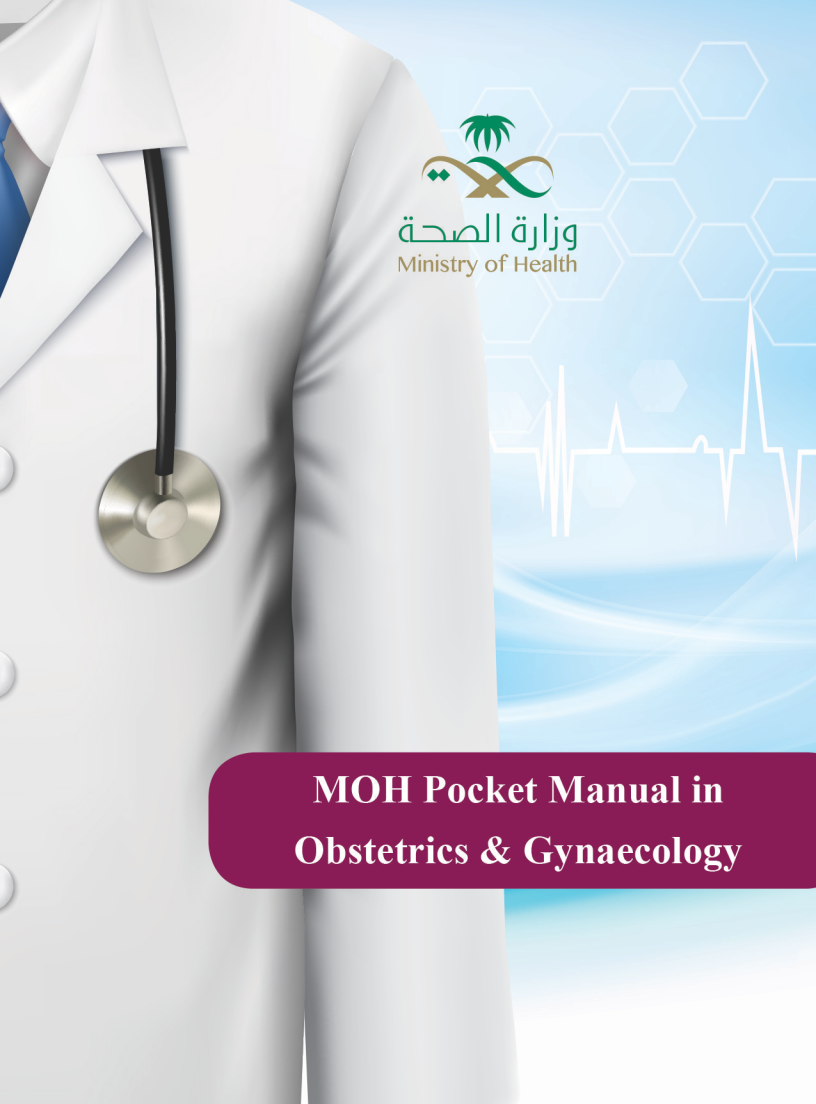

MOH Pocket Manual in Obstetrics & Gynaecology

POST PARTUM HEMORRHAGE

OVERVIEW:

- Postpartum Haemorrhage is an obstetrical emergency and is a major cause of maternal morbidity and one of the top three causes of maternal mortality.
- The incidence varies between 1-5% of deliveries.
- PPH is either primary occurring within 24 hours after delivery and secondary occurs 24 hours-12 weeks after delivery.
- Defined clinically as excessive bleeding after delivery that makes the patient symptomatic (e.g pallor, palpitation, weakness, restlessness, hypotension, tachycardia, oxygen saturation < 95%).
- Another classic definition is a 10 percent decline in postpartum hemoglobin concentration from antepartum levels
- A less useful definition of estimated blood loss ≥ 500 ml after vaginal birth or ≥ 1000 ml after cesarean delivery.

WORK UP:

- It is a team work.
- Detect the risk factors for postpartum haemorrhage, counseling and planning for delivery.

- Consultant on call or Specialist should be informed to assess the case if needed.
- All patients with risk factors for postpartum haemorrhage should have blood cross match and ready.
- Most risk factors are unpredictable but can be preventable, majority of cases of PPH have no identifiable risk factor:

  - Suspected abruption placenta
  - Placenta previa
  - Multiple pregnancy
  - Multiparity
  - PET
  - Retained placenta
  - Operative vaginal delivery
  - Over distended uterus

Causes of PPH:

- Uterine atony 80%
- Trauma of cervix ,vagina or ruptured uterus 20% - 30%

Retained placenta 10%

- Coagulation defect 1%

Prediction & prevention of postpartum haemorrhage:

Active management of 3rd stage of labour by:

- oxytocin (5 international unit I.V or 10 iu by intramuscular " STAT " with 0.2 mg. of Methergin (if no contraindication)
- Control cord traction will reduce blood loss
- Alert about the patient with risk factors
- Activate the Protocol of Postpartum haemorrhage
- Postpartum Cart with medication and instrument
- Clinical drill

MANAGEMENT:

It is a team work.

- Multidisciplinary approach:

- Experienced midwife
- Senior Obstetrician

- Alert Consultant obstetrician on call.
- Alert Anesthesiologist
- Alert the Blood Bank
- Alert the Haematologist as needed
- Alert one member of the team to record events, fluids, drugs and vital signs.

Resuscitation by :

1. Assess airway , breathing.
   Give oxygen mask at 10 – 15 L/minute.
2. Evaluate circulation.

a) Assess the vital signs every 10 – 15 minutes

b) Oxygen saturation

c) Foley's catheter

d) I.V. line with 2 big cannula, infuse crystalloid solution (Ringer Lactate) – 3 Liters: for every

1 liter of blood loss.

2 Liters Crystolloid + 1 -2 colloid (Plasma

Protein) until blood arrive.

e) Cross match 4 units of PRBC and 2 units of Fresh Frozen

Plasma.

_ Recombinant factor VIIa therapy should be based on the results of coagulation.

3. If patient is in hypovolemic shock:
   - 3.1 Head tilt down.
   - 3.2 Keep patient warm.
   - 3.3 Check for Coagulation Profile (PT, PTT, Fibrinogen, FDP, D- Dimer)
   - 3.4 Send for CBC, LFT, RFT, ABG as baseline

     every 30 minutes
   - 3.5 Consider central, arterial line
   - 3.6 ECG

4. Commence Record Chart.

Blood transfusion:

1. Blood transfusion is the volume replacement best and should be started as soon as possible.

Preparation of blood products should be as:

- 6 units of PRBC
- 6 units of Fresh Frozen Plasma
- 6 units of Platelets
  - 10 units of cryoprecipitate

2. Aim to maintain:
   - Hb> 8 g/dl
   - Platelet > 75 x 10^9
   - Prothrombin < 1.5
   - Fibrinogen > 1 gm.

   Identify the causes of postpartum haemorrhage

A. If uterine atony is suspected :
   - Bimanual uterine massage
   - Empty the bladder

- Insert 2 large bore I.V. cannula
- Start syntocinon drip 40 units in 500 cc. LR
- Methergin 0.2 mg. IM, if there is no contraindications, repeat

it as needed.

- If still no response, start Carboprost Protocol - 0.25 mg(-contraindicated in women with
- asthma) IM every 15 minutes for maximum 8 doses
- Misoprostol 1000 microgram per rectal (1 Tablet = 200 microgram)Total of 5 tabs.

If patient is still bleeding, initiate subsequent intervention.

1. Uterine Balloon Tamponade (Bakri Ballon) after ensuring if no placental remnants.

   - Insert either post vaginal delivery

   or during caesarean section.

2. Or intrauterine packing during caesarean section to control lower segment uterine bleeding.

   - If patient is still bleeding and/or is haemodynamically unstable, proceed for laparotomy.

   Procedure during laparotomy to control haemorrhage of atonic uterus:

1. External uterine compression suture: B- lynch

2. Uterine artery ligation

3. Internal iliac artery ligation

4. Arterial embolization (If available and arranged before)

5. Hysterectomy, the last resort but it should be decided for patients who are unstable with persistent heamorrhage to prevent DIC and death. It has to be decided after the opinion of two Consultants and informing the husband.

B. In case of retained product:

1. Manual removal of placenta under Ultrasound guidance.

2. Suction and evacuation.

C. In case of vaginal or cervical laceration or uterine rupture:

1. Patient should be taken for laparotomy for repair of the injury and control of bleeding.

Once the bleeding has been controlled,

continuous monitoring and observation in ICU.

ALERT:

1. Vaginal bleeding after delivery may not appear abnormal in symptomatic patient were physician must role out intra abdominal bleeding relate to cesarean section or broad ligament or vaginal hematomas.

2. Management of PPH is a team work and depend on the cause of bleeding, therefore early involvement of the most senior obstetrician is essential.

3. Activate the massive blood loss > 2.5 liter protocol as early as possible to ensure proper and volume replacement.

4. Hysterectomy is the last resort method for controlling hemorrhage and must be decided by two consultants after explaining to the husband.

5. Documentation : It is important to record:

   _ the staff in attendance and the time they arrived

   _ the sequence of events

   _ the time of administration of different pharmacological agents given, their timing and sequence

   _ the time of surgical intervention,where relevant

   _ the condition of the mother throughout the different steps

_ the timing of the fluid and blood products given.

References:

• WHO Guideline

•RCOG 2009

SHOULDER DYSTOCIA

OVERVIEW:

- Shoulder dystocia occurs when the descent of the anterior shoulder is obstructed above the symphysis pubis.
- occurs in 0.2 to 3 percent of all births

WORK UP:

- Shoulder dystocia is diagnosed when normal delivery maneuvers fails to deliver the body after the delivery of the head.
- Shoulder dystocia cannot be predicted or prevented .
- The relationship between fetal size and shoulder dystocia is not a good predictor.
- The majority of the cases occur in women with no risk factor.

MANAGEMENT:

- Call for help immediately including the most senior obstetrician, neonatologist .
- Assist the woman in recumbent position with her buttocks at the edge of the bed to assist access for the delivering physician.

- Use the HELPERRD nemonic.

H - Call for help.

E - Consider episiotomy which may improve access for internal manoeuvers.

L - Legs – McRoberts maneuvre . Ensure that the woman is in a recumbent position. Support the thighs into a hyperflexed position on the abdomen.

P - Pressure: Constant suprapubic pressure (also known as Rubin I) initially if unsuccessful a rocking motion may be used. The doctor applies gentle downward pressure to the baby while the assistant performs supra -pubic pressure over the anterior shoulder.

E - Enter : Rubins 2 : Enter the vagina from below and apply the digital pressure to the posterior aspect of the anterior shoulder towards the baby's chest.

Woods Screw: Maintain Rubin 2 maneuver and add a second hand to apply pressure to the anterior aspect of posterior shoulder.

Reverse Wood Screw : Apply digital pressure to the posterior

aspect of the posterior shoulder to rotate it 180^0

R - Remove posterior arm: The delivering doctor passes his/her hands into the vagina over the baby's chest locating the posterior arm. Apply pressure to the antecubital fossa to flex the elbow in front of the body. Sweep the arm across the chest to deliver the arm and rotate the baby into the oblique diameter of the pelvis to assist birth.

R - Roll on all fours: may increase pelvic diameters, and repeat all above maneuvers again.

D - Debrief and document procedures.

- Elective cesarean section is not recommended to reduce the potential morbidity for pregnancies complicated by suspected fetal macrosomia without maternal DM.

- There is no evidence that any one maneuvers is super to another in releasing an impacted shoulder or reducing the chance of injury. However, performance of MacRobert maneuver is reasonable initial approach.

- There is no advantage between delivery of the post arm and internal rotation maneuvers and therefore clinical judgment and experience can be used to decide the order.

- Third line maneuvers require careful consideration to avoid unnecessary morbidity and mortality. (Clidotomy, Symphysiotomy, Zavanelli).

ALERT:

Accurate timed documentation of a difficult and potentially traumatic delivery and the outcome is essential.

- RCOG March 2012

MANAGEMENT OF PRE - ECLAMPSIA

OVERVIEW:

- Pre- eclampsia is recognized clinically by the presence of hypertension + or - proteinuria.
- Serious complications:
  - Eclamptic seizures
  - Disseminated Intravascular Coagulation
  - Cerebral haemorrhage
  - Acute liver or renal impairment
  - Abruptio placenta

WORK UP:

- Investigations:
  - CBC, Hematocrit, Platelets, Blood Group and Cross Matching
  - Renal Function Test including Uric Acid
  - Liver Function Test
  - Coagulation Profile
  - 24 hours Urine collection for protein
  - ECG, Chest X – Ray (if indicated)

Repeat investigations every 6 – 12 hours according to the patient condition.

MANAGEMENT:

Admission to the hospital.

- Careful assessment of patient with pre – eclampsia should include the following:

  - Blood pressure (using manual as well as automated sphygmomanometer), monitor vital signs every 15 minutes initially, then every 30 – 60 minutes according to the case.

  - Urinalysis for protein by dip stick every 4 hours and urinary output monitoring.

  - Auscultation of heart and lung fields

  - Abdominal palpation for epigastric or liver tenderness.

Assessment of fetal size, presentation and well being (CTG and liquor volume)

- Examination of the optic fundus

- Tendon reflexes and clonus

- Stabilization:

- Control BP, monitor the patient's symptoms.

- Monitor fluid intake and urine output (100 ml. every 4 hours and intake not to exceed 150 ml./hour.

- Treatment Goals:

1) Prevent seizures:

Magnesium sulphate:

- Initial Dose: 4- 6 gms in 50 ml. over 15 – 20 minutes followed by

- Maintenance Dose : 1 – 2 gms/hour

- Monitor for magnesium toxicity and corelate with serum magnesium level.

- If significant toxicity is severe - give antidote

(Calcium Gluconate 1 gm. (10 ml. of 10%

solution slowly over 5 – 10 minutes).

- Stop Magnesium Sulphate at least 24 hours after the last fits or 24 – 48 hours postpartum.

2) Lower blood pressure:

If BP $\geq$ 160/100 (severe hypertension) start:

AGENT	DOSAGE
1.) LABETALOL OR	Start with 20 mg. IV, repeat at 20 – 80 mg IV every 30 minutes or 1 – 2 mg/min, max (300 mg. (then switch to oral
2.) NIPEDIFINE OR	mg. capsule to be bitten and swal- 10 – 5 lowed or just swallowed every 30 minutes 10 mg. tablet orally every 45 minutes to a maximum 80 mg./day
3.) HYDRALAZINE	Start with 5 mg. IV, repeat 5 – 10 mg. IV every 30 minutes to a maximum of 20 . mg IV

If mild hypertension start:

AGENT	DOSAGE
1.) METHYLDOPA OR	mg. Orally BID– QID (500 - 250 (max. 2 g/day
1.) LABETALOL OR	mg. Orally BID – TID 400 – 100 (Max. 1200 mg/day)
2.) NIPEDIFINE	Oral Tablets (10 – 20 mg. Orally (BID – TID (Max. 180 mg./day

3) Management of Eclamptic Seizures:

- Call for help, inform Specialist or Consultant on call.
- Protect airway (assess airway , breathing, check pulse & blood pressure) . Put patient in left lateral , suction & oxygen supplementation.
- Give Magnesium Sulphate to abort the fits (dose 4 – 6 gms diluted in 50 ml. of fluid followed by continuous infusion of 1 - 2 gms./hour)
- Prevent maternal injury
- Once stabilized, assess the fetal condition by CTG and USG, plan should be made to deliver the patient

• Delivery:

Vaginal delivery can be considered but if delivery is remote or unfavorable cervix, then caesarean section

may be required.

• Postpartum:

- Monitor in Labour Room or if post operatively in ICU as indicated for at least 24 – 48 hours or until the patient is considered to be out of danger from the complications of eclampsia.

Monitor the vital signs every 2 hours while patient is on Magnesium Sulphate drips.

- Repeat laboratory test until 2 consecutive sets of test are normal according to the case.

- Input – Output chart should be recorded hourly.

- If BP is still high post delivery, consider Methydopa or Labetalol orally. If this is not sufficient, add Nipedifine slow release 20 mg. once or twice /day.

ALERT:

- Avoid diuretics and Beta Blockers.

- Don't give Diazepam or Phenytoin to abort the fits.

References:

- Canadian Guideline 2010
- RCOG , March 2006
- William 24th Edition

PLACENTA PREVIA & ACCRETA MANAGEMENT

OVERVIEW:

Abnormally located placenta in the lower uterine segment over the cervical os (major placenta previa) or just reaching the os (minor placenta previa).

WORK UP:

- Diagnosed by ultrasound (abdominally or vaginally).
- MRI for any suspicion of accreta or precreta.
- CBC , Blood grouping, Cross - matching.

MANAGEMENT:

- Maintain pre operative Hb. > 9 – 10 g/dl.
- Asymptomatic minor previa follow up patient , till 36 weeks as out patient, then admit to hospital and elective caesarean section at 38 weeks.
- Asymptomatic major previa , do proper counseling either to keep in hospital till delivery or follow up as out patient provided closed proximity with the hospital.
- Symptomatic (history of bleeding) with major placenta previa , admit to hospital from 34 weeks of gestation.

- Give prophylactic thromboembolic stocking.
- Encourage gentle mobility.
- If at risk of DVT, give prophylactic anti coagulant as hospital protocol.
- Elective caesarean section should be planned at 38 weeks unless severe bleeding occur.
- If accreta is suspected, arrange for uterine artery embolization or internal iliac artery ligation depending on the facility and delivery at 36 – 38 weeks.

Placenta can be left in place or to proceed for hysterectomy , if there is severe bleeding.

In massive haemorrhage :

- Give uterotonic agents
- Bi manual compression
- Uterine packing
- B-Lynch
- Uterine or internal iliac ligation
- Hysterectomy

ALERT:

- No P/V examination for APH patient , unless placenta previa is roled out.
- Caesarean section should be done by the most experienced obstetrician or refer patient to higher center.
- Blood should be available in OR before starting the procedure.

References:

- RCOG Green Top Guideline No. 27, January 2011
- The Sixth Report of Confidential Enquires into Maternal Death in UK , 2004

CORD PROLAPSE

OVERVIEW:

Cord prolapsed occur when the umbilical cord lies before the presenting part after rupture of the membranes (fore-waters). If the forewaters are still intact it is defined as cord presentation.

WORK UP:

Cord prolapse is diagnosed by vaginal examination which must be performed immediately after spontaneous rupture of the membranes.

Fetal heart beat must be checked once the diagnosis is made.

MANAGEMENT:

- The person making the diagnosis must keep his/her hands in the vagina in attempt to keep the cord from being compressed by the presenting part.
- The woman should be asked to assume the knee chest position as it seems likely that will relieve cord compression or to put patient head down (trendling position).
- The fetal heart should be monitored.
- If less than fully dilated and fetus is viable, an immediate

caesarean section is considered.

- If the cervix is fully dilated and head engaged , obstetrician may decide instrumental delivery.
- If the cord is prolapsed outside the vagina, dehydration and spasm of the cord vessel is possible, so should be re-placed it in the vagina.
- The Paediatrician should be present at delivery time.
- Following delivery, arterial and venous cord blood should be taken for blood analysis.

ALERT:

- Fetal heart beat monitoring and status is essential to decide about the operative delivery.

Immediate action should be done to avoid serious neonatal morbidity and mortality.

References:

- William 24 Edition

PRETERM LABOUR

OVERVIEW:

Defined as labour pain at 24 weeks and less than 37 completed weeks gestation with at least 2 painful contractions every 10 minutes , cervical changes with: Cervical dilation > 2 cm. (1 – 3 cm) or effacement > 50 % or change in cervical dilatation or effacement by serial examination.

WORK UP:

- Patient assessment abdominally & vaginally.
- Fetal monitoring – CTG, ultrasound to exclude fetal abnormality.

MANAGEMENT:

- A plan of management should be decided by the most senior obstetrician available in conjunction with the Paediatrician team. In utero transfer , if needed it should be arranged.
- Steroid therapy may be effective in maturing the fetal lungs, and to reduce the incidence and severity of neonatal respiratory distress syndrome , given up to 36 weeks gestational age (Dexamethazone 12 mg. I.M. every 12 hours for 2 doses).
- Epidural analgesia is ideal if available. Other analgesia to be minimized.

Tocolytics when waiting for Corticosteroid action or intra – uterine transfer in presence of the uterine contraction.

24 – 32 Week:

Prostaglandin Synthetase Inhibitor :

Indomethacin 50 - 100 mg Rectally loading then 25 mg.

Orally every 4 – 6 hours x 48 hours

or Calcium Channel Blockers

Nifedipine - 20 mg orally then 10 – 20 mg. every

6 – 8 hours up to 48 hours

32 – 34 Week:

1- Nifedipine or
2-ß – Adenergic Receptor Agonist:

A. Ritodrine - 100 mg. Ritodrine HCL in 500 ml LR , 15 ml/ hr = 0.05 mg/min.

Monitor the patient to detect :

- FHR ≥ 180 baseline
- Maternal pulse ≥ 140
- Maternal BP < 90/50

- ECG changes
- Hypotension unresponsive to position change
- Respiratory symptoms: tachycardia, shortness of breath, chest pain
- Excessive maternal nervousness, palpitations, tremors or headache
- Vaginal bleeding

B. Terbutaline

IV Infusion - 2.5 - 5 mcg/min. increased by

1.5 – 5 mcg/min. every 20 – 30 minutes to a maximum dose 25 mcg/min. till uterine contraction stops.

Then reduce the dose to the lowest dose that maintain the uterine quiescence.

1. Atosiban (Tractocile)

Initial bolus dose of 6.75 mg. over one minute followed by an infusion of 18 mg/hr. for 3 hours, then 6 mg./hr for up to 45 hours (to a maximum of 330 mg).

3- Magnesium Sulphate

4 - 6 gms. Loading dose over 20 minutes

2 – 4 gms continuous infusion

4- Antibiotics - Avoids broad spectrum antibiotic

- Antibiotics are used as prophylaxis against Group B Beta – Streptococcus only

(Ampicillin 2 grams IV every 6 hours).

ALERT:

- Preterm birth is a leading cause to neonatal mortality.
- Nifedipine and atosiban appear to have comparable
- effectiveness in delaying delivery, with fewer maternal adverse effects and less risk of rare serious adverse

events than alternatives such as ritodrine or indomethacin

References:

- William 24th Edition

- RCOG October 2010
- RCOG February 2011

PRETERM PREMATURE RUPTURE OF MEMBRANE

(PPROM)

OVERVIEW:

- PPROM is the rupture of membrane before 37 weeks of gestation.
- Premature rupture of membrane (PROM) : is the rupture of the fetal membrane before the onset of labour.
- Antibiotics should be administered to patient with preterm PROM to prolong the latent period and improve outcomes.
- Corticosteroids should be given to patient with PPROM between 24 and 34 weeks to decrease the risk of intra-ventricular hemorrhage , respiratory distress syndrome and necrotizing enterocolitis.

WORK UP:

1. Diagnosis of Preterm PROM:

- History suggestive of Preterm PROM:

- Sudden gush of fluid or continued leakage of fluid.

2. Physical Examination:

- Check nitrazine paper for PH level and slides for ferning , if it is available.
- Check for leakage from the cervical os with coughing or fundal pressure.
- Sterile Speculum examination for dilatation , effacement, cord prolapsed and obtain culture and pooling amniotic fluid
- Perform ultrasonography for fluid index.
- AmniSure® (AmniSure® International LLC,Boston,
- MA, USA), a rapid immunoassay, has been shown to be accurate in the diagnosis of ruptured membranes with a sensitivity and specificity of 98.9% and 100%, respectively

MANAGEMENT:

1) Preterm PROM confirmed:

Delivery regardless of gestational age if evidence of intra amniotic infection, significant abruption, cord prolapsed or active labour and severe bleeding, life threatening medical disease, fetal demise.

2) 24 – 33 weeks:

Expectant Management includes:

Hospital admission.

Periodic assessment for infection , abrupt placenta and cord prolapsed

Fetal well being

Serial monitoring of leucocyte count and other markers of inflammation have not been proved to be useful and are non specific when there is no clinical evidence of infection. Delivery should be considered at 34 weeks of gestation.

- Administer corticosteroid and antibiotics.

-Dexamethazone 12 mg. every 12 hours for 2 doses I.M.

-Antibiotics:

- Ampicillin 2 g. every 6 hours for 48 hours I.V and
- Erythromycin 250 mg. every 6 hours for 48 hours
- Followed by 250 mg. Amoxicillin and 250 mg Erythromycin every 8 hours for 5 days orally.

•patient with penicillin allergy clindamycin 900 mg intravenously every 8 hours for 48 hours plus gentamicin 7 mg/kg ideal body weight for two doses 24 hours apart, followed by oral clindamycin 300 mg every eight hours for five days

3) Less than 24 weeks:

- Expectant management if patient is stable.
- Antibiotics are not recommended
- Costicosteroids are not recommended.

- If the patient opts for expectant management and is clinically stable with no evidence of infection, Out Patient follow up can be considered then admit to the hospital once pregnancy reached viability.

4) Maternal administration of Magnesium Sulfate used for fetal neuroprotection when birth is anticipated before 32 weeks of gestation reduces the risk of cerebral palsy.

5) Expectant Management includes:

- Hospital admission.
- Periodic assessment for infection , abrupt placenta and cord prolapsed
- Fetal well being
- Serial monitoring of leucocyte count and other markers of inflammation have not been proved to be useful and are non specific when there is no clinical evidence of infection.

6) Term Premature Rupture of Membranes:

- It complicates approximately 8% of pregnancies.
- The most significant maternal consequence of term PROM is intrauterine infection.
- Induction of labour reduce the time of delivery , the rate of chorioamnionitis and endometritis.
- There is insufficient evidence to justify the routine use of prophylactic antibiotics with PROM at term.

ALERT:

Physicians should not perform digital cervical examination and speculum examination is preferred to decrease the incidence of infection.

References

- ACOG No. 139, October 2013
- RCOG

SMALL FOR GESTATIONAL AGE

OVERVIEW:

Small for gestational age refers to an infant born with a birth weight less than 10th centile , maternal risk factors for (SGA) should be screened at booking.

WORK UP :

Detailed history should be taken including previous small for gestational (SGA) age baby, pre eclampsia and chronic hypertension.

Investigation :

- Ultrasound is the gold slandered tool in diagnosis (SGA) including :
  - Biometry
  - Doppler velocimetry
  - Abdominal circumference and estimated fetal weight (EFW)
- Serial measurement of abdominal circumference and EFW every 2-4 weeks.
- Amniotic fluid volume has minimal value in diagnosing growth restricted fetus.

MANAGEMENT :

- Delivery depends on ultrasound finding and Doppler.
- If Doppler finding are normal, repeat ultrasound and Doppler every two weeks and delivery by 37 weeks.
- Recommend: Steroids if delivery is by caesarean section.
- If Doppler is abnormal including :
- Pulsitile index or resistance index > 2 standard derivation or end diastolic volume present then repeat ultrasound weekly and consider delivery by 37 weeks and steroids if delivery by caesarean section.
- If umbilical artery Doppler showed absent/reversed end-diastolic velocities in preterm fetus < 32/52, Then daily umbilical artery , ductus venosus Doppler and CTG then delivery by 32 weeks after steroids.

ALERT :

All women should be assessed at booking for risk factor and referred for serial ultrasound measurement from 26-28 weeks of pregnancy.

References:

• RCOG Guidelines , 2nd Edition, February 2013

REDUCED FETAL MOVEMENT

OVERVIEW:

The initial goal is to exclude fetal death , fetal compromise and to identify pregnancies at risk after 24 weeks of gestation.

WORK UP:

- Check viability by auscultation if gestational age < 28 weeks.
- Do CTG (Cardiotocogram) if gestational age ≥ 28 weeks.
- Perform ultrasound to detect small for gestational age and amniotic fluid volume.
- Combination of CTG and amniotic fluid assessment considered as biophysical profile.

MANAGEMENT:

- For patient with RFM and gestational age between 24 and 28 weeks , confirm fetal heart by auscultation and reassure the patient.
- After 28 weeks of gestation, perform cardiotocogram once only and reassure the mother if normal.

- Women should be reassured that 70% of pregnancies with a single episode if RFM are uncomplicated.

ALERT:

Missing cases of fetal compromise (e.g. Intrauterine Growth Restriction) can lead to fetal demise.

References:

Royal College of Obstetrician and Gynaecologist , Green Top Guideline No. 57, February 2011

PERIPARTUM HYSTERECTOMY

OVERVIEW:

Peripartum hysterectomy may be performed urgently as a last resort to save life of a woman with persistent bleeding , or as planned procedure , often in conjunction with caesarean delivery.

WORK UP:

1. The most common indication for emergency procedures in severe uterine haemorrhage that cannot be controlled by conservative measures. Such haemorrhage may be due to an abnormally implanted placenta, uterine rupture, coagulopathy , or laceration of pelvic vessel.

2. A sequence of conservative measures to control uterine haemorrhage should be attempted before sorting to more radical surgical procedure.

3. Timing is critical to an optimal outcome: hysterectomy should not be performed too early or too late.

4. When obtaining informed consent prior to labour and delivery , the indications for peripartum hysterectomy , the chances of needing the procedure, and the possible outcome should be discussed with the patient and documented.

5. Identify risk factors:

- Women with a previous caesarean delivery and placenta

praevia specially placenta accreta.

- Atony is a common cause of postpartum haemorrhage and may be related to prolonged labour , chorioamniotis, use of oxytocin, multiple gestation or delivery of a large infant.or fibroid uterus with pregnancy ,p0lyhydramnios

- Uterine rupture, although uncommon, can cause massive intra abdominal haemorrhage associated with a small volume vaginal haemorrhage.

MANAGEMENT:

The obstetrician(senior ,exprit) should be prepared for possibility of having to perform a peripartum hysterectomy , especially in high risk situations or in the presence of heavy postpartum bleeding.

1. Scheduling the delivery for the early part of the day, if possible.
2. Cross matching four to six units of packed red blood cells and 4 units of Fresh Frozen plasma.
3. Inserting a three way Foley's catheter in the bladder to drain urine and to facilitate instillation of fluid to test bladder in-

tegrity, if required intra operatively(methylen blue) must be available.

4. Placing intermittent compression stockings to reduce the risk to deep vein thrombophlebitis.

5. Administering prophylactic antibiotics to decrease the risk of post

operative infection.

6. Informing the anesthesiologist of the increased possibility of

hysterectomy.

7. Assembling an operating room staff with experience in the procedures that might be performed (e.g.: hysterectomy, uterine and iliac artery ligation, ureteral stenting or surgery). At least two surgical assistants should be available , one capable of taking an active part in the operation and one who can provide adequate traction and exposur,.vascular surgoen and uorologist must be ready in case you need theme

In case of emergency hysterectomy, decision should be made by two (2) Consultants.

8. Control of persistent pelvic bleeding:

Bleeding in the deep pelvis may persist following hysterec-

tomy. Hemostatsis may be achieved by placing running and figure – of – eight sutures of heavy absorbable suture material in bleeding areas. If this does not control bleeding then during waiting for vascular surgeon:

Pelvic Packing: Packing is a last resort that usually succeeds in controlling low pressure (microvascular or venous) bleeding confined to the pelvis. We tie several Kerlix bandages together end to end to form one long strip for packing. The dry bandages are packed firmly, but carefully, into the pelvis.Packing is successful if no blood

- will be seen seeping through or around the gauze after 10 minutes.observation. The incision is then closed in a routine manner. Broad spectrum antibiotics are given until the woman has, but does not abrade pelvic tissue. If the been afebrile for 48 hours.

- Pack Removal: The gauze is removed under general anesthesia on the second day after insertion. Bleeding resume if the pack is removed too early or in the presence of coagulopathy, whereas pelvic infection is likely if removal is delayed.

  Irrigation with warm saline may be necessary to separate from the pelvic structures.

  If the operation was clean – contaminated, no post operative antibiotics are indicated, but a contaminated case may require treatment with broad spectrum antibiotics such as a

combination of ampicillin, gentamycin and metronidazole.

ALERT:

The principal complicatiopns after peripartum hysterectomy are urinary tract injury, coagulopathy and infection. Emergency procedures are associated with a higher rate of complications than planned procedures.

References:

•Up to Date, 2010

CAESAREAN SECTION

OVERVIEW:

Delivery of the baby or babies and placenta or placentas through abdominal incision and an incision into the uterus. Both incisions are usually transverse. A midline abdominal incision or a classical uterine incision is being considered, the woman be informed of the reasons and the added risks.

WORK UP:

Health Care Professionals should do:

- Review the history
- Review the laboratory investigations
- To be sure that blood is ready and cross matching is done
- Physical examination
- Check the consent if it is signed and complete.
- Antibiotics: Single dose of Cefazoline 1 gm. I.V. 1 hour before abdominal incision . It can be extended for 6 – 12 hours.

- antenatal steroid : dexamethsone 6 mg \12 hourly for 4 doses (48 hours)

MANAGEMENT:

Elective Caesarean section should be performed ≥ 39 weeks.(steroid must be given before that)

- Informed Consent:

The women should be aware that the fetus or fetuses will be delivered by the abdominal through open incision in the abdomen and uterus. Explain the procedure as describe in the patient information.

Women, who are obese, have had previous surgery or have pre existing medical conditions must understand that the quoted risks for serious or frequently complications will

increase. All surgeries carries risk of wound infection and thromboembolism.

- Serious risks including:

Frequent risks including:

Persistent wound and abdominal discomfort in the first few months after surgery.

Increased risk of repeat caesarean section for subsequent pregnancies.

Any extra procedures which may become necessary during the procedure:
Blood transfusion

Other procedures:

Repair to bladder and bowel damage, surgery of major blood vessels, Ovarian cystectomy/ oophorectomy in response to unsuspected pathology.

Hysterectomy: If sterilization is proposed, seperated consent is obtained(from both husband and wife) following specific counseling the antenatal period.

ALERT:

Women with placenta praevia who have had a previous caesarean at high risk of having a morbidly adherent placenta.

In case of placenta accrete, increta and percreta, the risk of haemorrhage , transfusion and hysterectomy should be discussed with the patient on part of the consent procedure.

References:

- NICE Guideline 2011
- RCOG , October 2004
- Up to date , 2013

BREECH IN LABOUR

OVERVIEW:

Delivery should be "assisted" with minimal hands – on .

Breech extraction plays no part in modern obstetric practice, with the exception of delivery of the second twin.

WORK UP:

- The SROD should be informed.
- The diagnosis of labour be firmly established.
- Ultrasound estimated fetal weight should be available, type of breech and excludes anomalies.
- Vaginal examination should be performed to confirm presentation , check for the cord.
- An IV line should be established and blood taken for CBC and cross match 2 units of blood and Indirect Coombs Test.
- ECV IS COSIDERED
- Epidural analgesia should be recomended and should be maintained for second stage and delivery if available.
- The fetus should be continuously monitored, CTG abnormalities must be evaluated.

- If progress in labour is unsatisfactory, augmentation with Syntocinon should not be used unless discussed with the Specialist or Consultant.

- The breech should be visible before pushing is encouraged.

- An elective episiotomy should be considered when indicated.

- A passive second stage without active pushing may last up to 90 minutes,allowing the breech to descend well into the pelvis.

- Once active pushing commences, if delivery is

- not imminent after

- 60 minutes, Caesarean section is recommended

MANAGEMENT:

Management of Labour Preterm Breech:

- Routine CS should not be advised.

- Mode of delivery based on individualization of the cases.

Routine caesarean section for twin pregnancy with breech presentation of second twin should not be performed

Term Breech:

Factors regarded as unfavorable for vaginal breech birth includes the following:

- Hyper- extended head
- Footling breech
    - Estimated fetal weight = 3.8 kg.
    - Fetal distress
    - Failure to progress
    - Growth restriction by < 2 kg.
    - Previous caesarean section
    - Clinically inadequate pelvis
    - Other contraindication to vaginal delivery
- Lack of presence of a clinician trained in vaginal breech delivery
- Clinically inadequate pelvis?

ALERT:

All Primigravida breech will be delivered by caesarean section at term.

References:

•RCOG December 2006

INTRAUTERINE FETAL DEATH (IUFD)

OVERVIEW:

This guideline covers the management of IUFD after 20(24) weeks of pregnancy .

WORK UP:

- Fetal death must be diagnosed by ultrasound.
- Once the ultrasound has confirmed fetal death , the information must be given to the parents.
- In Rhesus (D) Negative woman, blood for Kleihauer should be taken soon after the diagnosis for the estimation of the volume of fetal maternal transfusion.
- Anti – D should be given as soon as possible.

MANAGEMENT:

- In general, a vaginal delivery will be the safest option for the mother.
- Induction of labour.
- COAGULATION PROFILE
- full investigations for possible cause of death,

- If the woman appears to be physically well, her membranes are intact and there is no evidence of infection or bleeding, she should be offered a choice of immediate induction of labour or expectant management(with coagulation profile twice a week).

- If there is evidence of ruptured membranes, infection or bleeding, immediate induction of labour is the preferred management option.

- If a woman who has had an intrauterine fetal death chooses to proceed with induction of labour by vaginal PGE2, should be offered. The choice and dose of vaginal prostaglandin should take into account the clinical circumstances, availability of preparations and local Protocol.

ALERT:

For woman who have intrauterine fetal death and who have a previous caesarean section, the risk of uterine rupture is increased. The dose of vaginal prostagladin should be reduced accordingly, particularly in the third trimester

Reference:

• Nice Clinical Guideline No. 70, July 2008

• Up to date , August 19, 2013

INDUCTION OF LABOUR

OVERVIEW:

- Induction of labour (IOL) is a relatively common procedure.
- It is not risk-free and many women find it to be uncomfortable.
- Women should be informed that most women will go into labour spontaneously by 42 weeks.
- At 38 week antenatal visit, all women should be offered information about the risks associated with pregnancies that last longer 42 weeks , and their options.

WORK UP:

Induction of labour should be decided by consultant .

Health care professionals should explain the following points to women being offered induction of labour:

- The reason induction being offered.
- When, where and how,types of induction could be carried out
- The arrangements for support and pain relief (recognizing

the women are likely to find induced labour more painful than spontaneous labour).

- The alternative options if the woman chooses not to have induction of labour.
- The risk benefits of induction of labour in specific circumstances

  and the proposed induction methods.
- That induction may not be successful and what the woman's option would be.

MANAGEMENT:

1. Prevention of prolonged pregnancy

- Women with uncomplicated pregnancies should be given every opportunity to go into spontaneous labour.
- Women with uncomplicated pregnancies should be offered

  induction of labour between 41 + 0 and 42 +0 weeks to

  avoid the risk of prolonged pregnancy.
- The exact timing should take into account the woman's chooses not to have induction of labour, her decision should be respected. Heath care professionals should discuss the

woman's care with her from then on.

- From 42 weeks , women who decline induction of labour should offered increased antenatal monitoring consisting

  of at least twice weekly cardiotocography and ultrasound estimation of maximum amniotic pool depth+ doppler for umbilical cord.

2. *Preterm prelabour rupture of membranes*

- If a woman has preterm prelabour rupture of membranes, induction of labour should not be carried out before 34 weeks unless there are additional obstetric indications) for example: infection or fetal compromise).

- Women with uncomplicated pregnancies should be offered induction of labour at 34 weeks.

- If a woman has preterm premature rupture of membranes after 34 weeks, the maternity team should discuss the following factors with her before a decision is made about whether to induce, using vaginal PGE2 :

- Risk of the woman (for example: sepsis, possible need for caesarean section).

- Risks to the baby (for example: sepsis, problem relating to preterm birth).

- Local availability of neonatal intensive care facilities.

- Refer to Preterm Premature Rupture of Membrane Protocol (Index).

3. *Premature rupture of membranes at term*

➢ Women with premature rupture of membranes at term (at or over 37 weeks) should be offered a choice of induction of labour with vaginal PGE2 + or expectant management. Induction of labour is appropriate approximately after

24 hours prelabour rupture of the membranes at term.

4. Previous caesarean section

➢ If delivery is indicated , women who have had a previous caesarean section may be offered induction of labour with vaginal PGE2, caesarean section or expectant

management on an individual basis, taking into account the woman's circumstances and wishes.

➢ Women should be informed of the increased risks with induction of labour:

- Increased risk of need for emergency caesarean section.
- Increased risk of uterine rupture.

5. *Breech presentation*

- Induction of labour is not generally recommended if a woman 's baby is in the breech presentation.

- If external cephalic version is unsuccessful, declined or contraindicated , and the woman chooses not to have an elective caesarean section , induction of labour should be offered, if delivery is indicated, after discussing the associated risks with the woman.

6. *Fetal growth restriction*

- If there is severe fetal growth restriction with confirmed fetal compromise, induction of labour is not recommended.

7. *History of precipitate labour*

- Induction of labour to avoid a birth unattended by health care professionals should not be routinely offered to women with a history of precipitate labour.

8. Intrauterine fetal death

- If the woman appears to be physically well, her membranes are intact and there is no evidence of infection or bleeding, she should be offered a choice of immediate induction of labour or expectant management.

- In the event of an intrauterine fetal death, if there is evidence of ruptured membranes, infection or bleeding im-

mediate induction of labour is the preferred management option.

If a woman who has had an intrauterine fetal death to proceed with induction of labour, choice and dose of vaginal prostaglandin should take into account the clinical circumstances.

- For women who have intrauterine fetal death and who have had a previous caesarean section, the risk of uterine rupture increased. The dose of vaginal prostaglandin should be reduced accordingly, particularly in the third trimester.

9. *Recommended Methods of Induction of Labour*

➢ *Membrane sweeping*

Prior to formal induction of labour, women should be offered a vaginal examination for membrane sweeping.

Additional membrane sweeping may be offered if labour does not start spontaneously.

➢ *Pharmacological Methods*

Vaginal prostaglandin E2(PGE2) is the preferred method of induction of labour, should be administered as a gel, tablet or controlled release pessary.

The Recommended Regimens are:

- The patient Para 5 and more
  - Give PGE2 1.5 mg. Q 6 hours
  - Maximum = 4 doses
- Patient with previous scar
  - Give PGE_2 1.5 mg. Q 6 hours
  - Maximum = 4 doses
- Patient who is Para 4 and less
  - Give PGE2 3 mg. Q 6 hours
  - Maximum = 4 doses

Dose can be individualized according to Bishop Score.

A. Previous Scar:

If 4 doses given as Protocol and failed induction, the plan should be started by her Consultant .

B. Unscarred uterus on induction of labour:

Clear weekend plan should be written by the Consultant and whether to continue or rest.

➢ *Methods that are not recommended for Induction:*

The following should not be used for induction of labour:

- Oral PGE2
- Intravenous PGE2
- Extra - amniotic PGE2
- Intracervical PGE
- Intravenous oxytocin alone
- Hyaluronidase

➢ *Surgical Methods*

- Amniotomy, alone or with oxytocin should not be used as a primary method of induction of labour unless there are specific clinical reasons for not using vaginal PGE2 in particular the risk of uterine hyperstimulation.

➢ *Mechanical Methods*

- Mechanical procedures (balloon catheters) should not be used routinely for induction of labour. It is safe catheter is kept in place for 12 hours, if no progress should be removed.

➢ *Monitoring And Pain Relief For Induction Of Labour*

- Whenever induction of labour is carried out, facilities should be available for continuous electronic fetal heart rate and uterine contraction monitoring.

- Before induction of labour is carried out, Bishop score should be assessed and recorded and a normal fetal heart rate pattern should be confirmed using electronic fetal monitoring.

After administration of vaginal PGE2, when contraction begins, fetal well being should be assessed with continuous electronic fetal monitoring. Once the cardiotocogram is confirmed as normal, intermittent auscultation should be used unless there are clear indications for continuous electronic fetal monitoring.

- If fetal heart rate is abnormal after administration of vaginal PGE2, recommendations of management of fetal compromise should be followed.

- Bishop score should be reassessed 6 hours after vaginal PGE2 tablet or gel insertion or 24 hours after vaginal PGE2 controlled release pessary insertion, to monitor progress.

- Tocolysis should be considered if uterine hyperstimulation occurs during induction of labour.

➢ *Failed Induction*

- If induction fails, health care professionals should discuss this with the woman and provide support . The woman's condition and the pregnancy in general should be fully re-

assessed and fetal well being should be assessed using electronic fetal monitoring.

➢ Cord Prolapse

- To reduce the likelihood of cord prolapsed, which may occur at the time of amniotomy, the following precautions should be taken:

- Before induction , engagement of the presenting part should be assessed.

- Obstetrician and midwives should palpate for umbilical cord presentation during the preliminary vaginal examination and avoid dislodging the baby's head.

- Amniotomy should be avoided if the baby's head is high.

- Health care professionals should always check that there are no signs of a low – lying placental site before membrane sweeping and before induction of labour.

ALERT:

Induction of scarred uterus should be done with caution because of high possibility of ruptured uterus.

Reference:

- NICE Guideline 2011

INDUCTION OF LABOUR IN LABOUR ROOM

OVERVIEW:

Induction of labour should be decided after confirming the gestational age.

WORK UP:

- Induction of labour is the decision taken by a Consultant or the Specialist –on –Call.
- The indication for induction must be documented in the notes after confirming the date.
- The cervix should be assessed by Bishop Scoring System at the time when the decision for IOL is made.
- For unfavorable cervix Bishop Score < 4, cervical ripening with Prostagladin E_2 3 mg. Tablet should be started.
- If syntocinon follows Prostin insertion, a minimum of 6 hours should elapse in between.

MANAGEMENT:

1. Induction of Labour by Prostaglandin (PGE_2):

➢ Assessment of Bishop Score (BS) :

SCORE PARAM-ETERS	0	1	2	3
(Dilatation (cm	0	2 – 1	4 – 3	5+
(Length of cervix (cm	3	2	1	0
Station	-3	-2	-1	+2 +1
Consistency	Firm	Medium	Soft	-
Position	Posterior	Mid	Ante-rior	-

Unfavorable Cervix – should receive cervical ripening with prostaglandin vaginal tablet 3 mg. for (nullipara) or 1.5 mg.(multipara). If the cervix is favorable, Artificial rupture of membrane (ARM) should be performed and oxytocin infusion commenced. If the cervix is not favorable, a further Prostin should be administered. Then patient should be monitored by continuous CTG for at least one hour and the case should be discussed with the Specialist/Consultant to assess her for further Prostin. If the fetal heart rate is suspicious or there is uterine activity, it may not be appropriate to give further Prostin even if the cervix is still unfavorable.

- Favorable Cervix – After amniotomy, the oxytocin infusion is usually started after hours (max. 4 hours) depending on the situation if there is already uterine activity suggesting that oxytocin may not be necessary . All women being induced in this fashion should have a cannula sited and blood for grouping and cross matching taken.

2. Induction of Labour by Oxytocin:

- Oxytocin Regimen:

➢ 5 units Syntocinon in 500 ml. NS/RL.

➢ Start infusion pump at rate 6 ml/hour.

➢ Increase the rate by 6 ml. every 20 minutes after counting the contraction within 10 minutes.

➢ Continue to increase the rate until contractions are moderate to strong/ regular/ frequency of 3- 4 contraction/10 minutes each lasting more than 40 sec.

wMilliunits/ Minutes	Infusion pump (ml/ hour)	.Microdrops/min (ml. = 60 drops 1) (.hour = 60 mins 1)
1	6	6
2	12	12
3	18	18
4	24	24
5	30	30
6	36	36
7	42	42
8	48	48
9	54	54
10	60	60
11	66	66
12	72	72
13	78	78
14	84	84
15	90	90
16	96	96
17	102	102
18	108	108
19	114	114
20	120	120

- Double Dose Oxytocin Regimen:

➢ 10 units oxytocin in 500 ml. NS/RL.

➢ Start syntocinon by infusion pump at rate

6 ml/hour.

➢ Increase the rate by 3 ml. every 20 minutes after counting the contraction within 10 minutes.

➢ Continue increase the rate until contractions are moderate to strong/ regular/ frequency of 3 – 4 contraction / 10 minutes lasting more than 40 sec.

NOTE:

- Start double dose once rate beyond 120 ml/hour = 20 miu/min.
- Maximum double dose is 32 miu/min. = 96 ml/hour. If this dose is insufficient, higher dose may only be used after review by the Specialist or Consultant up to 48 miu/ml. .

Milliunits/minutes	Infusion Pump (ml/ hour)	.Microdrops /min
21	63	63
22	66	66
23	69	69
24	72	72
25	75	75
26	78	78
27	81	81
28	84	84
29	87	87
30	90	90
31	93	93
32	96	96

- Oxytocin regimen in previous scar:

➢ Start 5 units syntocinon in 500 ml. starting 3 microdrops/ min. and increase by 3 every 20 minutes

➢ Supervise by SROD or Specialist on Call with continuous monitoring of CTG.

ALERT:

The syntocinon should be reduced or stopped:

- In hyperstimulation syndrome (> 5 contraction every 10 min.).

Or if CTG showed non reassuring tracing.

Refrences:

William 24th Edition

TWIN PREGNANCY

OVERVIEW:

High risk pregnancies carries many complications which should be detected during antenatal follow up.

WORK UP:

- The optional time for ultrasound in twin pregnancy is for first trimester at 10 – 14 weeks to determine chorionicity and pregnancy outcome (Nuchal translucency can also be measured).
- Routine hospitalization for bed rest in multiple gestation is not recommended as there is insufficient prophylactic activity restriction.
- There is no role for prophylactic cerclage in multiple gestation and only indicated for the treatment of incompetent cervix.
- There is no role of prophylactic tocolysis except in special circumstances like in utero transfer
- Ultrasound for follow up:

- Fetal anomaly scan is best to be done at 16 – 20 weeks of gestational age.

- Serial growth ultrasound is required from 24 weeks of gestation every 3 – 4 weeks.

- Discordance is diagnosed when HC difference of 20 mm and EFW based on BPD and AC and FL > 20% .

MANAGEMENT:

1) Monochorionic Diamniotic Pregnancy:

- Usual time of appearance of twin to twin transfusion syndrome (TTTS) is 16 – 24 weeks.

- Fetal ultrasound assessment should take place every 2 – 3 weeks in uncomplicated monochorionic pregnancy from 16 weeks.

Should have detailed ultrasound scan which include extended view of the fetal heart.

- Women who present with sudden increase in abdominal size or breathlessness should be assessed properly as it may be a manifestation of TTTS.

- Diagnostic Markers for TTS are:

➢ Both fetuses of the same gender

➢ Polyhydramnios/oligohydramnios

- Evidence of cardiac dysfunction (Non Immune hydrops)

- Uncomplicated monochorionic pregnancy: Delivery should be planned for 36 – 37 weeks unless there is indication to deliver earlier and the plan should be written at 32 – 34 weeks.

- Complicated monochorionic pregnancy by TTTS: Delivery should be by caesarean section at 34 weeks.

2) Monochorionic , monoamniotic pregnancy:

- It has high mortality rate , major fetal loss before 24 weeks.

- It has complications:

- Cord entanglement

- High rate of congenital anomalies

- Prematurity

- TTTS (uncommon)

- TRAP (Twin Reverse Arterial Perfusion)

- Management of cord entanglement or uncomplicated monochorionic pregnancy.

- Frequent once a week or more) no stress test at 24 weeks and ultrasound scan with Doppler study from three times per

week to once per 4 weeks .

- Give corticosteroids
- CTG is not ideal but may detect bradycardia or deceleration .

Delivery by caesarean section at 32 to 34 weeks.

- Management of Twin Reverse Arterial Perfusion (TRAP):

- It is rare complication ≈ 1%.
- Patient should be referred to tertiary centre for management.

- Management of Twin pregnancy with one fetal demise:

- The risk of higher in monochorionic pregnancy.
- Patient should be informed about the risk of neurological abnormality of the survived fetus with incidence of 12 – 18% .
- Refer the mother to tertiary centre if possible for assessment.
- Arrange for MRI of fetal brain will give your earlier and more detailed information about brain lesions then ultrasound do.
- CTG can show abnormalities but later than MRI findings .
- Observation can be up to 4 weeks providing MRI findings

and follow up of coagulation screening of the mother.

- Assess the fetal anemia by middle cerebral artery peak systolic velocity using Doppler ultrasound study.

- If patient was on therapeutic dose low molecular weight heparin (LMWH) and chose regional anesthesia it can be done after 24 hours of last injection or after 12 hours of prophylactic dose of LMWH.

  Then Warfarin can be restarted on day 3 – 7 post delivery providing that there is no bleeding or risk to bleed.

ALERT:

Refer all complicated twin pregnancies to tertiary centre.

References:

- RCOG Guideline , Management of TTTS, 2008
- NICE Guideline, Multiple Pregnancies , 2011

TWINS IN LABOUR

OVERVIEW:

- Twin is a complicated delivery that need an expert physician to deal with.

WORK UP:

- Twin should be handle by SROD or Specialist.
- 2 Paediatrician should be available.
- Preparation of the patient for possible LSCS, instrumental delivery if needed.
- Start I.V. line and extract blood for CBC, cross match and Indirect Coomb's test

MANAGEMENT:

Epidural analgesia strongly advised and should be kept through second stage of labour till delivery.

- Both fetuses should be continuously monitored.
- Allow for vaginal birth except for obstetric contraindications.
- Caesarean section is indicated if locked twins is anticipated
- 1ST Twin cephalic delivery is similar to delivery to single tone.

- 2nd Twin :

➢ After delivery of 1st , heart rate and lie of 2nd twin should be evaluated using ultrasound and electronic fetal monitoring.

➢ If 2nd twin is cephalic and engaged delivery is similar to single tone.

➢ If the 2nd Twin is non cephalic – ultrasound can be used to do external cephalic version , breech extraction or internal podalic version of 2nd twin depending on the situation.

Interval between delivery of the two twins:

➢ Interval of 25 to 30 minutes including the procedure of delivery is acceptable.

- Oxytocin augmentation of labour after delivery of 1st twin is reasonable and sometimes necessary and amniotomy should be performed .

- For easier identification:

➢ Both the fetal and placental sides of the cut umbilical cord of 2nd twin is double clamped.

- Due to increasing risk of postpartum haemorrhage due to uterine atony, consider active management of third stage of labour.

ALERT:

- Aware about the increase incidence of postpartum haemorrhage following twins delivery.

References:

- William 24th Edition

CARDIAC DISEASE

OVERVIEW:

- Rheumatic Heart Disease is still a significant cause of cardiac disease in pregnancy though more congenital heart diseases are seen in Saudi Arabia. Consultation with Cardiologist during pregnancy is vital and a plan for delivery and the puerperium should have been made.

WORK UP:

- ECG monitoring
- I.V. line with complete blood work up and cross matching
- Vital signs
- Fetal monitoring

MANAGEMENT:

- Notify Specialist or Consultant Obstetrician to make the plan.
- Establish baseline examination (BP, Pulse, auscultate heart and lungs).
- Insert IV line.

- Continuous pulse oxymetry, hourly BP and pulse.
- Inform the Medical Specialist if needed
- First Stage of Labour :

- Epidural after discussion senior anesthetist, if available.
- If oxytocin is needed must be established by the senior doctor.
- Consider CVP line + / - intra arterial monitoring if needed.
    - Give continuous oxygen, if hypoxic.
    - Continuous CTG monitoring.
- If a caesarean section is required, it will be with a senior anesthetist.

- Second Stage of Labour :

- Do not lie flat . If she needs to be in lithotomy , use a wedge.

If pushing is contraindicated, use forceps or vacuum.

- Third Stage of Labour :

➢ A physiological third stage is sometimes preferred. Give

oxytocin, if needed.

- Cardiac failure most commonly occurs after delivery.
- Inform Specialist / Consultant, if PPH occurs.
- To remain in High Dependent Unit for 24 hours after delivery.

- Postpartum :

- Women at risk of cardiac failure should sit up as soon as possible after delivery.
- Women with significant congenital cardiac disease (including ASD, VSD, coartation of the aorta, Marfan's and complex cardiac disease) should be monitored on HDU for 24 hours post delivery.
- Women with pulmonary hypertension may require transfer to cardiac HDU.
- Monitoring and Management :
  - Nasal oxygen 6 L/min.
  - Pulse oxymetry
  - ECG monitoring

- Fluid balance

- Pulse and BP every 30 minutes for 12 hours then hourly

- Involve Physician / Anesthetist early if rise in pulse rate, fall in BP or drop in urine output.

- Watch for early signs of pulmonary oedema and consider the use of diuretics early.

- Management of Patients on Anti Coagulant Therapy :

➢ Inform Consultant.

Warfarin is usually contraindicated during pregnancy- certainly during the first trimester(> 1% of embryopathy) and within 2 weeks of delivery. Wherever possible, women should be routinely changed to IV or SC LMWH unless advised otherwise by haematologist.

➢ Heparin should be suspended either on admission in labour or on the morning of induction or elective CS and restart after 6 hours of delivery.

➢ If a woman is admitted in labour < 36 weeks , perform clotting studies and discuss the use of vitamin K/ FFP with Haematologist.

➢ Regional anesthesia is contraindicated with abnormal clotting studies.

- Woman on Warfarin or LMWH may breastfeed.

- Endocarditis Prophylaxis:

- Indications:

- Prophylaxis is mandatory for women with prosthetic heart valve.

- Prophylaxis is not recommended for women with the absence of infection, chorioamnionitis or pyelonephritis.

- Regime:

- Ampicillin 1 gm. IV 6 hourly

- Gentamycin 80 mg. IV 8 hourly

- Duration for 24 hours or at least 6 hours after delivery.

ALERT:

All pregnant patients with heart disease should be managed in a combined obstetric/cardiac clinic by one obstetrician and one cardiologist

References:

- Williams 24th Edition

DESSIMINATED INTRAVASCULAR COAGULOPATHY (DIC)

OVERVIEW:

This also known as Consumptive Coagulopathy and is one of the acquired disorders of homeostasis and characterized by an increased in prothrombin time, partial thromboplastin time and fibrin degeneration products and a fall in platelets and fibrinogen.

WORK UP:

- CBC (Hb., Hct, Platelet)
- Prothrombin Time
- Fibrinogen
- INR
- Send blood for cross matching of blood and blood products
- Send Septic Work up , if sepsis is suspected

MANAGEMENT:

Dessiminated intravascular coagulopathy can be due to a number of precipitating factors including:

- Large abruption (usually associated with an intrauterine death)
- Amniotic fluid embolism

- Severe PET (more commonly causes platelet consumption then coagulopathy

- Dilution due to massive transfusion
- Sepsis
- Retained dead fetus
- Postpartum Haemorrhage
- Acute fatty liver
- Placenta preavia
- Uterine rupture
- Anaphylactoid syndrome of pregnancy

Consultant obstetrician should be informed if DIC is diagnosed.

- It is vital that haematology staff are involved as early as possible in these cases.

- Correction of coagulopathy with clotting factors including platelets, FFP and Cryoprecipitate is obviously necessary. However, these will not solve the problem until the precipitating factor has been treated.

- Careful fluid management is also important in these women. Central venous access should be discussed with senior anaesthesia staff (SR or Consultant).

In any woman suspected of having DIC (including women with PPH), the massive obstetric haemorrhage protocol

should be followed including:

- IV access : two 14 gauge lines.
- Avoid hypothermia.
- Blood for CBC, Clotting , FDP Fibrinogen & 4 units cross match, INR and culture in case of sepsis.

If severe bleeding :

- Transfusion of blood products in case of massive blood loss > 2.5 liters should be as:(Massive Blood Transfusion Protocol)
  - 6 units of PRBC
  - 6 units of Fresh Frozen Plasma
  - 6 units of Platelets
  - 10 units of Cryoprecipitate
  - Recombinant Human Activated Protein C
  - Antithrombin III
- Inform a Senior Haematologist and Blood Bank.
- The Anesthetic Registrar should inform a Senior Anesthetist.

Resuscitate the woman initially with crystalloid , the aim is to keep systolic BP > 90 till blood arrive (fluid replacemnet is 3 L isotonic per 1 L of estimated blood loss) and as soon as possible with blood and clotting factors as recommended by the haematologist (in case of massive bleeding, Transfusion Protocol should be 1 PRBC: 1 FFP to maintain Hct 25 – 30 %) and as soon as possible with blood and clotting factors as recommended by the haematologist.

- Patient with Platelet 20000 or < 50000 microl with bleeding should receive Platelet Transfusion 1 – 2 units/10 kg./ day.
- Patient with high INR or fibrinogen < 50 mg with active bleeding should receive FFP and cryopercepitate (the aim to keep fibrinogrn level > 100 mg/dl).
- Use recombinant human factor VIIa in severe DIC.
- Monitor pulse, BP and urine output (maintain output around 30 cc/hour).
- Give oxygen (O2 sat. > 95 %).
- Remove the cause (if possible).
- Aim to maintain:
  - Hb> 8 g/dl
  - Platelet > 75 x 10^9
  - Prothrombin < 1.5

- Fibrinogen > 1 gm.

- If the cause is an abruption and the fetus is alive, caesarean section will usually be indicated .

- If the fetus is dead, it is important to empty the uterus promptly to reverse the DIC. It is usually possible to attain a vaginal delivery while stabilizing the DIC with appropriate clotting factors.

- Complication of DIC:
  - Renal failure
  - Liver failure
  - Pulmonary dysfunction
  - CNS dysfunction
  - Death

ALERT:

DIC is often heralds the onset of multiorgan failure.

References:

- RCOG February 2009
- Up To Date 2012

MANAGEMENT OF THE THIRD STAGE, RETAINED PLACENTA AND ACUTE UTERINE inversion

OVERVIEW:

Complications of 3rd stage of labour should be anticipated before delivery.

WORK UP:

- Keep I.V. line access.
- Send blood for urgent CBC and cross match of blood and blood products.
- Careful physical examination for definite diagnosis.

MANAGEMENT:

1. Active management of Third Stage :

(IV or IM (5 units Syntocinon plus .25 mg. Ergemetrine or 0.2 Methergin) with delivery of anterior shoulder , followed by continuous cord traction. One hand should be kept on the lower abdomen below fundus, pushing uterus upward to avoid uterine inversion.

- Uterotonic drugs after delivery of anterior shoulder:

1-oxytocin;

5 -10 units IM.

5 units slow IV over 1 to 2 min.

Altrantive; IV infusion (20 units in 500ml 0.9% saline 0ver the first hour)

2-Ergot alkaloids;

0.2 mg Methylergonovine IM.

Syntometrine(5 units oxytocin plus 0.5 mg Ergometrine) IM.

Women with hypertension, give Syntocinon only.

- Early cord clamping, as immediately or within the first 30 seconds.
- continuous cord traction. One hand should be kept on the lower abdomen below fundus, pushing uterus upward to avoid uterine inversion.

2- Retained Placenta :

- Consider this after 30 – 60 minutes if no bleeding.
- 30 min after active management of third stage of labor , 60 min after physiologic third stage.
- Inform obstetric specialist , anaesthetist, theatre staff,

haematologist.

- Explain action to mother and obtain consent.

- Management should be expedited as bleeding may start suddenly.

- Site IV line , take blood for CBC and cross match 2 units of PRBCs.

In the absence of haemorrhage, the woman should be observed for a further 30 minutes following the initial 30 minutes, before manual removal of the placenta is attempted,as spontaneous expulsion placenta can still occur.

Manual removal of placenta — adequate analgesia should be achieved using regional or general anesthesia, or conscious sedation. After routine surgical preparation and bladder catheterization, one hand follows the path of the umbilical cord through the vagina, cervix, and lower uterine segment to find the maternal-placental interface, while the other hand steadies the uterine fundus through the maternal abdomens. The plane of the interface, which feels velvety and irregular, is gently dissected using a side-to-side motion of the fingers.. There is no role for routine uterine curettage after manual removal.

Commence infusion of Syntocinon 40 IU in 500 ml. Normal Saline over 4 hours, continue at least 4 hours after removal of placenta.

If plan between placenta and uterus not be easily defined,

consider placenta accrete and inform Specialist / Consultant.

.Acute Uterine Inversion:

❖ Call the Senior Obstetrician if diagnose it during delivery:

This complication is uncommon. It is associated with uterine atony.

There are three degrees of inversion:

1) The inverted fundus reaches the cervical os.

2) The whole body is inverted up to the cervical os.

3) The uterus, cervix and vagina are completely inverted

Extent of inversion:

1st degree (incomplete) inversion: the fundus is within the endometrial cavity

2nd degree (complete) inversion: the fundus protrudes through the cervical os

3rd degree inversion (uterine prolapse): the fundus protrudes to or beyond the introitus

4th degree (total uterine and vaginal) inversion: both the uterus and vagina are inverted

If recognized at the time of delivery, replace the uterus immediately and give a bolus of 10 units of Syntocinon

to contract the uterus.

- If the diagnosis is delayed or it is not possible to reduce easily, call more Senior Doctor and take the patient to OR.

• uterine relaxants used when immediate uterine replacement is unsuccessful: Nitroglycerin50 micrograms IV, followed by up to four additional doses , 50 microgramTerbutaline (0.25 milligrams IV or SC) or magnesium sulfate (4 to 6 grams IV over 15 to 20 minutes) .

• Inhalational anesthetic agents, such as halothane and enflurane with nitroglycerin, they require controlling the maternal airway (intubation). Therefore, inhalational anesthetic agents are best administered in the operating room then reattempted manual replacement.

- the inversion can be corrected by hydrostatic replacement. This involves infusing warm saline from a height of approximately 1 m above the patient into the vaginal orifice to minimize leakage. A large amount of fluid be required.

- If the placenta is still attached to the uterus, this should be manually removed after uterine replacement.

▪ Intravenous Syntocinon should be given (10 IU stat) after correction of the inversion and delivery of the placenta. An infusion of Syntocinon (40 IU in 500 ml Normal Saline over 4 hours) may be required . Uterine rupture should be excluded before commencing hydrostatic replacement.

If above failed, proceed to laparotomy and surgical correction.

ALERT:

Active management of 3rd stage of labour for all patients in labour to reduce risk of complication.

References:

- William 24th Edition
- RCOG February 2011

MANAGEMENT OF PATIENTS ON ANTI - COAGULANT THERAPY

OVERVIEW:

Any patient on Anti Coagulant Therapy should be managed by an Obstetrician and Medical Specialist.

WORK UP:

- Monitor Coagulation Profile (PT,PTT,FDP, Fibrinogen) and CBC

MANAGEMENT:

1. During Pregnancy:

- Warfarin is usually contra indicated during pregnancy

  – certainly during the first Trimester (6 – 9 weeks) (> 1 % of embryopathy) and within 2 weeks of delivery. Wherever possible, women should be changed to IV or SC LMWH unless advised otherwise by haematologist.

- Any woman who is considered to be at high risk of haemorrhage and in whom continuous heparin treatment is considered essential should be managed with intravenous, unfractionated heparin until the risk factors for haemorrhage have resolved.

- If a woman is admitted in labour, 36 weeks , perform

clotting studies and discuss the use of Vitamin K/ FFP with haematologist.

- Therapeutic anticoagulant therapy should be continued for the duration of the pregnancy and for at least 6 weeks postnatally and until at least 3 months of treatment has been given in total.

1. During Labour:

If spontaneous labour occurs in women receiving therapeutic doses of subcutaneous unfractionated heparin, careful monitoring of the APTT is required. If it is markedly prolonged near delivery, protamine sulfate may be required to reduce the risk of bleeding.

➢ S.C. unfractionated heparin should be discontinued 12 hours before and intravenous unfractionated heparin stopped 6 hours before induction of labour or regional anaesthesia.

- The woman taking LMWH for maintenance therapy should be advised that once she is established labour or thinks that she is in labour, she should not inject any further heparin .

- Where delivery is planned, LMWH maintenance therapy should be discontinued 24 hours before planned delivery.

- Long term anti coagulant should resume heparin 12 hours

post CS and 6 hour post vaginal delivery if no bleeding.

- Labour or CS should be managed in close consultation with Haematologist.

2-After Delivery:

- A thromboprophylactic dose of LMWH should be given by 3 hours after a caesarean section (more than 4 hours after removal of the epidural catheter, if appropriate).

- Women should be offered a choice of LMWH or oral anticoagulant for postnatal therapy after discussion about the need for regular blood tests for monitoring a Warfarin , particularly during the first 10 days of treatment.

- Postpartum, Warfarin should be avoided until at least the third day and for longer in women at increased risk of postpartum haemorrhage.

- Woman on Warfarin and LMWH may breast feed.

Regional Anesthesia :

Regional anesthetic or analgesic techniques should not be undertaken until at least 24 hours after the last dose of therapeutic LMWH.

- The epidural catheter should not be removed within 12 hours of the most recent injection.

ALERT:

Regional anesthesia is contraindicated with abnormal clotting studies.

References:

- RCOG – February 2009
- Up To Date 2012

INSTRUMENTAL DELIVERY

OVERVIEW:

Operative vaginal deliveries are accomplished by applying direct traction on the fetal skull with forceps or by applying traction to the fetal scalp by means of vacuum extraction.

WORK UP:

Preparation:

- Explain to pt and take consent
- Empty bladder
- Lithotomy position
- Adequate analgesia
- The cervix should be fully dilated and membranes ruptured.
- The fetal head should be engaged (head is not palpable abdominally and leading bony point of the head is at or below the level of ischial spines = 0 station).
- The station , position and attitude of the fetus should be ascertain.
- Episiotomy should be performed. -may be not needed in multigravid.

MANAGEMENT:

Indication for Operative Vaginal Delivery :

- For shortening of Second Stage:

- Premature separation of placenta
- Cord prolapse
- Fetal distress
- Maternal exhaustion
- Cardiac disease
- prolong second stage

Instrumental Use:

- Forceps – Types:

The choice of instruments is influenced by training of the operator and clinical situation.

1) Classical Forceps:

- Wrigle's usually used for outlet deliveries.
- Simpson usually preferred for moulded head .
- Pipers in breech presentation for the after coming head.

Techniques(Basic Principles):

- abdominal examination to ensure engagement and contraction
- Vaginal examination is performed to ascertain position and station for fetal heart.
- The assembled forceps is held infront of the patient with the pelvic curve uppermost.
- The left blade is applied first followed by the right one.
- Traction is directed downwards and backwards but as the head descends this should be upwards.

- Vacuum Extraction:

1). Basic rules for delivery with vacuum extractor

Three rules should be followed to minimize the chances of fetal damage:

- Delivery should be completed within 15 minutes of application.
- The head, not just the scalp should descend with each pull.
- The cup should be reapplied no more than twice (and after one detachment an experienced operator should take over).

If failure occurs despite good traction, do not try forceps unless is due to leaking equipment. This decision should be made by a Specialist.

2). When to halt the procedure:

- Slips 3x.
- No descend after 3 successive pulls.
- 20 minutes elapsed.

3).Technique:

- Vaginal examination to ascertain the position, station and attitude of the fetal head.
- Choose the appropriate cup (metal or silicone or kiwi if available) and indicate the appropriate cup size 6 large cup is preferable because it allows greater traction without increasing risk of scalp trauma , however, smaller cups, may be used if the vaginal intritus is narrow).
- Proper cup placement is the most important determinant of success in vacuum extraction and is achieved by applying the cup in the midline 3cm from the posterior fontanel to include the flexion point.
- Ensure that no maternal tissue is trapped between the cap and the fetal head.

- Connect the pump.

- Pressure can be rapidly raised to 0.8 kg cm^2.

- Traction is initiated using two – hand technique. It should be intermittent and coordinated with maternal expulsion efforts (perpendiclar to the cup center).

- Rotation is spontaneous. Do not try to twist the cup to rotate the baby, as this will only injure the scalp.

ALERT:

➢ After any instrumental delivery, the following should be documented in the patient's medical record.

- The indication of the procedure.

- The degree of difficulty of the procedure.

- The maternal, neonatal complication that resulted.

References:

- RCOG February 2011
- Up To Date 2012

PERIMORTEM CAESAREAN SECTION

OVERVIEW :

Perimortem Caesarean Section is defined as a procedure to be performed after or during maternal cardiac arrest to increase the survival of the mother and the fetus, removal of the fetus results is an improvement of maternal circulation at term and can raise the cardiac output by 20 – 25 % by relieving aorto caval compression.

WORK UP:

OB/Gynae Consultant is the one who decides perimortem caesarean section if he is available in the hospital when:

- The mother fails to respond with a return of spontaneous circulation within 4 minutes.

- The first skilled physician available (Specialist) should initiate the caesarean delivery.

- Prepare equipment/personnel for perimortem cesarean delivery and neonatal resuscitation. Avoid delays for fetal heart tones or waiting for an obstetrician.

  Never perform a caesarean section with no fetal heart checked. If negative, no caesarean section.

- There is potential for fetal viability, gestational age about 24 weeks or greater.

MANAGEMENT:

- Perimortem cesarean section delivery kit will be available in the Labour Room , in the Antenatal Ward and in ICU Room and ER.

- Consent from family may be taken but not necessary to perform the procedure.

- Initiate immediate cardio pulmonary resuscitation and ACLS with lateral uterine displacement.

- Initiate cesarean delivery after four minutes of ineffective maternal circulation.

Attempt procedure is if estimated gestational age is greater than 23 to 24 weeks (fundal height greater than three to four centimeters or greater than three to four fingers – breadth above

the umbilicus in singleton pregnancy, bi – parietal diameter greater than 60 millimeters) or fetal weight > 1000 gms.

- Wear appropriate personnel protective equipment to protect health personnel from transmission of infection.

- Perform cesarean delivery with a bold Joel – Cohen method or vertical midline skin incision, and a vertical uterine incision.

Give infant to attendant for drying and warming and/or resuscitation.

- Pack the uterus with moist sponges. Remove lateral tilt. Continue ACLS throughout.
- When hemodynamically stable, remove the placenta and close uterus with a single line of # 0 absorbable suture. Close automatically, depending on available personnel and location. Obtain hemostasis with interrupted 0 absorbable suture.
- Antibiotics and wound management are necessary if the mother survives.

ALERT :

- The best survival rates are obtained where the CS is performed within five minutes of ineffective maternal circulation. It may still be worthwhile to pursue delivery after that as the fetal mortality is 100 % if no action is taken. Some infants have survived up to 20 minutes after ineffective circulation.
- Omission of perimortem caesarean section delivery or delay in performing the procedure, may lead to unnecessary loss of two lives.

References:

- RCOG

MANAGEMENT OF HIV IN PREGNANCY

OVERVIEW:

- All pregnant women are ended the screening for HIV infection, syphilis, hepatitis B and rubella in every pregnancy at their booking antenatal visit, as part of the infectious Diseases in Pregnancy Screening Programme and management should be a multidisiplinary. Team including an HIV physician, specialist, midwife, and pediatrician.

- Women already taking Highly Active Anti Retroviral Therapy (HAART) and /or Pneumocystic Carinii Pneumonia (PCP) prophylaxis before pregnancy should not discontinue their medication.

- Avoidance of breastfeeding , anti- retroviral therapy and appropriate management of delivery has reduced mother – to – child transmission rates from 25 – 30% to less than 1%.

WORK UP:

- Antenatal care of pregnant women who are HIV positive:

➢ Pregnant women who are HIV positive are recommended to have screening for syphilis, hepatitis B and rubella at their booking antenatal visit, in line with the general population.

➢ Pregnant women who are HIV positive should have additional blood test for hepatitis C, varicella zoster, measles and toxoplasma.

- Women taking HAART at the time of booking should be screened for gestational diabetes.

- Hepatitis B and pneumococcal vaccination is recommended for all individuals who are HIV positive and can be safely administered in pregnancy. Influenza vaccination can also be safely administered in pregnancy and the decision to immunization depends on the time of the year. Varicella zoster and measles, mumps and rubella vaccines are contraindicated in pregnancy.

- Women should be screened for genital infections at booking and again at 28 weeks. Any infection detected should be treated according to the national guidelines, even asymptomatic.

- Dating and anomaly scans should be offered to all women.

- Monitoring of plasma viral load and drug toxicities should be undertaken as directed by the HIV physicians.

- A plan of care for anti – retroviral therapy and mode of delivery should be made at 36 weeks following detailed discussion with the mother. Only woman with plasma viral loads of less than 50 copies/ml. should be offered a planned vaginal delivery.

- This plan should be reviwed when the woman presents in labour after confirming that any recently performed viral load results are less than 50 copies/ ml. In the absence of a docu-

mented mode of delivery plan, or in the event of uncertainty about viral load results, so LSCS should be undertaken.

MANAGEMENT:

1. Management of preterm delivery and preterm labour rupture of membranes:

- All women with threatened or established preterm labour and those with preterm prelabour rupture of membranes (PPROM) should have a genital infection screen performed and any infections, even if asymptomatic should be treated. The usual indications for steroids apply.

- Women should be counselled about the increased risk of preterm delivery associated with HAART.

- For women presenting with threatened preterm labour, multidiciplinary team advice (HIV physicians and paediatricians) should be sought so that, if preterm labour supervenes, there is a detailed plan of care.

- For women in preterm labour, urgent disciplinary team advice should be sought about the choice of anti-

  retroviral therapy. Infants born below 32 weeks of gestation may be unable to tolerate oral medication, so administering anti – retroviral therapy to the mother just before and during delivery will provide prophylaxis to the neonate .

- Where PPROM occurs after 34 weeks of gestation, delivery

should be expedited. Augmentation may be considered if the viral loads is less than 50 copies/ml and there are no obstetric containdications. Consideration should be given to starting broad spectrum intravenous antibiotics.

- Where PPROM occurs before 34 weeks of gestation, Consideration should be given to start broad – spectrum intravenous antibiotics. Evidence of chorioamnionitis and fetal distress are indications for prompt delivery. In other cases, the decision as to whether to expedite delivery should be made after multidisciplinary team consultation.

2-Management of delivery:

- A plan of care for anti – retroviral therapy and mode of delivery should be made at 36 weeks , following detailed discussion with the mother.

- A maternal sample for plasma viral load and CD4 count should be taken at delivery .

- Woman taking HAART should have their medications prescribed and administered before delivery and, if indicated , after delivery.

- Elective caesarean sections at 38 weeks to prevent labour or rupture membrane:

- If intravenous ZDV is indicated, the infusion should be started 4 hours before beginning the caesarean section and

should continue until the umbilical cord has been clamped.

The surgical field should be kept at haemostatic as possible and care should be taken to avoid rupturing the membranes until the head is delivered through the surgical incision.

- Peripartum antibiotics should be adminsitered in accordance with national guidelines for the general population.

➢ Planned vaginal delivery:

- Planned vaginal delivery should only be offered to women taking HAART who have a viral load of less than 50 copies/ml.

- When a woman presents in labour, her plan of care of delivery should be reviewed and recent viral load results should be confirmed as less than 50 copies/ml.

- HAART should be prescribed and administered throughout labour.

- Invasive procedure such as fetal blood sampling and fetal scalp electrodes are contraindicated.

- If labour progress is normal, amniotomy should be avoided unless delivery is imminent.

- Amniotomy and possible use of oxytocin maybe considered for augmentation of labour.

- If instrumental delivery is indicated , low - cavity forceps

are preferable to ventouse.

➢ Prelabour rupture of membranes at term:

- In the case of prelabour ruptured membranes at term, delivery should be expedited . If the viral lod is less than 50 copies/ml and there are no obstetric indications, augmentation may be considered.

- Broad - spectrum intravenous antibiotics should be administered if there is evidence of genital infection or chorioamnionitis.

- If PROM>4 hrs vaginal delivery is anticipated unless any obstetric indications for cs

➢ Prolonged pregnancy:

For woman on HAART with plasma viral load of less than 50 copies/ml, the decision regarding

induction of labour for prolonged pregnancy should be individualized. There is no contraindication to membrane sweep or to use of prostagladins.

➢ Vaginal birth after caesarean section:

- A trial of scar may be considered for women on HAART whose plasma viral load is less than 50 copies/ml.

2. Postpartum management of women who are HIV positive

- Women should be given supportive advice about formula feeding.

- Women taking HAART should have their medication prescribed and administered.

- Guidance about the contraception should be given in the immediate postpartum period.

- MMR and varicella zoster immunization may be indicated , according to the CD4 lymphocyte count.

ALERT:

Breastfeeding is contraindicated in HIV women and she should be given supportive advise about formula feeding.

Reference:

- Green Top Guideline No. 39 , June 2010

ECTOPIC PREGNANCY

OVERVIEW:

Ectopic pregnancy is a life threatening condition and one of the leading cause of maternal death.

WORK UP:

- Combination of TVUS and hCG for diagnosis a very early stage of pregnancy.
- Serum hCG level is 1500 or 2000IU/L with TVS ([6500 IU/L] with transabdominal ultrasound).
- The absence of an intrauterine gestational sac with hCG above the discriminatory zone suggests an ectopic or nonviable intrauterine pregnancy.
- A negative ultrasound examination at hCG levels below the discrimatory zone is consistent with an early viable uterine pregnancy or an ectopic pregnancy or non viable intrauterine pregnancy.

MANAGEMENT:

1. Expectant:

• When we suspect ectopic pregnancy, but TVUS fails to reveal extrauterine findings and (hCG) is low (≤ 200 mIU/mL) or declining.

• Patient must be willing and able to comply with follow - up.

• The upper limit of serum hCG level is 1000mIU/mL providing the patient is hemodynamically stable and asymptomatic.

Follow-up:

The hCG level every 48 hours for three measurements then weekly until it is undetectable.

2. Medical Treatment:

By Methotrexate: 50 mg per square meter of body surface I.M single dose. Suitable for asymptomatic, hemodaynamically stable patient and beta hCG < 5000 mIu/ml, no fetal cardiac activity and Ectopic mass size less than 3 to 4 cm.

If beta hCG > 5000 mIu/ml,multiple dose methods of Methotrexate every other day and folinic acid needed.

Before Methotrexate is applied some criteria must be applied (If liver function test and renal function test are normal and patient is hemodynamically stable)

Follow-up:

Serum BHCG is monitored on day 4 and 7 after Methotrexate if the fall of BHCG is > 15% , then repeat BHCG on day 7. Until BHCG< 25 IU/L, but if fallen is less than 15% a second dose of Methotrexate should be given.

Then weekly BHCG, on day 14 if decline is < 15% give 3rd Methotroxate dose (Maximum 3 doses).

3. Surgical Treatment:

Indications:

- Hemodynamic instability
- Impending or ongoing rupture of ectopic mass
- Contraindications to Methotrexate
- Coexisting intrauterine pregnancy
- Not able or willing to comply with medical therapy post treatment follow up
- Lack of timely access to a medical institution for management of tubal rupture
- Desire for permanent contraception

- Known tubal disease with planned in vitro fertilization for future pregnancy

- Failed medical therapy

Salpingostomy versus Salpingectomy:

- Salpingectomy , instead of salpingostomy in the following situations -

- Uncontrolled bleeding from the implantation site
- Recurrent ectopic pregnancy in the same tube
- Severely damaged tube
- Large tubal pregnancy (i.e. greater 5 cm)
- Women who have completed childbearing or who will be treated with in vitro fertilization
- Laparoscopy versus Laparotomy:

Laparoscopic surgery is the standard surgical approach for ectopic pregnancy. However, the surgical approach depends upon the experience and judgment of the surgeon and the anesthetist, and the clinical status of the patient.

ALERT:

Ectopic pregnancy should be suspected in any women of reproductive age with the classical symptoms of:

- Abdominal pain
- Amenorrhea
- Vaginal bleeding

References:

- RCOG Green Top Guideline , May 2004
- Up to Date , August 21, 2013

SEPTIC SHOCK IN OB/GYNAE

OVERVIEW:

Is the persistence of hypoperfusion despite fluid replacement as a complication of systemic manifestation of infection.

WORK UP:

Vital Signs :

- Fever (> 38 ^{0}C) or hyperthermia,hypothermia may be present
- Tachycardia > 100 beats/minute
- Tachypnea > 100 beats /minute
- Hypotension : Systolic < 90 mmHg.

1.) Physical Examination:

- Impaired mental status
- Significant oedema
- Oliguria < 0.5 ml./kg/hour
- Ileus

2.) Blood Test

- RBS: Hyperglycemia in absence of diabetes
- Thrombocytopenia
- WBC Count > 12 x 10 L or Leukopenia < 4 x 10 L or normal
- WBC Count with 10 % immune forms
- Plasma C – Reactive Protein > 7 mg./l
- Raised Serum Lactase > 4 mmol/L
- ABG: Arterial Hypoxemia
- Creatinine > 44.2 mmol/L
- Hyperbilirubinemia
- Blood Culture , Throat Swab Culture and Mid Stream Urine Culture and High Vaginal Swab Culture
- Imaging Test:

➢ Chest X – Ray

➢ Ultrasound Scan

➢ CT Scan of Pelvis, if abscess suspected

MANAGEMENT:

1) Stabilization of airway and breathing by oxygen and monitor with oximeter.

2) Assess and restore perfusion:

- Insert arterial catheter
- Insert central venous catheter (CVC)
- Target:

➢ Central or mixed venous oxyhemoglobin saturation ≥ 70%

➢ Central Venous Pressure (CVP) 8 to 12 mmHg.

➢ Mean Arterial Pressure (MAP) ≥ 65 mmHg.

➢ Urine output ≥ 0.5 ml./kg/hr.

3) Intravenous Fluid:

- Mean infusion volume of five liters within six hours
- Crystalloid (Normal Saline or Ringer Lactate) 20 – 40 ml./kg.

4) Intravenous Vasopressor (Norepinephrine), Epinephrine for patient who remains hypotensive despite adequate fluid or who develop cardiogenic oedema.

5) Antimicrobial Regimen:

- Intravenous antibiotic therapy should be initiated after obtaining appropriate cultures.

- Broad spectrum antibiotic coverage directed against both gram – positive and gram negative bacteria.

- If Pseudomonas is an unlikely pathogen , combining Vancomycin with one of the following:

  - Cephalosporin, 3rd generation (e.g. Ceftriaxone or Cerfotaxime)
  - Beta – Lactam/ Beta- Lactamase inhibitor (e.g. Piperacillin)
  - Carbapenem (e.g. Imipenem, Meropenem)

- If Psuedomonas is possible pathogen, Vancomycin with two of the following:

  - Anti -Pseudomonal Cephalosporin

    (e.g. Ceftazidime or Cefepime)

- Anti- PSeudomonal Carbapenem (e.g. Imipenem, Merpenem)
- Anti – Pseudomonal Bata – Lactam / Beta Lactamase (e.g. Piperacillin)
- Aminoglycoside (e.g. Getamycin, Amikacin)+

6) Corticosteroid Therapy:

Most likely to be beneficial to patient who have severe septic shock especially if begun within eight hours of onset of shock.

ALERT:

Septic shock management is a multidisciplinary (obstetrician, anesthesiologist and medical team) and needs high dependency care unit.

References:

- Up To Date 2012
- Green Top Guideline , April 2012

THIRD AND FOURTH DEGREE PERINEAL TEARS

OVERVIEW:

- A third degree tear is an injury to the perineum involving the anal sphincter complex

It can be classified in three types:

a. Less than 50% of the External Anal Sphincter (EAS) thickness torn.

b. More than 50% of the EAS thickness is torn.

c. Both the EAS and the Internal Anal Sphincter (IAS) torn.

- A fourth degree tear is an injury to the perineum involving the anal sphincter complex (external and internal) and the rectal mucosa .

WORK UP:

- Senior obstetrician or well trained doctors should be involved in the diagnosis of third and fourth degree perinael tear.

- Proper examination including per vagina (P/V) , per rectum (P/R) to assess any perineal injury .

- Proper examination to detect injury to perineum including anal sphincter.

MANAGEMENT:

- All third and fourth degree perineal repair should be carried out in the theatre.
- Perform detail assessment of the degree of vaginal – perineal or rectal injury under regional or general aneasthesia.
- suture materials:
- repair of the EAS muscle , monofilament sutures such as polydiaxanone (PDS) or modern braided sutures such as polyglactin (Vicryl) .
- repair of the IAS muscle , fine suture size such as 3-0 PDS and 2-0 Vicryl .
- repair of anal mucosa, 3/0 or 4/0 braided polyglactin on a tapered needle.

Surgical techniques:

- External Anal Sphincter:

(a) tear can only be repaired using an end – end repair while

the repair of

(b) complete tear of EAS should be by either overlapping or end – to end method.

The anal sphincter should be repaired using an overlap or an end to end (approximation) method. There is no evidence that either method is more advantageous.

. Internal Anal Sphincter - repaired separately with interrupted suture .

- Anal mucosa: repaired with interrupted sutures or continuous (nonlocking) sutures.
- Perform a rectal examination on completion to ensure the repair is intact.
- Document the procedure in the operative notes and arrange postpartum follow up.
- Antibiotic prophylaxis should be given:

➢ IV Amoxycillin /Clavulanate 1.2 g STAT at repair, followed by

Oral amoxicillin / clavulanate 625 mg. Three times a day for 3 – 5 days.

➢ For patients with mild Penicillin allergy:

➢ IV cefazolin 1g (or IV cefuroxime 750mg) and IV metronidazole 500mg STAT at repair, followed by Oral cefaclor

500mg TDS and metronidazole 200mg QID for 3-5 days.

- For patients with severe Penicillin allergy:
- IV clindamycin 600mg and IV gentamicin 5-7mg/kg STAT at repair, followed by Oral clindamycin 300mg QID and ciprofloxacin 500 mg BD for 3-5 days.

- Analgesia should be prescribed:
- Rectal diclofenac 100 mg. and Paracetamol 1.5 g STAT at completion of repair
- Oral non – steroidal anti – inflammatory and Paracetamol as required.

- Bulking agents (eg. Fybogel) and and stool softeners (lactulose 10mls BD) after 24 hours and continue for two weeks before weaning off. for 10 days
- Educate the woman about the need for adequate fluid intake when using bulking agents (1.5-2L /day).
- Ice Therapy to reduce the swelling for the 1st 48 – 72 hours post op, for 20 minutes every 3 – 4 hours.
- Refer to the dietician to advice for high fiber diet.
- Offer physiotherapy and pelvic floor exercise for 6 – 12 weeks after repair, Referral to the obstetric physiotherapist

should be made on arrival to the Maternity Ward where the woman should remain an inpatient for 24 hours.

- Post delivery the obstetrician performing the repair should ensure that the woman has a full understanding of the implications of the tear and the plans for subsequent follow-up

- All women who had a repair should be reviewed 4 - 6 weeks postpartum by OB/Gynae Consultant as out patient.

- If a woman is experiencing incontinence and pain at follow up, she should be referred to the Colo rectal surgeon for endo anal U/S and ano rectal manometry.

- The mode of subsequent delivery should be discussed in the context of current symptoms or findings of postpartum sonography.

Elective caesarean (LSCS) indicated if :

1) Symptomatic or have abnormal endo anal U/S and /or abnormal manometry.

2) Previous 4th degree perineal tear

3) Other risk factors for sphincter damage (e.g. big baby, Occipito Posterior position)

4) Woman's request

ALERT:

- Delayed diagnosis and surgical correction of the sphincter damage can lead to serious maternal morbidity.
- Consider the involvement of Senior obstetrician including the Consultant in the repair of the anal sphincter.
- Appropriate training for midwives and obstetrician for the anal sphincter injury diagnose and repair is essential.

References:

- RCOG March 2007
- Up To Date 2012

GESTATIONAL TROPHOBLASTIC DISEASE

(GTD)

OVERVIEW:

- Gestational Trophoblastic Disease(GTD) is a spectrum of disorders spanning from complete molar pregnancy through to the malignant invasive mole, to choriocarcinoma and the rare placental site trophoblastic tumor (PSTT).

- Gestational Trophoblastic Neoplasia (GTN) is a persistent elevation of beta human chorionic gonadotropin (BhCG).

WORK UP:

1. Clinical presentation irregular vaginal bleeding, hyperemesis, excessive uterine enlargement and early failed pregnancy.

2. Ultrasound examination: is helpful in making a pre-evacuation diagnosis.

3. Histological examination of the products of conception is the definite diagnosis.

4. Baseline quantitative level of BhCG must be obtained pre-evacuation.

5. CBC, LFT, RFT, Chest X-ray.

MANAGEMENT:

1. Suction curettage is the method of choice of evacuation for complete molar pregnancies.

2. Anti – D prophylaxis is required following evacuation of a molar pregnancy.

3. Preparation of the cervix immediately prior to evacuation is safe.

4. Excessive vaginal bleeding can be associated with molar pregnancy and a senior surgeon directly supervising surgical evacuation is advised.

The use of oxytocic infusion prior to completion of the evacuation is not recommended.

5. If the woman is experiencing significant haemorrhage prior to evacuation, surgical evacuation should be expedited and the need for oxytocin infusion weighed up against the risk of tumour embolization.

6. If symptoms are persistent, evaluation of the patient with hCG estimation and ultrasound examination is advised. Several case

   series have found that there may be a role for second evacuation in selected cases when the hCG is less than 5000 units/liter.

Management of twin pregnancy of a fetus and co existent molar pregnancy :

- In the situation of a twin pregnancy where there is one viable fetus and the other pregnancy is molar, the woman should be counseled about the increased risk of perinatal morbidity and outcome for GTN.

- The outcome for the normal pregnancy with a coexisting complete mole is poor, with approximately a 25% chance of achieving a live birth. There is an increased risk of early fetal loss (40%) and premature delivery (36%). The incidence of pre eclampsia is variable, with rates as high as 20% reported.

ALERT:

- The histological assessment of material obtained is essential.
- Any woman who develops persistent vaginal bleeding after a pregnancy event at risk of having GTN.
- Symptoms from metastatic disease , such as dyspnea or abnormal neurologic symptoms, can occur very rarely.

References:

- Green Top Guideline No. 38, February 2010

EPISIOTOMY

OVERVIEW:

A surgically planned incision on the perineum and the posterior vaginal wall during the second stage of labour to enlarge the pelvic soft tissue outlet and thereby prevent severe perineal lacerations, facilitate delivery and shorten the time of fetal expulsion.

WORK UP:

- To enlarge vaginal introitus to allow safe and easy vaginal delivery.
- To minimize over stretching and rupture of perineal muscles.
- To reduce stress and strain on fetal head.

MANAGEMENT:

- Medio – lateral episiotomy will be done only in selected cases.
- " A routine episiotomy should not be routinely carried out during spontaneous vaginal birth."

  "A routine episiotomy doesn't prevent pelvic floor damage leading to incontinence."

- Muscles involved in Episiotomy:

➢ Deep and superficial transverse perineal muscles

➢ Fibers of pubococcygeus and bulbocavernosus muscles.

- The episiotomy cutting and suturing should be done by the Doctor .

➢ It is not allowed to be sutured by the Midwife.

- Timing of Episiotomy:

➢ " Bulging thinned perineum during contraction just at crowning is the ideal time".

- Suturing of episiotomy should be done immediately after delivery.

- SROD or Specialist should be involved in suturing in the presents of following situations:

➢ Extended episiotomy

➢ Cervical tear

➢ Haematoma

- 3rd, 4th degree perineal tear

- All complicated episiotomies should be sutured under G.A. in OR.

- Document all the complications of episiotomy .

- Indications of Elective Episiotomy:

  - Inelastic perineum
  - To shorten 2nd Stage of labour, when indicated
  - Preterm delivery
  - Breech delivery
  - Expected big baby
  - Instrumental delivery
  - Previous vaginal repair

- Post Episiotomy Care:

- Good perineal hygiene.
- Elevation of the foot of the bed if there is perineal edema.
- To perform pelvic floor exercises regularly

- Stool softener is prescribed for several days postpartum

  NSAID for analgesic.

- Topical Lidocaine ointment is no longer routinely used following episiotomy as several reports have shown that topically applied anesthetics were no more effective than placebo.

Mediolateral episiotomy originating at the vaginal fourchette and usually directed to the right side. The angle to the vertical axis should be between 45 and 60 % at the time of the episiotomy.

Advantage: Reduction in incidence of 3rd and 4th degree perineal tear, protect anal sphinter + rectum.

- Median episiotomy is associated with higher rates of injury to the anal sphinter and rectum than is medio lateral episiotomy.
- Early closure of episiotomy dehiscence within the 1st two weeks after delivery may result in a reduction in the perineal pain during the healing process, reduction in dyspareunia.

ALERT:

- No routine episiotomy in modern delivery practice.

References:

- ACOG , 2006
- NICE, 2009
- Up to Date , 2011

INVESTIGATION AND TREATMENT OF COUPLE WITH RECURRENT FIRST – TRIMESTER AND SECOND – TRIMESTER MISCARRIAGE

OVERVIEW:

Women with recurrent first – trimester and second - trimester miscarriage should be looked after by a health professional with the necessary skills and expertise. Where available, this might be within a recurrent miscarriage clinic.

WORK UP:

1- Antiphospholipid antibodies

- All women with recurrent first – trimester and all women with one or more second – trimester miscarriage should be screened before pregnancy for antiphospholipid antibodies.
- To diagnose antiphospolipid syndrome - it is mandatory that the woman has two positive tests at least 12 weeks apart for either lupus anticoagulant or anticardiolipin antibodies of immunoglobulin G and/ or immunoglobulin M class.

2. Karyotyping

- Cytogenetic analysis should be performed on products of conception of the third and subsequent consecutive miscarriage(s).

- Parental peripheral karyotyping for both partners should be performed in couples with recurrent miscarriage where testing of products of conception reports as unbalanced structural chromosomal abnormality.

3. Anatomical factors

All women with recurrent first trimester miscarriage and all women with one or more second – trimester miscarriages should have a pelvic ultrasound to assess uterine anatomy.

Suspected uterine anomalies may require further investigations to confirm the diagnosis, using hysteroscopy, laparoscopy or three – dimensional pelvic ultrasound.

4. Thrombophilias:

- Women with second – trimester miscarriage should be screened for inherited thrombophilias including factor V Leiden, factor II (prothrombin) gene mutation and protein

MANAGEMENT:

- Women with recurrent miscarriage should be referred to a specialist clinic.

- Pregnant women with antipphospholipid syndrome should be considered for treatment with low - dose aspirin plus heparin to prevent further miscarriage.

• Genetic Factors

- The finding of an abnormal parenteral karyotype should prompt referral to a clinical geneticist.

• Cervical weakness and cervical cerclage

- Women with history of second – trimester miscarriage and suspected cervical weakness is candidate for cervical cerclage.

- Heparin therapy during pregnancy may improve the live birth rate of women with second - trimester miscarriage associated with inherited thrombophilias.

- Unexplained recurrent miscarriage

- Women with unexplained recurrent miscarriage have an excellent prognosis for future pregnancy outcome without pharmacological intervention if offered supportive care alone in the setting of a dedicated early pregnancy assessment unit.

Data suggest that the use of empirical treatment in women with unexplained recurrent miscarriage is unnecessary.

ALERT:

Cervical cerclage in a woman with recurrent miscarriage is associated with potential hazards and should be considered only in women who are likely to get the benefit.

References:

- Green Top Guideline , No. 17, April 2011

EARLY PREGNANCY LOSS MANAGEMENT

OVERVIEW:

- Early pregnancy failure may present with vaginal bleeding and or abdominal pain.
- Differential diagnosis include, threatened, inevitable, missed abortion, ectopic , and molar pregnancy.

WORK UP :

Diagnostic evaluation by clinical assessment and ultrasonography.

1. Clinical assessment:

Direct visualization of dilated cervix or the gestational sac may be sufficient to diagnose as inevitable, incomplete , or complete abortion.

2. Ultrasonography :

Ultrasonography is the most useful test:

- Absence of embryonic cardiac activity in an embryo with crown rump length greater than 5 mm.

- Absence of yolk sac when the mean sac diameter is 13 mm.
- Absence of an embryonic pole when the mean sac diameter is greater than 25 mm measured transabdominally or greater 18 mm by the transvaginal technique.

  These measurement correspond to gestational age of approximately 6 weeks. Serial examinations four to seven days apart are helpful to assess viability of the pregnancy when findings are equivocal.

MANAGEMENT:

1. Threatened abortion :

- The use of progestin to reduce the risk of miscarriage among women with threatened abortion is controversial.

Bed rest is commonly recommended.

2. Septic abortion: (Refer to Septic Shock page 18 – 20)

- Suspected abortion with retained products of conception

  should be managed by :

➢ Stabilizing the patient.

- Obtaining blood and endometrial cultures.
- Promptly administering parental board spectrum antibiotics as mentioned in septic shock.
- Surgically evacuating the uterine content:

- Evacuation of the uterus should begin promptly after initiating antibiotics and stabilizing the patient.

3) Complete abortion :

- Tissue that is passed should be examined to confirm that is the product of conception .
- Passage of intact gestational sac or contraction of the uterus with scant uterine bleeding and diminishing uterine cramps suggest that it is complete abortion.
- Ultrasound examination may be useful for confirming the absence of significant amount of retained intrauterine tissue.

4) Incomplete , inevitable, and missed abortion :

Women with an incomplete , inevitable, or missed abortion documented by ultrasound examination can be managed surgically, medically or expectantly.

Surgical Management :

- The conventional treatment of first and early second trimester failed pregnancy is dilatation and curettage (D&C).
- It is appropriate for women who do not want to wait for spontaneous or medically induced evacuation of the uterus and those with heavy bleeding or intrauterine sepsis.

Medical Management :

Medical methods for induced abortion as safe , effective and feasible alternatives to surgery, e.g : Misoprostol (PGE_1)

WHO Guidelines :

- 9 weeks till 12 weeks, Misoprostol given as 800 mcq every 12 hours up to three doses vaginally.
- 13-22 weeks: 400 mcq vaginally every 3-4 hours (max five doses) or 600 mcq vaginally every 12 hours.

Monitoring during the treatment :

- Pelvic examination is performed before each Misoprostol dose in order to determine if the fetus has been expelled.
- The frequency and strength uterine contraction are also monitored.

ALERT:

Ectopic pregnancy should be put in mind till it is rolled out.

References:

- SOGC Clinical Practice Guidelines, November 2006
- RCOG

MENORRHAGEA

OVERVIEW:

Heavy menstrual bleeding is menstrual loss of more than 80 ml.

WORK UP:

Decisions regarding both investigation and treatment are influenced

by a number of factors which include:

a) Patient age
b) Reproductive status of the woman

c) The pattern and severity of the symptoms

- A detailed history should define the presenting problem, determine the impact on the women's life and detect abnormal bleeding symptoms that indicate significant pathology.

- Abdominal and bimanual pelvic examination should be performed as well the general physical examination to detect possible causes of menorrhagea e.g. thyroid disease.

- An ultrasound scan is the first line investigation for delineating fibroids or excluding other causes.

- A full blood count should be done.

- Where medical treatment has failed or where there are specific risk factors for endometrial cancer, endometrial biopsy should be taken by pipelle sampling technique.

- Careful examination of the cervix by cytology is essential.

MANAGEMENT:

1. For women with heavy menstrual bleeding requiring medical treatment,the first line of treatment are: anti fibrinolytics (Tranexamic Acid) is the first line drug.

2. Non-steroidal anti-inflammatory drugs (NSAID) is used for the treatment of chronic heavy or prolong uterine bleeding are prescribed to start on the first day of menses for five days or till the end of menses.

Combined oral contraceptive pills are effective in reducing bleeding and controlling cycle irregularities.

3. Progestrogens are effective when given at high doses

(Norethisterone 5 mg.).

4. Progestrogens-Releasing Intra Uterine System (LNG-IUS) is well established treatment for heavy menstrual bleeding.

Second Line Drugs - when simpler measures have failed, are useful in the management of severe anemia e.g. GnRH Analogue. These approaches are limited to short term use because of their

side effects.

Long term satisfaction is high with hysterectomy, but it is associated with significant morbidity and mortality and should be offered only if simpler medical alternatives have failed.

ALERTS:

1. Abnormal uterine bleeding in perimenopausal women must be investigated if risk factors for endometrial cancer are present.

2. All post menopausal bleeding is abnormal, and require evaluation for endometrial cancer.

References:

• An Evidence Based Text for MRCOG, 2nd Edition, Jan. 2010

MANAGEMENT OF HEMATOMAS RESULTING FROM DELIVERY

OVERVIEW:

Puerperal haematoma occur in 1:300 to 1: 15000 deliveries.

WORK UP:

1) Identify patient at increased risk:

- Nulliparas
- Big baby > 4 kg
- Pre - eclampsia
- Prolonged 2nd stage
- Multi fetal pregnancy
- Vulval varicosities
- Common locations:
- Vulva
- Vagina / paravaginal area
- Retroperitoneal

2) Clinical Manifestations And Diagnosis:

- Symptoms develop in the 1st 24 hours after delivery .
- Pain and discomfort out of proportion to the size of injury.

• Vulva Hematomas

- Rapid development of severely painful, tense, compressible mass covered by skin with purplish discoloration.
- It can be an extension of a vaginal haematoma.

• Vaginal Hematomas

- Rectal pressure
- On physical examination, a large mass protruding into vagina is usually obvious.

• Retro Peritoneal Hematomas

- Retro peritoneal hematoma extending between the folds of broad ligament may be asymptomatic initially, then may develop haemodynamic instability tachycardia, hypotension and shock .

- Usually do not present with pain.

- Palpable abdominal mass or fever can be signs.

MANAGEMENT:

Initial approach and patient preparation :

1) Recognition of haematoma and prompt stabilization of the patient are the initial steps.

2) Physical examination of abdomen , vulva, vagina and rectum.

3) Check vital signs :

➢ If hemodynamically stable:

- Place a large bore I.V. line to administer crystalloid.

➢ If hemodynamically unstable:

- 2 large bore I.V. lines.

- Start IVF with crystalloid and blood products (i.e. PRBC)

- Prepare for surgical intervention
- Send blood for :

▪ CBC

▪ Fibrinogen Level

▪ PT, PTT

▪ Cross match 4 units PRBC

- Anesthesiologist consultation to do regional or general anesthesia.

❖ There are no data regarding the value of placing all patients with haematomas on antibiotics.

If surgical intervention required , give surgical site prophylaxis .

If signs of infection are present, then give broad spectrum antibiotics.

❖ Endocarditis prophylaxis is not indicated for minor vulval or vaginal procedures.

MANAGEMENT:

Either:

1) Conservative Management:

- Monitor vital signs
- Fix foley's catheter and check urine output hourly
- Check for signs of decreased end – organ perfusion:

e.g. - Lethargy

- Decreased urine output

- If any of the above sign re – examine the patient.
- Give analgesia (including narcotics).
- Apply cold packs for 24 hours.
- Repeat laboratory studies every 4 – 6 hours.

2) Surgical Intervention:

- If haematoma is expanding or falling haematocrit.
- Skin over haematoma incised and clot evacuated.
- Suction / irrigation.

- Detect bleeding points and ligate.
- Re approximate the space by interrupted or figure – of – eight stitches of fine , rapidly absorbable suture material.
- Do not pack or drain the haematoma cavity.
- Pressure maintained by placing a one liter bag of IVF over the area for 12 hours.
- In case of vaginal haematoma, apply vaginal packing with gauze or a ballon (e.g. Bakri) for 12 to 24 hours after surgical repair to aid in tamponade.

3) Selective arterial embolization

POST – OPERATIVE CARE:

- Perineal hygiene with sitz baths and gentle cleaning with saline rinse.

Pelvic rest for 4 – 6 weeks (no coitus or placement of tampons or vaginal medications).

-
- Rest primarily on her side or back to avoid pressure necrosis of swollen external genitalia.
- At discharge , advise to comeback if develop fever, new or worsening pain or bleeding

ALERT:

Puerperal haematoma mostly related to operative delivery or episiotomy but may also result in absence of laceration or incision.

References:

- RCOG Guideline , 2010

ANTENATAL CARE

OVERVIEW:

The Consultant or designee will assign the patient as low or high risk. High risk patient will be seen by the Consultant concerned.

WORK UP:

- All first visit patients will have a history and physical examination including those late booking needing consultant's opinion.
- Low risk patients may be followed up in the Primary Health Care up to 36 weeks of gestation.
- The initial visit should occur during the first trimester to identify woman at risk and need additional care and plan.
- The estimated date of delivery (EDD) should be calculated by accurate determination of the last menstrual period (LMP).
- Early Ultrasonography is more accurate than LMP at determining gestational age and that it should be used routinely to determine EDD and reduce the need for labor determination.

- Laboratory Test:

1) CBC at booking then at 28 and 36 weeks

   - If Hb. below 10 g/dl. – repeat monthly
   - If Hb. below 9 g/dl – Check Serum Ferritin

2) Blood Group and RH Type

   - If RH +ve with no antibodies to be checked only once
   - If RH +ve with antibodies, should have an antibody screen every month

3) Sickling Test

4) Rubella Antibodies

5) Hepatitis Screening

6) VDRL (RPR)

7) Gestational Diabetes Screening:

One Hour Glucose Challenge Test for all patients (oral 50 gms glucose) for non fasting ,

- If Blood Sugar < 7.8 mmol/L then to repeat it at 24 – 28 weeks

- If > 7.8 mmol.L – then do GTT (Oral glucose Tolerance Test)

- GTT performed between 24 – 32 weeks gestation and patient must be fasting from 12 midnight

- Fasting Blood Sugar is taken then 75 gms or 100 gms. glucose beverage given to patient to drink , then 3 bloods taken: one hour, two hours and three hours.

8) Complete Urine Analysis (MSU) and repeat it if specimen contaminated or if protein + or if symptomatic patients.

MANAGEMENT:

- Subsequent visits

1. The patient should be asked about fetal movements and this should be recorded in the file.

2. Any complaint should be documented.

3. B.P. should be checked by the nurse while the patient is " sitting" (which is more easier and quicker than left lateral position). If B.P. is > 130/90, it should be rechecked by the doctor.

4. The patient will be weighed regularly and her " weight gain" should be observed.

5. Routine urinalysis (chemical component ONLY: proteins, ketones, and sugar) should be routinely done for every patient upon arrival to the OPD.

6. Symphysis Fundal (S.F.) height should be checked routinely for gestations between 26 to 36 weeks. The S.F.H. should be within 3 cm. (+ or -) of the gestational age in weeks.

7. Presentation of the fetus should be documented.

An ultrasound scan should be done at 18 – 22 weeks (if not done earlier).

- Medications:

1. Folic Acid 1mg. OD, during the first 3 months of pregnancy

2. Fe Fumerate (200 mg) or Sulphate (60 mg.)

a) Once daily – If Hb. is > 10 gm/dl.

b) Twice daily - If Hb is < 10 g/dl.

- Prenatal Education:

- Information about physiologic changes that occur during pregnancy and preparation for the birthing process.

- Discuss care issues such as breastfeeding.

- Nutritional education should be provided according to the

need of the case e.g. Iron deficiency anemia or diabetic patient.

- Genetic counseling and testing should be offered to couples with a family history of genetic disorders, a previously affected fetus or child, or a history of recurrent miscarriage.

ALERT:

Routine fetal heart auscultation , urinalysis and assessment of maternal weight , Blood pressure and fundal height generally are recommended.

References:

•Nice 2009

MANAGEMENT OF DIABETES IN PREGNANCY (GDM)

OVERVIEW:

Obstetrical challenges in caring for pregnant women with Gestational Diabetes Mellitus (GDM) include knowledge of the maternal and fetal risks.

The perinatal care of women with GDM focuses upon identifying and managing conditions that are more common among women with glucose impairment.

WORK UP:

Diagnostic criteria for overt diabetes and gestational diabetes at first perinatal visit (Before 13 weeks):

Diagnosis:	FBS	RBS	HBA1C %
- Overt Diabetes	≥ 126 mg/dl.	≥ 200 mg/dl.	≥ 6.5 %.
- Gestational Diabetes	95 - 125 mg/dl.	NA	NA

Diagnostic criteria for overt and gestational diabetes using 75 gms. OGTT at 24 – 28 weeks:

Diagnosis:	FBS	1 hour	2 hour
- Overt Diabetes	≥ 126 mg/dl.	NA	≥ 200 mg/dl.
- Gestational Diabetes	92 -125 mg/dl.	≥ 180 mg/dl.	153-199 mg/dl.

One or more of abnormal values establish the diagnosis.

MANAGEMENT:

Management of elevated blood glucose:

1. The initial treatment of gestational diabetes should consist of medical nutritional therapy and daily exercise for 30 minutes.

2. Glucose monitoring and glycemic target:

Self monitoring by measurement of blood glucose before and either 1 0r 2 hours post meal and at bedtime:

- Pre Prandial Blood Glucose ≤ 95 mg/dl.
- 1 Hour Post Prandial ≤ 140 mg/dl.
- 2 Hours Post Prandial ≤ 120 mg/dl.

3. Nutritional Therapy:

Patient should be referred to Dietician to be placed on proper diet.

The Goal:

- To achieve normo glycemia
- To prevent ketosis
- To provide adequate weight gain

4. Non Insulin Therapy:

Gylburide is a suitable alternative to insulin for glycemic control.

5. Insulin Therapy:

Insulin Dose:

- 0.7 units/kg. in the 1st Trimester
- 0.8 units/kg. in the 2nd Trimester
- 0.9 units/kg. in the 3rd Trimester

Note:

Target blood glucose levels 1 hour after the start of a meal $\leq$ 140 mg/dl. and 2 hours after the start of a meal $\geq$ 120 mg/dl. without hypoglycemia and HBA1C $\leq$ 7% .

6. Fetal Antenatal Testing usually initiated at 32 weeks of gestation.

Assessment of fetal growth:

- Frequent ultrasounds to monitor fetal growth (28, 32 and 36 weeks of gestation) .

7. Timing of Delivery:

- Induction of labour at 39 weeks in women with good glycemic control.

If a concomitant medical condition is present or glycemic control is sub optimal , delivery should be undertaken as clinically indicated

8. Scheduled Ceasarean Section:

Scheduled for caesarean section is offered to women with GDM with fetal weight ≥ 4.750 gms. and insulin or hyperglycemic drugs are withheld:

- Hold AM dose
- Start 5% DW to avoid ketosis (DW 5%, Normal Saline 4.5)
- Check RBS every hour
- Avoid hypoglycemia during surgery
- RBS every 2 hours post – op . Keep blood glucose level within 70 – 190 mg/dl.
- Start insulin infusion drip , if RBS : 126 rate.

- HR 0.5 – 2 units /hour according to RBS result

- Metformin or Glyburide can be started after 24 – 48 hours prior to discharge.

9. Labour and Delivery:

In established labour, blood glucose should be checked every two hours and begin insulin infusion if the values rise above 120 mg/dl. and adjust insulin dose according to the local Protocol:

• Maternal BS	IV Insulin	IV Solution
RBS < 70	Hold	DW5% Normal Saline
RBS < 140	Hold	Normal Saline or Lactated Ringers
RBS> 140	10 units to 1000 ml.	5%DW5% Normal Saline In rate 100 – 125 /hour
or		
(Another Protocol)	0.5 – 1 unit/hour	100 ml. DW/hour

- Measure RBS every 2 – 4 hours

- Any Hypoglycemia < 50 should be treated promptly

  Hyperglycemia > 180

NOTE:

Using DW%% during labour shorten labour compared with Normal Saline infusion.

10. Postpartum Management and Follow Up:

- Check blood glucose (Fasting and After meals) for 24 hours after vaginal delivery and 48 hours after caesarean section.
- Keep blood glucose 140 – 160 mg/dl.
- Contraception: Any type of contraception is acceptable as long as the medical contraindications to use are absent
- Follow Up:

- All women with GDM should undergo an oral glucose tolerance test using a two – hour 75 gms. at 6 – 12 weeks postpartum.

ALERT:

Woman with diabetes should take a daily Folic Acid supplement to reduce the risk of neural tubal defects 3 months before withdrawing contraceptive measures.

References:

- Up To Date 2013
- ACOG 2013

وزارة الصحة
Ministry of Health

M . O . H
DRUG LIST

ALPHAPITICAL
DRUG INDEX

(A)	atracurium besylate
abacvir sulfate + lamivudine + zid-ovudine	atropine sulphate
acetazolam ide	azathioprine
acetylcholine chloride	azelaic acid
(acetyl salicylic acid (asprine	azithromycin
acitren	**(B)**
acyclovir	bacillus calmette-gue rin
adalimumab	bacitrin zinc + polymixin b sulphate
adefovir dipivoxil	baclofen
adenosine	basiliximab
adrenaline hcl	bcg vaccine (bacillus calmette – Guer-(in
(adrenaline (epinephrine	beclomethasone
albendazole	bnzhexol hcl
albumen human	benzoyl peroxide
alemtuzumab	benztropine mesylate
alendronate sodium	beractant,phospholipid
alfacalcidol	betahistine dihydrochloride
allopurinol	betamethasone
alprazolam	betaxolol hcl
alprostadil (prostaglandin e1) pediatric dose	bevacizumab
alteplase	bicalutamide
aluminum hydroxide + magnesium hydroxide	bimatoprost

amantadine hcl	bisacodyl
amethocain	bisoprolol fumarate
amikacin sulfate	bleomycin
amiloride hcl + hydrochloridethiazide	bortezomib
aminoacids for adult	bosentan
aminocaproic acid	botulinum toxin type a
aminoglutethimide	bretulium tosylate
aminophyline	brimonidine tartrate
amiodarone hcl	brinzolamide
amlodipine besilate or felodephne	bromocriptine
ammonium chlorhde	b-sitosterol
amobarbitol	budesonide
amoxicilline trihydrate	budesonide 3mg capsules
amoxicilline trihydrate + clavulanate potassium	budesonide turbuhaler
amphotericin b liposomal	Bulk-forming laxative
mpicilline sodium	bupivacaine hcl
anagrelide	buprenorphine
anastrozole	bupropion
antihemorroidal / without steroids	busulfan
(anti rabies serum (horse origin	**(C)**
anti-rho(d) immunogloblin	cabergoline
(antithymocyte globulin(atg	calcipotriol
apracloidine hcl	calcipotriol + betamethasone dipropionate
aripiprazole	(calcitonin (salmon)-(salcatonin

artemether + lumefantrine	calcitriol
artemisinin	calcium carbonate
artesunate	calcium chloride
artesunate + sulfadoxine + pyrimethamine	calcium gluconate
artificial tears eye dropper	calcium lactate
(ascorbic acid (vitamin c	capecitabine
(sparaginase (crisantaspase	capreomycine
atazanavir	captopril
atenolol	carbamazepine
atorvastatin	carbimazole

carboplatin	cyclophosphamide
carboprost tromethamine	cycloserine
carboxymethyl-cellulose	cyclosporine
carmustine	cyprotone acetate + ethinyl estradiol
carteolol hcl	cytarabine for injection
carvedilol	**(D)**
caspofungin acetate	dabigatran
cafaclor	dacarbazine
cefepime hydrochloride	dactinomycin
cefixime	dalteparin
cefixime sodium	danazol
ceftazidime pentahydrate	dantrolene sodium
ceftriaxone sodium	dapsone

cefuroxime	darunavir
celecoxib	dasatinib monohydrate
cephalexin monohydrate	daunorubicin hcl
cephradine	desmopressin acetate
cetuximab	dexamethasone
chloral hydrate	Dextran (dextran40) + sodium chlorid
chlorambcil	dextromethorphan
chloramphenicol	dextrose
chlordiazepoxide hcl	diazepam
chlorhexidine gluconate	diazoxide
chloroquine	diclofenac
chlorpheniramine maleate	didanosine
chlorpromazine hcl	diethylcarbamazine citrate
chlorthalidone	digoxin
chlorzoxazone	dihydralazine mesilate or hydralazine hcl
(cholecalciferol (vitamine d3	diloxanide furoate
cholestyramine	(diltiazem hcl (sustainad release
cincalcet hydrochloride	dimenhydrinate
cinnararizine	dinoprostone
ciprofloxacin	diphenhydramine hcl
cispltin	(diphetheria,tetanus,pertussis (dpt
citalopam hydrobromide	diphetheria,tetanus vaccine for adult
clarithromycin	diphetheria,tetanus vaccine for children
clindamycin	diphetheria antitoxine

clindamycin or erythromycin for acne	dipyridamol
clindamycin phosphate	disodium pamidronate
clofazimin	disopyramide phosphate
clomiphene citrate	distigmine bromide
clomipramine hcl	dodutamine hcl
clonazepam	docetaxel
clonidine hcl	docusate sodium
clopidogral	domperidone
clotrimazole	dopamine hcl
cloxacillin or flucloxacillin sodium	dorzolamide&1
clozapine	doxorubicin
codeine phosphate	duloxetine
colchicine	dydrogesterone
colistin sulphomethate sodium	**(E)**
conjugated estrogen + norgestrel	econazole
corticorelin (corticotrophin-releasing (factor,crf	edrophonium chloride
cromoglycate sodium	efavirenz
(cyanocobalmin (vit b12	(electrolyte oral rehydration salt (ors
cyclopentolate hcl	emtricitabine
cyclophosphamide	carboplatin
cycloserine	carboprost tromethamine
cyclosporine	carboxymethyl-cellulose
cyprotone acetate + ethinyl estradiol	carmustine
cytarabine for injection	carteolol hcl

(D)	carvedilol
dabigatran	caspofungin acetate
dacarbazine	cafaclor
dactinomycin	cefepime hydrochloride
dalteparin	cefixime
danazol	cefixime sodium
dantrolene sodium	ceftazidime pentahydrate
dapsone	ceftriaxone sodium
darunavir	cefuroxime
dasatinib monohydrate	celecoxib
daunorubicin hcl	cephalexin monohydrate
desmopressin acetate	cephradine
dexamethasone	cetuximab
Dextran (dextran40) + sodium chlorid	chloral hydrate
dextromethorphan	chlorambcil
dextrose	chloramphenicol
diazepam	chlordiazepoxide hcl
diazoxide	chlorhexidine gluconate
diclofenac	chloroquine
didanosine	chlorpheniramine maleate
diethylcarbamazine citrate	chlorpromazine hcl
digoxin	chlorthalidone
dihydralazine mesilate or hydralazine hcl	chlorzoxazone

diloxanide furoate	cholecalciferol (vitamine d3)
diltiazem hcl (sustainad release)	cholestyramine
dimenhydrinate	cincalcet hydrochloride
dinoprostone	cinnararizine
diphenhydramine hcl	ciprofloxacin
diphetheria,tetanus,pertussis (dpt)	cispltin
diphetheria,tetanus vaccine for adult	citalopam hydrobromide
diphetheria,tetanus vaccine for children	clarithromycin
diphetheria antitoxine	clindamycin
dipyridamol	clindamycin or erythromycin for acne
disodium pamidronate	clindamycin phosphate
disopyramide phosphate	clofazimin
distigmine bromide	clomiphene citrate
dodutamine hcl	clomipramine hcl
docetaxel	clonazepam
docusate sodium	clonidine hcl
domperidone	clopidogral
dopamine hcl	clotrimazole
dorzolamide&1	cloxacillin or flucloxacillin sodium
doxorubicin	clozapine
duloxetine	codeine phosphate
dydrogesterone	colchicine
(E)	colistin sulphomethate sodium
econazole	conjugated estrogen + norgestrel

edrophonium chloride	corticorelin (corticotrophin-releasing factor,crf)
efavirenz	cromoglycate sodium
electrolyte oral rehydration salt (ors)	cyanocobalmin (vit b12)
emtricitabine	cyclopentolate hcl

enalapril malate	Gemfibrozil
enfuvirtide	gentamicine
enoxaparin	glibenclamide
entecvir	gliclazide
ephedrine hydrochloride	glipizide
epirubicin hcl	glucagon
epoetin (recombinant human eryth- (ropoietins	glycrine
ergotamine tartarate	glycopyrrolate bromide
erlotinib hydrochloride	gonadorelin (gonadotrophine-releas- (ing hormone, lhrh
erythromycin	goserlin acetate
escitalopram	granisetron
esmolol hcl	griseofulvin micronized
esomeprazole magnesium trihydrate	(H)
estradiol valerate	haemophilus influenza vaccine
etanercept	haloperidol
ethambutol hcl	heparinecalcium for subcutaneous injection
ethanolamine oleate	(heparine sodium (bovine
ethinyl estradiol	(hepatitis b vaccine (child
ethionamide	homatropine

ethosuximide	human chorionic gonadotrophin
etomidate	human fibrinogen
etoposide	(human isophane insulin (nph
etravirine	human menopausal gonadotrophins,-follicle
(F)	stimulating hormone + luteinizing hormone
factor ix fraction for injection, which is sterile and free of hepatitis, hivand any other infectious disease agent	human normal immunoglobulin for i.m injection
factor viii (stable lyophilized con-(centrate	(human soluble insulin (regular
fat emulsion	hyaluronidase
(felodipine retard (modified release	hydralazine hcimesilate
fentanyl citrate	hydrochlorothiazide
ferrous salt	hydrocortisone
ferrous sulphate or fumarate + folic acid	hydroxurea
filgrastim g-csf	hydroxychloroquine sulphate
finasteride	ydroxyprogesterone hexanoate
fluconazole	hydroxypropyl methylcelulose
fludarabine phoaphate	hyocine butylbromide
fludrocortisones acetate	(I)
flumazenil	ibuprofen
fluorescein	ifosfamide
fluorometholone	iloprost
fluorouracil	imatinib mesilate

fluoxetine	imidazole derivative
flupenthixol	imipenem + cilastatin
fluphenazine decanoate	imipramine hcl
flutamide	(indapamide (sustaind release
fluticasone	indinavir
fluvoxamine malate	indomethacin
follitropin	infliximab
formoterol + budesonide turbuhaler	influenza virus vaccine
foscarnet	injectable polio vaccines (ipv) (salk (vaccine
fosinopril	insulin aspart
furosemide	nsulin detmir
fusidic acid	insulin glargine
(G)	insulin lispro
gabapentine	interferon alpha
ganciclovir	interferon beta 1a
gemcitabine	ipratropium bromide
medroxyprogesterone acetate	irbesartan
mefenemic acid	irintecan hydrochloride
melfloquine hcl	iron saccharate
megestrol acetate	isoniazid
meloxicam	isoprenaline hcl (isoproterenol hcl)
melphalan	isosorbide dinitrate
memantine hcl	isosorbide dinitrate

meningococcal polysaccharide sero group (a,c,y,w-135)	isotretinoin
mercaptopurine	itraconazole
meropenem	ivabradine
mesalazine	ivermectin
mesna	**(K)**
metformin hcl	kanamycin
methadone hcl	kaolin + pectin
methotrexate	ketamine hcl
methoxsalen + ammidine	ketoconazole
methoxy polyethylene glycol-epoetin beta	ketotifen
methyldopa	**(L)**
methylerrgonovine maleate	labetalol hcl
methylphenidate	lactulose
methylperdnisolone	lamivudine
metoclopramide hcl	lamotrigine
metolazone tartrate	lansoprazole
metolazone	latanoprost
metolazone tartrate	l-carnitine
etronidazole	leflunomide
mexiletine hcl	lenalidomide
micafungin sodium	letrozole
miconazole	Leucovorin calcium
midazolam	leuprolid depo acetate
miltefosine	levamizole

minocycline hcl	levetiracetam
mirtazapine	levofaoxacin
misoprostol	levothyroxine sodium
mitomycin	lidocaine + fluorescein sodium
mitoxantrone hydrochloride	Lidocaine hcl
mixed gas gangrene antitoxin	linezolid
moclopemide	liquid paraffin
mometasone furoate	lisinopril
montelukast sodium	lithium carbonate
orphine sulphate	lomustine
moxifloxacin hydrochloride	Loperamide hcl
ultienzyme (pancreatic enzymes:protease200-600u;lipse5,000-10,000u and amylase5,000-10,000u) /capsule or enteric coated tablet	lopinavir + ritonavir
multivitamins	lorazepam
mupirocin	losartan potassium
muromonab-cd3	lubricant
mycophenolate mofetil	(M)
(N)	magnesium oxide
nafarelin	mannitol
nalbuphine hcl	maprotilline hcl
naloxone hcl	measles vaccine
naphazoline	mebendazole
Naproxene	mebeverine hcl
natalizumab	mechlorethamine hcl
natamycin	meclozine + vitamine B6

phenylephrine hcl	nateglinide
phenytoin sodium	nelfinavir
phosphate enema	neomycin sulphate
phosphate salt	neostigmine methylsulpfate
phytomenadione	niclosamide
pilocarpine	nicotine(24-hour effect dose)
pioglitazone	nifedipine retard (modified release)
piperacillin + tazobactam	nilotinib
plasma protein solution	nimodipine
pneumococcal polyvalent (23 valent) vaccine	nitrazepam
poliomyelitis vaccine live oral: (sabin strain)	nitrofurantoin
polyacrylic acid	nitroglycerin
polyethylene glycol,3350-13.125g oral ppowder, sodium bicarbonate 178.5mg,sodium chloride350mg , potassium chloride 46.6mg/sachet	isosorbide dinitrate
polymyxin b sulphate + neomycin sulphate + hydrocortisone	non sedating antihistamine tablet (cetirizine or noratadine)
polystyrene sulphate resins (calcium)|	noradenalin acid tartrate
potassium salt	norethisterone
pramipexole	norfloxacin
pravastatin	nystatin
praziquantel	(O)
prazosin hcl	octreotide
prednisolone	ofloxacin

pregabalin	oily phenol injection
Prilocaine + felypressin	olanzapine
Primaquine phosphate	olopatadine hcl
Primidone	omeprazole sodium
Procainamide hcl	ondansetron
Procarbazine	orienograstim (g-csf)
Procyclidine hydrochloride	oxaliplatin
Progesterone	oxybuprocaine
Proguanil hcl	oxybutynin hcl xl
Promethazine hcl	oxymetazoline
proparacaine	oxytocin
propfol	(P)
propylthiouracil	paclitaxel
Propranolol hcl	paliperidone
Protamine sulfate	palivizumab
prothionmide	pancuronium bromide
Protirelin (thyrotrpphin-releasing hormone,trh)	pantoprazoole sodium sesquihydrate
Pseudoephedrine hcl 30mg + anti-histamine	papaverin
Pumactant phospholipid	para-amino salicylate sodium
Pura aluminum hydroxide	paracetamol
Pyrazinamide	pegaspargase
Pyrethrins	pegylated interferon alpha 2a
Pyridostigmine	pemetrexed
Pyridoxine hcl (vitamine b6)	penicillamine

Pyrimethamine	penicillin benzathine (penicillin g)
Prilocaine + felypressin	pentamidine isethionate
primaquine phosphate	pentavalent vacc.(hbv+hib+dtp)
(Q)	pentoxifylline
quetiapine	perindopril
quinidine sulfate	permethrin
quinine dihydrochloride	pethidine hcl
quinie sulphate	phenobarbital (phenobarbitone)
(R)	phenoxymethyl penicillin (penicillin v potassium)
rabies immunoglobulin for i.m injection	phentolamine mesylate
stibogluconate sodium (organic pentavalent antimony)	rabies virus vaccine
streptokinase	racemic epinphrine
streptomycin sulfate	raltegravir
strontium ranelate	ranitidine
succinylcholine choloride	rasburicase
sucralfate	recombinant factor via
sulfacetamide	repaglinide
sulfadiazine	reteplase
sulfadoxin500mg + pyrimetha-mine25mg	retinoin (vitamine a)
sulfasalazine,500mg/tablet	ribavirin
sulindac	rifabutine
sulpiride	rifampicin
sumatriptan succinate	riluzole

(T)	ringer's lactate solution
tacrolimus	risperidone
tamoxifen citrate	ritonavir
tamsulosin hcl (modified release)	rituximab
telmisartan	rivaroxaban
temazepam	rocuronium bromide
tenofovir disoproxil fumurate	ropivacaine hcl
terbinafine	rose bengal
teriparatide	rosuvastatin
terlipressin acetate	(S)
tetanus antitoxin	salbutamol
tetanus immunoglobulin for i.m injection	salmeterol + fluticasone propionate
tetanus vaccine	scorpion anti – venin
tetracosactrin (corticotrophin)	selegiline hcl
tetracycline hcl	senna
thalidomide	sevelamer
theophylline	sevoflurance
thiacetazone	sildenafil
thiamine (vitamine b1)	silver sulfadiazine (steril)
thioguanine	simethicone
thiopental sodium	simvastatin
tigecycline	sirolimus
timolol	sitagliptin phosphate
tinzaparin sodium	snake anti-venin

tiotropium	sodium acetate
tirofiban hydrochloride	sodium aurothiomalate
tobramycin + dexamethasone	sodium bicarbonate
tobramycin sulfate	sodium chloride
tolterodine tartrate	sodium cormoglycate
topiramate	sodium hyaluronate
trace elements additive (pediatric dose)	sodium hyaluronate intra-articular (mw over 3 sillion)
tramadol hcl	sodium nitropruprusside
tranexamic acid	sodium phosphate
trastuzumab	sodium valpproate
trazodone	somatropin (human growth hormone)
tretinoin	sorafenib
triamcinoloneacetonide	sotalol hydrochloride
triamterene + hydrochlorthiazide	spectinomycin hcl
trifluperazine hcl	spiramycin
trifluridine	spironolactone
trimetazidine dihydrochloride (modified release)	sterile balanced salt solution (bss)
trimethoprim + sulfamethoxazole	sterile water for injection
triple virus vaccine (measles-mumps-rubella)	verapamil hcl
triptorelin acetate	verapamil hcl (sustaind release)
tropicamide	vigabatrin
tuberculin ppd skin test	vinblastine sulfate

typhoid vaccine	(W)
(U)	warfarin sodium
urea	water for injection (sterile)
urofollitrophine f.s.h	wax removal
ursodeoxycholic acid	(X)
(V)	xylometazoline hcl
valaciclovir hcl	(Y)
valganciclover hcl	yellow fever vaccine
valsartan	(Z)
vancomycin hcl	zidovudine (azidothymidine,AZT)
varicella-zoster virus (chicken pox vaccine)	zidovudine + lamivudine
vasopressine	zinc sulfate
vecuronium bromide	zolledronic acid
venlaxine hcl (sustaind release)	zolpedem tartrate
vincristine sulfate	zuclopenthixol acetate
vinorelbine	
vitamine B1 & B6& B12	
vitamine B complex	
vitamine E	
voriconazole	

Authors

Khalid O. Dhafar, MD, MBA, FRCS, FACS
Consultant General Surgery
Health Affair, Ministry of Health
Jeddah, Saudi Arabia

Hassan Adnan Bukhari, MD, FRCSC
Assistant Professor, General Surgery, Umm Al-Qura University
Consultant General Surgery, Trauma Surgery and Critical Care, King Abdulaziz Hospital, Makkah, Saudi Arabia
Head of Accident and Emergency Department, Al-Noor Specialist Hospital
Makkah, Saudi Arabia

Abdullah Mosleh Alkhuzaie, MD, SBGS
Consultant General Surgery
King Abdulaziz Hospital
Ministry of Health
Makkah, Saudi Arabia

Saad A. Al Awwad, MD, SBGS, JBGS
Consultant General Surgery
King Fahad General Hospital, Ministry of Health
Jeddah, Saudi Arabia

Ali Abdullah S. Al-Zahrani, MD, SBGS
Consultant General Surgery
King Faisal Hospital, Ministry of Health
Taif, Saudi Arabia

Mohammed Abdulwahab Felimban, MD, ABFM, FFCM (KFU)
Director of healthcare quality and patient safety
Health affair, Ministry of Health
Makkah, Saudi Arabia

Faisal Ahmed Al-Wdani, BPharma (KFH)
Clinical Pharmacist
King Faisal Hospital, Ministry of Health
Makkah, Saudi Arabia

Illustration

Flowchart by Hassan Adnan Bukhari

Medication Table by Faisal Ahmed Al-Wdani