml + Hydralazine 2 A in 24h
- Ceftriaxone
- Metronidazole
- Gentamycine
- Paracetamol
- tramadol
- Omeprazole
- Morphine
- furosemide
- MgSO4
- Thiopental (IVSE)
- Loxen (IVSE)
- Nocuronium

## MENAGEMENT ( D0-1-2-3): 3 days

Extubate 24 hours after intubation

- PIV LR 1000ml + Hydralazine
- Omeprazole
- Ceftriaxone
- Metronidazole
- Paracetamol
- tramadol
- Nifedipine
- Furosemide

Additional for QD

- Solumedrol 125mg
- Cerebrolysin 30ml (3amp)+ NSS 100ml infusion in 30mn
- B-complex 2amps + NSS 100ml infusion

# Safety to ward in D3



## VI. Case III review

Mme. P S L, 30 years old, G2P1A0, term pregnancy in labor, admit to ED for 3 times of tonic clonic convulsion from Pearang, PreyVeng by Ambulance.

- Unconscious and high BP
- Proteinuria +++

## Clinical examination in ED

- Appearance: **Unconscious, lower limbs edema**
- Vital sign:
  - BP : **203/107 mmHg**
  - HR : 135/min
  - RR: 22/min
  - Temps: 37.5 C
  - SpO2: 95%
  - BCF: **180/min**
- Neurological:
  - **Convulsions**
  - Unconscious
  - No motor deficiency
  - Pupils : reactif
- Pulmonary
  - Spontaneous respiratory

## Blood test :

- WBC : 10.1
- Hb : 12.1 , Hct : 36.5
- Plt : 86, aPTT : 30 sec, PT : 83%
- ASAT : 90, ALAT : 125
- Proteinuria **3+**, Glucose Negative

## Hypothesis diagnosis

**Eclampsia in term pregnancy in labor pregnancy + UMC**

▶ **Indication :**

**Emergency C-section + Hysterectomy**

## ICU- D0

VS:

- BP : 180/97 mmHg
- HR: 128/min
- Mechanical Ventilation (VAC)
- SpO2: 99%
- Temps: 37 C
- Urine : 3ml/kg/h

## MENAGEMENT:

- Infusion LR 100ml + Hydralazine 2 A in 24h
- Ceftriaxone
- Metronidazole
- Gentamycine
- Paracetamol
- tramadol
- Morphine
- Omeprazole
- furosemide
- MgSO4
- Thiopental (IVSE)
- Loxen (IVSE)
- Nocuronium

## MENAGEMENT ( D0-1-2-3): 3 days

Extubate 24 hours after intubation

- IVF LR 1000ml + Hydralazine
- Ceftriaxone
- Metronidazole
- Paracetamol
- Tramadol
- Omeprazole
- Nifedipine
- Furosemide

Additional for QD

- Solumedrol 125mg
- Cerebrolysin 30ml (3amp)+ NSS 100ml infusion in 30mn
- B-complex 2amp + NSS 100ml infusion

# Safe back home in day 7



# VII. Take home message

- ▶ គោលនយោបាយ និងនីតិវិធី ស្តីពី (Methylprednisolone) ការពារការហើមខួរក្បាលលើជំងឺ ក្រឡាភ្លើង (Eclampsia) នៅមជ្ឈមណ្ឌលជាតិគាំពារមាតា និងទារក
  - ថ្នាំ: មេទីលប្រេតនីសូឡូន បាក់តាមសរសៃ (Methylprednisolone sodium succinate IV)

- កំរិតថ្នាំ:

- ▶ កំរិតផ្ទៃមុខ: ១-២ មីលីក្រាម/គីឡូ IV (អតិបរមា ១២៥ មីលីក្រាមក្នុងមួយថ្ងៃ)។
- ▶ ការលាយ: លាយជាមួយទឹកស្អាតឬ Normal saline; ផ្តល់យ៉ាងយឺតរយៈពេល ៣០-៦០នាទី

- រយៈពេល: ៤៨-៧២ ម៉ោង (ឬតាមការណែនាំរបស់វេជ្ជបណ្ឌិត)

## Methylprednisolone use :

Relief for inflamed areas of the body:

- ▶ inflammation (swelling), severe allergies, adrenal problems, arthritis, blood or bone marrow problems, eye or vision problems, lung or breathing problems (eg, asthma), lupus, skin conditions, kidney problems, ulcerative colitis, and flare-ups of multiple sclerosis.
- ▶ The effect of bolus methylprednisolone in prevention of brain edema in hypoxic ischemic brain injury.

# Additional brain support

- Cerebrolysin 30ml (3amp)+ NSS 100ml infusion in 30mn
- Bcomplex 2amp + NSS 100ml infusion

For 3 to 5 days

## VIII. References

- ▶ Global and regional causes of maternal deaths 2009–20: a WHO systematic analysis. *Lancet Glob Health*. 2025.
- ▶ WHO Eclampsia Guidelines 2023
- ▶ American College of Obstetricians and Gynecologists (ACOG) 2020.
- ▶ UpToDate. (2023): Eclampsia: Management Approach.
- ▶ Society for Maternal-Fetal Medicine (SMFM). (2021):  
▶ Guidelines for Management of Hypertensive Disorders of Pregnancy.
- ▶ Cunningham, F. G., et al. (2022).
- ▶ Williams Obstetrics, 26th Edition: Chapter on hypertensive disorders discusses corticosteroid use for eclampsia complications (pp. 756-760).

National Maternity and Child health Center, Phnom Penh Cambodia

THANKS FOR YOUR ATTENTION

