Kingston Hospital NHS
NHS Foundation Trust

Specialist Services Division

MANAGEMENT OF ECLAMPSIA

Topic/Heading: Management of Eclampsia
Lead Clinician for Guideline: Emmanuel Kalu **Discipline:** Maternity **Date of Guideline:** May 2015 **Version:** 7 **Approved By:** Maternity Risk Management Group **Date:** May 2015 **Audit Date:** May 2018 **Guideline Review Date:** May 2018 **Review Completed By:** Michelle Mooy
Rationale for Development: To ensure that women with Eclampsia are cared for and referred appropriately
Aims and Objectives: To ensure that all trained staff are competent to care for women with Eclampsia and are able to recognise the symptoms of the disease.
Method of Guideline Development: In accordance with local and national guidance
Guideline: Management of Eclampsia
Evidence Base: See page 9
Consultation: Maternity Guideline Group and Maternity Risk Management Group
Implementation: Available through PIMS
Outcome Measures and Audit Criteria: See page 11
Assessment of Competence to Carry Out the Procedure:

Definition and Diagnosis

Eclampsia is defined and diagnosed as the occurrence of one or more convulsions / fits superimposed on pre-eclampsia. 38% of eclamptic fits are antenatal, 18% intrapartum and 44% postpartum.

Assessment and Management Protocol for Women with Eclampsia
Team Communication

Effective communication is the key to successful multidisciplinary management of this serious obstetric condition.

- Fast bleep 2222 Obstetric Team (Unit Leader, Obstetric ST 3-7, Obstetric ST 1-2, Anaesthetic ST, Paediatrician ST).
- The Unit Leader must inform the Obstetric Consultant on-call and the Anaesthetic Consultant on call and the Neonatal Unit (NNU)
- The Consultant Obstetrician and Anaesthetist must work together to formulate and document a management plan
- Observations must be recorded on the MEOWS chart at 15 minute intervals
- Blood results can be viewed via CRS or WINPATH as a flow chart.
- BP must be measured every 15 minutes until stabilised or as directed by the medical team

ECLAMPSIA - Airway - Breathing - Circulation first

- The principles of management should follow the basic principles of airway, breathing and circulation
- Do not leave the woman alone but call for help, including appropriate personnel such as the anaesthetist and senior obstetrician.
- Aim to prevent maternal injury during the convulsion.
- Place the woman in the left lateral position and administer oxygen.
- Assess the airway and breathing and check pulse and blood pressure.
- Pulse oximetry is helpful.

Control and Use of Anticonvulsant therapy in eclampsia

Magnesium sulphate is the therapy of choice to control seizures.
A loading dose of 4g must be given by infusion pump over 5 minutes, followed by a further infusion of 1g/hour maintained for 24 hours after the last seizure.

Initial Treatment (Loading Dose)	4 g in 40 mL over 5 minutes by slow IV bolus (4 x 10 mL amps of 10% MgSO4) (1g in 10 mL). followed by:
Maintenance Dose	1g/hr (10mL of 10% MgSO4/hr) IV. (This volume needs to be deducted from hourly maintenance fluid)
Contraindications	Cardiac disease, acute renal failure. • Use Diazemuls, 10mg IV bolus then 2.5mg/hr infusion • OR rectal diazepam 10 mg/2.5 mL.
Duration of Infusion	24-48 hrs after delivery

Monitoring	Clinical	Therapy can be monitored safely by clinical observations. Unlikely to achieve MgSO4 toxicity using the dose above. However it is important to monitor clinically as toxicity can cause cardio respiratory arrest. Check:

		a) Level of consciousness: b) Hourly. B/P, urine output c) Respiratory rate – (Should be greater than 16/min) d) Oxygen saturation (should be greater than or equal to 95%) e) Patellar reflex: • After completion of loading dose. • Hourly whilst on maintenance dose. • (Use arm reflexes patients if patient has epidural)
	ECG/Pulse Oximetry	• ECG (3-lead) mandatory during whole time on MgSO4 • Pulse Oximetry whilst on MgSO4.
	MgSO4 Levels	**Routine monitoring not necessary**. Request levels if • Recurrent seizure • Loss of patella reflex, • Respiratory rate less than16 • Oxygen saturation less than 95% • Urine output less than 25ml/hr (100ml/4 hours) • Serum urea greater than 10mmol /l.
		2 ml in SST gel tube (Yellow) **Mark urgent and ask lab to phone the result**. Therapeutic range: 2-4mmol/l (4.0-8.0 mg/dl)

Presence of patellar reflex, oxygen saturation and MgSO4 levels if done must be recorded on the MEOWS chart. If the midwife is to carry out clinical monitoring, it is the responsibility of the Obstetric ST 1-2 or Obstetric ST 3-7 to ensure these are performed and recorded accurately.

If oliguria, (urine output less than 100ml in 4hrs)

- Reduce infusion to 0.5g/hr.
- Measure MgSO4 levels.

Recurrent Seizures after Starting Magnesium Sulphate

- Treat seizure with a further bolus of magnesium 2-4g over 5 minutes (2g if <70kg, 4g if >70kg). One stat dose only.
- If possible take blood for MgSO4 level prior to additional bolus.
- If further seizures occur despite above, consider:
  - Diazemuls 10 mg IV bolus and then an infusion (2.5 mg/hr)
  - Thiopentone infusion (on intensive care unit)
  - Chlormethiazole 0.8% infusion
  - Rate altered until patient adequately sedated - 800 mg in 500 ml
  - Consider ventilation.
- If recurrent seizures, inform anaesthetist and intensive care unit and consider giving another anticonvulsant.

Management	**Loss of patellar reflex or respiratory rate <12/min**	1. Stop maintenance infusion ASK FOR URGENT MEDICAL REVIEW BY OBSTETRIC/Anaesthetic TEAM 2. Send MgSO4 level to laboratory urgently. 3. Withhold further MgSO4 until patellar reflexes return or blood MgSO4 level known. Restart at 1g/hr and check levels after 1hr.
	Oxygen saturation persistently less than 95% (on air)	1.Commence O2 at 4litres/min 2. Stop maintenance infusion and send MgSO4 level 3. Inform anaesthetist ASK FOR URGENT MEDICAL REVIEW BY OBSTETRIC TEAM
	Cardio-respiratory arrest	1. "Crash call" 2222 and institute CPR 2. Stop maintenance infusion 3. Administer 10 ml 10% Calcium gluconate IV (antidote) 4. Intubate immediately and manage with assisted ventilation until resumption of spontaneous respirations 5. Send MgSO4 level to lab urgently.

Control of Severe Hypertension

Commence on MEOWS chart

Blood Pressure Control

- If the blood pressure is greater than 160/110 or MAP125mmHg, intravenous antihypertensive medication should be commenced.
- It is important that BP is not allowed to fall precipitately (below 140/90) to avoid the risk of under perfusion of vital organs (brain, kidneys and placenta).
- Acute reduction in diastolic BP to below 90mmHg may produce fetal distress - keep on continuous CTG.
- BP should be measured every 15 minutes until stabilised and then as directed by the medical team in the written management plan

Antihypertensive Medications

Intravenous Labetalol

- Preferred first line for acute control of severe hypertension
- IV achieves controlled rapid reduction of BP without adverse effect on uteroplacental perfusion or the reflex tachycardia associated with hydralazine.
- Onset of action quicker than hydralazine
- Does not result in reflex tachycardia and therefore side effects often associated with hydralazine are unusual.
- **Acute control**: 20mg IV slowly can be repeated at 10 minutes intervals by 40, 60, 80mg up to a cumulative dose of 220mg.
- **Maintenance Dose:** IV infusion 200mg up to 50ml of normal saline. Start at 40mg (10mls) /hour & double dose half hourly until satisfactory response or maximum dose maximum 160mg (40mls) /hr reached.

Intravenous Hydralazine

- 5-10mg IV bolus diluted with 10 mL normal saline and given slowly. Doses can be repeated 5mg IV at 20 min intervals. The effect of a dose may last up to 6 hours.
- May cause abrupt and profound reduction in blood pressure and uteroplacental perfusion.
- Liaise with anesthetists and consider plasma volume expansion as preload.

Fluid Balance

- Fluid balance is of vital importance as one of the main causes of maternal death is pulmonary oedema often due to iatrogenic fluid overload.
- Fluid balance must be accurately recorded on the MEOWS and fluid balance chart with input /output and blood loss at delivery.
- Catheterise with large bore catheter and monitor hourly out put
- Maintenance fluids of crystalloid should be given at 85ml/hr. Any additional infusions should be subtracted from this volume e.g. syntocinon, magnesium sulphate. See Appendix 1
- Colloid preloading may be necessary prior to vasodilatation to prevent hypotension and maternal compromise e.g. before administering hydralazine.
- It is unusual for the patient to become oliguric prior to delivery, but urine output may be artefactually reduced if the fetal head is well down in the pelvis, so use a large-bore catheter.
- Oliguria is frequent following delivery; occurring in 30% of patients with severe disease. Urine output will recover over time and does not need any treatment.
- If urine output is less than 100ml in 4 hours, do serum ureas and electrolytes again
- Oliguria with concentrated urine and no evidence of renal failure is often due to reduced renal perfusion and this improves with time. **Exclude acute tubular necrosis if prolonged oliguria. Look for casts, involve renal physicians early and watch for polyuria**.
- Fluid challenges are dangerous as much of the fluid will leak into interstitial fluid and increase the risk of pulmonary oedema.
- Invasive monitoring is often not necessary and CVP may be misleading with pulmonary oedema occurring despite low CVP. Diuretics should be used only when there is confirmed pulmonary oedema.

Fetal Assessment

Fetal surveillance by way of continuous electronic fetal monitoring should be performed.

Delivery Plan

- Once stabilised, plans should be made to deliver the woman
- It is important to stabilize the mother's condition before assessing fetal condition and planning delivery.
- The woman's condition will always take priority over the fetal condition.
- Urgent delivery is required if CTG is abnormal.
- The mode and timing of delivery should be an Obstetric Consultant decision.
- The Neonatal Team must be informed of the decision to deliver and be present at the delivery regardless of gestation.
- Use oxytocin (Syntocinon 10 IU), rather than syntometrine or ergometrine for 3rd stage.

Transfer of Mother from Delivery Suite to Intensive Care Unit (ITU)

The decision for transfer will ultimately rest with the consultant obstetrician and anaesthetist in conjunction with the ITU admitting team. Please see the **Maternal Transfer Guideline**

Postpartum management

- These patients are best managed on Delivery Suite (for one-to-one care) in HDU rather than intensive care unit unless ventilated.
- After delivery, mothers who have suffered an eclamptic fit should continue on the Severe PET Protocol and kept under observation with HDU level care for at least 24 hours. Monitoring as per management plan and MEOWS chart.
- Thromboembolic stockings and fragmin should be administered to reduce the risk of thrombo-embolism if clotting is impaired and continued until patient is fully mobile.
- DIC should be managed in association with haematologists.
- Request blood investigations(FBC's, LFT, U&E and Clotting) as clinically appropriate
- Diuresis usually signals resolution unless there is underlying disease.
- Do not measure fluid balance if creatinine is within normal range after step down from HDU level care
- View results via CRS/WINPATH flow chart

Postnatal BP Care

- If patients was not on Antenatal Antihypertensive treatment:Measure BP at least 4 times per day whilst inpatient
- If BP greater than or equal to 150/100mmHg start antihypertensive treatment
- If patient was on antenatal antihypertensive treatment continue antenatal hypertensive treatment.
- If Methalydopa was used to treat pre eclampsia stop within 2 days of birth
- Reduce antihypertensive treatment if BP falls to less than 130/80 mmHg. Consider reducing if BP less than 140/90 mmHg
- If woman breast feeding avoid diuretic treatment for hypertension
- Offer transfer to community care if BP<150/100mmHg, blood test results stable or improving and no symptoms of pre-eclampsia.

Follow Up Care and Postnatal Review

- Women should be monitored in hospital for up to 4 days postpartum before discharge when deemed fit for discharge by a member of the Obstetric Team
- Postnatal care should be in accordance with **Postnatal Care Planning guideline**

Consultant Follow-Up

The woman must be offered an appointment with the Obstetric Consultant at six weeks instead of the General Practitioner. The risks of recurrence as well as management of future pregnancies will be discussed at this appointment.

References

Hypertension in pregnancy- the management of hypertensive disorders during pregnancy. NICE clinical guideline107; aug 2010.

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Magee et al Hydraliazine for treatment of severe hypertension in pregnancy meta- analysis BMJ 327 (7421) 955. Oct 2003.

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Magpie Trial Collaberative Group. Do mothers with pre-eclampsia and their babies benefit from magnesium sulphate. Lancet 2002;359:1877-90.

Managing Obstetric Emergencies and Trauma – the MOET Course Manual (2nd Edition) 2007, RCOG Press

The Management of Severe Pre-Eclampsia / Eclampsia (2006) Royal College of Obstetricians and Gynaecologists, Guideline No. 10(A)

Appendix 1

When using syntocinion infusion where fluid restriction is required use the following regime:

Primip Dose: 10 IU oxytocin in **500mls** Normal Saline 0.9% solution

Rate: Start infusion at 15mls/hr increasing the rate by 15mls/hr every 30 minutes until **either** the maximum of 45mls/hr (15mU/min) **or** uterine contractions 4 - 5 in 10 lasting no more than 60 seconds is achieved.

This must be administered through an IVAC pump.

Multip Dose: 5 IU oxytocin in **500mls** Normal Saline 0.9% solution

Rate: Start infusion at 15mls/hr increasing the rate by 15mls/hr every 30 minutes until **either** the maximum of 75mls/hr (12.5mU/min) **or** uterine contractions 4 - 5 in 10 lasting no more than 60 seconds is achieved.

This must be administered through an IVAC pump.

Increase the tabulated dose at **30 minute** intervals until contracting 4 - 5 in 10 lasting 60 seconds with adequate resting tone in between.

Further increase must be decided by the obstetric registrar.

If satisfactory contractions have not been achieved after 2 hours, management must be discussed with the Obstetric Registrar.

Rate	**Oxytocin Concentration (milliunits/min)**	
	PRIMIP	**MULTIP**
Mls / Hr	**10 IU per 500mls**	**5 IU per 500mls**
15	5 Mu	2.5 mU
30	10 mU	5 Mu
45	15 mU	7.5 mU
16	20 mU	**10 mU**
75	25 mU	**12.5 mU**
90	30 mU	**15 mU**

Shaded area represents unlicensed doses of oxytocin. Caution should be observed under Registrar supervision and the Registrar must discuss this Management Plan with the consultant and document this in the Health Record. The Consultant should be informed if there are any concerns with regard to using high doses of Oxytocin.

Audit / Monitoring Tool

Element to be monitored i.e. measurable policy objective	Position responsible for monitoring	Method	Frequency	Reporting arrangements
Documentation of the assessment and diagnosis of eclampsia is recorded inline with the standard set out in this guideline	Speciality Lead for Obstetrics or designated person	Clinical audit Audit proforma to be held by Lead/Audit centre Sample: All health records of women who have delivered with a diagnosis of eclampsia over a one year period	Annual	Reported annually to Clinical Governance Meeting
Communication lines are clearly documented between relevant staff groups				
Blood pressure control and fluid balance are recorded as stated in the guideline on the MEOWS and fluid balance chart				
Methods used to prevent eclamptic seizures are documented in line with this guideline.				
The fetal assessment is monitored and an appropriate delivery plan, indicated by gestation, is recorded				
The documentation of an appropriate postnatal follow up is recorded				