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Obstetric Safety

DIAGNOSIS OF LABOUR

FIRST STAGE

- **Latent phase**
  - Cervix less than 4 cm dilated
- **Active phase**
  - Cervix between 4 cm and 10 cm dilated

SECOND STAGE

- **Early phase** (non-expulsive)
  - Cervix fully dilated (10 cm)
  - Fetal descent continues
  - Patient has no urge to push
- **Late phase** (expulsive)
  - Presenting part of fetus reaches the pelvic floor and the patient has the urge to push
  - Typically lasts less than 1 hour in primigravida women and less than 30 minutes in multigravida women

Carry out vaginal examinations at least once every 4 hours in the first stage of labour and plot the findings on the partograph.

The partograph is very helpful in monitoring the progress of labour and in the early detection of abnormal labour patterns.

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DIAGNOSIS OF VAGINAL BLEEDING IN EARLY PREGNANCY[1]

Typical Symptoms and Signs	Occasional Symptoms and Signs	Probable Diagnosis
▪ Light* bleeding ▪ Closed cervix ▪ Uterus corresponds to dates	▪ Cramping/lower abdominal pain ▪ Uterus softer than normal	**Threatened abortion**
▪ Light bleeding ▪ Abdominal pain ▪ Closed cervix ▪ Uterus slightly larger than normal ▪ Uterus softer than normal	▪ Fainting ▪ Tender adnexal mass ▪ Amenorrhea ▪ Cervical motion tenderness	**Ectopic pregnancy**
▪ Light bleeding ▪ Closed cervix ▪ Uterus smaller than dates ▪ Uterus softer than normal	▪ Light cramping/lower abdominal pain ▪ History of expulsion of products of conception	**Complete abortion**
▪ Heavy** bleeding ▪ Dilated cervix ▪ Uterus corresponds to dates	▪ Cramping/lower abdominal pain ▪ Tender uterus ▪ No expulsion of products of conception	**Inevitable abortion**
▪ Heavy bleeding ▪ Dilated cervix ▪ Uterus smaller than dates	▪ Cramping/lower abdominal pain ▪ Partial expulsion of products of conception	**Incomplete abortion**
▪ Heavy bleeding ▪ Dilated cervix ▪ Uterus larger than dates ▪ Uterus softer than normal ▪ Partial expulsion of products of conception resembling grapes	▪ Nausea/vomiting ▪ Spontaneous abortion ▪ Cramping/lower abdominal pain ▪ Ovarian cysts (easily ruptured) ▪ Early-onset pre-eclampsia ▪ No evidence of a fetus	**Molar pregnancy**

* Light bleeding: takes longer than 5 minutes for a clean pad or cloth to be soaked

** Heavy bleeding: takes less than 5 minutes for a clean pad or cloth to be soaked

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DIAGNOSIS OF VAGINAL BLEEDING IN LATE PREGNANCY[1]

Typical Symptoms and Signs	Occasional Symptoms and Signs	Probable Diagnosis
▪ Bleeding after 22 weeks gestation (may be retained in the uterus) ▪ Intermittent or constant abdominal pain	▪ Shock ▪ Tense/tender uterus ▪ Decreased/absent fetal sounds ▪ Fetal distress or absent fetal heart sounds	**Abruptio placentae**
▪ Bleeding (intra-abdominal and/or vaginal) ▪ Severe abdominal pain (may decrease after rupture)	▪ Shock ▪ Abdominal distention/free fluid ▪ Abnormal uterine contour ▪ Tender abdomen ▪ Easily palpable fetal parts ▪ Absent fetal movements and fetal heart sounds ▪ Rapid maternal pulse	**Ruptured uterus**
▪ Bleeding after 22 weeks gestation ▪ Painless	▪ Shock ▪ Bleeding may be precipitated by intercourse ▪ Relaxed uterus ▪ Fetal presentation not in pelvic/lower uterine pole feels empty ▪ Normal fetal position	**Placenta previa**

MANAGEMENT OF BLEEDING IN LATE PREGNANCY, LABOUR AND POSTPARTUM HEMORRHAGE

1. Monitor blood loss, vital signs and urine output and treat appropriately. Remember bleeding can recur.
2. After bleeding is controlled (24 hours after bleeding stops), determine hemoglobin or hematocrit to check for anemia and treat appropriately.
3. Record details or problems and procedures carried out.
4. Inform the woman about these and provide her with a written summary. Provide counselling and advise on prognosis for fertility and childbirth.
5. Schedule a follow-up visit at 4 weeks.

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DIAGNOSIS AND MANAGEMENT OF ABORTION COMPLICATIONS

Symptoms and Signs	Complication	Management
▪ Lower abdominal pain ▪ Rebound tenderness ▪ Tender uterus ▪ Prolonged bleeding ▪ Malaise ▪ Fever ▪ Foul-smelling vaginal discharge ▪ Purulent cervical discharge ▪ Cervical motion tenderness	▪ Infection ▪ Sepsis	**Begin antibiotics* as soon as possible before attempting manual vacuum aspiration**
▪ Cramping abdominal pain ▪ Rebound tenderness ▪ Abdominal distention ▪ Rigid (hard and tense) abdomen ▪ Shoulder pain ▪ Nausea/vomiting ▪ Fever	▪ Uterine, vaginal or bowel injuries	**Perform a laparotomy to repair the injury and perform manual vacuum aspiration simultaneously. Seek assistance, if required**

*Give antibiotics until the woman is fever-free for 48 hours

- Ampicillin 2 gm IV every 6 hours
  - *Plus* gentamicin 5 mg/kg IV every 24 hours
  - *Plus* metronidazole 500 mg IV every 8 hours

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SEVERE PRE-ECLAMPSIA AND ECLAMPSIA

PRE-ECLAMPSIA: onset of a new episode of hypertension during pregnancy (with persistent diastolic blood pressure >90 mm Hg) with the occurrence of substantial proteinuria (>0.3 g/24 h)[2]

Classifying Pre-Eclampsia and Signs of Imminent Eclampsia[2]

	Mild Pre-Eclampsia	Severe Pre-Eclampsia
Diastolic blood pressure	< 110	110
Proteinuria	Up to 2+	3+ or more
		Indications of severe pre-eclampsia
Headache	Absent	May be present
Visual disturbances	Absent	May be present
Upper abdominal pain (epigastric region)	Absent	May be present
Oliguria (less than 400 mL in 24 hours)	No oliguria	Diminished urinary output to less than 400 mL in 24 hours
Hyper-reflexia	Absent	May be present
Pulmonary edema	Absent	May be present

Severe pre-eclampsia and eclampsia are managed similarly, with the exception that delivery must occur within 12 hours of the onset of convulsions in eclampsia.

***All* cases of severe pre-eclampsia should be managed actively. Symptoms and signs of "impending eclampsia" (blurred vision, hyperreflexia) are unreliable and expectant management is not recommended.**

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ECLAMPSIA MANAGEMENT

Immediate management of a pregnant woman or a recently delivered woman who complains of severe headache or blurred vision, or if a pregnant woman or a recently delivered woman is found unconscious or having convulsions:

SHOUT FOR HELP

Make a quick assessment of the general condition of the woman, including vital signs while simultaneously finding out the history of her present and past illnesses from her or her relatives.

- Check airway and breathing
- Position her on her side
- Check for neck rigidity
- Check her temperature

Not breathing? or **Breathing is shallow?**

→ YES
Open airway and intubate, if required
Assist ventilation using an Ambu bag and mask
Give oxygen at 4–6 L/min

→ NO
Give oxygen at 4–6 L/min by mask or nasal cannulae

Convulsing?	**→ YES** Protect her from injury, but do not actively restrain her. Position her on her side to reduce the risk of aspiration of secretions, vomit and blood After the convulsion, aspirate the mouth and throat as necessary. Look in the mouth for a bitten tongue: it may swell. Give magnesium sulfate. If a convulsion continues in spite of magnesium sulfate, consider diazepam 10 mg IV.
Diastolic blood pressure remains above 110 mmHg?	**→ YES** Administer antihypertensive drugs. Reduce the diastolic pressure to less than 100 mmHg, but not below 90 mmHg.
Fluids	Start an IV infusion. Maintain a strict fluid balance chart and monitor the volume of fluids, administered and urine output to ensure that there is no fluid overload, Catheterize the bladder to monitor urine output and proteinuria.

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Urine output less than 30 mL/h?	→ **YES** Withhold magnesium sulfate until urine output improves; Infuse a maintenance dose of IV fluids (normal saline or Ringer's lactate) at 1 liters in 8 hours; Monitor for the development of pulmonary edema. Never leave the woman alone. A convulsion followed by aspiration of vomit may cause death of the woman and fetus.

Observe vital signs, reflexes and fetal heart rate hourly

Auscultate the lung bases hourly for rales indicating pulmonary edema	If rales are heard, withhold fluids and give ▪ Furosemide 40 mg IV once

Assess clotting status

Anticonvulsant drugs

Magnesium sulfate is recommended for the treatment of women with eclampsia in preference to other anticonvulsants. • (Moderate-quality evidence. Strong recommendation.)[3]

Magnesium sulfate schedules for severe pre-eclampsia & eclampsia[1,2]

Loading dose

- Magnesium sulfate 20% solution — 4 gm IV over 5 minutes
  - *Follow promptly* with magnesium sulfate 50% + 1 mL of 2% lidocaine — 8 gm IM; 4 gm in each buttock

- Ensure that aseptic technique is practiced when giving magnesium sulfate deep IM injection; warn the woman that a feeling of warmth will be felt when magnesium sulfate is given
- If convulsions recur after 15 minutes, give 2 gm magnesium sulfate (50% solution) IV over 5 minutes

Maintenance dose

- Magnesium sulfate 50% solution + 1 mL of 2% lidocaine — 4 gm IM every 4 hours, alternate buttocks

- Continue treatment with magnesium sulfate for 24 hours after delivery or the last convulsion, whichever occurs last.
- Before repeat administration, ensure that
  - Respiratory rate is at least 16 per minute
  - Patellar reflexes are present
  - Urinary output is at least 30 ml per hour over the last 4 hours

- Withhold or delay drug if:
  - Respiratory rate falls below 16 per minute
  - Patellar reflexes are absent
  - Urinary output falls below 30 ml per hour over preceding 4 hours

- In case of respiratory arrest:
  - Assist ventilation (mask and bag; anesthesia apparatus; intubation)
    - Calcium gluconate (10 mL of 10% solution) — 1 gm IV slowly until drug antagonizes effects of magnesium and respiration begins

➔ The full intravenous or intramuscular magnesium sulfate regimens are recommended for the prevention and treatment of eclampsia.
• (Moderate-quality evidence. Strong recommendation.)[2]

➔ For settings where it is not possible to administer the full magnesium sulfate regimen, the use of magnesium sulfate loading dose followed by immediate transfer to a higher level health-care facility is recommended for women with severe pre-eclampsia and eclampsia.
• (Very-low-quality evidence. Weak recommendation.)[2]

➔ Magnesium sulfate is a lifesaving drug and should be available in all health-care facilities throughout the health system. The guideline development group believed that capacity for clinical surveillance of women and administration of calcium gluconate were essential components of the package of services for the delivery of magnesium sulfate.[2]

Use diazepam only if magnesium sulfate is not available[1]

➔ A Cochrane systematic review of seven RCTs involving 1396 women provided the evidence on the differential effects of magnesium sulfate when compared with diazepam for the care of women with eclampsia.[4] Magnesium sulfate fared better than diazepam regarding critical maternal outcomes of death (seven trials; 1396 women; RR 0.59, 95% CI 0.38–0.92) and recurrence of convulsions (seven trials; 1390 women; RR 0.43, 95% CI 0.33–0.55).

Diazepam schedules for severe pre-eclampsia and eclampsia[1]

Loading dose

- Diazepam 10 mg IV (intravenous) slowly over 2 minutes
- If convulsions recur, repeat loading dose

Maintenance dose

- Diazepam 40 mg in 500 ml IV fluids (normal saline or Ringer's lactate) titrated to keep the patient sedated but arousable
- Do not give more than 100 mg in 24 hours

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Management of Severe Hypertension During Pregnancy

Antihypertensive drugs

- ➔ Hydralazine is the most studied drug, though in the comparison with calcium channel blockers (nifedipine and isradipine) the latter have been associated with a greater reduction in the risk of persistent high blood pressure.[2]
- ➔ It should be noted that the analysis of the evidence related to the multiple comparisons of antihypertensive drugs for very high hypertension during pregnancy is complicated by its low quality which is due primarily to the small samples used in the trials, rare events as outcomes and variations in the adminsterred drug regimens.[2]

If the diastolic pressure is 110 mmHg or more, give antihypertensive drugs.

Goal is to keep the diastolic pressure between 90 mmHg and 100 mmHg to prevent cerebral hemorrhage. Avoid hypotension.

Hydralazine[1]

Give hydralazine 5 mg IV slowly every 5 minutes until blood pressure is lowered. Repeat hourly as needed or give hydralazine 12.5 mg IM every 2 hours as needed.

If hydralazine is not available:

Labetolol

- Give labetolol 10 mg IV[1]:
  If response is inadequate (diastolic blood pressure remains above 110 mmHg) after 10 minutes, give labetolol 20 mg IV
- Increase dose to 40 mg and then 80 mg if satisfactory response is not obtained within 10 minutes of each dose

Calcium Channel Blockers

Nifedipine 5 mg chewed and swallowed or injected into the oropharynx; may be repeated at 10-minute intervals

Rectal administration of drugs[1]

- Give diazepam rectally when IV access is not possible. The loading dose of 20 mg is taken in a 10 ml syringe.

Remove the needle, lubricate the barrel and insert the syringe into the rectum to half its length. Discharge the contents and leave the syringe in place, holding the buttocks together for 10 minutes to prevent expulsion of the drug. Alternatively, instill the drug in the rectum through a urinary catheter. If convulsions are not controlled within 10 minutes, inject an additional 10 mg per hour or more, depending on the size of the woman and her clinical response

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Caesarean Section

Preparation Steps

1. Review indications. Check fetal presentation and ensure that vaginal delivery is not possible.

2. Obtain consent from the patient after explaining the procedure and the reason for it.

3. Check the patient's haemoglobin concentration, but do not wait for the result if there is fetal or maternal distress or danger. Send the blood sample for type and screen. If the patient is severely anaemic, plan to give two units of blood.

4. Start an IV infusion.

5. Give sodium citrate 30 ml 0.3 molar and/or ranitidine 150 mg orally or 50 mg IV to reduce stomach acidity. Sodium citrate works for 20 minutes only so should be given immediately before induction of anaesthesia if a general anaesthetic is given.

6. Catheterize the bladder and keep a catheter in place during the operation.

7. If the baby's head is deep down into the pelvis, as in obstructed labour, prepare the vagina for assistance at caesarean delivery.

8. Roll the patient 15° to her left or place a pillow under her right hip to decrease supine hypotension.

9. Listen to the fetal heart rate before beginning surgery.

Aftercare of obstetric emergencies

Abortion

- Reassure the woman that the chances for a subsequent successful pregnancy are good unless there has been sepsis or a cause of the abortion is identified that may have an adverse effect on future pregnancies (this is rare).
- The woman should be encouraged to delay the next pregnancy until she is completely recovered.
- If pregnancy is not desired, certain methods of family planning can be started immediately (within 7 days) provided there are no severe complications requiring further treatment.

- Also identify any other reproductive health services that a woman may need:
    - Tetanus prophylaxis or tetanus booster
    - Treatment for sexually transmitted diseases (STDs)
    - Cervical cancer screening

Ectopic pregnancy

- Prior to discharge, provide counselling, a family planning method, if desired and advice on prognosis for fertility.
- Correct anaemia with oral iron.
- Schedule a follow-up visit at 4 weeks.

Molar pregnancy

- Recommend a hormonal family planning method for at least 1 year to prevent pregnancy. Voluntary tubal ligation may be offered if the woman has completed her family.
- Follow up every 8 weeks for at least 1 year with urine pregnancy test because of the risk of persistent trophoblastic disease or choriocarcinoma.
    - If the urine test becomes positive, refer the woman to a tertiary care centre for further follow-up and management.

References

[1] Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors, 2007
[2] WHO recommendations for Prevention and treatment of pre-eclampsia and eclampsia, 2011
[3] Managing Eclampsia, 2008
4 Duley L, Henderson-Smart DJ, Walker GJ, Chou D. Magnesium sulphate versus diazepam for eclampsia. *Cochrane Database of Systematic Reviews*, 2010, (12):CD000127.