STANDARD CLINICAL MANAGEMENT PROTOCOLS AND FLOWCHARTS ON EMERGENCY OBSTETRIC AND NEONATAL CARE

2019

Obstetrical and Gynaecological Society of Bangladesh (OGSB)

Ministry of Health and Family Welfare

Directorate General of Health Services (DGHS)

Directorate General of Family Planning (DGFP)

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UNFPA

World Health Organization

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Abbreviations

ABCD	Airway, Breathing, Circulation, Disability
AMTSL	Active Management of Third Stage of Labour
ANC	Antenatal Care
APH	Antepartum Haemorrhage
BF	Breast Feeding
βhCG	β Human Chorionic Gonadotrophin
CBC	Complete Blood Count
CCT	Controlled Cord Traction
CPR	Cardiopulmonary Resuscitation
CRP	C Reactive Protein
CS	Caesarean Section
C/S	Culture and Sensitivity
D&C	Dilation and Curettage
DGHS	Director General of Health Services
DM	Diabetes Mellitus
ECD	Early Childhood Development
E&C	Evacuation and Curettage
EDD	Expected Date of Delivery
EmONC	Emergency Obstetric & Neonatal Care
FHR	Fetal Heart Rate
FD	Foetal Distress
GOB	Government of Bangladesh
HR	Heart Rate
HTN	Hypertension
HVS	High Vaginal Swab
HLD	High Level Disinfection
IUD	Intrauterine Death
IV	Intravenous
IP	Infection Prevention
LMP	Last Menstrual Period
MBS	Modified Bishops Score
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
MNCRH	Maternal and Neonatal Care & Reproductive Health
MO & HMO	Medical officer & Honorary Medical officer
MVA	Manual Vacuum Aspiration
MgSo4	Magnesium Sulphate
NGO	Non-Government Organization
NS	Normal Saline
OGSB	Obstetrical &Gynaecological Society of Bangladesh
PAC	Post Abortion Care
PE	Pre-eclampsia
PNC	Postnatal Care
PPH	Post-partumHaemorrhage
POC	Product of Conception
POD	Pouch of Douglas
PROM	Premature Rupture of Membrane
PT	Pregnancy Test
PV	Per vaginal
RL	Ringer's Lactate
RTI	Reproductive Tract Infection
SKS	Skin to Skin Contact
STD	Sexually Transmitted Disease
TB	Tuberculosis
TT	Tetanus Toxoid
USG	Ultrasonography
UNICEF	United Nation International Children Emergency Fund
VVF	Vesico Vaginal Fistula
WHO	World Health Organization

Introduction

Reducing childbirth associated mortality remains a major challenge to Bangladesh health system. Since 1990, there has been a significant reduction of maternal and child mortality. Despite significant progress, Bangladesh still has a very high level of maternal and child mortality in compared to many other developing countries. Efforts to curb the rate further have been directed at increasing the coverage of skilled birth attendance including midwives especially in facility setting. With the increasing coverage and utilization of health service, quality of care has also become an important avenue to end preventable morbidity and mortality. The risk of maternal and perinatal complications and its sequelae are well understood through continuous research and generation of new knowledge.

The complications during pregnancy and childbirth can happen without warning and can strike any women at any time. A special care known as Emergency Obstetric care is required by woman once she develops any kind of complication during pregnancy, delivery and postpartum period to save her life. At present comprehensive emergency obstetric care services are provided in all medical college hospitals, 58 district hospitals, 132 upazila health complexes and 69 MCWC at district & upazila level with 2 national level institutions at Azimpur (MCHTI) and Mohammadpur (MFSTC) at Dhaka and in different private and NGO health facilities.

The development of service delivery guidelines and implementations of clinical protocols are vital part of the effort to standardize practices and improve the quality of services. Evidence based service delivery guidelines and protocols provide a foundation and guidelines for program planners', trainers and researchers. Clinical protocols ensure quality in service delivery, teaching and training and at the same time provides safe guards for providers and managers against any medico-legal issues. Clinical protocols are the detailed outline for health service providers for case management with integrated knowledge, skills and attitude. Development and or revising national or institutional protocols and guidelines for reproductive health services is a complex process requiring the commitment and input of a multidisciplinary team. The process and protocols should have the authorization of policy makers to replace the previous protocols and to ensure uniform practice of newer one.

Obstetrical and Gynaecological Society of Bangladesh (OGSB) is working in the area of development of different teaching and training aids including curricula, protocols and guidelines. OGSB and Government of Bangladesh has developed for this emergency obstetric care for doctors with the support of UNICEF, Dhaka, Bangladesh which have been approved by the Curriculum Review Committee of DGHS, Ministry of Health and Family Welfare.

It has been observed during the monitoring process of EmONC services in different health care facilities that these protocols are not used properly by the health care providers in the facilities. Reasons behind this include protocols are in booklet form, carrying too many information and not very user friendly. So use of protocols in daily practices is almost non-existing in majority of facilities including the medical colleges.

So, considering this, OGSB decided that based on the information supplied in these protocols, modification and upgrading could be done to make them user friendly and at the same time several flow charts could be prepared in poster forms to be displayed in different service delivery rooms (labour room, eclampsia, Operation Theater etc.). The flow charts will be in easy and simple language with relevant information arranged chronologically in step wise manner.

Protocols and guidelines are essential to ensure quality service delivery. At the same time implementation needs efforts and support. For implementation OGSB has also arranged training of trainers of different health care facilities regarding the content and use of protocols and flow charts. These trainers could facilitate the dissemination and use of these protocols and flowcharts in different health care facilities and training of service providers. On the basis of evaluation and feedback from the users, respond to new information and changing needs an ongoing process of updating and improving the protocols will be continued from time to time.

Protocol development:

A project proposal was made to get support from UNICEF, Bangladesh for upgrading and modification of existing protocols and development of flowcharts on emergency obstetric and neonatal care (EmONC). The whole process of upgrading the protocols was a joint effort by the member of the core committee, working group committee, EC members of OGSB, relevant experts of different medical colleges and other relevant experienced persons.

Initially draft protocols and flow charts were prepared by different working groups formed by the core committee. To review the protocol, a series of expert consultation meeting was arranged among all the members such as core committee, working group committee, EC members of OGSB, relevant experts of medical colleges and other relevant experienced persons. The draft protocols and flow charts were repeatedly reviewed and rechecked. The reviewed protocols and flow charts were finally checked by small group of expert professionals. After finalizing the standard clinical management protocol it will be disseminated to the representative from DGHS, Ministry of health, UN Agencies, Development Partners and NGOs.

The upgrading and modification of the standard clinical management on EmONC protocol was done by following several steps as shown in Figure 1.

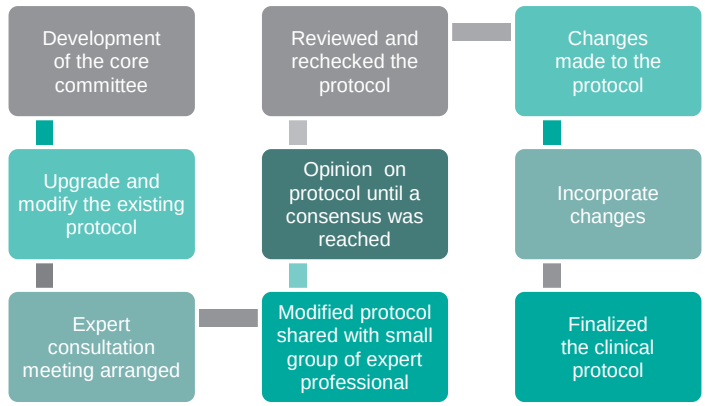


Figure 1: Steps for upgrading and modification of the Standard Clinical Management on EmONC protocol

Guideline of using the protocols

1. The protocols of the Standard Clinical Management on EmONC have been developed for the doctors working in comprehensive EmON Ccenters with emphasis on management of normal labour and common obstetric emergencies. This is also an attempt to standardize clinical practice and to improve case management and training. It will also help in rational use of drug, uniformity of care, accountability along with supervision and monitoring. If practiced under a standard guideline, these protocols shall also offer safeguard to the service providers against medico-legal issues.
2. These protocols are developed taking help of literature review and evidence based practices and made suitable for wide variety of doctors. They can use these according their level of expertise and available facilities.
3. There are 28 protocols; There are provisions of management of a normal delivery but there are also guidelines for managing all most all type of deviations from normal. In each protocol there is clear instruction for diagnosis, management, getting help when necessary and referral. The first protocol is developed on Behavior Change Communication.
4. This protocol has been updated using international guideline e.g. WHO, NICE & RCOG guideline with references.
5. It is not possible to cover all aspect of management of a particular case in this guideline for various limitations. Hopefully it will satisfy the need of the majority.
6. It is recommended that every trainee (Registrar/Asst. Reg./MO/HMO/EmONC/internee) should get a copy of this booklet before starting training from the institute.
7. These protocols should be made available at the delivery room, eclampsia rooms and other service delivery room for proper utilization
8. Head of the Dept. of all institutes and consultant of District Hospital should arrange to display the flow charts on service delivery rooms.
9. Each training institutes should arrange two orientation courses for the new trainees twice in a year and provide training for using these protocols on daily practice before starting training.

CONTENTS

1: I Treat Patients and Their Families in the Way I Would Like to be treated

❖ **By Using Communication Techniques That Show Respect and Care**

- I introduce myself and address the patient by name
- I smile
- I look into the patient's eyes when speaking
- I use understandable language
- I use a calm, respectful tone of voice
- I keep body height at same level when talking together (if patient is lying down, I sit in chair beside the bed)
- I pay attention when the patient talks
- I include the patient and family in discussions about the patient's situation when doing bedside rounds,a good way to educate and show respect at same time

❖ **By Assuring privacy/Confidentiality**

- I do not discuss personal details of the patient in public
- During examinations:
  a. I draw curtains between beds if possible
  b. I do appropriate exposure during examinations
  c. Carefully expose part of body to be examined
  d. Cover parts of body not being examined
  e. Ask family to provide privacy by holding up cloth during examination

❖ **By Supporting Patient's Emotional Needs**

- I observe signs of fear, anger, stress, fatigue and pain
- I allow the patient to express her feelings
- I show empathy to the patient by being kind
- I PRAISE and REASSURE patient's efforts

❖ **By Respecting a Patient's Dignity**

- I always explain what I am doing before touching; such as during breast, abdominal and vaginal examination
- I tell the patient my findings of examination

❖ **By Providing Guidance**

- I explain what to expect during labour and birth.
- I explain what the patient and family can do during labour (Drink lots of fluids, empty bladder often, walking during labour, positions for labour and birth)

2: Flow chart for Antenatal Care

Definition: It is the preventive and promotive health care for all pregnant women to ensure safe delivery and delivery of a healthy baby and to reduce mortality & morbidity.

Schedule of ANC visit:

2016 WHO ANC model Recommended at least 8 visits, 1st within 12 weeks, 2nd – at 20 weeks, 3rd at 26 weeks, 4th - at 30 weeks, 5th at 34 wks, 6th at 36 wks, 7th at 38 wks, 8th at 40 wks. Return for delivery at 41 wks, if not given birth. (1 visit at 1st, 2 visit at 2nd & 5 visit at 3rd trimester)

Ideal: Once a month up to 28 weeks, (2) Every 2 weeks up to 36 weeks, (3) Every week up to labour.

But GoB using at least 4th visit

	First visit: within 16 weeks	Second visit: 24-28 weeks	Third visit: 32 weeks	Fourth visit: 36-38 weeks
Goals	- Confirm pregnancy and calculate expected date of delivery (EDD) - Register pregnant women - Screening women for routine ANC or more specialized care. - Screen, treat and give preventive measures. - Develop a birth and emergency plan. - Advice and counsel.	- Assess maternal and fetal well being. - Exclude pregnancy induced hypertension (PIH), anaemia, multiple pregnancies. - Give preventive measures. - Review and modify birth and emergency preparedness plan. - Adequate weight gain - Advice and counsel	- Assess maternal and fetal well being. - Exclude pregnancy induced hypertension (PIH), anaemia, IUGR, multiple pregnancies. - Give preventive measures. - Review and modify birth and emergency plan. - Adequate weight gain - Advice and counsel.	- Assess maternal & fetal wellbeing. - Exclude PIH, anaemia, multiple pregnancy, mal-presentation. - Give preventive measures. - Review and modify birth and emergency plan. - Advice and counsel. -Total weight gain (minimum 9 kg through pregnancy)
Tasks: Always conduct initial rapid assessment and management for signs of emergency, give appropriate treatment, and refer to hospital if needed				
History (ask, check records)	☐ Menstrual History - Cycle - Regular/ Irregular - LMP - EDD ☐ H/O previous pregnancy: - Para - Gravida - Abortion /Still birth/ IUD - Age of last child - Type of delivery - Place of delivery - Term/pre-term/post-term - Complication during last pregnancy ☐ ANC- of index pregnancy - H/O Medication ☐ Family History: - H/O DM, HTN ☐ H/O Medical disorder: - Heart disease, Renal disease, Asthma, Diabetes, Jaundice, STI, TB, ☐ H/O TT vaccination - Assess significant symptoms. Take psychosocial history. - Confirm pregnancy and calculate expected date of delivery (EDD). - Categories all women (in some cases after test results)	- Assess significant symptoms - Check record for previous complications and treatments during the pregnancy. - Re- categories (if needed)	- Assess significant symptoms-RA - Check record for previous complications and treatments during the pregnancy. - Re- categories (if needed)	- Assess significant symptoms. - Check record for previous complications and treatments during the pregnancy. - Re- categories (if needed)

Rapid Assessment- (RA)

1. Convulsion
2. Bleeding
3. Fever

Examination (look, listen, feel)	Complete general examination: - Height, Weight, BMI - Pulse - Blood pressure - Anaemia, - Jaundice, - Obstetrical examination - No. of pregnancy	- Weight Pulse, Blood pressure, Anaemia, Jaundice, Edema, - Fetal growth and movements	-Weight Pulse, Blood pressure, Anaemia, Jaundice, Edema, - Uterine height - Normal or undue enlargement	- Weight, Blood pressure, pulse, Anaemia, Jaundice, Edema, respiratory distress - Fetal growth and movements, - Multiple pregnancy, - Malpresentation
Screening and Tests	- CBC, HbsAg, VDRL - Urine R/M/E(2) - Urine for sugar and albumin - Blood grouping and Rh typing - USG(2) - OGTT (Fasting and 2 hrs after 75gm glucose): in high risk cases	- Hb%(2) - Urine R/M/E(2) - Anomaly scan - OGTT (all cases)	- Urine R/M/E - Hb% - USG(2) (if necessary)	Urine R/M/E - Hb% - USG(2)
Preventive measures	- Iron and folate - Calcium after 12 wks - Intermittent preventive treatment for malaria during pregnancy (IPTP)3	- Tetanus toxoid (4) - Iron and folate - Calcium + Vit D - Multivitamin/Vitamin B complex and minerals - De-worming (if needed) - Intermittent preventive treatment for malaria during pregnancy (IPTP)(3) - Antenatal Corticosteroids (24 to 34 weeks+6 days, single course)5	- Iron and folate - Calcium - Multivitamin and minerals - Deworming (Once) - Intermittent preventive treatment for malaria during pregnancy (IPTP)3 - Antenatal Corticosteroids (24 to34 weeks+6 days, single course) 5 Distribution of Tab. Misoprostol	- Iron and folate - Calcium - Multivitamin and minerals - Intermittent preventive treatment for malaria during pregnancy(IPTP) (3) - De worming (Once) if not given - Distribution of Misoprostol if not given in 3rd visit
Treatments - Treat all problems in pregnancy as per availability of competent providers and comprehensive facilities. Refer women for treatment of any complications, as needed.				
Health education, advice, and counseling	- Importance of routine ANC - Self-care at home - Rest, avoid heavy work& lifting heavy weight objects - Maternal nutrition - Safer sex and healthy life style - Prohibition of tobacco, illicit drugs - Danger signs of pregnancy and delivery complications - Birth preparedness and emergency readiness	☐ Check about the birth plan and emergency preparedness ☐ Reinforcement of previous counseling ☐ Counseling - For maternal health - Diet, Nutrition and fluid - Rest - Ambulation - Importance of ANC visit - General cleanliness/ self-care - Danger signs(Maternal) - Bowel & bladder - Exercise - Birth preparedness - Postpartum family planning - Personal hygiene - Hand washing ☐ For Birth Preparedness - Place of delivery - Attendant& Blood donor - Money saving - Transport ☐ For newborn health - Essential newborn care - Immediate and exclusive breastfeeding - Importance of PNC visit - Danger signs (Newborn) - Thermal care (S2S, KMC)	Check about the birth plan and emergency preparedness - Counseling on essential newborn care, postnatal care, early initiation of breast feeding postpartum family planning and birth spacing - Reinforcement of previous counseling - Counseling on Misoprostol	- Check about the birth plan and emergency preparedness - Counseling on essential newborn care, postnatal care, early initiation of breast feeding, and postpartum family planning and birth spacing - Reinforcement of previous counseling - Counseling on Misoprostol

1. Wt in Kg/Ht in M^2, <18.5-Underweight, <17-Moderate underweight, <16-Severe Underweight, 2. When and where available, 3. Malaria endemic area, 4. If 5 doses completed then not require, 5. Antenatal corticosteroids should be given to all women at risk of iatrogenic or spontaneous preterm birth between 24 weeks 0 day and 34 weeks 6 days weeks of gestation: Inj. Dexamethasone - 6 mg intramuscularly – 4 doses 12 hourly. (Indications : PROM, Vaginal bleeding, Hypertensive disorder-Pre-eclampsia, Preterm labour)

Note: Daily oral iron and folic acid: 30mg to 60mg elemental iron and 400 µg (0.4mg) of folic acid - 60mg of elemental iron is equivalent to 300mg of ferrous sulfate heptahydrate, 180mg of ferrous fumarate or 500mg of ferrous gluconate.

Daily calcium supplementation: 1.5 -2gm oral elemental calcium (WHO. 2016).

Birth Planning

Birth planning is required to facilitate safe delivery and to avoid unnecessary delay in referring the patient in case of a complication during labour.

Issue	Option
Where will you deliver?	Hospital/Home (Misoprostol distribution-if birth planning at home after 32 wks)
Who will conduct your delivery?	Trained/untrained birth attendant
Where will you go if there is any complication during pregnancy/delivery/after delivery?	Community Clinic/UHC/Medical College Hospital/Private Clinic/NGO Clinic
What type of transport will you use in case of emergency to reach the hospital?	Ambulance/rickshaw/van/Boat/Bullock cart
Have you saved some money to bear the expenses of emergency if needed?	Small savings throughout pregnancy is good enough for meeting the expenses of delivery
Keep contact with Blood donors (at least 2)	Keep contact with Blood Bank

- Explain the danger signs and symptoms of pregnancy, labour and postpartum period
- Any P/V bleeding with/without pain before delivery or severe bleeding after delivery.
- Extreme pallor (breathlessness, dizziness, palpitation)
- Fits/convulsions
- High blood pressure (≥140/90 mm, or a rise of 30/15 mm Hg)
- Fever (persistent, >100.4.F)
- Swollen feet, hands and face
- Severe headache and or blurring of vision
- Excessive vomiting, vomits immediately after eating or drinking for continuous 24 hours.
- Persistent abdominal pain
- Pain when urinating
- Prolonged labour-Labour pain persist for> 12 hrs
- Leakage of fluid or rupture of membrane before onset of labour pain
- Any part other then head is coming out during delivery
- Foul smelling vaginal discharge with fever after delivery

TT Immunization

During pregnancy this vaccine is given to the mother to prevent maternal and neonatal tetanus. In first pregnancy two doses are required. 1st dose of tetanus is to be taken between 20-32 weeks and the 2nd dose is to be taken 4 weeks after the 1st dose (2nd dose should be taken at least 4 weeks before EDD)

- If any pregnant mothers have completed the 5 doses, She doesn't need any TT immunization
- If she has taken 2 injections of TT in school or previous pregnancy (within 3 years)-she have to take only one injection

Reference:

1. WHO recommendations on antenatal care
apps: who.int/iris/bitstream/10665/250796/1/9789241549912
2. WHO recommendations on antenatal care for a positive pregnancy experience, 2016 p- 23,101

3: Normal Labour and Child Birth Practices

Care throughout labour

1. Ask the woman about her expectation for labour
2. Ensure there is culture of respect in all setting for mother
3. Inform/counsel attendant of the women about her condition from time to time
4. Don't intervene if labour is progressing normally
5. Ensure supportive one to one care
6. Never leave the woman alone
7. Encourage the woman to mobilize & adopt comfortable positions
8. Take routine hygiene measures

Recommended practice

A. Practices which are Demonstrably Useful and Should be Encouraged

Birth planning/place of birth
A personal plan to determine the place of delivery and level of care provider needed made with the pregnant women and her husband/family

Risk Assessment
Risk assessment of pregnancy during prenatal care, throughout labour & postnatal period

Supportive Care
1. Respecting women's informed choice of place of birth
2. Monitoring the woman's physical and emotional well-being throughout labour and delivery, and at the end of the birth process
3. Respecting the right of women for privacy in the birthing place
4. Empathetic support by caregivers during labour and birth
5. Respecting women's choice of female companions during labour and birth
6. Offering oral fluids during labour and delivery
7. Non-invasive, non-pharmacological methods of pain relief during labour, such as massage, relaxation and breathing techniques
8. Freedom in movement throughout labour
9. Encouragement of non-supine position in labour

Ensure Evidence based practice
1. Single use of disposable materials and appropriate decontamination of reusable materials during labour and delivery
2. Use of gloves in vaginal examination, during delivery of baby and placenta
3. Careful monitoring of the progress of labour, by the use of WHO partograph
4. Fetal monitoring with intermittent auscultation of FHR ½ hourly
5. Active management of third stage of labour to prevent postpartum hemorrhage
6. Sterility in the cutting the cord, delayed cord clamping between 1-3 min. (Ref: WHO)
7. Routine examination of the placenta and the membranes
8. Early skin-to-skin contact between mother and child and support the initiation of breast feeding within 1 hour postpartum.
9. Prevention of hypothermia of the baby

3:1 Normal Labour and Child Birth

Inappropriate practice

B. Practices which are Frequently Used Inappropriately

1. Restriction of food and fluids during labour
2. Pain control by systemic agents
3. Pain control by epidural analgesia
4. Continuous electronic fetal monitoring
5. Oxytocin augmentation in spite of uterine contraction
6. Early amniotomy in the first stage of labour
7. Directed bearing down before the woman feels the urge to bear down herself
8. Rigid adherence to a stipulated duration of the second stage of labour, such as 2 hours, if progress of labour and maternal and fetal conditions are good.
9. Unnecessary operative delivery
10. Liberal or routine use of episiotomy
11. Routine use of Misoprostol in third stage of labour
12. Routine use of additional oxytocin (in drip) after AMTSL

Harmful practice

C. Practices which are Clearly Harmful or Ineffective and Should be Eliminated

1. Routine use of enema, pubic shaving, intravenous infusion in labour
2. Routine prophylactic insertion of intravenous cannula
3. Routine use of bladder catheterization
4. Routine use of supine position during labour
5. Administration of oxytocin for augmentation without indication and effective monitoring
6. Routine use of lithotomy position during labour
7. Repeated or frequent vaginal examinations especially by more than one caregiver
8. Sustained bearing down efforts during the second stage of labour without relaxation
9. Massaging and stretching of the perineum during the second stage of labour
10. Fundal pressure during labour
11. Routine use of ergometrine in the third stage of labour
12. Routine lavage of the uterus after delivery
13. Routine manual exploration of the uterus after delivery

First Stage of Labour: (WHO 2018)

Latent First stage: It is period of time characterized by painful uterine contractions and variable changes of cervix including some degree of effacement and slower progressive of dilatation up to 5cm for first and subsequent labours. Median duration of first stage of labour is 6 to 7.5hrs

Active first stage: It is a period of time characterized by regular painful uterine contractions, a substantial degree of cervical effacement and more rapid cervical dilatation from 5cm until full dilatation for first and subsequent labours. Median duration of active first stage is 4hrs in first labour and 3hrs in second and subsequent labour.

3.2: Normal Labour and Child Birth, Rapid Initial Assessment

QUICK CHECK

Ask her complaints why she has come
Ask and check records
Discuss antenatal notes with patient
If woman is very sick, talk to her companion

Initial Assessment-Look, Listen, Feel

Symptoms (Look, Listen)
Is the woman

- In severe pain
- In labour
- In imminent delivery
- Bleeding vaginally
- Looking very ill/distressed/pale
- Unconscious
- Convulsing
- In respiratory distress

Vital Signs (Look, Listen, Feel)

- Consciousness
- Pulse, BP
- Respiratory rate
- Temperature
- Anaemia
- Jaundice
- Cyanosis
- Edema
- Dehydration
- Lung auscultation
- Heart sounds
- Do obstetric exam
  - Abdominal
  - Vaginal

Classify and Categorize

1.	Emergency care	Call for help Reassure the woman & her companion Start ABCD management accordingly	2. Labour management	Transfer her to labour ward	3. Routine Care	Keep her in waiting area Explain Give advice and care

Emergency Care (Unconscious patient) ABCD approach

(A&B) AIRWAY AND BREATHING

- Shake the patient and shout for help
- Turn the patient on her back
- Advanced preg-Left lateral tilt
- Assess breathing for 10 secs
  Look-Chest movement
  Listen-Breath sounds
  Feel-Movement of air
- Open the airway-Perform head tilt, Chin lift, Jaw thrust
- Remove any obstruction
- Clear secretions

- If no breathing
  - Ventilate with bag & mask
  - Ask for help
- If difficulty in breathing
  - Propped up
  - Oxygen inhalation
  - Auscultate lung base and heart sound

Suspect

a. Eclampsia
b. APH
c. Heart failure
d. Diabetes
   (Hypo/ Hyperglycemic shock)
e. Hepatic encephalopathy
f. Psychiatric disorders

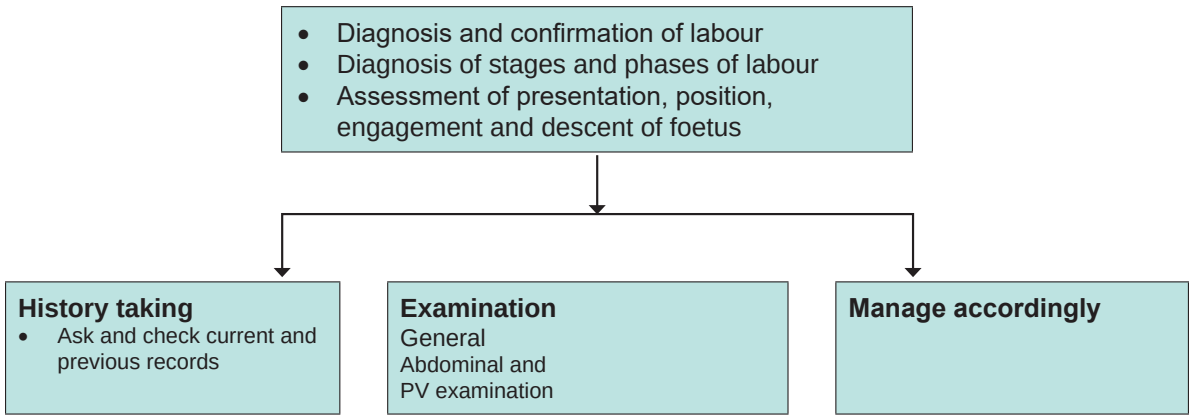
(C) CIRCULATION
Assess circulation by
1. Pulse -weak and rapid
2. Skin temperature-cold/ moist
3. Pallor
4. BP- Low
5. Urine output/catheter

(D) LEVEL OF CONSCIOUSNESS
A Alert
V not alert but responds to vocal command
P responding to pain
U unresponsive

3.3: Normal Labour and Child Birth

Flow chart

Diagnosis of Labour



A. Diagnosis of Stages and Phases of Labour

Symptoms and signs	Stage	Phase	Management
• Cervix not dilated	False labour/not in Labour		• Observe/discharge with advice • Treatment of pain
• Cervical dilatation <5 cm • Weak contractions<3/10 min, persists< 20 sec	First Stage	Latent	• Give supportive care & assurance • Monitor and record in record sheet
• Cervical dilatation ≥ 5 cm • Strong contractions > 3/10 min, persists 20-30 sec • Rate of dilatation≥ 1 cm/hour • Engagement & descent of fetal head	First Stage	Active	• Give supportive care & assurance • Start plotting partograph
• Cervix fully dilated 10 cm • Fetal descent continues • No urge to push	Second Stage	Early Non-Expulsive	• Close monitoring • Continue supportive care • Record in record sheet • Prepare for delivery
• Cervix fully dilated 10 cm • Presenting part reaches pelvic floor • Urge to push	Second stage	Late Expulsive phase	• Close monitoring • Take the patient to labour table • Records in record sheet • Prepare for delivery
• Perineal bulging, peeping of head • Crowning • Anal gapping	Imminent delivery		• Prepare for delivery • Conduct delivery

Normal Labour and Childbirth

Protocol for Diagnosis of Labour (History and Examination)

Diagnosis of Labour Includes	• Diagnosis and confirmation of Labour • Diagnosis of stage and phase of Labour	• Assessment of presentation, position, engagement and descent of foetus

Diagnosis Symptoms& Signs	1. Painful Intermittent uterine contraction	2. Progressive dilatation and effacement of cervix	3. May be associated with show or watery discharge

A History taking of the woman in labour
Ask, check record

- Greetings
- Duration of labour pain
- Frequency and severity of pain
- Movement of baby
- Ruptured membrane for how many hours
- Bleeding P/V and amount
- Associated complaints
  - Headache
  - Fever
  - blurring of vision
  - Vomiting
  - Breathing difficulties, voiding difficulties
- Check LMP & EDD
- Determine preterm (less than 37 weeks) term, postdated (beyond EDD)

Check previous pregnancy records

- No of deliveries/abortion
- Mode of deliveries: NVD, Vacuum, Forceps, C/S
- Complications: PE, Eclampsia, PPH, Retained placenta, 3rd degree perineal tear etc.
- Outcome of baby
- LB/SB/IUD/LBW/prematurity

Check current pregnancy records

- ANC records
- Tetanus immunization status
- Review the birth plan

Investigations

- CBC
- Blood group ABO &Rh typing
- VDRL
- HBs Ag
- S, TSH
- Blood sugar- 2hrs after 75gm of glucose
- Urine R/M/E
- USG of pregnancy profile

B Examination of woman in labour (General & Abdominal)

Look, Listen, Feel

- Observe appearance
  - Coping well/distressed/ pushing
- **Check vital signs**
  - Pulse
  - Respiration
  - BP
  - Pallor
  - Edema
  - Dehydration
  - Temperature
  - Jaundice
  - Heart and lungs
  - Urine output
- **Check Abdomen**
  - Previous scar (if any)
  - Fullness of bladder
  - Contour
  - Contractions-number/10min, duration, relaxation between contractions
  - No of Fetus (Single/Multiple)
  - Amount of liquor
  - Fetal presentation-cephalic, breech transverse
  - Fetal movements
  - FHS – rate, rhythm

C Vaginal Examination of Women in labour
Ask, Check Record

- Explain the reason for examination
- Ensure informed consent, privacy, dignity & comfort of woman
- Explain the findings to women & birth companion

Look at the vulva for

a) Vaginal bleeding
b) Leaking amniotic fluid: clear/ meconium stained/foul smelling
c) Bulging perineum
d) Any visible fetal parts

Perform Vaginal Examination

1. Position the woman with legs flexed and apart
2. Wash hands with soap before and after
3. Put on sterile gloves
4. Use chlorhexidine cream
5. Perform gentle vaginal examination &assess pelvis
   (do not start during a contraction)
   Determine
   a) Effacement of cervix
   b) Cervical dilatation in centimeters
   c) Presenting part head/breech/ shoulder
   d) Station of head
   e) Membrane intact or ruptured
   f) If membrane is ruptured look for color of the liquor
   g) if cord prolapse- follow guideline for cord prolapse

If bleeding at any time after 7 months of pregnancy- **suspect placenta previa**
DO NOT perform vaginal examination

3.4: Normal Labour and Childbirth Management

A. Management of 1st Stage

I. Supportive care during labour and Childbirth

1 Communication
- Assure, praise, encourage
- Maintain a calm & confident approach
- Ask her permission before any procedure
- Explain all procedures
- Inform all findings and progress
- Ensure and maintain privacy, respect and dignity
- Involve the woman in any handover of care

2 Birthing Companion
- Encourage support from chosen companion throughout the labour
- Teach the companion
  - Always be with the woman
  - Encourage and praise her
- Help her to walk, breath and relax
- Massage back
- Encourage her to drink and go to the toilet
- Show the woman & companions how to ask for help

3 Mobility
- Encourage to walk around and
- Support woman's choice of position in each stage

4 Eating/drinking
- Encourage to eat soft carbohydrate rich food- biscuits, breads
- Nutritious liquid drinks and water

5 Urination and Bowel Care
- Encourage the woman to empty bladder at least 2 hourly
- If rectum is loaded give glycerine suppository
- Do not give enema

6 Breathing technique
- Teach her to notice normal breathing
- Take deep breath slowly and relax during contraction (puff out)

7 Pain relief

Support the woman to cope with pain in labour
- Walking and mobility
- Change in position
- Breathing technique
- Warm shower
- Back Massage
- If pain is constant and woman is in distress or anxious, find out the cause

Inhalation analgesia-

Entonox: 50:50 mixture of oxygen & nitrous oxide

If needed Inj. Pethidine 1 mg/kg, no more than 100 mg IM
- with antiemetic I/M when cervix is 5 cm dilated
- keep antidote Inj. Naloxone ready

Do not give pethidine if delivery is anticipated within 1-3 hours

Regional analgesia-Epidural
- Require obstetric setting/intensive level of monitoring, presence of Anesthetist.

8 Cleanliness
- Encourage woman to take bath and clean perineum with soap
- Wash hands with soap before or after exam
- Use sterile gloves for P/V exam
- Maintain the 5 cleans of labour and birthing area
- Clean up spills
- Routine hygiene measure taken by stuff.

5 clean:

Clean hands

Clean delivery surface

Clean blade for cutting cord

Clean cord tie

Clean cord (stump care-7.1% chlorhexidine)

9 Transfer of Care/Referral
- Explain the woman & her companion about the reason for transfer
- Address any concern
- Ensure that her wishes are respected
- Ensure that informed consent obtained
- When arranging the referral- the caregiver should alert the relevant health care professionals about referral.(mobile phone)

II. Management of First Stage of Labour

a. Latent Phase

Diagnosis

Symptoms/Sign

- Intermittent lower abdominal pain
- Intermittent uterine contractions <3 contractions/10 min persist <20 sec
- Show
- Cervical dilatation<5 cm

General Management

a. Provide assurance and supportive care

b. Monitor hourly for Emergency sign

- Mood and behavior
- Frequency & duration of contraction
- Foetal heart rate
- Assess progress of labour and cervical dilatation every 4 hourly
- Record time of rupture membrane and color of liquor
- Record findings in labour in record sheet

Specific Management

- **After 8 hours if**

  no increase in contraction

  membranes intact

  no progress in cervical dilatation

  Discharge the women
- **Advice to return**

i. if pain increases

ii. membrane ruptures

iii. vaginal bleeding

- **Keep her under observation if**

Contractions stronger and more frequent

but membranes intact-Assess progress of labour

- **if no progress in cervical dilatation**
  - o Consult with senior
  - o ARM may be done
  - o Continue close monitoring

II. Management of First Stage of Labour

b. Active Phase

Diagnosis

Symptoms/Sign

- Intermittent lower abdominal pain
- Intermittent uterine contractions; 3 contractions/10 min, persists 20-40 sec
- Show
- Rupture of membrane
- Cervical dilatation≥5 cm
- Progressive descent of presenting part

General Management

a. Provide assurance and supportive care

b. Monitor every 30 min for-

i. Emergency sign

ii. Maternal Pulse

iii. Frequency & duration of contraction

iv. FHR Intermittent auscultation of Foetal heart rate

c. Monitor every 4 hourly-Maternal pulse, BP, temperature, cervical dilatation, descent of head, color of liquor.

d. Record finding in partograph

If FHR >160 b/min (Ref: ACOG, NICE, FIGO)

< 110 b/min: Then carry out continuous cardiotocography (CTG) if available

If CTG not available auscultation FHR every 5 mins for ½ hrs, if persisting tachycardia or bradycardia follow guideline for Fetal distress.

Continuous monitoring by CTG (if available)

Suspected chorioamnionitis/sepsis

Fever 38^{0}C

Severe Hypertension

Delay in 1st stage

Oxytocin use

Any complicated pregnancy

Specific Management

e. If cervical dilatation lies on or to the left of alert line

- Continue monitoring and provide supportive care until cervix is fully dilated

f. If cervical dilatation lies to the right of alert line

- Reassess women
- Maintain supportive care
- Empty bladder
- Adequate hydration
- Encourage walking
- Monitor more frequently ½ hourly
- if weak contractions do augmentation by oxytocin or ARM
- If facility for LUCS not available-Refer

g. If cervical dilatation passes to the right of action line

- reassess
- Call senior or refer
- Supportive therapy & assess if progress with observation established & dilatation could be anticipated at 1 cm or more
- If facility for LUCS not available-refer
- Do augmentation if needed by oxytocin or ARM
- If no progress deliver by caesarean section

B. Management of 2nd Stage

Diagnosis

Symptoms/Sign

Cervix fully dilated
Foetal descent continue

General Management

- **Mood and behavior**
- **Provide supportive care, praise and assure the women**
- **Never leave the women alone**
- **Monitor every 5 minutes**
  - **Frequency, duration and intensity of contraction**
  - **FHR**
- **Perineum thinning and bulging**
- **Peeping and crowning of the Foetal head**
- **Record all in record sheet**

Specific Management

- Ensure all delivery equipment and supplies are ready
- Ensure empty bladder
- Assist in comfortable position, provide emotional and physical support
- Allow her to push with contraction
- When perineum is bulging and head is visible - wash hands and put on sterile gloves
- Ensure controlled delivery of the head in between contraction
- Feel gently for cord around baby's neck
- Clean face and mouth
- Await spontaneous rotation of shoulder
- Place a hand on each side of baby's head, slightly depressed the head towards the perineum to deliver the anterior shoulder and then lift the baby's head up to deliver the posterior shoulder
- Place the baby on mothers abdomen
- Thoroughly dry the baby, change wet cloth
- Note baby's breathing, crying while drying, resuscitation if no crying
- Manage 3rd stage
- Clamp and cut the cord within 1to3 minutes

Place baby on mothers chest, cover the baby including head & - encourage initiation of breastfeeding

C. Management of 3rd Stage

Diagnosis

Symptoms/Sign

The baby is just delivered
Placenta is inside the uterus

General Management

Delivery of the placenta (AMTSL)

- Palpate the mothers abdomen to exclude 2nd baby (twin)
- Give 10 IU oxytocin IM within one minute of delivery
- Wait 2-3 minutes for strong uterine contraction and deliver placenta by controlled cord traction
- Massage the uterus
- Feel if uterus is well contracted
- Give supportive care

Specific Management

Controlled Cord Traction

- Hold the clamped cord by right hand
- At the same time place side of one hand usually left above symphysis pubis with palm facing towards the mothers umbilicus. This applies counter traction to the uterus during controlled cord traction. Apply steady sustained down ward traction on cord
- If placenta does not descend during 30-40 seconds of controlled cord traction wait until the uterus is well contracted again then repeat controlled cord traction with counter traction
- As the placenta is coming out, catch in both hands to prevent tearing of the membrane
- If the membrane do not slip out spontaneously gently twist them into a rope and move out
- Massages the uterus after delivery of placenta
- Check the placenta and membranes for completeness
- Check the uterus is well contracted and repeat check every 5 minutes
- Examine perineum, lower vagina and vulva for tears
- Estimate and record blood loss in 3rd stage of labour
- Clean perineum, place sanitary pad or folded clean cloth

D. 4th Stage of Labour-Monitoring

Monitor Mother

- Every 15 minutes for First 24 hours
- Feel and ensure uterus is hard
- Assess vaginal bleeding, episiotomy, local tears
- Monitor pulse, BP
- Record findings and duration of 3rd stage
- Provide supportive care

Monitor Baby

Every 15 minutes

- Breathing: listen grunting, look for chest in-drawing and fast breathing
- Warmth: check to see if feet are cold to touch
- Umbilical stump: look for bleeding

References:

1. *Emergency Obstetric Care. Quick Reference Guide for Front line Provider Maternal & Neonatal Health JHPIEGO pdf.usaid.govt/pdf-docs/ PNACY 580 pdf*
2. *Guidelines on 8 key evidence based practices on labour. www.commonhealth.in/pdf/8.pdf*
3. WHO recommendations Intrapartum care for a positive childbirth experience 2018 ISBN 978-92-4-155021-5

3.5: Protocol for Using the PARTOGRAPH

The WHO partograph has been modified to make it simpler and easier to use. The latent phase has been removed and plotting on the partograph begins in the active phase when the cervix is 5 cm dilated. A sample partograph is included. Record the following on the partograph:

Patient information: Fill out name, gravida, para, hospital number date and time of admission and time of ruptured membranes.

Fetal heart rate: Record every half hour.

Amniotic fluid: Record the color of amniotic fluid at every vaginal examination:

- **I:** membranes intact:
- **C:** membranes ruptured , clear fluid;
- **M**: meconium-stained fluid;
- **B:** blood-stained fluid.

Moulding: Record using the following key

- 1: sutures apposed: (+)
- 2: sutures overlapped but reducible; (++)
- 3: sutures overlapped and not reducible (+++)

Descent assessed by abdominal palpation: Refers to the part of the head (divided into 5 parts) palpable above the symphysis pubis, recorded as a circle (O) at every examination. For example: At 0/5, the sinciput (S) is at the level of the symphysis pubis.

Cervical dilatation: Assessed at every vaginal examination. Marked with a cross (x) on alert line of admission. Begin plotting on the partograph at 5 cm. Check every 4 hours.

Alert line: A line starts at 4 cm of cervical dilatation to the point of expected full dilatation at the rate of 1 cm per hour. Start 1st plotting on alert line.

Action line: Parallel and 4 hours to the right of the alert line.

Hours: Refers to the time elapsed since onset of active phase of labour, starting time is “0” hours.

Time: Record actual time.

Contractions: Chart every ½ hour; palpate the number of contractions in 10 minutes and their duration in seconds. Record on the right side of the time line and fill up two consecutive boxes of two lines.

- Less than 20 seconds: 
- Between 20 and 40 seconds: 
- More than 40 seconds: 

Oxytocin: Record the amount of oxytocin per volume IV fluids in drops per minute every 30 minutes when used.

Drugs given: Record any additional drugs given.

Pulse: Record every 30 minutes and mark with a dot (.)

Blood pressure: Record every 4 hours and mark with arrows.

Temperature: Record every 4 hours.

Protein: Perform this test at admission for all patients, but repeat as indicated for PE/Eclampsia/renal disease

Volume: Record every time urine is passed, encourage to pass urine

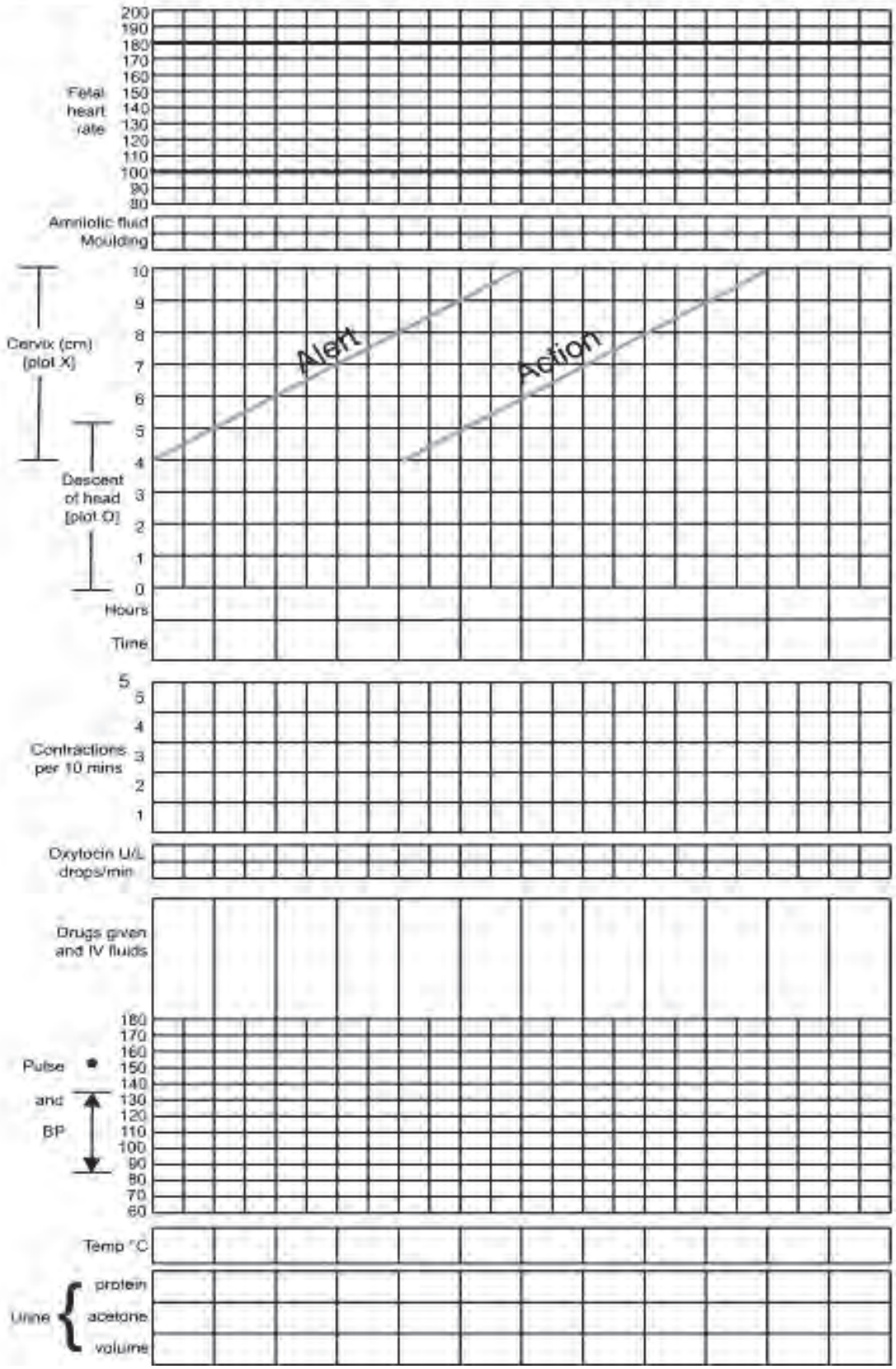
Acetone: Examine only if indicated & especially in diabetes & maternal distress.

To be recorded on the time line: Cervical dilatation, descent of Foetal head, FHS, pulse, moulding, hours, time, contractions, oxytocin, drugs/I. V fluid given, blood pressure, temperature and urine (protein, acetone and volume)

The WHO Partograph

Name Gravida Para Hospital number

Date of admission Time of admission Ruptured membranes hours



4: INDUCTION OF LABOUR (IOL)

DEFINITION

Induction of labour is the initiation of uterine contractions after the period of viability who is not in labour with an aim to achieve a vaginal birth within 24 to 48 hours.

General principles related to the practice.

- Should be performed with caution, since this procedure carries risk of uterine hyper stimulation and rupture and fetal distress
- Facilities should be available for assessing maternal and fetal well-being.
- Women should never be left unattended.
- Whenever possible, induction of labour should be carried out in facilities where cesarean section can be performed.

Information and Decision making

- Woman should be well informed that most women go into labour spontaneously by 42 weeks.
- At 38 week's visit, inform about risk of continuation of pregnancy >42 weeks and their options.
- Risk and benefits of induction of labour in specific circumstances and the proposed induction methods

The information should cover

- Membrane sweeping
- Induction of Labour at 41wks
- Expectant management (advantage & disadvantage)
- Reason for induction being offered
- When, where and how induction could be carried out
- Arrangement for support and pain relief
- Alternative option of women to choose not to have induced
- Induction may not be successful in that case cesarean section is alternative option

Modified Bishop Score

Modified Bishop Scoring System				
Factor	**Score**			
A. Cervix	0	1	2	3
Dilatation (cm)	0 (Closed)	1-2	3-4	5-6
Effacement, %	0-30	40-50	60-70	80
Length (cm)	>3	1-3	<1	
Consistency	Firm	Medium	Soft	
Position	Posterior	Mid	Anterior	
B. Head Station	-3 or above	-2	-1 or 0	+1, +2

Total score: 13, Favorable score: 6-13, Unfavorable score: 0-5

Pre IOL assessment

- Review history
- Confirm gestational age by LMP & early USG
- Baseline observations-vital signs, Pulse, B.P, Heart, Lungs
- Abdominal palpation (presentation, attitude, FHR, lie, engagement)
- CTG: if available, consult Obstetrician if abnormal

- Vaginal examination:
  - Assess MBS (Modified Bishops Scoring)
  - Membrane status (intact or ruptured)

Booking for IOL

Prior to booking for IOL the Medical Officer will

1. Document the indication for induction
2. Find out if there are any contraindications for IOL and discuss with the lead obstetrician
3. Confirm gestational age
4. Assess fetal wellbeing-Clinical/CTG & USG
5. Obtain written informed consent which includes reason for IOL, choice of IOL method(s)to be used, potential risks of IOL and consequences for accepting or refusing a recommendation of IOL

Day of admission

Prior to commencement of IOL the Medical Officer/Midwife will:

1. Ensure that an informed consent has been obtained prior to admission
2. Review the indication for IOL
3. Ensure that there are no contraindications for IOL
4. Confirm gestational age
5. Assess fetal well being
6. Discuss the process for IOL
7. Assess fetal lie/presentation/position
8. Assess membrane status (intact/ruptured)
9. Assess Bishop score on admission & documentation.

Methods of Induction of Labour

1. Mechanical
   - Membrane sweeping
   - Foley's Catheter
2. Medical
   - Prostaglandins
     - Dinoprostone (E2)
     - Misoprostol (E1)
   - Oxytocin
3. Surgical
   - ARM
4. Combined

Membrane Sweeping

- Routine sweeping (stripping) of membranes promotes the onset of labour and decreases induction rates.
- This technique results in an increase of local production of prostaglandins.

Sweeping membrane is recommended for reducing formal induction of labor. There is evidence that routine sweeping of the membranes promotes the onset of labour& decreases the induction rates. When the cervix is closed, a massage of cervical surface with index finger & middle finger for 15-30 seconds gives the same result.

PROSTAGLANDINS

MISOPROSTOL

A synthetics PGE_1 analogue

1. Oral
2. Sublingual
3. Vaginal

Dosage

1. 25 μg orally 2 hourly (maximum 4 doses)
2. 25 μg vaginally in posterior fornix 6 hourly (maximum 4 doses)
   If no effect after 2 doses increase dose of 50 μg every 6 hourly

Caution

Choose only one route
Do not use misoprostol in grand multi/scarred uterus (H/O C/S, H/O Myomectomy)

Notes:

Do not exceed 4 doses in 24 hours
Do not use > 50 μg at a time. (Assess uterine contraction before giving each dose).

Adverse Effects

- Serious adverse events with the use of misoprostol are similar to those of other PG, e.g.

Uterine tachysystole with its potential fetal and maternal effects, meconium staining of liquor.
It is a potent uterotonic and should not be used in women with a ***previous CS.***
Life-threatening uterine rupture that has been reported anecdotally in women with a previous CS.

Prostaglandin E2 (Dinoprostone)

Prostaglandins E2, (dinoprostone) acts on the cervix by dissolving collagen structural network of the cervix.

Preparation

1. Intra cervical 0.5 mg/500 μg gel (Cerviprime gel) (available in Bangladesh)
2. 10 mg pessary (Cervidil)
3. Intra vaginal tablet 1 mg/2mg (Prostin)

Dosage

0.5mg Endocervical gel vaginally 6 hourly (maximum 4 doses for 24 hours)

Post dose care

- After insertion advise woman to-
  - Remain recumbent for 30 minutes
  - Inform staff as soon as contractions commence
- Observe Pulse, BP, FHR, uterine activity, P/V bleeding/discharge hourly for 4 hours
- CTG for minimum of 30 minutes (if available)
- If observations normal, no contractions and not otherwise indicated, ongoing care as for latent first stage of labour
- Continuous CTG when in active labour or when contractions are ≥ 3 in 10 minutes. If not possible FHR auscultation immediately after a contraction. Fetal distress if rate <100 b/min

Cautions

Choose only one route (oral/vaginal)
Before each insertion of Prostaglandin (Dinoprostone) check uterine contraction and cervical dilatation
Do not use Dinoprostone in grand multipara and in scarred uterus

Discontinue Prostaglandin if

Membrane ruptures
Cervical ripening achieved
Good labour pain established
Maximum dose is reached
Foetal distress/uterine hyper stimulation occur
Begin oxytocin infusion if needed after 6 hours of using last dose of Misoprostol/Dinoprostone

OXYTOCIN

- Review the prerequisites carefully
- Give effective dose of oxytocin but the response varies greatly between women
  - Rule - Always start with low dose infusion
  - Gradually increase rate of infusion until good uterine contraction is established
  - Then maintain the rate until delivery
- Never leave the woman alone receiving oxytocin
- Carefully monitor maternal pulse, BP, uterine contractions and FHR every 1/2 hourly in active phase
- Criteria for good labour pattern, - 3 contractions / 10 minutes & each lasting 40 seconds
- Maintain cold chain system. Keep it in freeze.

DOSE OF OXYTOCIN (Oxytocin Protocol)

- Starting dose: infuse oxytocin 2.5 units in 500 ml of lactoride or N/S at 10 drops / min (2.5 miu/min)(i.e. 0.5 ml/min or 10d/min)
- Increase the infusion rate by 10 drops / min every 30 min until good contraction pattern is established
- Maintain this rate until delivery
  If good contraction pattern not established with infusion rate of 60 drops / min
  -Increase oxytocin concentration to 5 units in 500 ml of Lactoride/ NS and start from 30 dpm (15 miu/min) increase the rate by 10 dpm every 30 min, until good contraction is established or maximum rate of 60 dpm

If labour still not established

- **In multigravida and woman with previous C/S consider this as failed induction and deliver by C/S**
- **In primigravida** - Use oxytocin 10 units in 500 ml of lactoride/NS and start with 30 dpm and then increases the rate by 10 dpm every 30 min until good contractions established or maximum rate is reached (60 dpm)

If labour not established consider failed induction -consider other method or delivery C/S
If hyper stimulation (contraction lasts > 60 secs or tachysystole (>5 contractions /10 min) occurs
- Stop the infusion
- Use tocolytics–Terbutalin 250 µgm I/V slowly over 5 min or / Salbutamol 10 mg in 1L N/S or lactoride at 10 dpm.
- If not available or in cardiac patients, Nifedipine 20mg/oral may be used.
- Monitor pulse, uterine relaxation and FHR
- Keep the woman in left lateral position and start oxygen inhalation
- Stay with women until normal uterine activity achieved.

FOLEY'S CATHETER

- Useful alternative to prostaglandin specially in multigravida patient or patient with previous C/S
- Review the prerequisites
- Exclude contraindications-P/V bleeding, Ruptured membrane, obvious cervicitis, vaginits.

Procedure

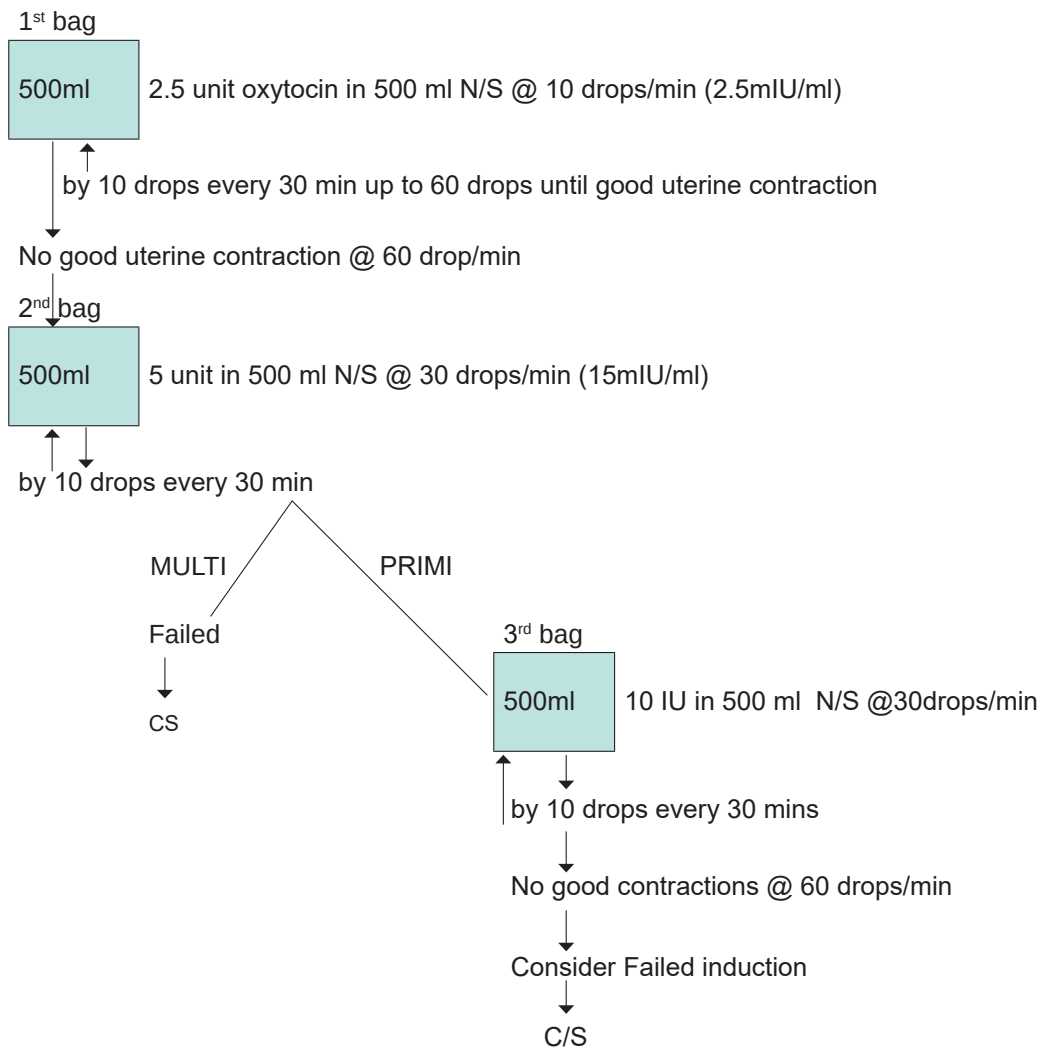
- Place the woman in dorsal position
- Introduce a sterile Sim's speculum
- Hold the cervix with sponge holding forceps (anterior lip)
- Hold the Foley's catheter with sterile artery forceps- away from the tip
- Do not touch the portion of Foley's catheter which will go inside the cervix
- Gently introduce the catheter through the cervix beyond the internal OS
- Inflate the bulb with 30-50 ml of water
- Fix the catheter at the thigh with tension
- Leave the catheter until contraction starts and catheter fall off or remove it after 12 hours

ARM

Protocol

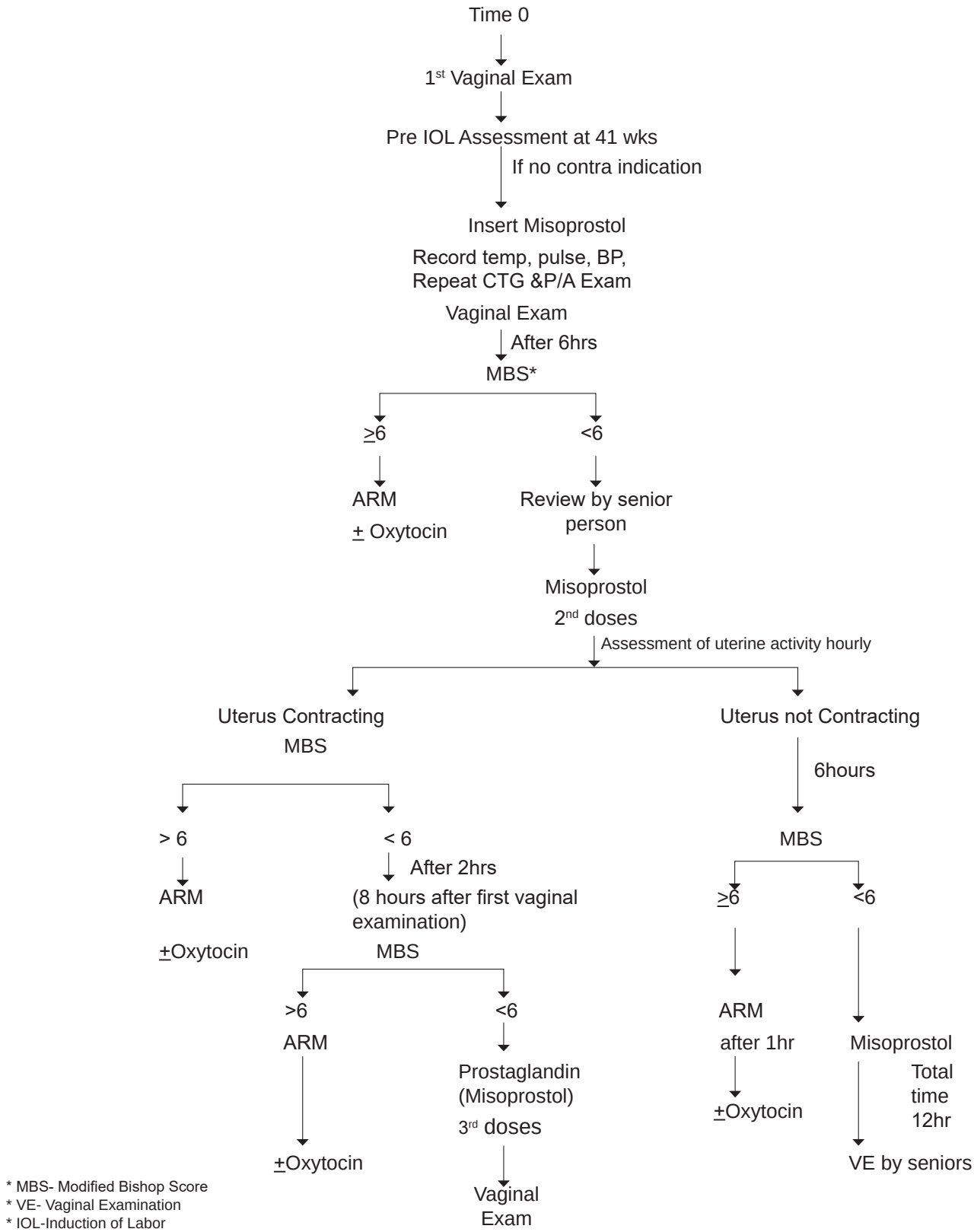
- Review the prerequisites
- Do not do ARM if the patient is HIV (+ve) or HBsAg (+ve)
- Position the woman in dorsal position
- Gently do PV examination and assess the cervix
- Introduce a Kocher's artery forceps inside the vagina guiding it with the fingers to the membrane
- Place two fingers against the membrane and rupture the membrane with instrument in the other hand
- Allow the amniotic fluid to drain slowly
- Note the color of the liquor, FHR
- Give prophylactic antibiotics-Inj. Amoxycillin 500 mg 8 hourly/Cephalosporin 500 mg 6 hourly
- If good labour pain not established after 1 hour of the ARM, start oxytocin infusion

Flow Chart of Oxytocin Regime



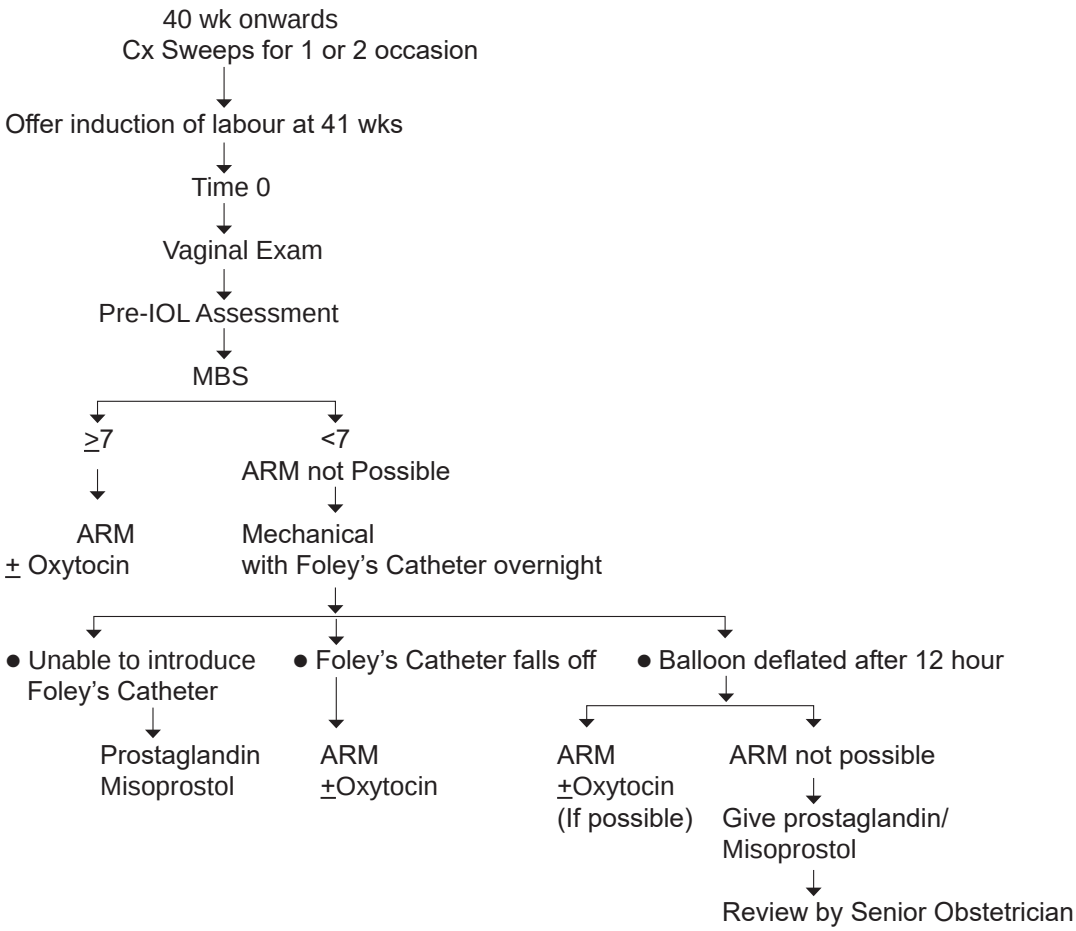
Flow Chart

A. PRIMI with intact Membrane

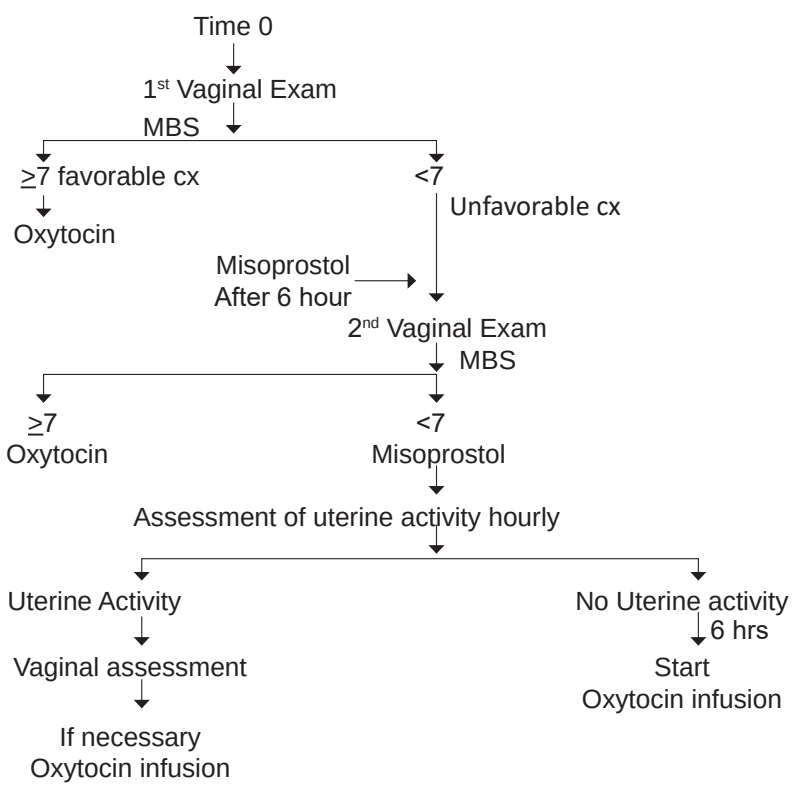


* MBS- Modified Bishop Score
* VE- Vaginal Examination
* IOL-Induction of Labor

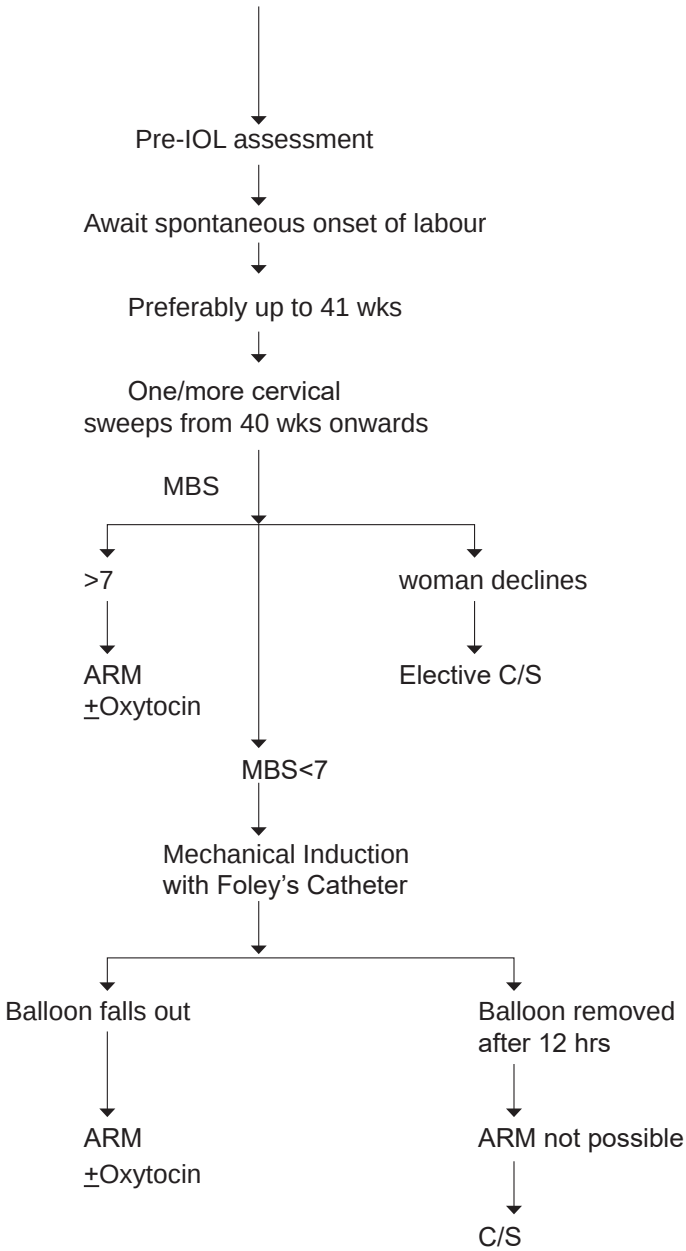
B. MULTIPAROUS WOMAN (with previous 1 or more vaginal delivery)



C. PRIMI Rupture Membrane

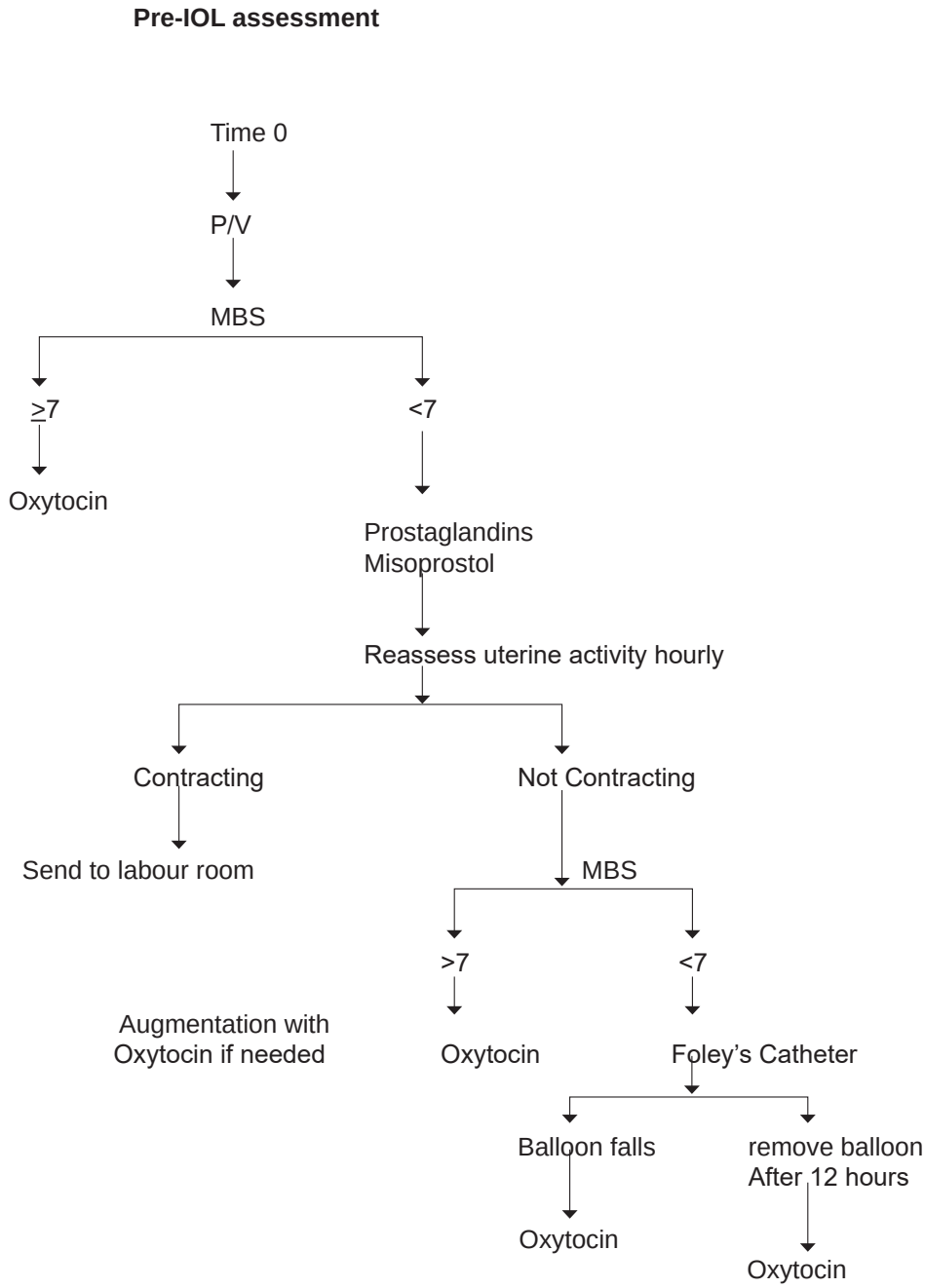


D. MULTIPAROUS woman with Previous 1 C/S



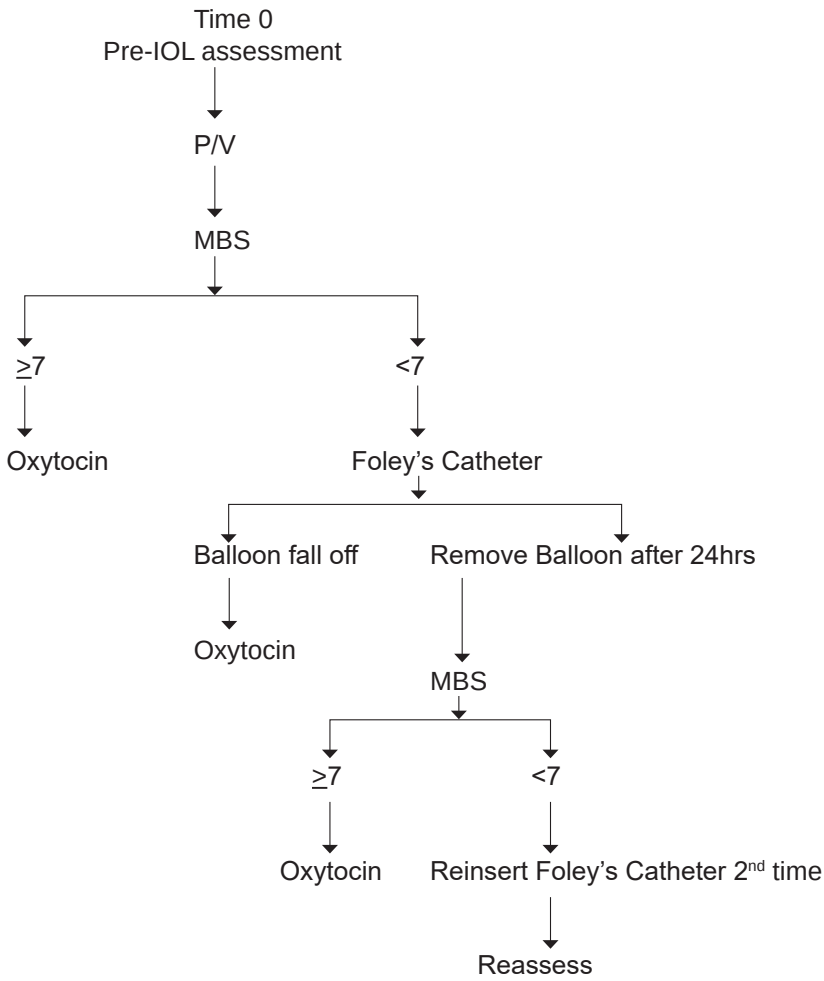
Note: Give antibiotic after cervical sweeping

E. IUD



Caution
Surgical induction is contraindicated in IUD

F. IUD with previous C/S



Caution

- Prostaglandin is contra indicated in previous C/S
- ARM is contraindicated in previous C/S

Reference:

1. ACOG Practice Bulletin No-107
2. WHO & FIGO recommended regimen 2017
3. A Clinical Guideline for the Induction of Labour (IOL) Process
   Norfolk and Norwich University Hospital (NHS), August 2016 to review 2019
4. Integrated Management of Pregnancy and Childbirth (IMPAC)
5. Queensland Clinical Guidelines
6. SOGC Clinical Practice Guideline

5: Unsatisfactory Progress of Labour

Unsatisfactory progress of labour may be due to delay in 1st stage or 2nd stage of labour.

Contributing factors are:

1. Psyche (Lack of antenatal education, support in labour)
2. Passenger (Big baby, mal presentation and malposition)
3. Powers (inefficient uterine contraction in active phase of labour)
4. Passage (pelvic abnormalities, Cephalo-pelvic disproportion)

Delay in 1st stage of Labour

Prolonged latent phase:

The latent phase is longer than 12 hours in primipara or longer than 8 hours in multipara.

Prolonged active phase:

- When cervical dilatation is to the right of the alert line.
- Cervical dilatation of less than 2cm in 4 hrs for first and subsequent labours
- Delay in descent and rotation of fetal head
- Changes in strength, duration and frequency of uterine contraction

Delay in 2nd stage of Labour

Prolonged 2nd stage of Labour

- **Nulliparous:**
  No progress in descent or rotation for $\geq$ 3 hours without an epidural, and $\geq$ 4 hours with an epidural
- **Parous:**
  No progress in descent or rotation for $\geq$ 2 hours without an epidural, or $\geq$ 3 hours with an epidural.

Secondary arrest

In 1st stage failure of cervical dilatation & descent of presenting part in presence of good contraction.

Obstructed labour

Delay in descent of presenting part in spite of good uterine contraction.

Note: A minimum cervical dilatation rate of 1cm/ hr. throughout active stage of labour is unrealistically fast for some women and is therefore not recommended for identification of normal labour progression.

A slower than 1-cm/ hr. cervical dilatation rate alone should not be an indication for obstetric intervention.

Flow Chart

Unsatisfactory Progress of Labour
Management

1st Stage of labour

Prolonged Latent Phase

1. **Assurance**
   Woman may be encouraged to stay at home

2. **Presence of a support person**

3. **Encourage ambulation and adequate hydration**

4. If patient is at home she may be referred to Consultant led unit (CLU),when
   - Pain intensity increases
   - membrane ruptures
   - Less fetal movement

At CLU
- Assurance
- Augmentation of labour with ARM and Oxytocin
- Plot Partograph
- Give antibiotic

Amoxicillin/Cephalosporine

If the woman has not entered the active phase after 8 hours of oxytocin infusion

↓

Do C/S

Prolonged Active Phase

Exclude any sign of obstruction or CPD or fetal distress
If membrane intact- do ARM

↓

Assess uterine contraction

↓

If contraction < 3 /10min &<40sec duration, it indicates

↓

Inadequate uterine contraction

↓

Augment by oxytocin

↓

Oxytocin infusion drop increment every 30 min by 10 drops until adequate uterine contraction

↓

Assess after 2 hours

↓

If no progress	If progress
↓	↓
CS	Continue and assess 2 hourly

Secondary Arrest

Failure of Cc dilatation & descent of presenting part in presence of good uterine contraction

Obstructed labour
- Secondary arrest of cervical dilatation & descent of presenting part
- Large caput
- Third degree moulding
- Cervix poorly applied to the presenting part
- Oedematous cervix, ballooning of lower uterine segment
- Formation of retraction band, maternal &Foetal distress

Management
Resuscitation as required

↓

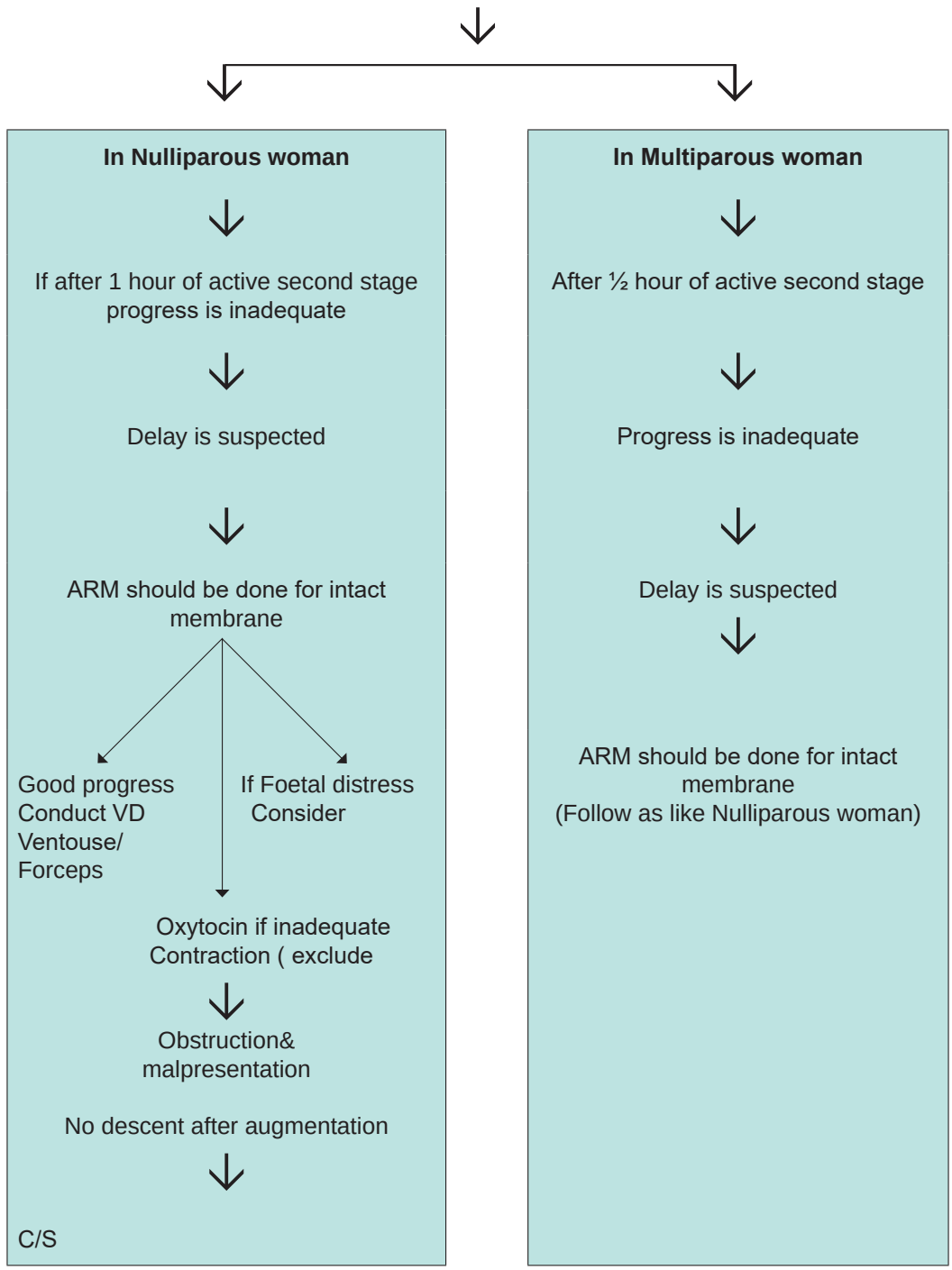
Followed by

↓

C/S

Management

2nd Stage of labour



Note:

- Birth expected to take place in 3 hours of start of active second stage in nulliparous & in 2 hours in multiparous woman.
- The use of oxytocin is not recommended in parous women (Ref: NICE Guideline)
- Do not routinely use oxytocin in the second stage of labour for women with regional anesthesia
- If women is excessively distressed , give support and sensitive encouragement
- Talk with woman & her birth companions about why birth needs to be expedited

Reference:

1. Clinical guidelines of Management of normal labour and prolonged labour in low risk patients, Mid Essex Hospital Services (NHS) , 2015
2. WHO recommendations Intrapartum care for a positive childbirth experience WHO,ISBN 978-92-4-155021-5,2018

6: Protocol for Foetal Distress

Definition: Foetal distress refer to compromise of foetus due to inadequate oxygen or nutrient supply. This can occur due to maternal, fetal or placental factors.

Cause:

Main cause of Foetal distress is uteroplacental insufficiency

Risk Factors:

1. Oligohydramnios, polyhydramnios
2. Multiple pregnancy
3. Rh isoimmunisation
4. Hypertension/Pre-eclampsia
5. Diabetes Mellitus/GDM
6. Fetal growth restriction
7. Less Foetal movement
8. H/O stillbirth
9. Postdated pregnancy

Symptoms/ Signs

- Decreased Foetal movement
- Thick meconium stained liquor
- Abnormal Foetal heart rate (less than 100 is bradycardia or more than 160 beats per minute is Foetal tachycardia).
- Abnormal CTG (Non reassuring)

General Management

- Propped up position or place mother on left lateral position
- Stop oxytocin if it is being administered.
- Give oxygen by mask

Foetal heart rate

- A normal Foetal heart rate may slow during a contraction but recovers to normal as the uterus relaxes.
- A very slow Foetal heart rate in the absence of contractions or persisting after contractions is suggestive of Foetal distress
- A rapid Foetal heart rate may be a response to maternal fever, hypertension, chorioamnionitis or by drugs causing maternal tachycardia (e.g. tocolytic drugs).
- In the absence of maternal tachycardia, Foetal tachycardia should be considered as a sign of Foetal distress.
- If a maternal cause is identified (e.g. maternal fever, drugs), initiate appropriate management.
- If a maternal cause is not identified and the Foetal heart rate remains abnormal throughout at least three contractions, perform a vaginal examination to check for explanatory signs of distress:
    - If there is bleeding with intermittent or constant pain, suspect abruption placentae
    - If there are signs of infection (fever, foul-smelling vaginal discharge) give antibiotics as for chorioamnionitis
    - If the cord is below the presenting part or in the vagina, manage as prolapsed cord
- If Foetal heart rate abnormalities persist or there are additional signs of distress (thick meconium stained fluid), plan for delivery.
    - If the cervix is fully dilated and the Foetal head is not more than 1/5 above the symphysis pubis or head is at +2 station, deliver by vacuum extraction or forceps.
    - If the cervix is not fully dilated or the Foetal head is more than 1/5 above the symphysis pubis or head is 0 or above stations, deliver by caesarean section.

Reference:

1. Foetal distress –signs of Foetal distress and treatment https//patient.info>doctor> fetal distress
2. Intrapartum Foetal distress – RCOG. http;//wwwrcog.org,uk

Flowchart for Management of Foetal Distress

Foetal Distress	• Persistent abnormal FHR (< 100 or > 160 beats /min) • Thick meconium stained liquor • Abnormal CTG

↓

General Management	• **Position : Propped up /left lateral** • **Assurance** • **Stop Oxytocin** • **Give O_2**

Specific Management of Foetal Distress ↓

Find the causes ▪ **Cord presentation/prolapse** ▪ **Abruptio placenta** ▪ **Chorioamnionitis** ▪ **Prolonged/obstructed labour**	**Exclude Maternal causes** ▪ **Fever** ▪ **Dehydration** ▪ **Drugs** ▪ **Hypertension** ▪ **Haemorrhage** **Treat accordingly**

↓

- **Look for FHR in absence of contraction or whether abnormal FHR persists after contraction or repeated during contraction**
- **Look for presence of additional signs of distress**
  - **Thick meconium stained liquor**
  - **Abnormal CTG**

↓

Plan for Delivery

↓

First Stage LUCS

Second Stage

- **Cervix fully dilated and station +2 or more : Deliver by vacuum/forceps**
- **Cervix fully dilated but station 0 or above : Deliver by Caesarean Session**

Foot Note:

- Meconium staining amniotic fluid is seen frequently as the fetus matures and by itself is not an indicator of Foetal distress. A slight degree of meconium with Foetal heart rate abnormalities is a warning of the need for vigilance.
- Thick meconium suggests passage of meconium in amniotic fluid and may indicate the need for expedited delivery and management of neonatal airway at birth to prevent meconium aspiration.
- In breech presentation, meconium is passed in labour because of compression of the Foetal abdomen. This is not a sign of Foetal distress unless it occurs in early labor

7: Clinical Guideline for the Management of Shoulder Dystocia (SD)

Definition: Shoulder dystocia is an acute obstetrical emergency where the Foetal head has been delivered but the shoulders are stuck and cannot be delivered.

Signs of recognizing shoulder dystocia:

- Foetal head has been delivered but shoulders are stucked and cannot be delivered.
- Foetal head remains tightly applied to the vulva
- The chin retracts and depresses the perineum
- Traction on the head fails to deliver the shoulder either the anterior or the posterior shoulder which is caught behind the pubic symphysis or sacral promontory.

Risk factors

Antepartum

1. Excessive weight gain (>35 lb/15.9 kg) during pregnancy.
2. Maternal obesity (BMI > 30 kg/m2)
3. Post term pregnancy
4. Fetal macrosomia (large body compared to head)
5. Diabetic mother
6. Multiparity

Intrapartum

1. Operative vaginal delivery (Vacuum, forceps)
2. Prolonged second stage of labour

Summary of management of Shoulder Dystocia (SD)

H Help
E Edge& Episiotomy
L Legs (Mc. Robert's maneuver)
P Pressure (Suprapubic pressure)
E Enter (RUBIN II & Wood Screw maneuver)
R Remove (Delivery of posterior arm)
R Roll (All 4)

Management

1. Call for help.
2. Move the woman to lie with her buttocks over the edge of table.
3. Make adequate episiotomy to reduce soft tissue obstruction and to allow space for internal maneuvers.
   - Apply form, continuous traction downwards on fetal head to move anterior shoulder under the symphysis pubis
   - Avoid excessive traction on the head as this may result in brachial plexus injury

1. **Mc Robert manoeuvre**
   - Mc Robert position-woman on her back, ask her to flex both thighs, bringing her knees as far up as possible towards her chest, abduct and rotate legs outwards
   - Do not apply fundal pressure. This will further impact the shoulder.

1. If the shoulder still not delivered

RUBIN-1 (Suprapubic pressure)-is rotation of anterior shoulder towards fetal chest under pubic symphysis. This reduces bisacromial diameter.

i. Have an assistant at the mothers side, place their hands on the suprapubic region of mothers abdomen
ii. Position is similar to that of CPR with assistant above the woman
iii. With the heel of the hand (or fist) and arms straight, apply moderate pressure obliquely (downward and laterally) to fetal anterior shoulder.
iv. Use right hand for performing this maneuver if the fetus is facing mothers right side and vice versa.
v. If continuous pressure does not dislodge the shoulder use a rocking motion (compression/relaxation)

2. **RUBIN II** (if above measures fail)

   Insert one hand vaginally behind the posterior aspect of anterior shoulder of foetus and rotating the shoulder towards chest shifting it from midline to oblique diameter. As a result shoulder girdle is adducted and diameter is reduced

3. **Wood's screw maneuver-**which leads turning the anterior shoulder to the posterior and vice versa.

4. **Jacquemier's maneuver** (Delivery of posterior arm)-in which the fore arm and hands are identified in the birth canal and gently pulled.

5. All four position :

   Placing the woman in the all fours position i.e hands and knees (Rolling of the patient on her hand and feel), may dislodge the anterior shoulder and facilitate delivery.

   The all fours position offers evenly distributed weights on all four limbs and maximizes the pelvic diameters, when adequate room is available along the curve of the sacrum to allow a hand to be inserted up to the Foetal waist to deliver the posterior shoulder or arm.

Flow chart

Action

Call for help

Move the women to lie with her buttocks at the edge of the bed

Make an adequate episiotomy

With the woman on her back, ask her or assistants to flex both thighs, abduct and rotate legs outwards bringing her knee as far up as possible towards her chest (McRobert's position)

Ask the assistant, apply suprapubic pressure by using the heel of the hands from above to push shoulder down under the symphysis pubis (Do not apply fundal pressure) **RUBIN-1**

Apply firm, continuous traction downwards on the fetal head to deliver the anterior shoulder

If the shoulder is still not delivered: Insert an hand into the vaginal along the baby's back and apply pressure to the posterior aspect of anterior shoulder in the direction of the baby's chest to rotate and decrease the Biacromial diameter and deliver ant shoulder **RUBIN-2**

If above procedure failed, apply pressure to the posterior shoulder in the direction of the sternum to reduce the diameter and deliver the posterior shoulder

Turning the anterior shoulder to the posterior and vice versa- **Wood's screw maneuver**

If the shoulder still is not delivered despite the above measures, try to deliver the posterior shoulder first: Grasp the humerus of the arm that is posterior and, keeping the arm flexed at the elbow, sweep the arm across the chest. This will provide room for the shoulder that is anterior to move under the symphysis pubis **Jacquemier's maneuver**

All four position :
Placing the woman in the all fours position i.e hands and knees(Rolling of the patient on her hand and feel), may dislodge the anterior shoulder and facilitate delivery.

After delivery, resuscitate the baby

Perform active management of the third stage of labour to deliver the placenta

Check the birth canal for tears following childbirth and repair episiotomy

SALVAGE

1. Sling-Applying traction by hooking the axilla to extract the posterior arm
2. Cleidotomy
3. Symphisiotomy
4. Zavanielle-Push the head inside and delivery by cesarean section

Reference:

1. RCOG Green top Guideline No-42 Nov 2014 page 6-9
2. Essential Obstetric and Newborn Care, Lifesaving skills manual, RCOG in partnership with LSTM, WHO, LATH

8: Protocol for Prolapse of Umbilical Cord

Definition: Descent of the umbilical cord through the cervix, alongside (occult) or past the presenting part (overt) in the presence of ruptured membranes.

Risk factors for cord prolapse:

- Multiparity
- Low birth weight of fetus (<2.5 kg)
- Fetal Congenital anomalies
- Transverse, oblique, unstable lie
- Breech presentation
- Second twin
- Polyhydramnios
- Unengaged presenting part
- Low lying placenta
- ARM with high presenting part
- Stabilizing induction of labour
- Internal podalic version

General management:

- Give 0_2 @ 4-5 L/ min
- Cover the cord with a sterile warm normal saline soaked mob
- Feel for cord pulsation

Specific management:

A. Cord pulsating (foetus alive) * Check FHR
* Detect Foetal lie
* Minimum handling of the cord to avoid vasospasm

1. If transverse lie and gestational age is term or near term –Emergency caesarean section or Refer immediately.

2. If transverse lie and gestational age is extreme preterm – Counsel with mother and guardian regarding chance of viability and deliver that is safe for the mother.

3. If longitudinal lie – Diagnose stage of Labour by immediate vaginal examination

a) If the woman is in the 1st stage of labour
- ➢ Assistance should be called immediately & preparation made for immediate birth.
- ➢ Option to relieve cord compression –
  - Knee chest (prayer position) position/Left lateral position (left lateral with pillow under hip)
  - Inflate the bladder with 500 ml. of normal saline and clamp the Catheter.
- ➢ Use tocolytics as necessary
- ➢ Prepare for neonatal resuscitation

Perform immediate caesarean section and deflate the catheter before peritoneal incision.

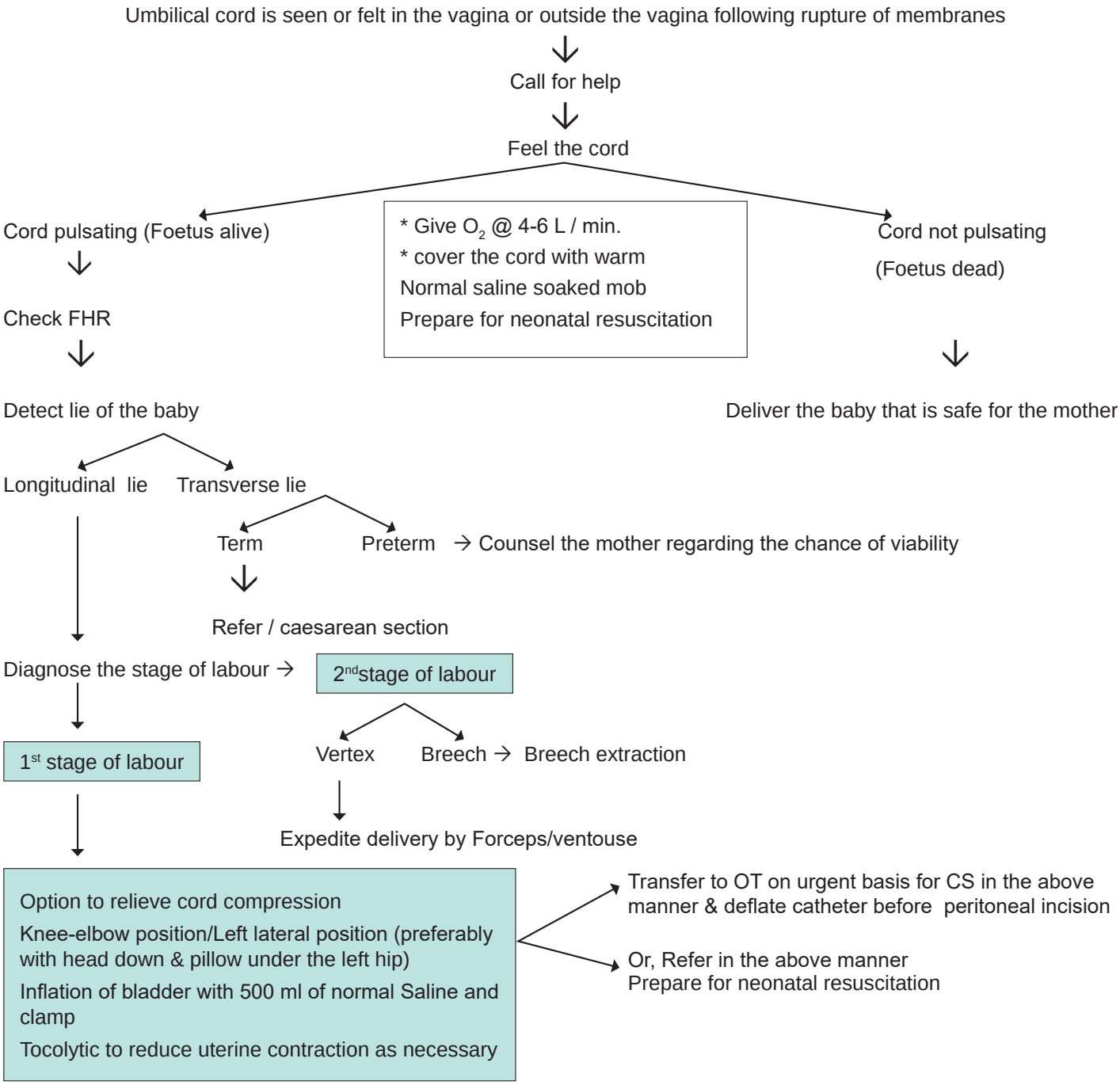
b) If the woman is in the 2nd stage of labour-
- ➢ Expedite the delivery with forceps or ventouse, if presentation is vertex
- ➢ Perform breech extraction if presentation is breech.
- ➢ Prepare for neonatal resuscitation.

B. Cord not pulsating –

Check FHR

Counsel with the mother and the guardian that foetus is dead and deliver in the manner that is safe for the mother.

Flow chart for prolapse of umbilical cord



1. Reference: Green-top Guidelines No-50, Nov 2014

9: Protocol for Vaginal Delivery after Caesarean Section/Scarred uterus (VBAC)

Planned VBAC

Planned VBAC (vaginal birth after caesarean) refers to any woman who has experienced a prior caesarean birth, who plans to deliver vaginally rather than by ERCS (elective repeat caesarean section).

Problem

Increasing rate of primary cesarean section. So, repeat section has increased.

Successful / Unsuccessful

A vaginal birth (spontaneous or assisted) in a woman undergoing planned VBAC indicates a successful VBAC.
Birth by emergency caesarean section during the labour indicates an unsuccessful VBAC.

Maternal outcomes

● Uterine rupture is defined as a disruption of the uterine muscle extending to and involving the uterine serosor disruption of the uterine muscle with extension to the bladder or broad ligament.

● Uterine dehiscence is defined as disruption of the uterine muscle with intact uterine serosa.

● Other outcomes: hysterectomy, thromboembolism, haemorrhage, transfusion requirement, viscus injury (bowel, bladder, ureter), endometritis, maternal death.

Antenatal counseling

- Women with a prior history of one uncomplicated lower-segment transverse caesarean section, in an otherwise uncomplicated pregnancy at term, with no contraindication to vaginal birth, should be able to discuss the option of planned VBAC and the alternative of a repeat caesarean section (ERCS).
- The antenatal counselling of women with a prior caesarean birth should be documented in the notes.
- A final decision for mode of birth should be agreed between the woman and her obstetrician before the expected/ planned delivery date (ideally by 36 weeks of gestation).
- Women considering their options for birth after a single previous caesarean should be informed that, overall the chances of successful planned VBAC are 72–76%.
- All women who have experienced a prior caesarean birth should be counselled about the maternal and perinatal risks and benefits of planned VBAC and ERCS when deciding the mode of birth.
- The risks and benefits should be discussed in the context of the woman's individual circumstances, including
  - Personal motivation and preferences to achieve vaginal birth or ERCS
  - Attitudes towards the risk of rare but serious adverse outcomes
  - Plans for future pregnancies
  - Chance of a successful VBAC (principally whether she has previously had a vaginal birth
- Review of the operative notes of the previous caesarean to identify the indication, type of uterine incision and any perioperative complications.

Factors associated with successful VBAC

Previous vaginal birth, particularly previous VBAC, is the single best predictor for successful VBAC

Factors for unsuccessful VBAC are:

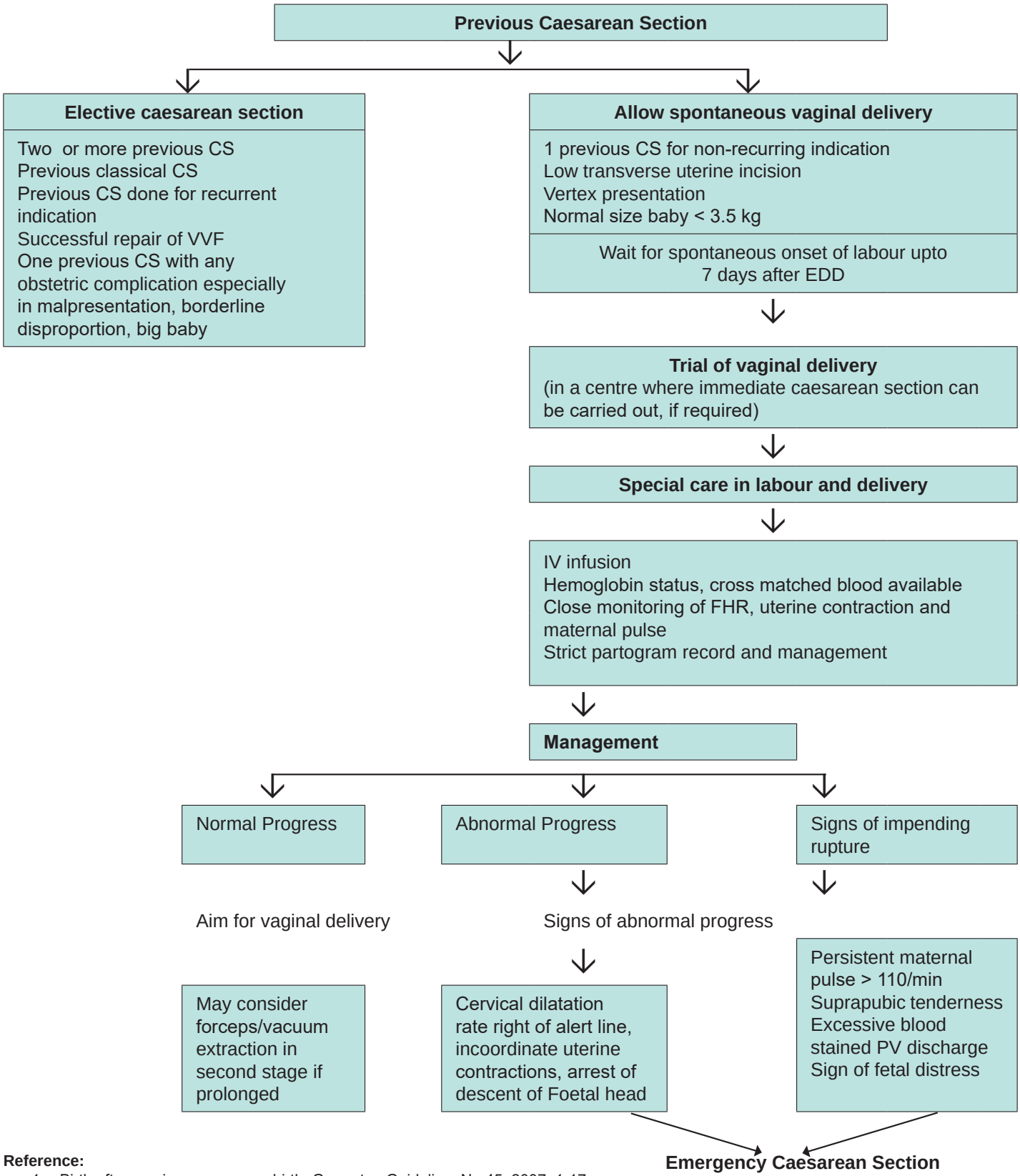
- Induced labour
- No previous vaginal birth
- Body mass index greater than 30
- Previous caesarean section for dystocia
- VBAC at or after 41 weeks of gestation
- Birth weight greater than 4000 g
- No epidural anesthesia
- Previous preterm caesarean birth
- Cervical dilatation at admission less than 4 cm
- Less than 2 years from previous caesarean birth
- Advanced maternal age
- Non-white ethnicity
- Short stature and
- A male infant

Contraindications to VBAC

1. Women with a prior history of one classical caesarean
2. Women with a previous uterine incision other than an uncomplicated low transverse caesarean section incision
3. Previous uterine rupture
4. Uterine incision has involved the whole length of the uterine corpus
5. Two or more previous caesarean deliveries
6. Who experienced both intrapartum and postpartum fever in their prior caesarean birth are at increased risk of uterine rupture in their subsequent planned VBAC labour

Flowchart

Flowchart for Delivery option after Caesarean Section



Reference:

1. Birth after previous caesarean birth, Green top Guideline. No.45, 2007p1-17.

10: Labour Analgesia

Relief of pain during labor & delivery is an essential part in good obstetric care.

Goals of Labour Analgesia- reduce pain of labor

- Should allow parturient to participate in birthing experience
- Minimal motor block to allow ambulation
- Minimal effects on fetus
- Minimal effects on progress of labor

Criteria of ideal analgesia:

- Efficient pain relief
- Should not depress the respiratory centre of fetus
- Should not affect the progress of labor
- Should be easily administered & convenient
- Good therapeutic safely

Types of Labour Analgesia

1. **Non-pharmacological analgesia**
    a) Psycho prophylaxis
    b) Ancillary support
        i) Position
        ii) Acupuncture

2. **Pharmacological**
    a) Systemic
        i) Opiod analgesia
        ii) Antispasmodic
    b) Inhalation agents Entonox
    c) Regional analgesia:-
        i) Epidural
        ii) Pudendal block
        iii) Perineal infiltration
    d) Patient controlled Analgesia
        i) Entonox
        ii) Inj Pethidine IM.

1. Non Pharmacological: Psycho prophylaxis

Antenatal

a) Relaxation & motivation can reduce the fear & apprehension to great extent.
b) Antenatal classes to alley anxiety by explaining the normal physiology of pregnancy & labour
c) Relaxation exercise.

Intranatal

a) Allow to walk around during labor.
b) Assume any comfortable position:- Dorsal, Squatting, semi squatting
c) Encourage breathing technique.
d) Presence of companion in labor (Husband or relatives).

Advantage

It reduces the need of analgesia.

2. Pharmacological

a) Opioid Analgesia

i) Pethidine: most commonly used intranatal analgesia
ii) Morphine

i) Pethidine:

a) Drug of choice
b) Has strong sedative but less analgesic effect.
c) Generally used in active phase of 1st stage of labor.

Dose: 100mg I/M (1 mg/kg/BW)

Advantages:

a) Provide adequate analgesia.
b) Safe
c) Quick action as parenteral administration
d) Doses do not inhibit uterine contraction
e) Help to dilate cervix.

Pre-condition for Inj Pethidine

a) Don't give too early because it causes prolonged labour
b) Don't give late if anticipate delivery within 1-2 hours
c) Anti dote must be ready (Naloxone),Dose for new born :0.1 to 0.2 mg/kg/dose I/M, may repeat in 3-5mins if no response.(1 amp =2ml). For adult – 0.4 mg to 2 mg S/C, I/M
d) Ranitidine to inhibit gastric acid production &
e) Emetic effect is counteracted by metoclopromide.

ii) Antispasmodic: Tiemonium methyl sulfate

By relieving spasm in later part of 1st stage of labour

Should be given IM only,can cause respiratory arrest if given IV

b) Inhalation agent

Entonox

a) Cylinders contain 50% N_2O & 50% O_2.
b) Approved for used by midwives.
c) It can be self administered.
d) Most commonly used inhalation agent during labour.

Side effect:-

i) Hyper ventilation.
ii) Hypocapnia.
iii) Dizziness.

c) Regional analgesia

Epidural Analgesia

i) Provides excellent pain relief by reducing maternal catecholamines
ii) Ability to extend the duration of block to match the duration of labor
iii) Blunts hemodynamic effects of uterine contractions: beneficial for patients with preeclampsia.

Timing:- When the women is active phase of labour.

Monitoring:-
Pulse
BP — 15 minute interval.
FHR

The women is kept in semilateral position to avoid aortocaval compression.

Advantages

i) Safest & simple method of pain relief when complete relief of pain is needed.
ii) Can top up the analgesic effect (repeated dose)
iii) Safe.
iv) Less risk of infection (as do not puncture the SA space)
v) No effect on fetal respiration.
vi) Can continue even after labour.
vii) Post operative analgesia can be given,
viii) Can be converted into anesthesia if needed.
ix) Reduced blood loss during labour (as it causes symphathetic block) .
x) Cause peripheral pooling of blood so increased feto-placental circulation.
xi) So there is no fetal distress.

Disadvantage:

i) 2nd stage may be prolonged as because pt can not bear down.
ii) May require instrumental delivery.

Complication:-

i) Hypotension.
ii) Post spinal headache
iii) Pain at insertion site.
iv) Total spinal
v) Can paralyze the motor nerve.
vi) Unblocked segment.
vii) Risk of failure (10-15%)
vii) Urinary retention.

Pudendal nerve block

- Safe & simple method of analgesia during delivery.
- It dose not relieve the pain of labour but affords perineal analgesia & relaxation.

Indication:- Forcep & Vaginal breech delivery .

Addition: - Perineal & Vulval infiltration needed to block

Route -Transvaginal route:

Complication

i) Haematoma formation
ii) Allergic reaction
iii) Toxicity may affect.
iv) Tachycardia
v) Hypotension
vi) Arrhythmias
vii) Cardiac arrest
viii) Convulsion

Perineal infiltration:- By Local anesthesia

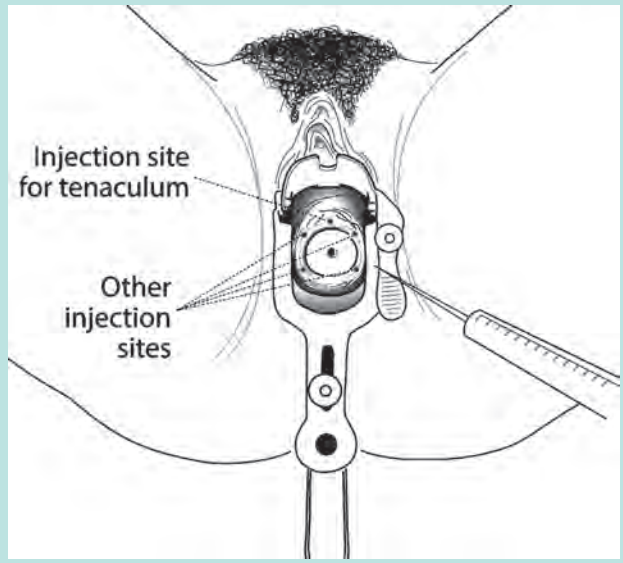
Para-Cervical Block

PARACERVICAL BLOCK

A. Indication	**B. Precautions**
• Dilatation and curettage • Manual vacuum aspiration	• Make sure there are no known allergies to lignocaine or related drugs • Do not inject into a vessel
	Counsel the client

C. Procedure

1. Load a 20 mL syringe with 20 mL of 1.0% lignocaine (Or, 10 mL syringe with 10 mL of 2.0% lidocaine)
2. Introduce cusco to expose the cervix
3. Clean cervix with povidone iodine solution
4. Inject 2ml of 1%(1ml of 2%)lignocaine in the anterior lip of cervix at 12'O clock position, inject needle not more than 1 cm. Wait for 1 min
5. Hold the anterior lip cervix with a volselum/tenaculum forceps
6. Use slight traction to move the cervix and define the transition of smooth cervical epithelium to vaginal tissue. This transition marks the site of further injections around the cervix.
7. Inject the remaining 18 ml in equal amounts at the cervico vaginal junction at the 2, 4, 8, and 10 o'clock. Inject continuously from superficial to a depth of 3 cm, using a slow technique to decrease any pain to the woman.
8. Remember to pull back on the plunger before injecting anesthesia to prevent intravascular injection.
9. Wait for 2 minutes and then start the procedure.



Paracervical Block

Ref: Clinical Protocol on MENSTRUAL REGULATION, POSTABORTION CARE, POSTABORTION & POSTPARTUM FAMILY PLANNING. Developed by: OGSB, RCOG and Ipas Bangladesh, November 2017

11: Flow Chart Postnatal Care

Definition: Care of Mother and Newborn from 1 hour after delivery, up to 6 weeks post-delivery.
Schedule of postnatal visit: First: within 24 hours; second: 2-3 days; Third: 4-7 days; Fourth: 42days.

Rapid assessment should be done before routine PNC care

Visit with time	Mother			New born		
	History & Examination	Investigation & Counseling	Care & Management	History & Examination	Counseling	Care & Management
1st visit: Within 0-24 hrs of delivery Place & Person: Home or facility	History taking □ Date time, place & mode of delivery □ Duration of pregnancy □ Duration of Labour □ Any complain □ Any H/O fever, excessive bleeding, pain in lower abdomen, Headache. Examination General □ Pulse □ BP □ Temperature □ Anemia □ Jaundice □ Edema Abdomen □ Tenderness □ Height of Uterus □ Uterus hard or soft □ Wound (if any) Breast □ Engorgement □ Redness □ Temperature □ Cracked nipple Perineum □ Episiotomy wound □ Tear □ Swelling □ Vaginal Bleeding □ Vaginal discharge - Amount - Smell	Investigation □ CBC- if possible and if not done during ANC/ otherwise Hb% □ Blood group if not done before. □ Blood sugar if baby is big and if not done during ANC Counseling □ Diet, Nutrition and fluid □ Rest & exercise □ Ambulation □ Importance of PNC visit □ General cleanliness/ self-care □ Bowel & bladder □ Danger sign	□ Reassurance □ Explain □ Medication - for pain - Supplement Iron-Ferous-sulphate Vit. A 2,00,00 IU single dosage (up to 14 days) Calcium + Vit D □ Referral	History taking □ Date, time and place of delivery □ Duration of pregnancy □ Duration of Labour □ Mode of delivery □ Any complain □ Time of cry □ Bowel and bladder habit □ Feeding habit Examination □ Birth weight □ Color □ Respiration □ Umbilicus □ Temperature □ Abdomen □ Genitalia □ Spine □ Any congenital anomalies	□ Exclusive breast feeding □ Keeping the baby warm □ Dry& wrap □ Delayed bathing (after 3 days) □ Immunization □ Importance of neonatal care □ Danger signs	□ Delayed cord clamping (1-3 min) & use of chlorhexidine at umbilical cord □ Reassurance □ Explain □ Medication if required □ Management Of Birth asphyxia □ Management of any complication □ Referral

Visit with time	Mother			New born		
	History & Examination	**Investigation & Counseling**	**Care & Management**	**History & Examination**	**Counseling**	**Care & Management**
2nd visit on 3rd day of delivery and 3rd visit on 7-14 Days of delivery Place & Person: Home or facility	History taking (If missed 1st visit) □ Date time, place & mode of delivery □ Duration of pregnancy □ Duration of Labour Inquire about □ Any complain □ Any H/O fever, excessive bleeding, pain in lower abdomen, Headache, etc. Examination General □ Pulse □ BP □ Temperature □ Anemia □ Jaundice □ Edema Abdomen □ Tenderness □ Height of Uterus □ Uterus hard or soft □ Wound (if any) Breast □ Engorgement □ Redness □ Temperature □ Cracked nipple Perineum □ Episiotomy wound □ Tear □ Swelling □ Vaginal Bleeding □ Vaginal discharge - Amount - Smell	Investigation □ CBC- if possible & not done in 1st visit □ Blood group if not done before. □ Blood sugar if H/O GDM or DM. Counseling □ Diet, Nutrition and fluid □ Rest & exercise □ Ambulation □ Importance of PNC visit □ General cleanliness/ self care □ Bowel & bladder □ Danger signs -Severe bleeding after delivery -Intense Headache -Blurring of vision -Fits/Convulsions -Foul smelling vaginal discharge with fever	□ Reassurance □ Explain □ Medication - for pain - Supplement Iron Ferrous sulphate Calcium + Vitamin D - Vit. A (2,00,00 IU) single dosage (up to 14 days if not given in 1st visit) □ Referral	History taking (if not missed 1st visit) □ Date, time and place of delivery □ Duration of pregnancy □ Duration of Labour □ Mode of delivery □ Time of cry Inquire about □ Any complain □ Bowel and bladder habit □ Feeding habit Examination □ Weight □ Color □ Respiration □ Umbilicus □ Temperature □ Abdomen □ Genitalia □ Spine □ Any congenital abnormality	Exclusive breast feeding □ Keeping the baby warm □ Immunization □ Importance of Neonatal care □ Care of the baby □ ECD □ Danger signs -Reluctant to feed -High pitched cry -Fever -Grunting or in drawing of chest -Convulsion -Yellow coloration of eyes and body -Discharge/bleeding from umbilicus	□ Reassurance □ Explain □ Medication if Required □ Management of any complication □ Referral □ Birth □ Registration
4th visit on 42 days of delivery Place & Person: facility	**History taking** □ Any complain □ Any H/O fever, excessive bleeding, pain in lower abdomen, Headache, etc. Examination General □ Pulse □ BP □ Temperature □ Anemia □ Jaundice □ Edema Abdomen □ Tenderness □ Height of Uterus □ Uterus hard or soft □ Wound (if any) Breast □ Engorgement □ Redness □ Temperature □ Cracked nipple Perineum □ Episiotomy wound □ Tear □ Swelling □ Vaginal bleeding □ Vaginal discharge - Amount - Smell	**Investigation** □ CBC- if possible & not done in 1st visit □ Blood group if not done before. □ Blood sugar if H/O GDM or DM. Counseling □ Diet, Nutrition and fluid □ Rest □ Ambulation □ Importance of PNC visit □ General cleanliness/ self care □ Bowel &bladder □ Danger signs	□ Reassurance □ Explain □ Medication - for pain - Supplement Iron Ferrous sulphate □ Referral	**History taking** (if not missed 1st visit) □ Date, time and place of delivery □ Duration of pregnancy □ Duration of Labour □ Mode of delivery □ Time of cry Inquire about □ Any complain □ Bowel and bladder habit □ Feeding habit Examination □ Birth weight (for 1st visit) □ Color □ Respiration □ Umbilicus □ Temperature □ Abdomen □ Genitalia □ Spine □ Any congenital anomalies	**Exclusive breast feeding** □ Keeping the baby warm □ Immunization □ Importance of Neonatal care □ Care of the baby □ ECD □ Complementary feeding □ Danger signs	□ Reassurance □ Explain □ Medication if required □ Management of any complication □ Referral

Note: Early Childhood Development (ECD)

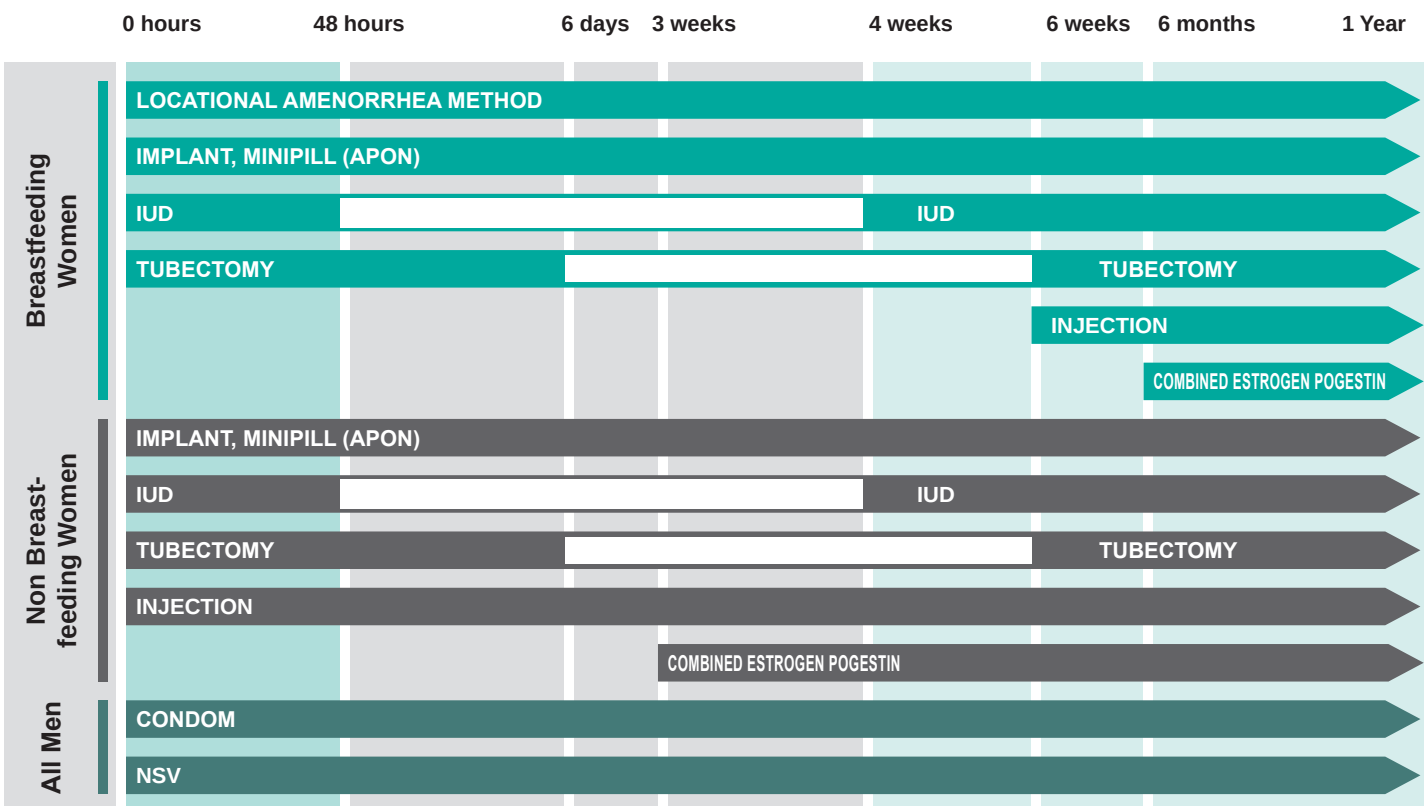
Common physical problems during post-natal period and Actions

Presenting symptoms or complaints	Ask/look/feel	Probable diagnosis and cause	Action
• Excessive per vaginal bleeding	• Amount: excessive or mild • When: after first 24 hours of delivery. • Persistence: Continuous or irregular • Odor: Foul Smelling	Delayed Post-partum hemorrhage (Presence of bits of after births or infection after delivery)	• Fundal massage and assessment of the amount of bleeding • Injection ergometrine 2 ampl. I/M • Increased frequency of the breast feeding and rest • Immediate refer to the hospital
• Foul smell discharge after childbirth	• Fever more than 100^{0}F • Pain in lower abdomen • Tenderness in lower abdomen • Foul smell vaginal discharge	Puerperal Sepsis	First line management Antibiotic: Oral • Cap. Amoxicillin 500mg. 6 hourly • Tab. Metronidazole 400mg 8 hourly (IV if CSBA herself is conversant to IV) • Referral
• Leakage of urine, stool and flatus	• Leakage of urine, continuous or when urge • Smells of urine/stool • Difficulty to hold flatus • Fecal incontinence: continuous or when loose	• Urinary tract infection/ Vesico vaginal fistula • Rectovaginal fistula/ complete perineal tear	• Sign and symptoms of urinary or fecal incontinence should be assessed during postnatal visits, during the first week after delivery, and at the 6-week postpartum examination. • Counseling regarding perineal strengthening exercises. • Referral
• Severe pain on the perineum	• Discoloration of overlying tissue • Swelling in the perineal area	Perineal hematoma (Due to injury of blood vessels in the perineum during birth.)	• Painkillers • Antibiotics – Cephradine – 500 mg 6 hourly • Refer as early as possible
• Pain in breast with fever	• Usually only onebreast is affected • Colour: Reddened, wedge shaped area on breast • Tenderness: Present • When: 3 – 4 week safter delivery • May lead to breast engorgement	Mastitis	• Assurance • Continue Breast feeding • Routine expression of milk • Hot or cold compression • Painkillers • Antibiotics if necessary – - Cap. Fluclox – 500 mg 6 hourly for 5 days - Cap. Cephradine – 500 mg 6 hourly for 5 days • Referral
• Pain in lower abdomen	• When: After delivery • Character: Pain is spasmodic • Duration: 2-4 days after delivery	After pain (Due to presence of blood clots or bits after births)	• Massage the uterus • Painkillers • Hot compression
• Painful wound • Fever	• Pain at the site of wound • Color: Redness around the wound • Swelling: Swollen Wound • Discharge: Foul smelling discharge at the site of the wound • Fever	Wound infections (Wound may be at the Cervical/ Perineal lacerations/ episiotomy site or caesarian incision)	• Refer to the hospital
• Pain in breast	• Both breasts affected and associated with discomfort • Size: Enlarged • Consistency: Hard • Tenderness: Present • When: 3 – 5 days after delivery	Breast engorgement	• Assurance • Continue Breast feeding more frequently • Show the mother position and attachment • Routine expression of milk • Hot or cold compression • Breast support • Pain killer • Referral
• Burning during urination • Increased frequency and urgency of urination, • Feeling unwell	• Fever: with chills • Pain and tenderness in lower abdomen	Urinary tract infection (may be due to catheterization or bladder trauma, lacerations or bruising)	• Advise her to drink plenty of water • Counsel her that she needs to go for urine examination and to visit a doctor • Treat with Cap. Amoxicillin 500 mg 8 hourly for 5-7 days
• Pain& Swelling of the leg and ankle	• Pain and Swelling: one leg or both • Color: Redness • Tenderness: Present on the leg and ankle	Thrombophlebitis (due to injury and inflammation of the blood vessel)	• Use of compression stockings • Painkillers • Bed rest • Immediate referral to the physician
• Sore in nipple	• Pain during breast feeding • Baby sucked the nipple only • Mother avoids frequent feeding	Cracked nipple	• Correct positioning and attachment of baby to the breast • Continue breast feeding • Put breast milk, on sore area and dry in air.
• Swelling of legs	• Dependent edema may present for few days • Check BP &Urine for protein	Physiological edema	• Assurance • Rest

Regular Immunization Schedule (0-11 m and 15 m old children): Measles and rubella vaccine-information booklet, DGHS, Sept 2012

Disease	Name of Vaccine	Amount Dose	Number Dose	Interval between Doses	Appropriate Time to start	Place of administration	Route of administrator
Tuberculosis	BCG	0.5 ml	1	-	After birth	Left upper Arm	Intra dermal
Diphtheria, Whooping Cough, Tetanus, Hepatitis-B, Hemophylus Influenza-OB (Hib)	Pentavalent Vaccine (DPT, Hepatitis-B Hib)	0.5 ml	3	4 weeks	6 weeks	Outer side of Mid-thigh	Intra muscular
Pneumococcal Pneumonia	PVC Vaccine	0.5 ml	3	4 weeks	6 weeks	Outer side of Mid-thigh	Intra muscular
Poliomyelitis	OPV	2 drops	4	4 weeks	6 weeks	Oral	Oral
Measles and Rubella	MR	0.5 ml	1	-	After completion of 9 m	Outer side of Mid-thigh (Right thigh)	Sub dermal
Measles	Measles	0.5 ml	1	-	After completion of 9 m	Outer side of Mid-thigh (Right thigh)	Sub dermal

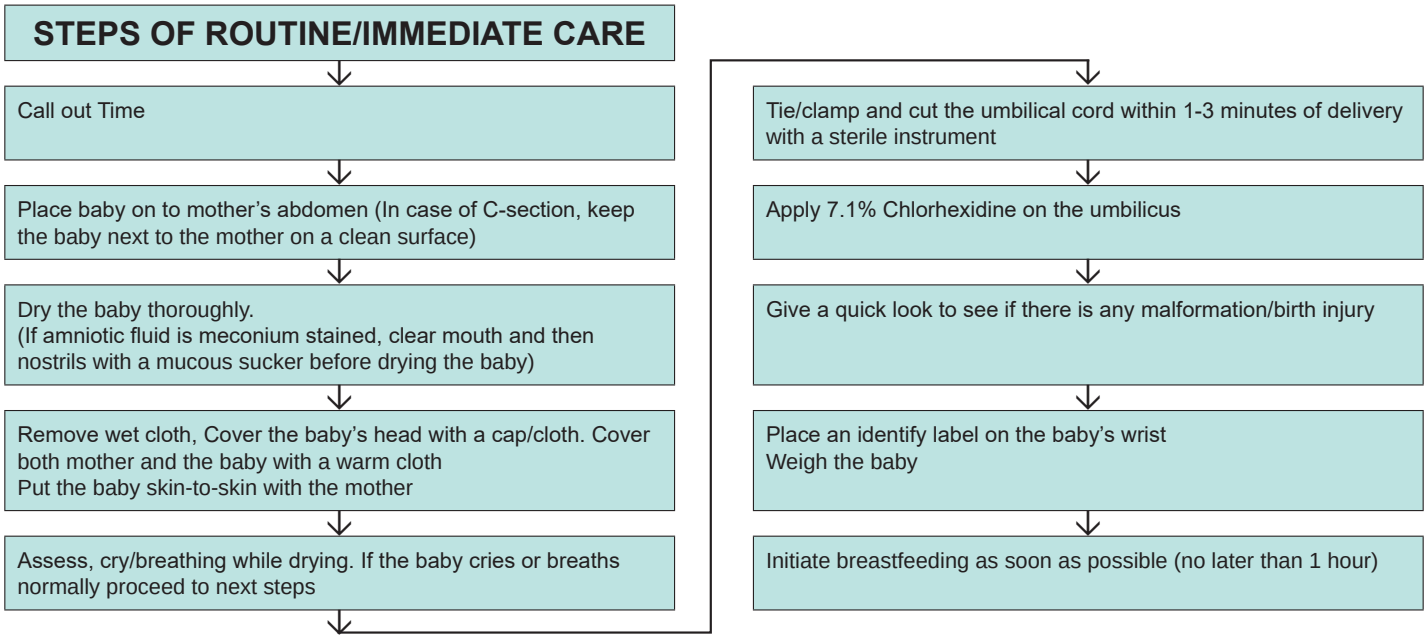
Post-partum Family Planning



Reference:

1. WHO recommendations on postnatal care of mother and newborn *apps.who.int/iris/bitstream/10665/97603/1/97*
2. *Maternal Health Standard Operating Procedures(SOP) Volume-1*

12: Algorithm for Immediate or Routine Care at Birth of Baby



Preparation for Delivery

- Identify a helper and explain role
- Make an emergency plan. Be prepared to act quickly to manage problems such as asphyxia
- Prepare the delivery place (ensure privacy, light, warmth)
- Prepare a place for resuscitation
- Wash hands
- Prepare equipment and supplies and check functionality of the bag & Mask and suction device.

Equipment and supplies	
• Gloves	• 7.1% Chlorhexidine
• Two pieces of clean warm clothes	• Suction device
• Cap	• Bag & mask
• Thread/cord clamp	• Stethoscope
• Scissors	• Clock/timer
	• Weighing scale

If there is no cry/breathing or the baby is gasping start resuscitation

Put the 1stknot 2 fingers from the abdomen, 2ndknot one finger away from the 1st knot. Milk the cord towards placenta and put a 3rdknot 4 fingers from the 2nd.

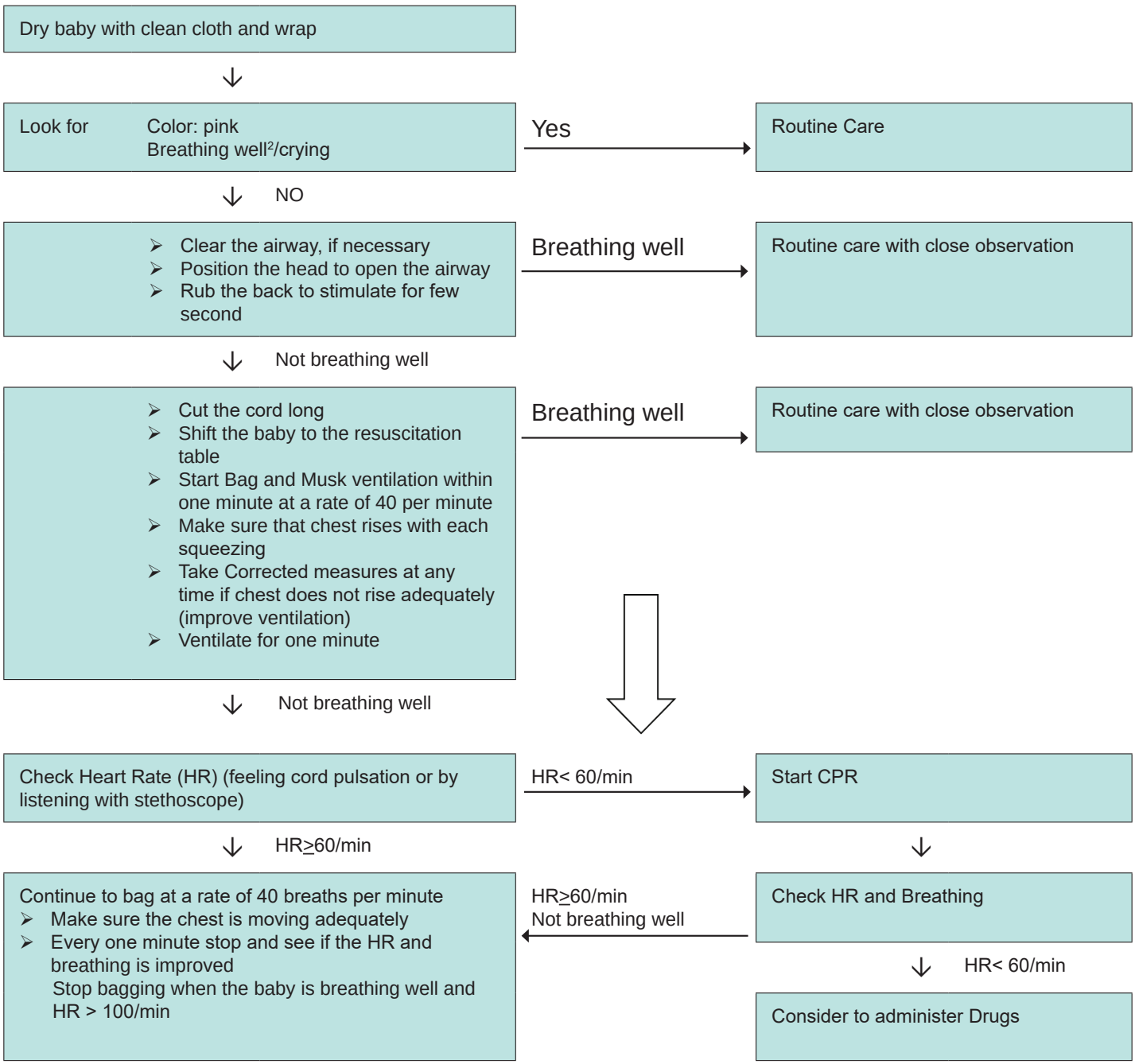
Wash hands; or change gloves when necessary

Apply 7.1% Chlorhexidine on cut end of the cord, soak the body and the base completely. Keep the cord open and dry

Discard the used Chlorhexidine container

If chlorhexidine is not applied immediately after birth, apply within 48 hours

13: Algorithm for Management of Perinatal Asphyxia



- Adapted from SOP for Neonatal Health and Helping Babies Breath (HBB)

If liquor is meconium stained, suction mouth first and then both nostrils, before drying

Breathing well: Breathing quietly and regularly or crying

Routine care:

- Keep warm (Skin-to-skin with mother)
- Cut cord (within 1-3 minutes)
- Check breathing
- Initiate BF

Not breathing well: Gasping or not breathing at all

Improve ventilation;

- Check mouth, oropharynx & nose for secretion; give suction if necessary
- Keep mouth wide open
- Reapply musk and make a better seal
- Reposition the neck
- Apply harder and longer squeeze

CPR: One CPR cycle comprises of 3 chest compressions plus 1ventilation. To give chest compression, hold the baby with the fingers around the torso, thumbs in front, in the midline just below the nipple line, over the lower third of the sternum. Depress the sternum to a depth of approximately one third of the antero-posterior diameter of the chest. Count "one and'..... two and.....three and..... (Give ventilation after counting three and'). Continue the cycles for 30 second and evaluate breathing and heart rate to take the next action.

Drugs: Injectable adrenaline 1:1000 sol": Mix 1 ml with 9 ml of distilled water to make a 1:10,000 dilution. Give 0.1-0.3 ml/kg IV or 0.5-1.0ml/kg intra-tracheal

Additional Drugs:

- **Injectable dextrose 10%:** Give 2 ml/kg IV
- **Injectable naloxone 0.4 mg/ml:** Give 0.5ml/kg-if labouring mother received opiate within 4 hours of delivery.

Harmful resuscitation practices:

- Slapping the baby on the back
- Hanging upside down by the feet
- Milking the cord
- Routine suction of baby's mouth and nose
- Throwing cold water on the baby's face & body
- Giving glucocorticoid injections
- Blowing into the ears and nose
- Stimulating the anus
- Squeezing the rib cage
- Heating the placenta
- Dipping the baby's cord alternatively in hot and cold water
- Bending the legs on the abdomen

Reference:

Dept. Health, Republic of South America 2014;Helping baby's breath: American academy of pediatrics 2011; SOP: Standard operation procedure.

14: Management of low birth weight babies

Low birth weight babies (LBW) are defined as babies with birth weight of <2500 gm irrespective of the gestational age.

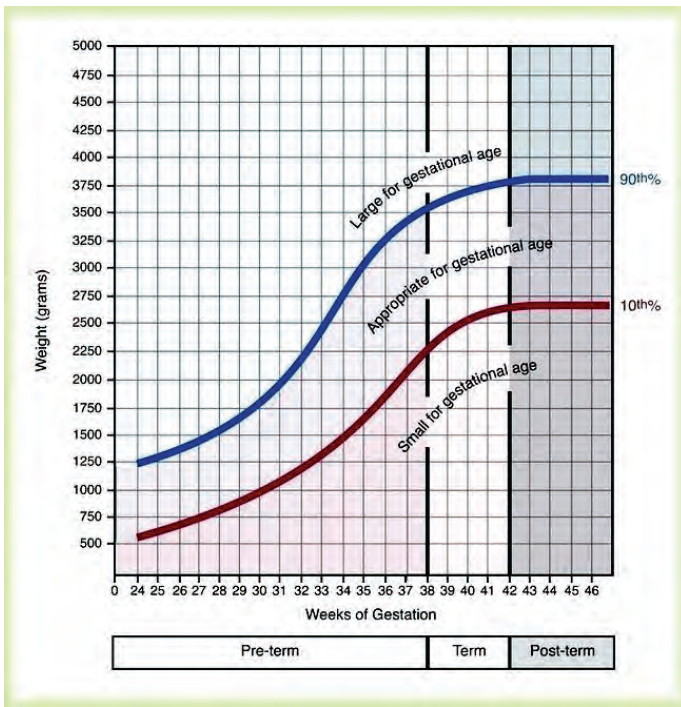
Category of birth weight:

- Normal birth weight : Birth Weight 2500 - 4000 gm
- Low birth weight(LBW) : Birth Weight <2500 gm
- Very Low birth weight(VLBW) : Birth Weight <1500 gm
- Extremely Low birth weight(ELBW) : Birth Weight <1000 gm
- Incredible Low birth weight : Birth Weight < 750 gm

Type of LBW according to cause:

1. Preterm
2. Intrauterine growth restriction (IUGR)/SGA: Weight below the 10th percentile on the chart, for that gestational age.

Intrauterine growth chart



Problems of a preterm baby:

- Hypothermia
- Hypoglycemia
- Respiratory distress syndrome (RDS)
- Perinatal Asphyxia
- Apnoea
- Sepsis
- Intra ventricular hemorrhage
- Feeding Problem
- Necrotizing enterocolitis
- Hypocalcaemia
- Jaundice
- Congenital heart disease - PDA
- Retinopathy of Prematurity (ROP)

Management of Low Birth Weight baby

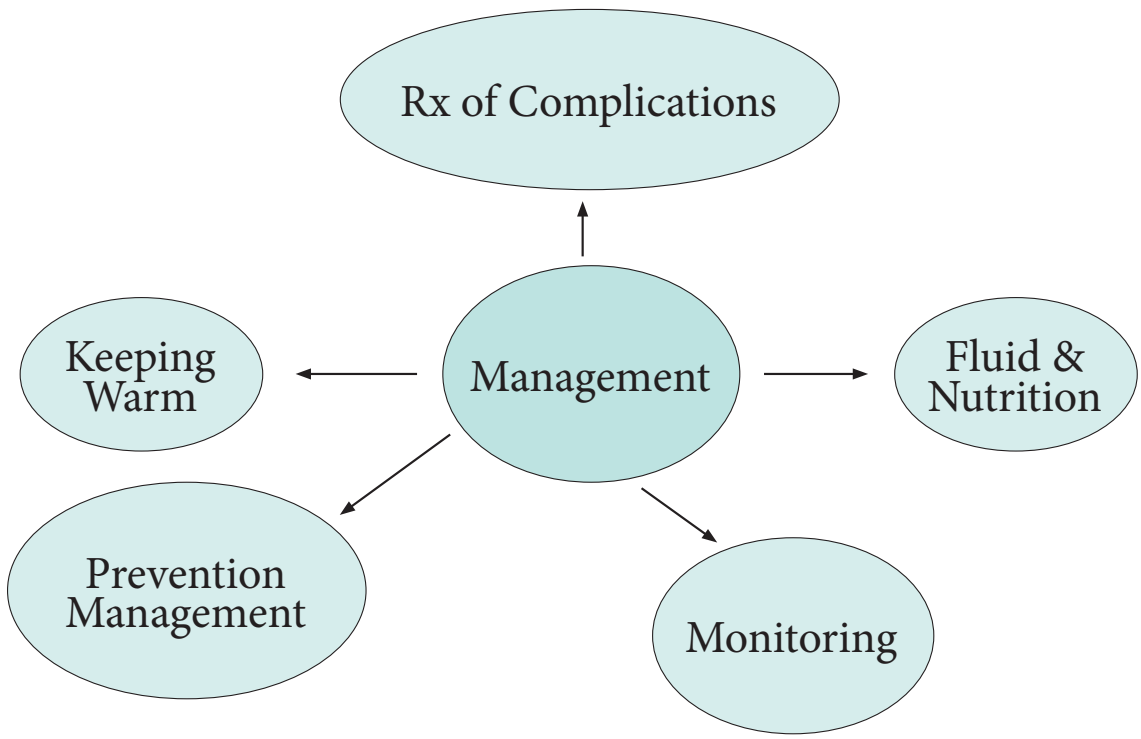
Delivery room management:

- Ideally, the delivery of an anticipated LBW baby should be conducted in hospital with established newborn care facilities.
- In-utero transfer of a LBW fetus is desirable, convenient and safe than the transport of baby.

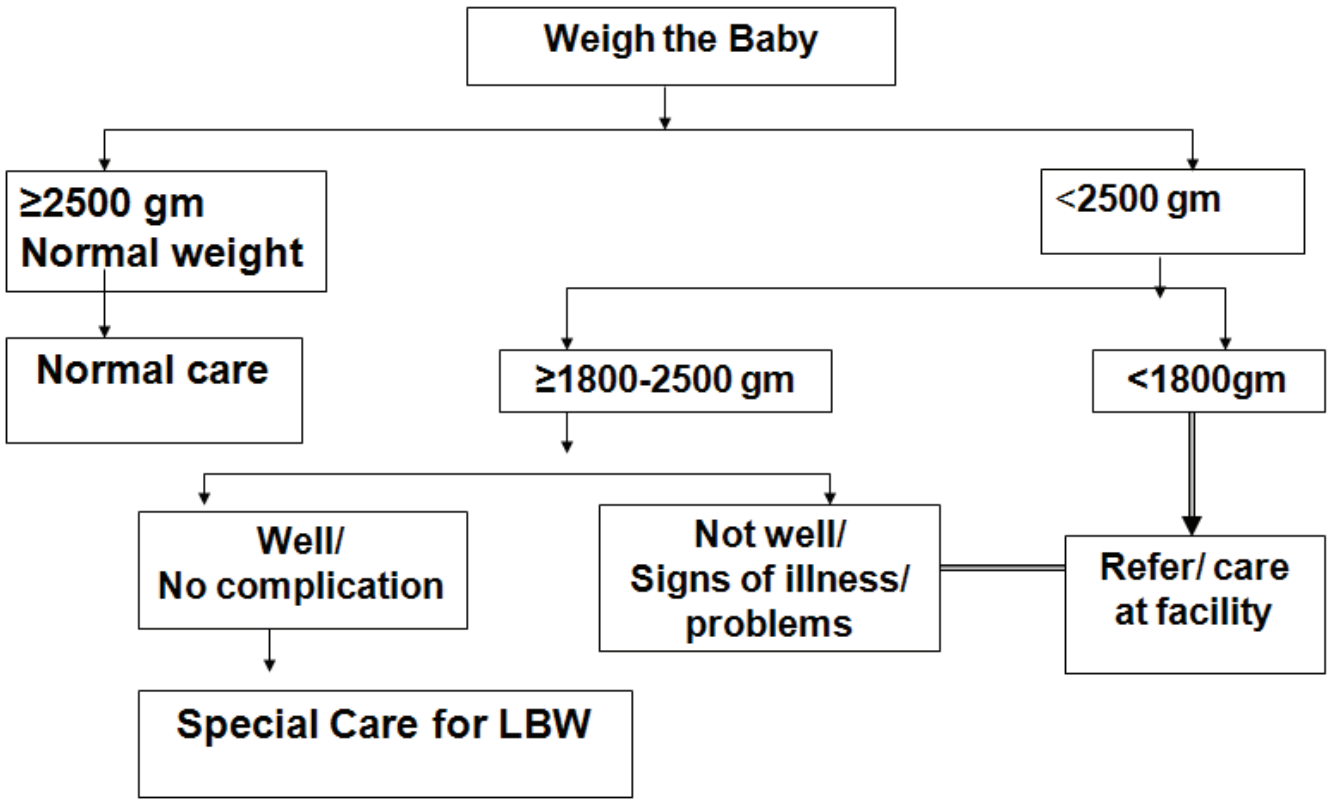
Antenatal corticosteroid in preterm delivery:

- Antenatal corticosteroid therapy is a simple and effective therapy that prevents RDS in neonate.
- Recommended Dose: Inj Betamethasone 12 mg IM every 24 hrs X 2 doses or
  - Inj. Dexamethasone 6 mg IM every 12 hrs X 4 doses.
- Given to mothers with preterm labour or APH or intended preterm delivery before 34 wks of gestation.

Principles of Management:



Management algorithm



Deciding the place where a LBW baby should be managed

a) **LBW babies weighing >1800 grams (>34 weeks):** These babies are more or less stable. So, shifted to the mother side in post natal care area, provided with extra assistance and monitoring as needed.

The training of mother during her stay include -

- Kangaroo Mother care (KMC) and assessment of temperature
- Breastfeeding
- Cup feeding may be needed
- Recognition/reporting of danger signs and
- Input all her queries related to care of a LBW baby.

b) Babies with birth weight below 1800 gm: These babies are more prone to develop all complications of low birth weight. These babies should be admitted .

Indications for hospitalization

- Gestation: <34 week
- Birth weight <1800gm
- Any sick baby

Thermal care:

Temperature can be maintained:

a) At Hospital

- Wrapping with extra layers of clothes
- Changing wet clothing
- Using radiant warmer, if available
- Breastfeeding
- Kangaroo Mother Care
- Nursing the baby next to the mother, as the mother herself is a good source of warmth for the baby
- Keeping the room warm (26-30^0 C) by heater

b) At Home

- Dress the babies with clothes, cap ,mitten and socks can be used for hand and foot
- Wrap properly with several layers of warm clothes or blanket.
- Immediate changing of wet clo.
- Kangaroo Mother Care (KMC)
- Keep door/window closed during winter
- Postponed bathing for first 72 hours and afterwards as per requirement
- Continue Exclusive Breast feeding

Feeding and nutrition:

Feeding of low birth weight (< 2500gms) babies differs from that of normal birth weight babies. These babies (especially those < 1800 grams) often have difficulty in taking milk directly from breast and may require more help and ongoing monitoring.

Calories requirement in newborn:

For preterm infant: 110-140 kcal/kg/day

Feeding methods

- Gavage feeding (orogastric/ nasogastric feeding)
- Feeding by cup/cup-spoon. (alternate feeding method)
- Direct breast feeding

Initiation of Feeding:

Time of starting feeding and method of feeding should be individualized on the basis of birth weight, gestational age and clinical conditions of the neonate.

- Start feeding as early as possible when hemodynamically stable.
- Abdominal examination shows– no distension, presence of bowel sounds, non- bilious gastric aspirates
- Having no sign of respiratory distress
- Having no risk factor for NEC.
- If Hemodynamically unstable start I/V fluid

Modes of providing fluids and feeding:

Age	<1200gm and or <30wks	1200-<1800gm and or 30-34 wks	≥1800gm and or >34 wks
Initial	Nothing per oral I/V fluid Try Gavage (OG/NG) feed if not very sick	Gavage(OG/NG) feeding	Breast feeding If unsatisfactory, expressed breast milk (EBM) with cup or spoon Breast feeding
After 1-3 days	Gavage (NG/OG) feeding	Feeding EBM with cup or spoon	Breast feeding
Later(1-3 weeks)	Feeding EBM with cup or spoon	Breast feeding	Breast feeding
After some more time(4-6 weeks)	Breast feeding	Breast feeding	Breast feeding

Choice of milk: Breast milk.

Signs of feeding intolerance

- Vomiting
- Abdominal distension and increase in abdominal girth >2cm from baseline at the level of umbilicus
- Gastric residuals >30% of previous feed or >3ml whichever is more
- *Routine pre-feed gastric aspirates are not recommended*

When to stop feed / withheld feeding

- Evidence of feeding intolerance
- Blood / bile stained gastric aspirate
- Reduced or absent bowel sound
- Systemic signs – cyanosis, bradycardia, lethargy
- Signs of systemic illness.ie, apnoea, shock, convulsion, respiratory distress

Counseling at discharge:

Mother and family must be counseled before discharge of the LBW neonate from hospital

Advice on discharge

- Provide exclusive breastfeeding
- Thermal protection at home
- When to seek care (“DANGER signs”) and whom and where to contact
- Personal hygiene for prevention of infections
- Scheduled visits for assessing growth monitoring, detecting illness and providing immunization
- Mother’s nutrition and health
- Advise for a screen for ROP and Hearing evaluation for the babies who are very low birth weight 32 wk./<1500 grams)

Vaccinations in LBW babies:

If the LBW baby is not sick, the vaccinations schedule is the same for as the normal babies. Hence, BCG and OPV-0 should be given at the earliest. A sick LBW baby however, should receive these vaccines only on recovery at discharge.

15: Flow Chart for Management of Breastfeeding

Breastfeeding (BF) is the gold standard of infant feeding making strong bondage between mother and baby to provide substantial health benefit for baby, mother and nation.

It protects the babies from many killer diseases & also protects women from non-communicable disease (NCD) as well.

Early initiation of breastfeeding within one hour of birth prevent newborn death by 31%

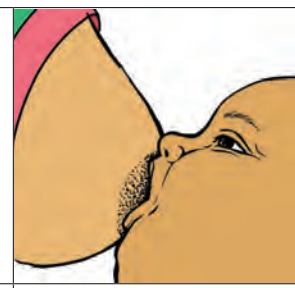
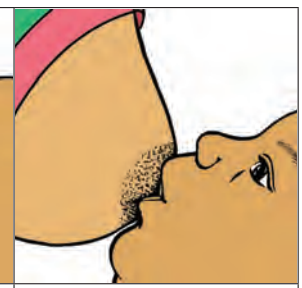
Though Breastfeeding (BF) is a natural act it is also a learn behavior. Mother and other caregivers require active support for establishing and sustaining appropriate breastfeeding practices

WHO and UNICEF recommendation

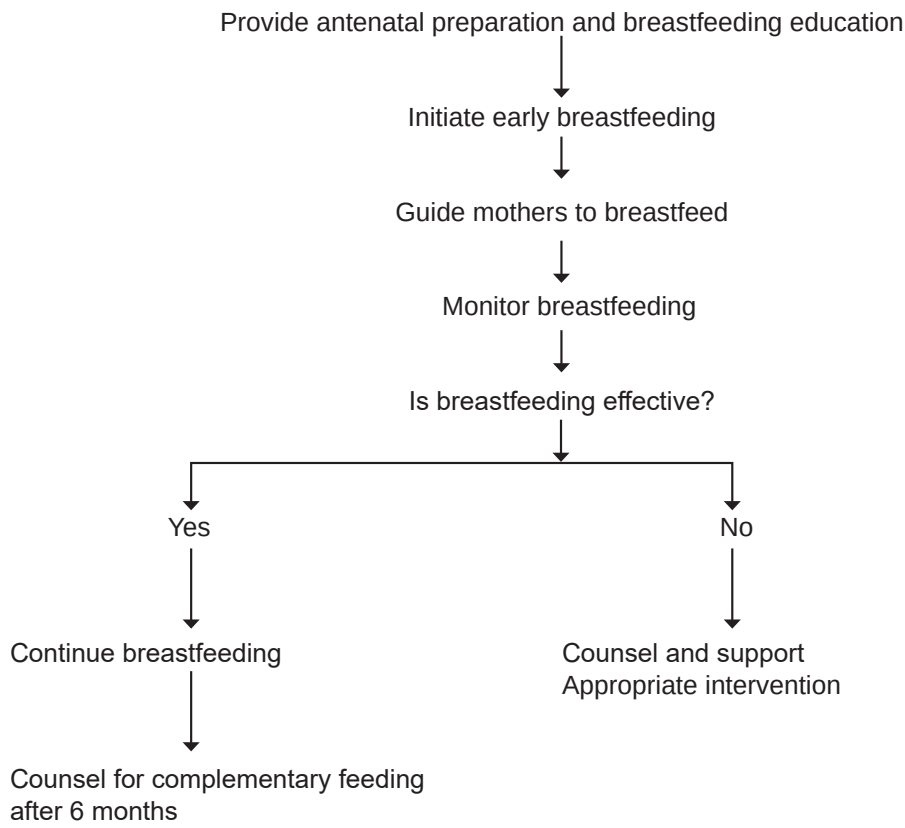
1. Initiation of Breastfeeding within the 1st hour of life
2. Exclusive breast feeding for 6 months.
3. Breastfeeding on demand as often as the child wants
4. No use of bottle teats or pacifiers.

Breastfeeding Management

A. **Preparation for BF in Antenatal Period**	B. **Initiation of BF just after delivery**	C. **Support during postpartum period**
• Counsel women about the benefits of BF & disadvantage of artificial milk • Check for retracted nipple • Demonstrate technique of BF, expression of breast milk.	• Dry the baby first • Put the baby on mother's breasts for contact and initiation of BF • Turn the baby's whole body towards mother • Touch baby's upper lip with mother's nipple when the baby opens mouth attach the baby onto the breast Baby's mouth should cover as much of the areola as possible (lower part must be inside baby's mouth) • Counsel about the disadvantages of wrong technique.	• Baby should stay with the mother in the same bed • Newborn should be nursed on demand (Baby led feeding) • Allow the baby to suck one breast until slips off and offer another if the baby wants • Facilitate unrestricted breastfeeding • Start nursing from the previous unfed breast for subsequent feeding • Provide extra support for mother after C/S • key points of position and attachment is to be followed for prevention of breastfeeding problems • Management of breastfeeding problem as early as possible

I. **Key points of position** • Baby's head and body in a same line • Baby's body close to mother • Baby's whole body should be supported • He or she should be facing the breast		II. **Key points of attachment** • Baby's mouth wide open • Lower lip curled outwards • Most of the areola including the lower part must be inside the baby's mouth • Baby's chin will touch the breast		
III. Observation of BF • Documentation of breastfeeding during hospital stay - Condition of breast and nipple - Position of mother & baby - Correct attachment - Frequency of feeding - Baby's behavior - Number of wet cloth/diapers - Number & character of bowel movements		**IV. Bring mother to the confidence that the baby is getting enough milk** • Passing urine at least 6 times/day (5th day on wards) • Baby is playing • Baby is sleeping well • Baby is gaining weight		**V. Expression of breast milk** • Manual expression of breast milk is better • Press areola by the thumb &index finger all around.	**vi. Preservation of breast milk** • Up to 4-8hrours in room temperature • up to 24hr in normal refrigerator (4^0C) • up to 3 month in deep freeze • up to 6 month in -20^0C

Algorithm for Management of BF



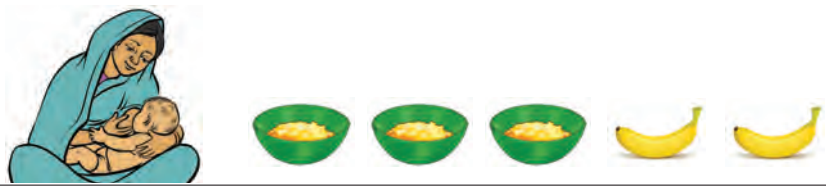
Ref: 1. MOH NURSING CLINICAL PRACTICE GUIDELINE, SINGAPORE 2002.
2. Management of Breastfeeding for Healthy full terms infants revised in 2014

16: Infant & Young Child Feeding (IYCF)

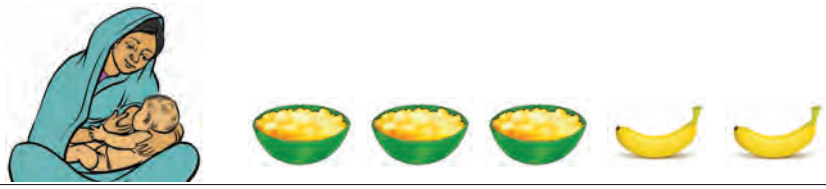
Recommended Feeding for Children up to Age Two (WHO Recommendation)
Newborn (Up to 6 months)
Begin breastfeeding within one hour of birth including colostrum; continue exclusive breastfeeding (no other liquids or water) for six months (180 days)

Starting from 6 to 8 months
Introduce local family foods; half of a 250 ml bowl or bati of semi-solid or solid food two times a day, plus two snacks/fruits, along with continued breastfeeding.

Starting from9 to 11 months
Rapidly increase amount of food for a young child to a half of a 250 ml bowl or bati of food three times a day plus two snacks/fruits, along with continued breastfeeding.



Starting from 12 to 23 completed months
Rapidly increase food to one full 250 ml bowl or bati of food three times a day, plus two snacks, along with continued& breastfeeding



Wash hands to protect food and health

Caregivers should wash their hands and the child's hands with water and soap before food preparation and feeding a child to prevent contamination of complementary food

Based on the National IYCF Strategy (IPHN 2007), the National IYCF Communication Framework and Plan (IPHN 2010), and the National Hygiene Promotion Strategy for the Water Supply and Sanitation Sector in Bangladesh, 2011, Policy Support Unit, Local Government Division, MoLGRD& C

Complementary Feeding

Baby 7 to 8 completed months

- Give mashed family foods: Solid/Semi Solids
- Give fish or egg or chicken liver daily + concentrated dal + Shak or yellow fruits/vegetable + fried foods and food made with cow's milk
- Feed ½ bati (250ml) two times a day

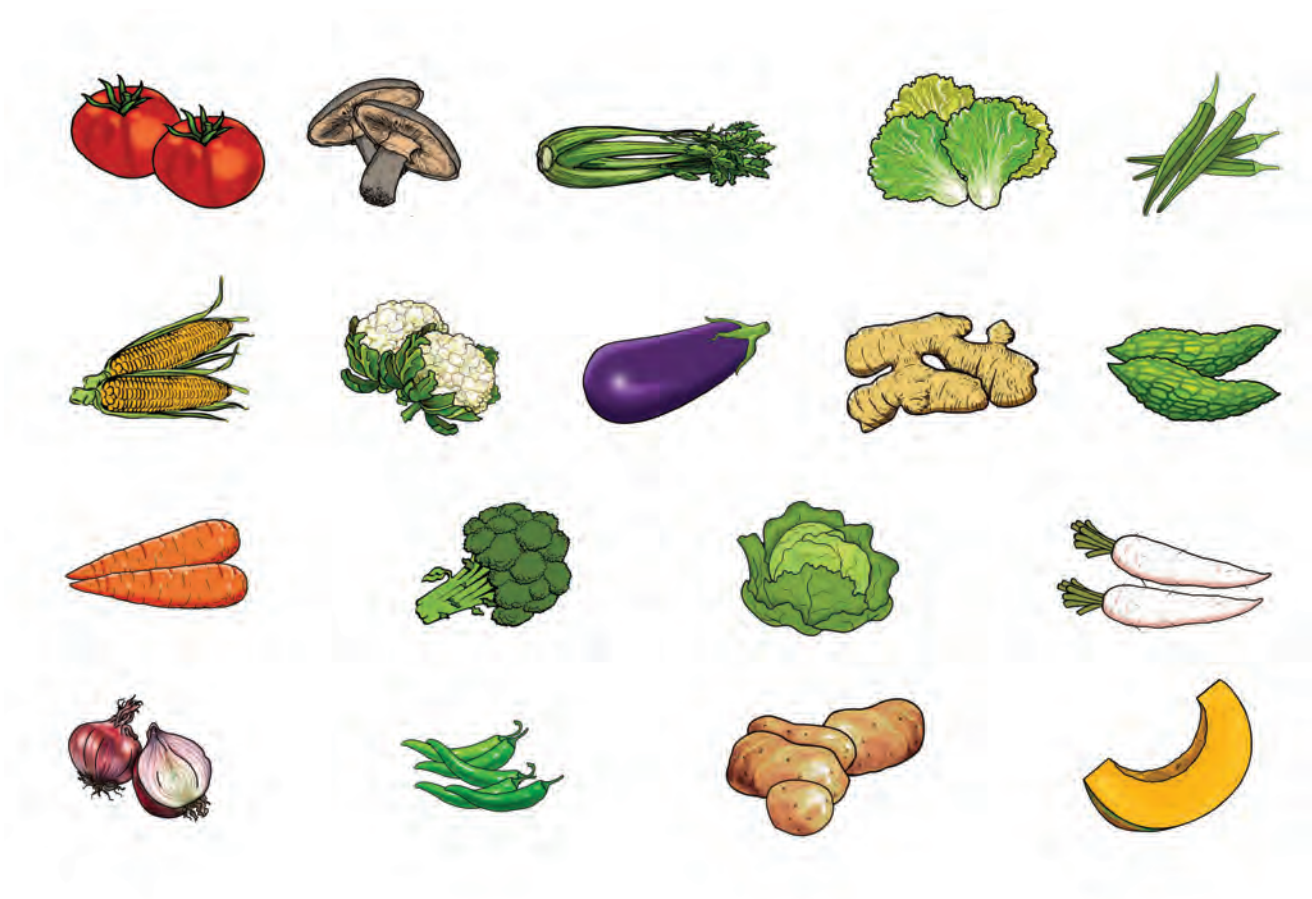
Baby 9 to 11 completed months

- Spend time and teach child to feed himself/herself
- Give fish or egg or chicken liver daily + concentrated dal + Shak or yellow fruits/vegetable + fried foods and food made with cow's milk
- Feed ½ bati (250ml) three times a day and 1-2 time nutritious snacks.

Child 12 to 23 completed months

- Encourage child to feed himself/herself
- Give fish or egg or chicken liver daily + concentrated dal + Shak or yellow fruits/vegetable + fried foods and food made with cow's milk
- Feed one full bati (250ml) three times a day and 1-2 time nutritious snacks.

Vegetables



17: Protocol for Antepartum Haemorrhage

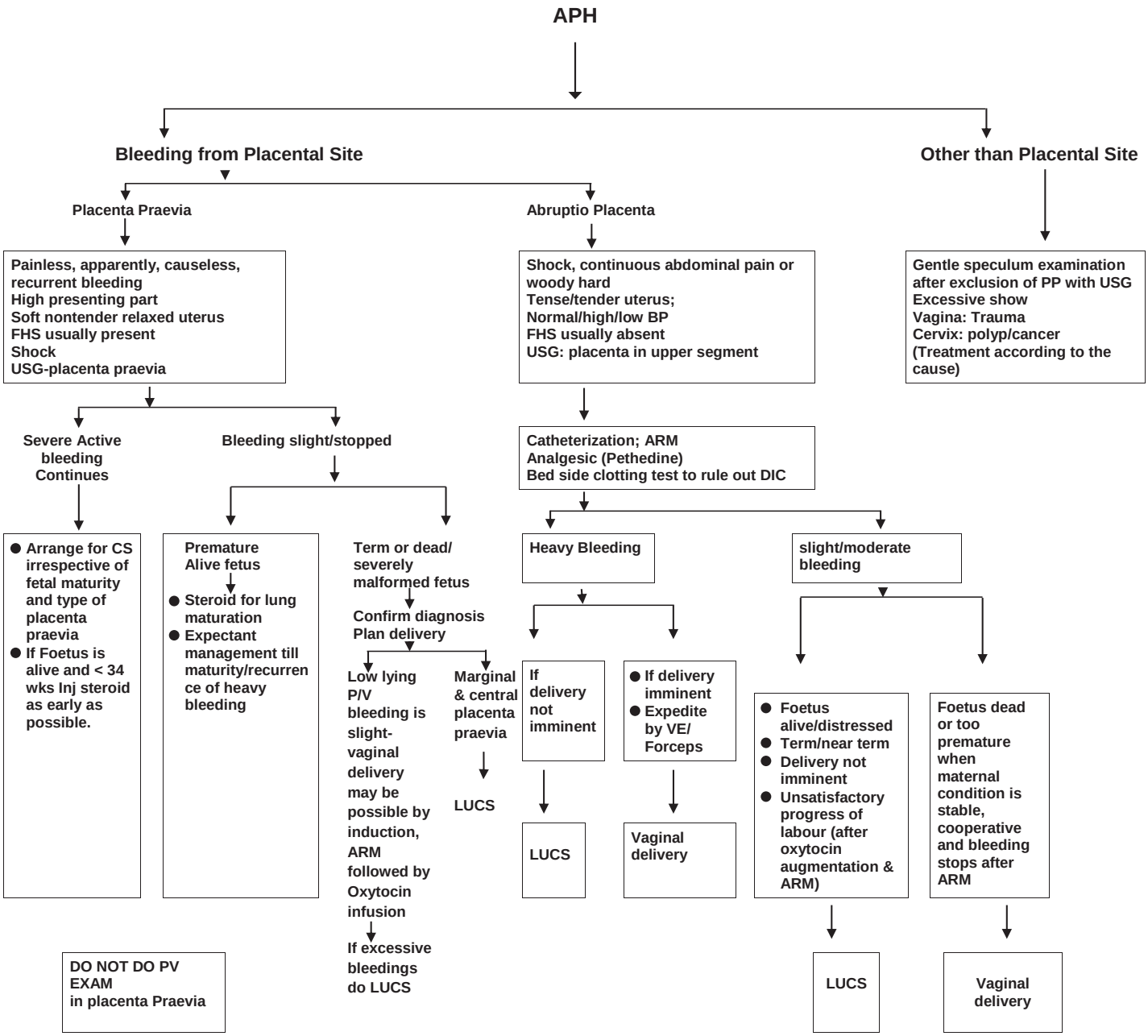
Definition	• Vaginal bleeding after 28 wks of pregnancy up to delivery of the foetus
Anticipate APH	• PE, Chronic hypertension, renal disease, previous episode of bleeding in this pregnancy • Advanced maternal age, multiparity, previous CS, past H/O of APH, polyhydramnios, PROM, multiple pregnancy
General Management	• History: Gestational age, H/O Trauma, Amount of blood loss, Pain in lower abdomen, tightness of abdomen **Clinical Examination:** • Pallor, Pulse, BP • P/A: Contour of uterus, Tenderness, FHR • P/V: Amount of blood loss **IV access:** • Blood for Hb%, grouping, Rh typing & cross matching. • Start I/V fluid (Normal saline/Ringer Lactate) • Blood transfusion (According to loss) • Shock: Resuscitate as necessary- IV fluids, oxygen • USG of uterus for pregnancy profile and localization of placenta (at labour room) if not already known • Reassurance &Counseling (keep ready at least 4 units of blood)

If expertise/facility unavailable:

- Provide first aid
- Counsel patient & family
- Refer

Flow chart for Specific Management of Antepartum Haemorrhage

(According to cause of hemorrhage)



Note: Inj. Dexamethasone 6mg 12 hourly 4 doses for 48 hrs.

Antepartum Haemorrhage

Coagulopathy (Clotting Failure)

Coagulopathy is both a cause and a result of massive obstetric hemorrhage. It can be triggered by abruption placenta, fetal death in-utero, septic abortion, eclampsia, amniotic fluid embolism and many other causes. The clinical picture ranges from major hemorrhage, with or without thrombotic complications, to a clinically stable state that can be detected only by laboratory testing.

Note: In many cases of acute blood loss, the development of coagulopathy can be prevented if blood volume is restored promptly by infusion of IV fluids (normal saline or Ringer lactate) and blood transfusion.

- Treat the possible cause of coagulation failure
  - abruptio placenta
  - o eclampsia
- Use blood products to control hemorrhage
  - Give fresh whole blood replace clotting factors and red cells;
  - If fresh whole blood is not available, choose one of the following based on availability
    - fresh frozen plasma for replacement of clotting factors (15 ml/kg body weight);
    - packed (or sedimented) red cells for red cell replacement
    - cryoprecipitate to replace fibrinogen
    - Platelet concentrates (if bleeding continues and the platelet count is less than 20,000)

Reference:

1. Antepartum Haemorrhage, Royal College of Obstetricians &Gynecological, Green-top guideline No-63, Nov-2011.

18: Management Protocol of Postpartum Haemorrhage

Definition	➢ Excessive per vaginal bleeding >500 ml following vaginal delivery & 1000 ml following C/S or any amount of bleeding which deteriorates maternal condition after child birth ➢ Symptoms: Bleeding P/V, giddiness, palpitation and shortness of breath. ➢ Signs: Rapid pulse, low BP, pallor, tachypnea or Shock
Identify PPH	➢ Primary PPH: Excessive per vaginal bleeding after delivery within 24 hours ➢ Secondary PPH: Excessive per vaginal bleeding after 24 hours of delivery up to 6 weeks post-partum.
Anticipate PPH	➢ Prepare and be aware of PPH for every birthing women ➢ Anticipate PPH (High risk) - *Past H/O of PPH, * In present pregnancy: Hypertension, APH, prolonged labour, multiple pregnancy, polyhydramnios * instrumental / operative delivery, *injudicious use of oxytocin, *chorioamnionitis, *anaemia (anemia in pregnancy should be investigated and treated)

Management of Primary PPH

Primary Care Level 1.a. At Community Clinic Level (Allocated service provider: CHCP, CSBA	**During Antenatal Care** ➢ Prepare and be aware of PPH for every birthing women (arrangement should always be ready) ➢ If PPH is anticipated →Refer to nearby Upazila Health Complex (where functioning CEmONC is present) or to secondary level or tertiary level hospitals (the closest one) **During Intra-natal Care** ➢ Stabilization of patient ➢ If PPH is anticipated → refer to Upazila Health Complex (where functioning CEmONC is present) **After Delivery** ➢ Active management of 3rd stage of labor for prevention of PPH ➢ Postpartum haemorrhage →due to uterine atony • Intravenous fluid (Hartman Saline) • Uterine massage • Uterotonic drugs (Oxytocin, misoprostol) • Bimanual compression • Condom tamponade (Sayeba's Method- needs training) & transfer to higher centre. ➢ Genital tract trauma – identify and refer. ➢ Refer to nearby Upazila Health Complex (where functioning CEmONC is present) or to nearest secondary/tertiary level hospitals (the closest one). ➢ **Aggressive resuscitation should continue and regular communication with the receiving unit is essential (Mobile phone Communication)**

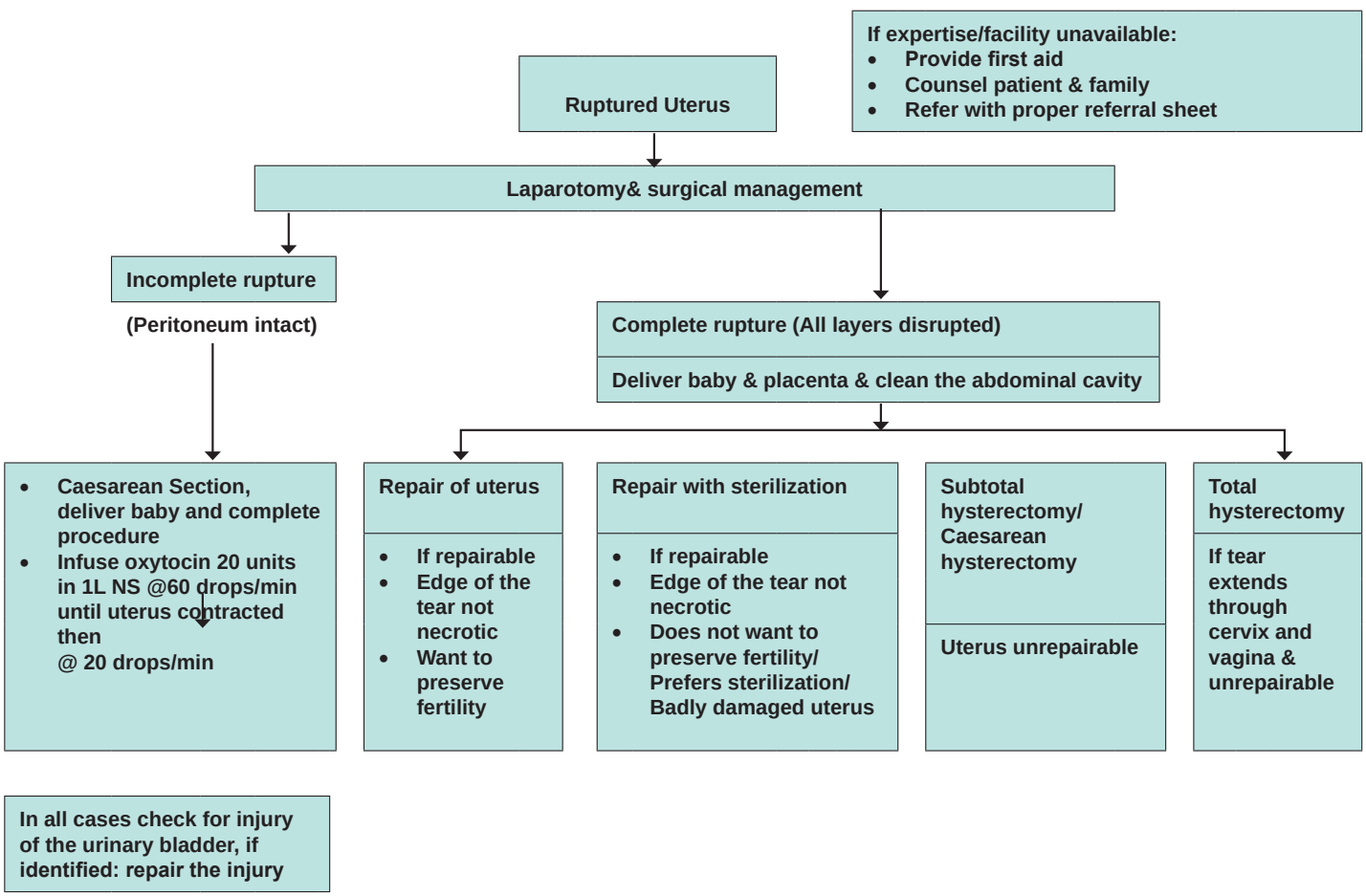
Primary Care Level 1.b At Union Health & Family Welfare Centre (UH & FWC) (Service provider: FWV, SACMO	**During Antenatal Care** ➢ Anticipate PPH ➢ If PPH is anticipated →Refer to nearby Upazila Health Complex (where functioning CEmONC is present) or to secondary level or tertiary level hospitals (the closest one) **During Intra-natal Care** ➢ Anticipate PPH ➢ If PPH is anticipated →Refer to nearby Upazila Health Complex (where functioning CEmONC is present) or to secondary level or tertiary level hospitals (the closest one). ➢ **Aggressive resuscitation should continue and regular communication with the receiving unit is essential** **After Delivery** ➢ Active management of 3rd stage of labor ➢ Primary Postpartum haemorrhage →due to uterine atony • Intravenous fluid (Hartman saline) • Uterine massage • Uterotonic drugs (Oxytocin/ergometrine /misoprostol) • Tranexamic acid (Oral 1gm/or 10 cc I/V slowly) • Bimanual compression • Condom tamponade (Sayeba's Method- needs training) & transfer to higher centre. ➢ Genital tract trauma – identify and repair, refer if needed ➢ If bleeding not controlled Refer to nearby Upazila Health Complex (where functioning CEmONC is present) or to secondary level or tertiary level hospitals (the closest one) ➢ **Aggressive resuscitation should continue and regular communication with the receiving unit is essential (Mobile phone communication)**
Primary Care Level 1.c At Upazila Health Complex (Consultant, MO, SSN)	**During Antenatal Care** • Anticipate PPH • If PPH is anticipated for placenta accreta or placenta previa with previous Caesarean→ refer to tertiary level hospital **During Intranatal Care** • Anticipate PPH • If PPH is anticipated→ Give general management: o Wide bore IV cannula o Hartman Saline o Counsel patient and party (Guardian) o Keep blood ready in hand Refer to nearby secondary/tertiary level care (the closest one), if it is a case of Placenta accreta and Placenta previa with history of previous caesarean section. ➢ **Aggressive resuscitation should continue and regular communication with the receiving unit is essential** **(Mobile phone communication)**

	After Delivery: AMTSL for prevention of PPH Postpartum haemorrhage i. Uterine Atony • Hartman saline IV (1L) with 20 IU oxytocin to infuse in 15 min and next 1 L within 30 mins, then regulate the rate of infusion until pulse settle down <100 b/min and systolic BP >100mm of Hg • Inj. Ergometrine 0.2mg IM /IV or Tab. Misoprostol 800-1000mcg PR • Tranexamic acid (slowly 10cc I/V, oral 1 gm) • If bleeding continued- Complete blood count • Bimanual compression • Condom tamponade (Sayeba's method), & transfer to higher centre if needed. ii. Genital tract trauma – identify & repair iii. Bleeding disorder: diagnose, fresh blood transfusion/treatment according to cause Refer to nearby secondary/tertiary level care if it's a case of Placenta accreta and Placenta previa with history of previous caesarean section or if other high risk factors are present. ➢ **Aggressive resuscitation should continue and regular communication with the receiving unit is essential (Mobile phone communication)**
2. Secondary Level Care (Consultant, MO, SSN)	**During Antenatal Care** Anticipate PPH • Keep blood ready (at least keep 2 donors ready) in hand • Check for emergency preparedness of the center Refer to nearby tertiary level care if it is a case of Placenta accrete/percreta or Placenta praevia with history of previous caesarean section **During Intranatal Care** Anticipate PPH • Prepare for general management: • Arrangement for ABC management • IV access with wide bore cannula • IV Fluid if needed • Blood grouping, cross matching and keeping donor ready • Counseling and keep the family informed **After Delivery** AMTSL for prevention of PPH Postpartum haemorrhage i. Uterine atony (A) • IV Hartman saline(1L) with 20 IU oxytocin to infuse in 15 min and next 1 L within 30 mins then regulate the rate of infusion until pulse settle down <100 b/min and systolicBP >100mm of Hg • Uterotonic drugs ➢ Inj. Ergometrine 0.2mg IM /IV ➢ Tab. Misoprostol 800-1000mcg PR • Tranexamic acid (slowly 10cc I/V, oral 1gm) • Complete blood count, coagulation profile • Uterine massage • External Aortic compression • Bimanual compression • Exploration of uterus/ Urinary Catheter • Condom tamponade (Sayeba's method) **If Continuous bleeding –** Operative intervention a. Laparotomy i. Conservative Surgery: By preserving uterus

	• B-Lynch method or modified B-Lynch • Uterine artery ligation • Ovarian artery ligation ii Hysterectomy b. Genital tract trauma – identify and repair c. Bleeding disorder: diagnose, fresh blood transfusion/treatment according to cause Refer to nearby tertiary level care center if PPH is anticipated for Placenta previa with history of previous caesarean section, placenta accrete/percreta& local support is inadequate→ • counsel patient and the family • refer to tertiary level hospital ➢ **Aggressive resuscitation should continue and regular communication with the receiving unit is essential**
3. Tertiary level care: Consultant, MO, Professor, senior Obstetrician, Obstetric Anesthetist, Gynecological Oncologist, Urologist, Interventional radiologist, Intensive care specialist, Neonatologist.	**During Antenatal Care** • Anticipate PPH • If PPH is anticipated for placenta accreta, percreta→counseling and keep the family informed • Keep donor ready (at least 4 donors) **During Intranatal Care** • AMTSL for prevention of PPH • Anticipate PPH If PPH is anticipated due to intrapartum risk , inform PPH team **If high risk- give General management:** • Arrangement for ABC management • IV access with wide bore cannula • Hartman Saline IV • Catheterization • Blood grouping, Rh typing, cross matching and keeping donor ready • Counseling and keep the family informed **After Delivery** AMTSL for prevention of PPH **Postpartum hemorrhage** **Uterine atony (A)** • Hartman solution IV(1L) with 20 IU oxytocin to infuse in 15 min and next 1 L within 30 mins then regulate the rate of infusion until pulse settle down <100 b/min and systolicBP >100mm of Hg • Uterotonic drugs ➢ Inj. Ergometrine 0.2mg IM /IV ➢ Inj. Carbetocin 100 mg I/V slowly stat ➢ Tab. Misoprostol 800-1000mcg PR • Tranexamic acid (10cc1/Vslowly, Oral 1gm) • Complete blood count, coagulation profile • Bimanual compression • Exploration of uterine cavity • Condom tamponade (Sayeba's method) • External Aortic compression i. If refractory bleeding- PPH team: Obstetrician, Obstetric Anesthetist, Gynecological Oncologist, Urologist, Interventional Radiologist, Intensive care specialist, Neonatologist, should be informed and ready **Operative intervention** Laparotomy: . i. Conservative Surgery: By preserving uterus • B-Lynch method or modified B-Lynch • Uterine artery ligation • Ovarian artery ligation ii. Hysterectomy(keep ready ICU bed)

19: Protocol & Flowchart for Management of Ruptured Uterus

Signs and Symptoms	➢ Vaginal bleeding after 28 wks of pregnancy, in labour and after delivery ➢ Rapid pulse, pallor, low BP, restlessness, other signs of shock, suprapubic pain and tenderness ➢ Distended & tender abdomen, loss of uterine contour, absent Foetal movement/Foetal heart sound ➢ Sense of something giving away with collapse
Suspect Ruptured Uterus	➢ Obstructed labour/transverse lie especially in multipara; H/O previous CS, myomectomy, hysterectomy; fall/blow on abdomen, forcible external cephalic version/internal podalic version: injudicious use of oxytocin, difficult manual removal of placenta, difficult forceps/ breech extraction: placenta accreta
General Management	➢ Assess severity of symptoms ➢ Exam: Palor, Pulse, BP, feeling & contour of uterus, FHR, PV blood loss ➢ Shock: Resuscitate as necessary, IV access, blood for Hb gr. & Rh and cross match. Start Hartman solution or normal saline, replace blood ➢ Reassurance & Counseling; Explain the situation and need for immediate interference/type of interference



In all cases check for injury of the urinary bladder, if identified: repair the injury

20: Flowchart for Management of Obstetric Shock

Shock is characterized by failure of the circulatory system to maintain adequate perfusion of the vital organs. Shock is a life threatening condition that requires immediate and intensive treatment

Shock in obstetrics may occur due to Bleeding, Infection& Trauma in pregnancy and postpartum period
Causes:

Bleeding in pregnancy and/ Postpartum

(1) Early pregnancy: Causes are abortion, ectopic and molar pregnancy

(2) Late pregnancy &labour: causes are placentae praevia, abruption placentae, ruptured uterus

(3) Post-partum: causes are PPH due to uterine atony, Injury to genital tract, retained placenta or placental fragments,

Infection:
Septic abortion, amnionitis, metritis, acute pyelo nephritis.

Trauma:
Causes are uterine and bowel injury during abortion, ruptured uterus, tears of the genital tract.

Signs and Symptoms

- Consciousness : Confused, no response to verbal stimulation or to pain (coma)
- Skin : Cold, clammy, pallor
- Pulse, BP : Rapid, low volume (more than 110 per minute). Low blood pressure (systolic BP less than 90mmHg)
- Respiration : Rapid/air hunger /gasping
- Hydration : Dehydrated, low urine output (less than 30 ml/hr.)
- P/V examination : According to the cause of shock

Immediate Management

- Shout for help; Left lateral position
- Placement of two large bore cannula, IV fluid (Crystalloid or colloid solutions) if a peripheral vein cannot be cannulated, perform venous cutdown (venesection)
- Blood for Hb, Gr & Rh and cross-match,
- Start Normal saline/Ringer's lactate
- Continuous catheterization: intake output chart
- Monitor vital signs: pulse & BP every 5 mins until stable, respiration temperature; urine output
- Keep patient warm by covering with blanket
- Foot end raised
- Reassure and keep patient and family informed, explain the situation and need for immediate intervention
- Urgent Inv grouping and Rh typing, cross match, Hb, hematocrit, bed side clotting test

Specific Management

Hemorrhage
- Resuscitation
- Control bleeding
- Replace blood
- Find out the cause and give treatment according

Infection
- If infection is suspected as the cause
- Collect appropriate samples (blood, urine, HVS, Pus) for microbial culture before starting antibiotics
- Give combination of antibiotics covering aerobic and anaerobic infections.
- Ampicillin 2g IV 6 hourly, Plus gentamicin 5 mg/kg IV every 24 hours
  - Resuscitation
  - Antipyretic

Others
- Eclampsia see protocol
- CVA
- Cardiac causes
- Pulmonary embolism
- Drug reaction hypoglycemia
- hepatic shock
- Amniotic fluid embolism
- Treat accordingly/Refer

Reassessment: Signs of improvement are:
- Stabilizing pulse (90 per minute or less)
- Increasing BP (systolic 100 mmHg or more)
- Improving mental status
- Increasing urine output (30 ml per hr. or more)

21: Protocol for Management of PROM

Definition	**Rupture of the fetal membranes before onset of labour** ➢ Term PROM: ≥37+0 weeks ➢ Preterm premature rupture of membranes (PPROM):<37 weeks' gestation.

Diagnosis **Symptoms &Signs**	• Maternal history: H/O gush of fluid P/V • Per speculum examination (sterile) to see ➢ Fluid coming through the cervix ➢ Fluid coming through cervix during coughing ➢ Typical odour of amniotic fluid confirms the diagnosis ➢ Ask the patient to place a vaginal pad over vulva & examine it 1 hour later (In suspected cases) • For Diagnosis Nitrazine test to detect pH change If available ➢ Fern test ➢ Fetal Fibronectin : (present in endocervix or the vagina in 93.8% cases) ➢ Ultrasound (helps to confirm the diagnosis)

General Management	• Confirm gestational age • Ask for pain, fever, foul smelling P/V discharge, Foetal movement • Assess pulse, temperature, uterine tenderness, liquour volume, uterine contraction, FHR, and vaginal discharge • Investigations : CBC, Urine RME, High Vaginal swab (HVS) for C/S, C-reactive protein (CRP), USG to see fetal wellbeing and liquor volume (AFI)

Special Note: Do not perform a digital vaginal examination

Management

➢ **≥36 weeks :** Active Management (Can wait for 24 hours for spontaneous onset of labour)

➢ **32-<36 weeks :**

- **Immediate induction and delivery after antibiotics and steroids administration (if gestational age <34, delivery 24 hours** after the last steroid injection) if there is sign of infections (Leukocytosis >16000/cu mm> , CRP > .9mg/dl , largest pocket of amniotic fluid < 2cm, variable deceleration and poor variability CTG, Cervical length <1.5cm with funneling
- **Otherwise Expectant management:**
  - Hospitalization
  - Antibiotics
  - Antenatal corticosteroids (<34 weeks)
  - Tocolytics only to get benefits of steroid administration/window for transporting to referral center
  - Maternal & Fetal Monitoring

➢ **>24- <32weeks: Expectant management.**

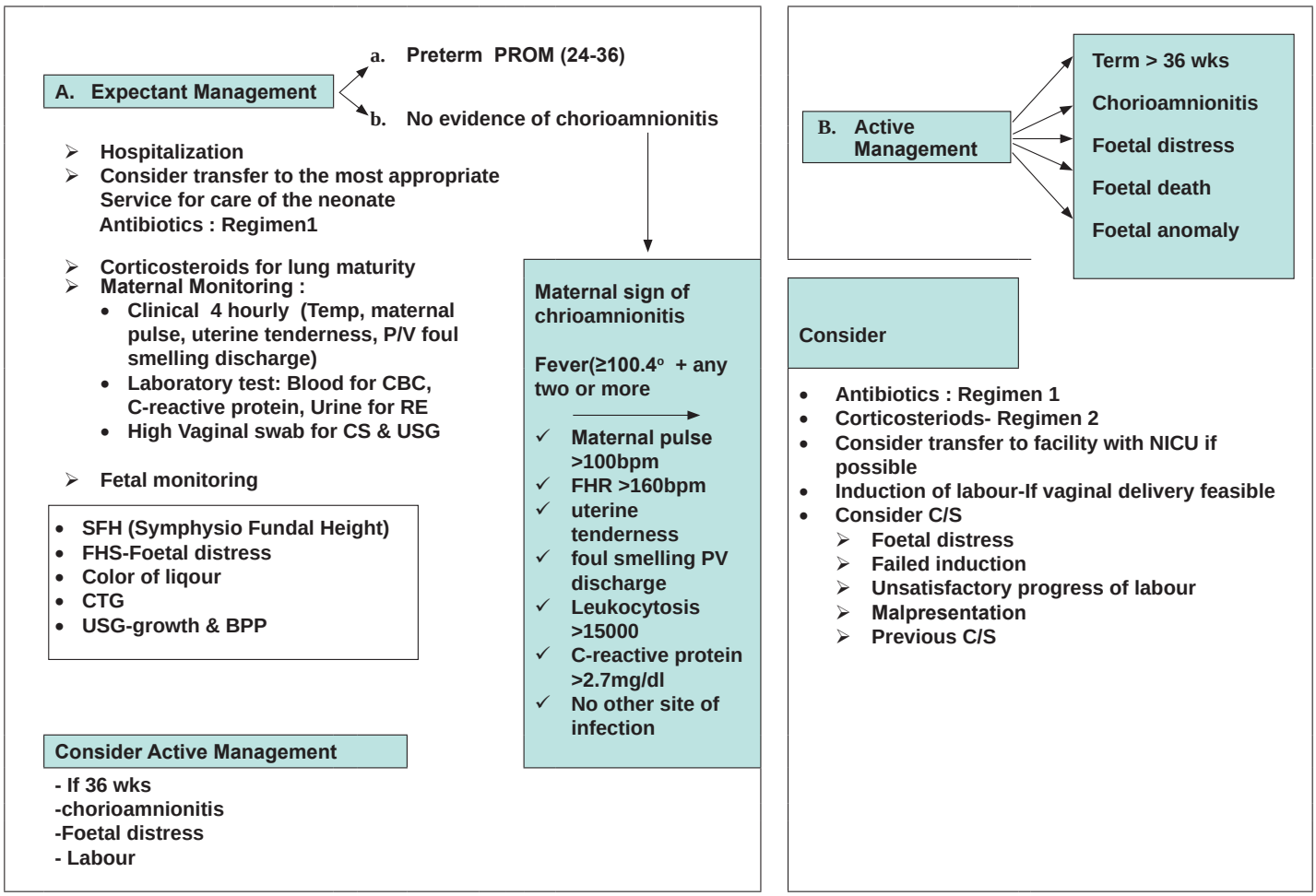
- Hospitalization
- Antibiotics administration
- Steroids administration
- Maternal & Fetal Monitoring

Tocolytics for 2 days if there is uterine contraction on admission to get benefits of steroid administration

➢ **<24 weeks:** Counseling & termination (as no management can improve prognosis) : Follow the protocol for termination of pregnancy

Note: Dose of cortico steroid: Inj. Dexamethasone 6 mg 12 hourly I/M 4 doses for 48 hours
Do not use steroid in presence of infections

Flow Chart



Foot Note: Regimen

Regimen 1: Antibiotics: **-Inj. Ampicillin/Cephalexin IV for 48 hours followed by Erythromycin 250 mg qds + Amoxicillin 500 mg tds- until delivery (NICE Guideline)**

If chorioamniotitis develops give injectable combination antibiotics: ampicillin (2 gm) IV 6 hourly + gentamicin (5 mg/kg) IV every 24 hours + Metronidazole IV (500 mg) 8 hourly until the patient is fever free for 24 hours

Source: Integrated management of pregnancy and childbirth managing complications in pregnancy and childbirth (MCPC)

Regimen 2: Corticosteriods for lung maturity: if < 34 wks – Inj. Dexamethasone (6mg) IM 12 hourly for total 4 doses

Ref:

1. Preterm Pre-labour Rupture of Membranes (Green-top Guideline No. 44).

   https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg44 Oct 1, 2010
2. Practice Guidelines. ACOG Guidelines on Premature Rupture of Membranes. *Am Fam Physician.* 2008 Jan 15;77(2):245-246.
3. Practical guide to High Risk pregnancy 3rd edition By Fernando Arias. Page 240
4. Pocket Book of Hospital care for mothers (Guidelines for management of common maternal conditions). WHO (2017 edition):189

http://www.searo.who.int/entitymaternal-reproductive_health/en

22: Preterm labour

Preterm delivery is associated with high perinatal morbidity and mortality.

Diagnosis

- Labour occurring before 37 weeks of gestation.
  - Palpable regular contractions
  - Blood-stained mucus discharge (show) or watery discharge
- Sometimes
  - Cervical dilatation and effacement
  - Light vaginal bleeding

Confirm the diagnosis of preterm labour by documenting cervical effacement or dilatation over 2 hours.

Management

Consists of giving cortico steroids, tocolysis and or allowing labour to progress. Maternal problems are chiefly related to interventions carried out to stop contractions.

Attempt tocolysis if:

- Confirmed gestational age <37weeks
- Cervix is<3cm dilated
- no amnionitis, preeclampsia or active bleeding
- no fetal distress

Note: This intervention aims to delay delivery until the effect of cortico steroids has been achieved

Tocolytic

Give a to colytic drug and monitor maternal and fetal condition (pulse, blood pressure, signs of respiratory distress, uterine contractions, loss of amniotic fluid or blood, fetal heart rate, fluid balance, blood glucose).

Corticosteroids

Antenatal Corticosteroids given to the mother

- To improve fetal lung maturity and chances of neonatal survival
- Considerable reduction in the risks of complications of prematurity such as:
  - Respiratory distress syndrome
  - Intraventricular haemorrhage
  - Perinatal death

Antenatal corticosteroid therapy is recommended for women at risk of preterm birth from 24 wks to 34 wks of gestation when the following conditions are met:

- Gestational age assessment can be accurately undertaken.
- Preterm birth is considered imminent.
- There is no clinical evidence of maternal infection.

Dose :

Give betamethasone 12 mg IM, 24 two doses hours apart OR

Dexamethasone 6 mg IM, four doses 12 hours apart.

A repeat course of antenatal corticosteroid is recommended if preterm birth does not occur within 7 days after the initial dose, and a subsequent clinical assessment demonstrates that there is a high risk of preterm birth in the next 7 days.

Note: Corticosteroids should not be used in the presence of frank infection. If preterm labour continues despite use of to colytic drugs, arrange for the baby to receive care at the most appropriate service with neonatal facilities. If needed and possible, refer the woman before she gives birth.

Table. Tocolytic drugs to stop uterine contractions

Drug	Initial dose	Subsequent dose	Side effects and precautions
• Nifedipine (preferred drug)	• 10-30 mg stat	• Followed by 10-20mg every 4-8 hours (titrate according to uterine activity) for up to 48 hours or until transfer is completed, whichever comes first.	• Contraindications: hypersensitivity to drug, CHF, Hypotension • Side effects: flushing, dizziness, palpitations
• Indomethacin	• 100 mg loading dose by mouth or rectum	• Give 25 mg every six hours for 48 hours	• If gestation is more than 32 weeks, avoid use to prevent premature closure of fetal ductus arteriosus. Do not use for more than 48 hours.

When tocolysis is considered in this context, nifedipine (a calcium channel blocker) is the preferred choice.

Note: Prophylactic antibiotic treatment for preterm labour with intact membranes is not recommended.

Magnesium Sulphate:

The use of magnesium sulfate is recommended now a days for women at risk of imminent preterm birth before 32 weeks of gestation for prevention of cerebral palsy in the infant and child.

- There are three dosing regimens :
  - IV 4 g over 20 minutes, then 1 g/hour until delivery or for 24 hours, whichever came first
  - IV 4 g over 30 minutes or IV bolus of 4 g given as single dose
  - IV 6 g over 20–30 minutes, followed by IV maintenance of 2 g/hour

There is insufficient evidence to recommend one specific dosing regimen over others .

- Allow labour to progress if:
  - The cervix is more than 3 cm dilated
  - There is active bleeding
  - The fetus is distressed, dead or has an anomaly incompatible with survival
  - There is amnionitis or preeclampsia
  - Monitor progress of labour using the partogram

Note: Avoid delivery by vacuum extraction, as the risks of intracranial bleeding in the preterm baby are high.

- Prepare for management of preterm or low birth weight baby and anticipate the need for resuscitation.

Reference:

1. WHO guidelines for management of common maternal conditions, Pocket book for Hospital care of mothers, 2017ed.p-234

a. To enter into routine β-hCG follow-up protocol.

23: Management Protocol for Hypertensive disorders in pregnancy at facility level

Definition:

Hypertensive disorders in pregnancy

Gestational hypertension

- Defined as systolic blood pressure ≥140 mm Hg and/or diastolic blood pressure (DBP) ≥90 mm Hg in a previously normotensive pregnant woman after ≥20 weeks of gestation in the absence of proteinuria or new signs of end-organ dysfunction.

The blood pressure readings should be documented on at least two occasions 4 hours apart

Preeclampsia: Occurrence of new-onset hypertension plus new –onset proteinuria after 20wks

Blood Pressure

- Greater than or equal to 140 mm Hg systolic or ≥90 mm Hg diastolic on two occasions at least 4 hours apart after 20 weeks of gestation, at the time or after delivery in a woman with a previously normal blood pressure.[11]
- Greater than or equal to 160 mm Hg systolic or ≥110 mm Hg diastolic, hypertension can be confirmed within a short interval (minutes) to facilitate timely antihypertensive therapy.[11] **and**

Significant Proteinuria

- Greater than or equal to 300 mg per 24-hour urine collection **or**
- Protein/creatinine ratio ≥0.3(each measured as mg/dl)
- Dipstick reading of 1+ (used only if other quantitative methods not available)

Mild preeclampsia/ Preeclampsia without severe features

- Two readings of Systolic BP 140 to≤160mmHg & DBP ≥90 to <110mmHg4 hours apart after 20 weeks gestation.
- Significant proteinuria (≥0.3gm in 24 hrs urine) or Protein creatinine ratio 0.3 or≥1+ on Dipstick.
- No evidence of organ dysfunction.

Severe preeclampsia/ Severe features of Preeclampsia (Any of these findings)

- Systolic BP ≥ 160 mm Hg &or Diastolic BP ≥ 110 mm Hg after 20 weeks gestation on 2 occasionsat least 4hrs apart
- Significant proteinuria (≥0.3gm in 24 hrs urine) or Protein creatinine ratio 0.3 or ≥1+ on Dipstick.

Or in the absence of proteinuria, new-onset hypertension with the new onset of any of the following:

- Thrombocytopenia- platelet count <100000/microliter
- Renal insufficiency- serum creatinine>1.1 mg.dl or a doubling of serum creatinine concentration
- Impaired liver functions- elevated liver transaminases ≥ twice normal concentration
- Pulmonary edema
- Cerebral or visual symptoms
  Headache (increasing frequency, not relieved by regular analgesics).
  Blurred vision.
- Oliguria (passing less than 400 mL urine in 24 hours).
- Upper abdominal pain (epigastric pain or pain in right upper quadrant)

Eclampsia

- New onset hypertension after 20 weeks gestation.
- Significant Proteinuria or ≥1+ on Dipstick.
- And sometimes.
  - o Altered sensorium or loss of consciousness.
  - o Other symptoms and signs of severe preeclampsia.
- Along with convulsions

Chronic hypertension

- Is defined as high BP known to predate conception or detected before 20 weeks of gestation or persists for more than 12 weeks postpartum Women.

Chronic hypertension with superimposed preeclampsia in a patient of chronic hypertension if there is:

- Women with hypertension only in early gestation who develop proteinuria after 20wks gestation.
- Women with hypertension with proteinuria before 20wks of gestation who
  - a) Experience a sudden exacerbation of hypertension or need to escalate dose of antihypertensive drug in previously well controlled BP
  - b) Sudden increase in liver enzymes to abnormal levels
  - c) Presence with decrement in platelet levels to below 100,000/ microliter
  - d) Manifest symptoms such as right upper quadrant pain and severe headache
  - e) Develop pulmonary edema
  - f) Develop renal insufficiency
  - g) Have sudden, substantial and sustained increases in protein excretion

Classification and Diagnosis of hypertensive disorders of Pregnancy based on symptoms & Signs

Symptoms and Signs Typically Present	Symptoms and Signs Sometimes Present	Probable Diagnosis
• Two readings of systolic BP ≥140mmHg or diastolic BP ≥ 90mm Hg 4 hours apart after 20 weeks' gestation • No proteinuria	–	Gestational Hypertension
• Systolic BP ≥140mmHg or diastolic BP ≥ 90mm Hg or more during first 20 weeks of gestation	–	Chronic Hypertension
Systolic BP ≥140mmHg or diastolic BP ≥ 90mm Hg or more during first 20 weeks of gestation and further rise of BP or new development of Proteinuria ≥1+	• Features of severe Preeclampsia	Chronic hypertension with superimposed preeclampsia
• Two readings of Systolic BP ≥140mmHg or diastolic BP ≥ 90mm Hg or more after 20wks gestation 4 hours apart • Significant Proteinuria or ≥1+proteinuria	–	Mild Preeclampsia

Symptoms and Signs Typically Present	Symptoms and Signs Sometimes Present	Probable Diagnosis
• Systolic BP ≥160mmHg or diastolic BP ≥ 110mm Hg or more after 20 wks of gestation • Significant Proteinuria	• Proteinuria might be absent • Headache (increasing frequency, unrelieved by regular analgesics) • Blurred vision • Oliguria (passing less than 400 mL urine in 24 hours) • Upper abdominal pain (epigastric pain or pain in right upper quadrant) • Pulmonary edema	Severe Preeclampsia
• Convulsions • Systolic BP ≥140mmHg or diastolic BP ≥ 90mm Hg or more after 20 weeks of gestation • Significant Proteinuria or ≥1+in dip stick	• Coma (unconscious) • Other symptoms and signs of severe preeclampsia	• Eclampsia

Management of hypertensive disorders in pregnancy

- Women with preeclampsia (mild/severe) and eclampsia should be stabilized and immediately referred to a CEmONC centre for management.
- Women with mild preeclampsia may rapidly progress to severe preeclampsia.

Gestational Hypertension/ Mild Preeclampsia

- Admission
- Monitor BP 4times a day
- Test for 24 hrs urinary protein – Do not repeat quantification of proteinuria
- Kick count daily
- Blood test: Twice a wk. (CBC, S creatinine, S electrolytes, s transaminases, Bilirubin) and urine parameters and examination of retina for changes is advisable
- Ultrasonography to determine fetal growth every 3wks
- Women with systolic BP 140/90mmHg to 149/99mmHg - No antihypertensive. Oral Labetalol if BP is 150/100-159/109mmHg, ((NICE)
- Discharge if BP normalizes and investigations are normal
- Follow-up twice weekly with weekly platelet counts and liver enzymes
- Monitor fetal growth, if signs of growth restriction consider early delivery

Severe preeclampsia

- Admit and Stabilize patient at CEmONC centre
- Principles of management:
  - Admission
  - Monitor BP at least 4 times a day
  - 24hrs total urinary protein (Do not repeat quantification of proteinuria)
  - Monitor blood tests: 3 times a wk.(CBC, S creatinine, S electrolytes)
  - Start antihypertensive: Oral labetalol
  - Plan delivery

Magnesium Sulfate: Start MgSo4 (10gm prophylactic dose) (if DBP ≥ 110 mm Hg or symptoms like headache, upper quadrant pain, blurring of vision present or persist)

For settings where it is not possible to administer the full magnesium sulfate regimen, the use of magnesium sulfate loading dose followed by immediate transfer to a higher level health-care facility is recommended for women with severe preeclampsia and eclampsia.

Antihypertensive medications (Oral)

Drug	Dose	Side Effects
Methyldopa	250 mg tds(max 2g)	Fatigue, depression
Labetalol	100 mg bd-tds (max 2400 mg)	IUGR, hypoglycemia
Nifedipine	10 mg bd- tds (max 120 mg)	Hypotension, headache

Drugs in hypertensive emergencies (defined as organ damage occurring because of severely elevated BP, BP≥160/110)

Drug	Dosage (LSS)	Repeat
Labetalol	10 mg IV	• If response to labetolol is inadequate (diastolic blood pressure remains above 110 mm Hg) after 10 minutes, give Labetalol 20 mg IV; Increase dose to 40 mg and then 80 mg if satisfactory response is not obtained after 10 minutes of each dose
Hydralazine	5 mg IV slowly over 5 minutes until blood pressure is lowered	• Repeat hourly as needed or give hydralazine 12.5 mg IM every 2 hours as needed
Nifedipine	5 mg oral	• If response to nifedipine is inadequate (diastolic blood pressure remains above 110 mm Hg) after 10 minutes, give an additional 5 mg

Management of Chronic Hypertension

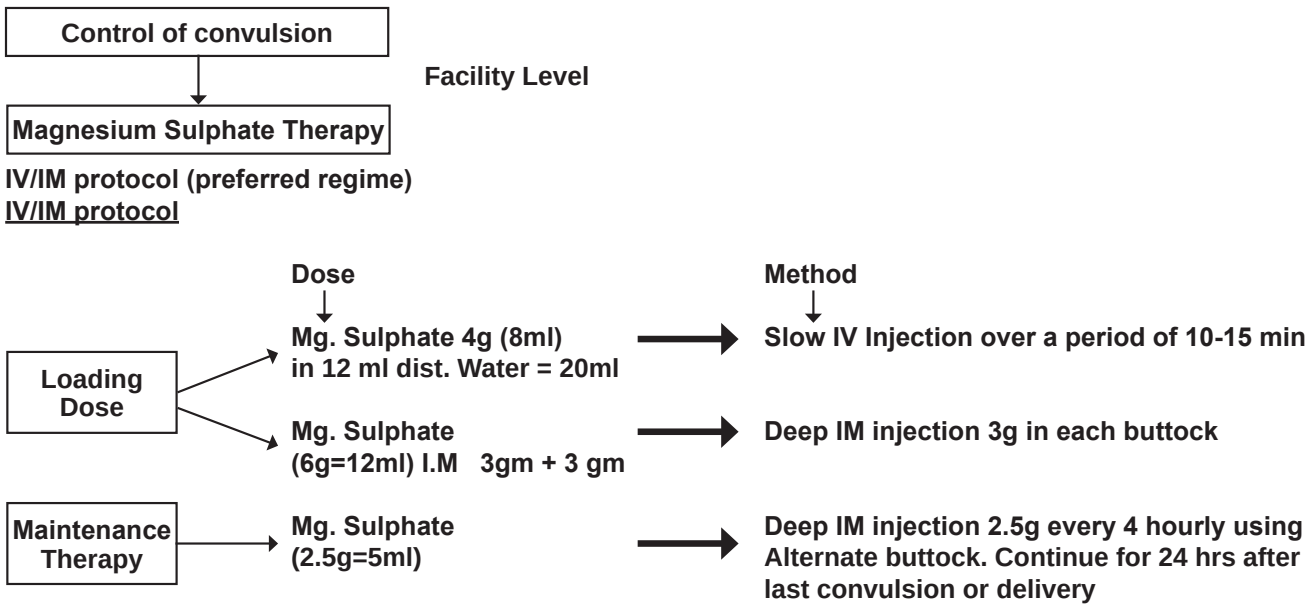
- Encourage rest.
- Do not lower blood pressure below 120/80 mmHg. High levels of blood pressure maintain renal and placental perfusion in chronic hypertension.
- If disease is well-controlled, continue the same antihypertensive if acceptable in pregnancy.
- Start antihypertensive if BP≥150/100.
- If proteinuria or other signs and symptoms are present, consider superimposed preeclampsia and manage as preeclampsia (see Table 3.1)
- Monitor fetal growth and condition:
    - o If there are no complications, deliver at 37 weeks.
    - o If fetal growth restriction is severe and pregnancy dating is accurate, assess the cervix and consider delivery.

Eclampsia

General Management

- If the woman is unconscious or convulsing, SHOUT FOR HELP
- Rapid assessment and management should be done simultaneously.
- Check airway breathing & circulation (ABC)
- If she is breathing, secure airway gives her oxygen @ 4-6 L per minute by mask or nasal cannula
- If she is not breathing, assist ventilation using an Ambu bag & mask & give oxygen @4-6 L per minute by ambu bag or endotracheal tube
- If the woman is convulsing/unconscious position her to left side (eclamptic position)
- Clear the mouth and throat as necessary.
- Protect her from injuries, but do not attempt to restrain her and never leave the women alone
- IV access --> IV fluid: Normal saline/Hartman's solution
- Continuous catheterization to monitor urine output and proteinuria
- Give anticonvulsant drugs
- If diastolic blood pressure remains above 110 mm Hg and systolic BP more than 160 mm Hg, give antihypertensive drugs. Reduce the diastolic blood pressure to less than 100 mm Hg but not below 90 mm Hg (this helps to maintain perfusion to the fetus).
- Maintain strict fluid balance and intake output chart, prevent fluid overload (80ml/Hour, not more than 2 liters in 24 hours)
- Maintenance of nutrition: 24 hours after delivery if patient is unconscious:- give Ryle's tube feeding - 250 ml fluid 2 hourly, if conscious give oral feeding
- Antibiotics: Inj. Amoxycillin - 8 hourly/Ceftriaxone 1 gm 12 hourly
- Provide constant supervision
- Monitor Pulse, BP, respiration (>16/min), reflexes every 1/2 hrs.
- Monitor FHR, urine output, auscultate lung bases
- Care of the eye, skin and maintain oral hygiene
- Investigation: CBC, Bl gr & Rh typing, S creatinine, S, electrolytes, SGPT, Bilirubin, urine for protein, bedside clotting test, Coagulation Profile

Magnesium Sulphate Therapy



Inj. MgSo4 IV Protocol (Inj. Nalepsin)

Loading dose: Inj. Nalepsin - 4 gm in 100ml rapid IV @60-75 drops/min over a period of 20 minutes

Maintenance dose: (in the facility)

Inj. Nalepsin 100ml (4gm) @6-7 dpm [need 4 hrs to finish one bottle & continue 6 bottles for 24 hrs (4 x 6 = 24 gm)]

[Inj. Nalepsin (4gm/100 ml) in 4 hrs

= 1 gm/hr. (i,e 25 ml/hr.)

= 25 ml x 15 drops/hrs(15 drops /ml)

= 375 drops /60 min= 6-7 drops /min]

IM protocol (Community level)
(If skill provider to give IV injection is not available - use IM protocol)

	Dose	Method
Loading Dose	Inj. MgSo4 (10 gm) 4 ampoule (2.5 x 4=10gm)	5 gm (2 amp in each buttock) Deep IM
Maintenance Dose	Inj. MgSo4 (2.5 gm = 5 ml)	2.5 gm every 4 hours using alternate buttock up to 24 hours Deep IM

Source: 1. WHO's essential care practice guidelines for pregnancy and childbirth
2. Life Saving Skills Manual, Essential Obstetric and Newborn Care, RCOG
3. Fernando Aries, Practical Guide to High risk pregnancy , 3rd ed Elsevier 2008

Foot Note-1:

- Mild preeclampsia often has no symptoms.
- Mild preeclampsia may progress rapidly to severe preeclampsia.
- Oedema of the feet and lower extremities are not considered a reliable sign of preeclampsia.
- The risk of complications, including eclampsia, increases greatly in severe preeclampsia.
- A small proportion of women with eclampsia have normal blood pressure.
- Treat all women with convulsions as if they have eclampsia until another diagnosis is confirmed.
- Random urine sampling, such as the dipstick test for protein, is a useful screening tool.
- If dipsticks are not available, a sample of urine can be heated to boiling in a clean test tube. Add a drop of 2% acetic acid to check for persistent precipitates that can be quantified as a percentage of protein to the volume of the total sample.
- Only clean-catch mid-stream specimens should be used.

Foot Note-2:

- MgSO4 Loading Dose: MgSO4 20% solution (4 g IV over 5 minutes), MgSO4 50% solution (3 g deep IM injection in each buttock).
- Maintenance Dose: Check& if urine output > 30 ml per hour, respiratory rate > 16, and patellar reflexes present, then give MgSO4 2.5 gm 50% solution every 4 hours 1.M in alternate buttock for 24 hrs.
- MgSo4 toxicity --> RR < 16/min, urine output< 30 ml/hr., absent patellar reflex
    - Omit next doses of MgSo4
    - give Inj. calcium gluconate 1 gm (10 ml) slow IV
    - Assist ventilation if needed
- If convulsion recur after 30 minutes of loading dose - add 2.5 gm of Inj. MgSo4 in 5 ml DW(20% solution) push IV over 5 minutes
- If skilled provider to use IV/IM protocol is not available use IM protocol (give 10 gm IM loading dose MgSo4 5 gm in each buttock before referral) at peripheral facility / home before referral
- Diazepam therapy - If MgSo4 not available /contraindicated
- Loading dose - 10 mg IV slow over 2 min, if convulsion recur repeat 10 mg IV slowly:
- Maintenance dose: Inj. Diazepam 40 mg in 500 ml NS in IV drip. Rate adjusted so that patient remains sedated but arousable. Do not use >100mg/24 hrs
- IV fluids to maintain urine output of 30 ml/hour. Use 1 liter normal saline over 6 hours initially and monitor carefully for fluid overload.
- Bed side clotting test: Take 5ml blood in a test tube, keep it upright, turn it after 5 minutes to seeclot formation.
    - If clotnot forms, turn every 1 minute. If fails to clot within 10 min - test +ve - coagulation failure.

Referral

Consider referral for tertiary level care of women who have:

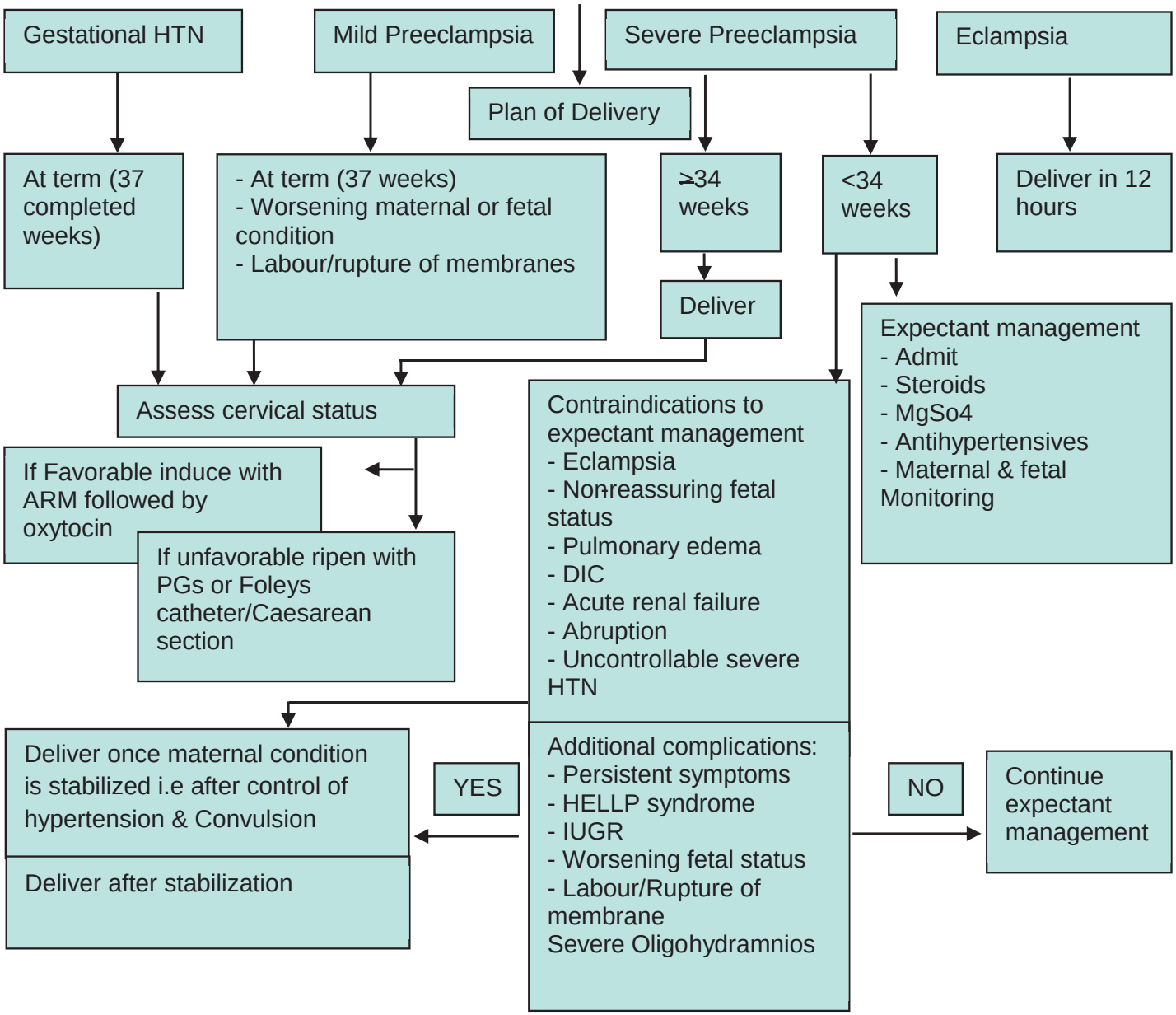
□ Oliguria that persists for 48 hours after delivery

□ Coagulation failure (e.g. coagulopathy)

□ Hemolysis, elevated liver enzymes and low platelets (HELLP syndrome)

□ Persistent coma lasting more than 24 hours after convulsion

Plan for delivery



ARM: Artificial rupture of membranes
PG: Prostaglandins
DIC: Disseminated Intravascular Coagulation
IUGR: Intrauterine Growth Retardation

HELLP Syndrome: Hemolysis
EL: Elevated Liver enzymes
LP: Low Platelet count

Management Protocol for Hypertensive Disorder in Pregnancy at Community level

Providers

- FWV
- FWA (CSBA)
- HA (CSBA)
- SACMO
- CHCP

Facility

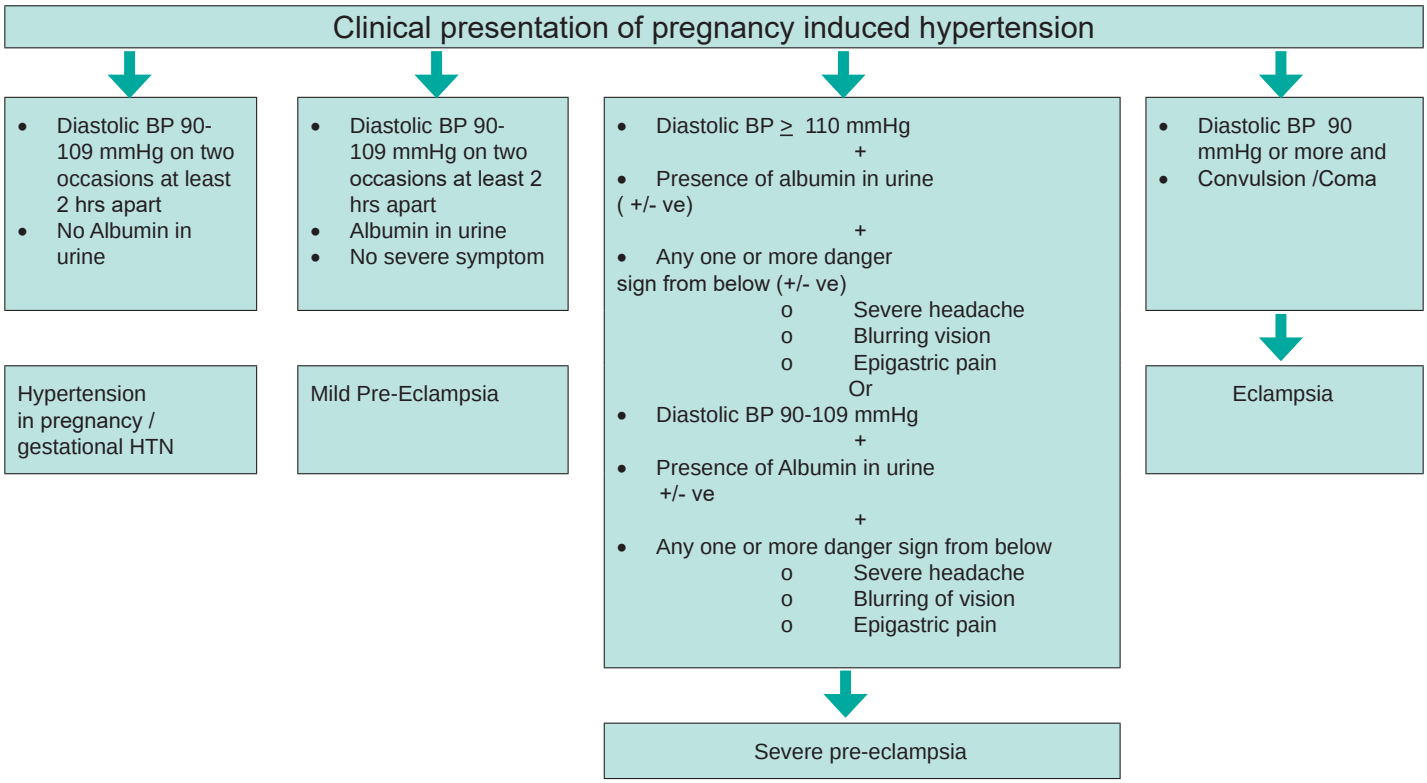
- Settings where administration of full magnesium sulphate regimen is not possible
- Not ready to manage PE/Eclampsia patients
- Recommendation- use loading dose of magnesium sulphate followed by immediate transfer to CEmONC center of severe PE and Eclampsia patient.

Classification of Hypertensive Disorder in Pregnancy

Four types

1. Pregnancy induced hypertension: Hypertension after 20 wks of gestation
2. Preeclampsia: Pregnancy induced hypertension with proteinuria
3. Severe preeclampsia: Presence of one or more danger sign with preeclampsia
4. Eclampsia: Preeclampsia with convulsion or coma

Symptoms and Signs according to classification of hypertensive disorder in pregnancy



- Remember, pregnancy induced hypertension may not produce any symptom, only high BP may be the sign
- Sometime albumin may not be present in urine

Diagnosis of hypertension in pregnancy & management at community level

As per WHO recommendation, by 8 standard ANC, hypertension in pregnancy can be detected. Take specific history with the aim to detect hypertension in pregnancy in each ANC and PNC and even in intranatal period.

Ask or query the pregnant woman –

- Hypertension from before pregnancy or after pregnancy
- Any symptom from following –
  - Severe headache
  - Blurring of vision
  - Epigastric pain, nausea, vomiting, generalized edema
- Measure BP 2 hourly in sitting position
- Check for albumin in urine

For diagnosis of Pregnancy induced hypertension, PE, Eclampsia

Ask the patient / family member/attendant who came with the patient about

- Last menstrual period of pregnant woman, duration of pregnancy, time place and birth attendant if she has immediate delivery
- Whether she was suffering from HTN before
- Whether the pregnant woman had headache, swelling of body, epigastric pain if any, for how long?
- Whether she had any P/V watery discharge or bleeding if any for how long
- Whether she has labour pain if any for how long?

Assessment of Patient condition

Eclampsia is a very emergency condition, so, some management should be given side by side the examination of the patient.

- Watch for consciousness of patient. If the patient is unconscious kept her in the left lateral position with straight head to make the airway open up (eclamptic position)
- To prevent tongue bite and to drain saliva through opening of mouth, put rolled scarf or cloth in between two gum or and teeth and aside
- Be careful the patient should not be hurt or be fallen from bed.
- Observe patient is breathing and make sure that the airway is open and clean
- Check pulse and BP, examine the lower abdomen if the bladder is full or not
- Check per abdominally SFH, contraction of uterus lie and FHS
- If the patient has labour pain do pervaginal examination to assess the dilatation of cervix and delivery is imminent or not
- Check for postpartum haemorrhage and injury in the vagina if the patient come after delivery and take measures accordingly

Primary Management (Severe Preeclampsia and Eclampsia) – at community level

A. Antenatal

- Injection MgSo4 10 gm (20 ml) I/M, (5 gm (10 ml) I/M in each buttock)
- Immediately refer to comprehensive EmONC center /district hospital

B. Intranatal (imminent delivery, 1st stage of labour /2nd stage of labour)

- Inject Inj. MgSo4 loading dose 10 gm (20 ml) I/M, (5 gm (10 ml) I/M in each buttock)
- Conduct delivery
- AMTSL
    - Inj. Oxytocin I/M stat / Tab. Misoprostol 2 tab per rectally
    - Control cord traction
    - Fundal massage
    - Record BP hourly
    - Refer the patient immediately to comprehensive EmONC Centre/district hospital

C. Postnatal :

- Inj. MgSo4 5 gm/ I/M in each buttock, total 10 gm (20 ml) I/M
- Refer immediately to comprehensive EmONC centre /district hospital

Management of Eclampsia

- The aim of management of eclampsia is to prevention of maternal and Foetal death by preventing respiratory distress and convulsion
- Keep the patient in left lateral position with head extended and at lower level to make the airway open up (eclamptic position)
- Introduce rolled cloth in between both gum and teeth and keep the airway open and clean
- Counsel the family members about the effects on mother and foetus
- Indwelling Foley's catheterization to measure urine output (if possible)
- Inject loading dose of inj. MgSo4 5 gm in each buttock I/M (if respiration rate and urine output is normal (according to chart)
- Immediately counsel with referral centre and fill up the referral card
- Immediately refer the patient to nearby comprehensive EmONC centre by managing transport
- If delivery is imminent give inj. MgSo4 loading dose as above and prepare for conduction of delivery
- Active management of 3rd stage of labour
    - Inj. Oxytocin I/M immediately /Tab. Misoprostol (2 tab) per rectally
    - Control cord traction
    - Fundal massage
- Inj. MgSo4 I/M stat if it occur after delivery, immediate care of newborn and refer immediately

IM protocol (Community level)
(If skill provider to give IV injection is not available - use IM protocol)

	Dose	Method
Loading Dose	Inj. MgSo4 (10 gm) 4 ampoule (2.5 x 4=10gm)	5 gm (2 amp in each buttock) Deep IM
Maintenance Dose	Inj. MgSo4 (2.5 gm = 5 ml)	Deep IM 2.5 gm every 4 hourly using

Job description for management of preeclampsia and eclampsia at community level

WHERE	WHO	WHAT	SYMPTOMS AND SIGNS	DIAGNOSIS	TO DO
At Home	Health Assistants(HA), Family Welfare Assistants(FWA), Community Skilled Birth Attendants (CSBA)	-Registration of the pregnant women - Counseling about pre-eclampsia and eclampsia by using pictorial cards - Blood pressure(BP) has to be measured in sitting position - If Diastolic BP is raised >90mmhg, then repeat BP check after 1 hr. -Urine albumin should be measured by Dip stick	- Severe Headache - Blurring Vision - Epigastric Pain -Measure BP(if possible)		
			-Diastolic BP ≥90mmHg (on two occasion) and Urine albumin nil	Pregnancy induced hypertension (PIH)	-Advise rest - Explain danger signs - Check BP and urine albumin again after 3 days -If diastolic BP remains ≥90mmHg refer her to doctor at Upazila health complex for treatment of hypertension
			Diastolic BP 90-109 mmHg (on two occasion) and Urine albumin present but no danger signs	Mild Preeclampsia	-Immediately refer to Comprehensive Emergency Obstetric Care (CEmONC) or District hospital
			Diastolic BP 90-109 mmHg (on two occasion) and Urine albumin present and danger signs present	Severe Preeclampsia	Start loading dose of magnesium sulphate (MgSO4) Refer to District hospital or Comprehensive Emergency Obstetric Care (CEmONC)
			Diastolic BP ≥110 mmHg (on two occasion) and Urine albumin present	Severe Preeclampsia	Start loading dose of mgSO4 Refer to District hospital or Comprehensive Emergency Obstetric Care (CEmONC)
			Diastolic BP ≥90mmHg with convulsion	Eclampsia	Start loading dose of mgSO4 Refer to District hospital or Comprehensive Emergency Obstetric Care (CEmONC)
At EPI Center	Community Health Care Provider (CHCP) at Community Clinic/ FWV at Satellite clinic	- Counseling about pre-eclampsia and eclampsia by using pictorial cards and refer			
At Community Clinic	Health assistant (HA), Family welfare assistant(FWA), Community Skilled Birth Attendants (CSBA), Community Health Care Provider (CHCP)	Registration of the pregnant women Counselling about preeclampsia and eclampsia by using pictorial Cards Classification of the disease according to Danger Sign verification	Severe Headache Blurring Vision Epigastric Pain Measure BP if possible	Pre-eclampsia (probable)	- Arrange BP measurement at sitting position by Skilled birth attendant(CSBA) or Family welfare visitor(FWV) - Communicate with the CSBA or FWV through cell phone - Send the pregnant woman to Union Health and Family Welfare Centre

Job description for management of preeclampsia and eclampsia at UH & FWC level

WHERE	WHO	WHAT	SYMPTOMS AND SIGNS	DIAGNOSIS	TO DO
Union Health &Family welfare Centre (UH&FWC) Satellite clinic	Family Welfare Visitor (FWV), Sub-Assistant community medical officer(SACMO) Doctor if posted (special case)	Blood pressure(BP) has to be measured in sitting position If Diastolic BP is raised >90mmhg, then repeat BP check after 1 hr. rest Urine albumin should be measured by urine stick	Diastolic BP ≥90mmHg (on two occasion) and Urine albumin nil	Pregnancy induced hypertension (PIH)	Advise rest Explain danger signs Check BP and urine albumin again after 3 days If diastolic BP remains ≥90mmHg refer her to doctor at Upazila health complex for treatment of hypertension
			Diastolic BP 90-109 mmHg (on two occasion) and Urine albumin present but no danger signs	Mild Pre-eclampsia	Immediately refer to Comprehensive Emergency Obstetric & Newborn Care (CEmONC) or District hospital
			Diastolic BP 90-109mmHg (on two occasion) and Urine albumin present and danger signs	Severe Pre-eclampsia	Start loading dose of magnesium sulphate (mgSO4) Refer to District hospital or Comprehensive Emergency Obstetric & Newborn Care (CEmONC)
			Diastolic BP ≥110 mmHg (on two occasion) and Urine albumin present	Severe Pre-eclampsia	Start loading dose of mgSO4 Refer to District hospital or Comprehensive Emergency Obstetric& Newborn Care (CEmONC)
			Diastolic BP ≥90mmHg with convulsion	Eclampsia	Start loading dose of mgSO4 Refer to District hospital or Comprehensive Emergency Obstetric & Newborn Care (CEmONC)

Protocol for management of pre-eclampsia and eclampsia at Facility level

(at District hospitals or Comprehensive Emergency Obstetric care Centre)

WHERE	WHO	HOW WHAT	OBSERVATION	DIAGNOSIS	TO DO
Upazila Health Complex (at Comprehensive Obstetric care Centre or Basic Obstetric care Centre)	Doctor	☐ Measure BP in sitting position ☐ If diastolic BP≥90mmhg then repeat BP check after 1 hr. ☐ Check urine albumin -encourage routine antenatal check ups -advise skilled obstetric care/hospital obstetric care -to prevent PIH/pre-eclampsia/eclampsia prescribe calcium 500mg 2 tablet daily to all pregnant woman during their antenatal/ prenatal visits from 12 weeks pregnancy onwards - Advise birth spacing of 2-5 years to women who has child and encourage to use Long acting reversible contraceptives(LARC)	- Diastolic BP ≥90mmHg (on two occasion) and Urine albumin nil	Hypertension	-Advise rest - Explain danger signs - Check BP and urine albumin again after 3 days -If diastolic BP remains ≥100mmhg add antihypertensive. For example: labetalol, methyl dopa, nifedipine, hydralazine Drugs which are contraindicated in pregnancy: ACE inhibitor, beta blocker, diuretics (frusemide)
			Diastolic BP 90-110 mmHg (on two occasion) and Urine albumin present but no danger signs	Mild Preeclampsia	-Immediately refer to Comprehensive Emergency Obstetric & Newborn Care (CEmONC) or District hospital
			Diastolic BP 90-<110mmHg (on two occasion) and Urine albumin present and danger signs	Severe Preeclampsia	-Start loading dose of injection magnesium sulphate -Refer to District hospital or Comprehensive Emergency Obstetric & Newborn care (CEmONC)
			-Diastolic BP ≥110 mmHg and Urine albumin present	Severe Pre-eclampsia	-Start loading dose of Inj. MgSO4 -Refer to District hospital or Comprehensive Emergency Obstetric & Newborn Care (CEmONC)
			-Diastolic BP ≥90mmHg with convulsion	Eclampsia	-Start loading dose of Inj. MgSO4 -Refer to District hospital or Comprehensive Emergency Obstetric & Newborn Care (CEmONC)

Protocol for management of pre-eclampsia and eclampsia at Facility level

(at District hospitals or Comprehensive Emergency Obstetric care Centre)

Patients with severe preeclampsia/eclampsia before arriving at comprehensive obstetric care centre:

- If loading dose of injection magnesium sulphate is pending treat according to **Protocol of severe pre-eclampsia and eclampsia** [standard management protocol on Emergency Obstetric& Newborn Care (EmONC)]
- If loading dose of injection magnesium sulphate given continue with magnesium sulphate. Maintenance Therapy as per mentioned protocol.

If patient convulse after giving loading dose during continuation of Maintenance Therapy; then:

A. If convulsion occurs within 30 minutes of giving injection Magnesium sulphate- keep in observation

B. If convulsion occurs after 30 minutes of giving injection Magnesium sulphate –give injection MgSO4 2.5 gm (5ml) diluted with 5 ml distilled water

or normal saline slow IV.

-Encourage routine antenatal and postnatal care

- Measure BP in sitting position
- If diastolic BP≥90mmhg then repeat BP check after 1 hr.
- Check urine albumin

- Advise skilled obstetric care/hospital obstetric care

-To prevent PIH/Pre-eclampsia/eclampsia prescribe calcium 500mg 2 tablet daily to all pregnant woman during their antenatal/prenatal visits from 12 weeks pregnancy onwards

- Advise birth spacing of 2-5 yrs. to women who has child and encourage to use Long acting reversible contraceptives (LARC)

24: Protocol for Gestational Diabetes Mellitus

Hyperglycaemia first detected at any time during pregnancy should be classified as either gestational diabetes mellitus (GDM) or diabetes mellitus in pregnancy (DIP), according to WHO criteria.

Diagnosis of GDM

1. **Diagnosis of GDM (at any time in pregnancy if one or more of the following criteria are met):**
   - Fasting plasma glucose : 5.1-6.9 mmol/l (92 -125 mg/dl)
   - 1-hour plasma glucose : ≥ 10.0 mmol/l (180 mg/dl)
   - 2-hour plasma glucose : 8.5-11.0 mmol/l (153 -199 mg/dl)

2. **Diabetes in pregnancy (DIP)** if one or more of the following criteria are met:
   - Fasting plasma glucose : ≥ 7.0 mmol/l (126 mg/ dl)
   - 2-hour plasma glucose : ≥ 11.1 mmol/l (200 mg/dl)
   - Random plasma glucose: ≥ 11.1 mmol/l (200 mg/ dl) in the presence of diabetes symptoms.

Screening of GDM

1. All pregnant women at booking visit and rescreen between 24 and 28 wks(if initial OGTT is normal)
2. Those who are high risk for GDM, rescreen again between 34 and 36 wks ((even if 2nd OGTT is normal)

Risk factors include:

- Previous diagnosis of GDM
- Prediabetes
- Member of a high-risk population
- Age ≥35 years
- BMI ≥23 kg/m^2(based upon ethinicity)
- PCOS, acanthosisnigricans
- Corticosteroid use
- History of macrosomic infant
- Current fetal macrosomia or polyhydramnios

Management

Key Components

- Lifestyle Management
- Medical Nutrition Therapy (MNT)
- Pharmacologic therapy

1. **Life Style Management :**Moderate exercise (at least 30 minutes/day) aerobic activities: walking 20-30min,3-4 times/wk.

2. **Medical Nutrition Therapy (MNT)**: By a registered dietitian if available
   - Diet Plan: 3 meals and 3 snacks (midmorning, afternoon and prebed)
   - Calorie needed
     - Normal: BMI (18.5–22.9 kg/m^2): 30–38 kcal/kg/day
     - Overweight: BMI (23-27.4 kg/m^2): 25 -30 kcal/kg/day
     - Obese: BMI (>27.5kg/m^2): 30-33% calorie restriction
     - Underweight BMI: (<18.5kg/m^2) : 35- 40kcal/kg /day

- Calorie Distribution :
  - At breakfast 10-15%
  - At lunch 20-30%
  - At dinner 30-40%
  - Snacks 0-10%
- Composition: Carbohydrate- 40-50% complex, Protein 20%, Fat 30-40%(10% saturated)

3. Pharmacotherapy: If women with GDM do not achieve glycemic targets within 2 weeks from nutritional therapy alone, insulin therapy should be initiated.

Starting insulin dose

0.8U/kg/day in 1st trimester

1U/kg /day in 2nd trimester

1.2U/kg/day in 3rd trimester

Total daily insulin requirement=

Give 2/3rd of total dose in fasting state → 2/3rd as NPH (intermediate); 1/3rd as regular insulin or Lispro

& 1/3rd at night → ½ regular or insulin lispro at dinner; ½ NPH at bed time

Or

Give Regular Insulin with starting dose as Inj Actrapid/Maxsulin R/HumilinR ® 4+4+4 (±2) Subcutaneously ½ hr. before meal

Or

Inj Intermediate insulin+ Regular insulin (Mixtard 70/30) ®8+0+4 (±2) Subcutaneously ½ hr. before meal and then treat the dose as per glucose level

Glycemic control

i) Glycemic target :

- Preprandial < 5.3 mmol/L
- 1-hour postprandial BG< 7.8 mmol/L; or
- 2 hours post-prandial BG < 6.7 mmol/L

ii) Self-monitoring of blood glucose (SMBG) : Teach and ask the patient to monitor blood glucose at least 4 times/day (i.e. fasting & 2 hour after each meal i.e. breakfast, lunch, dinner)

Special points to remember:

1 unit of rapid acting insulin lowers blood glucose 30mg/dl

- 10gm of –CHO increases blood glucose 30mg/dl
- 1unit of rapid acting insulin will cover intake of 10gm of -CHO

Special points for antenatal care

- Well controlled GDM without any complications : routine antenatal care
- Uncontrolled GDM +/or any complication : every 2 weekly in 2nd trimester, every wk. in 3rd trimester
- Fetal anomaly scan : at 18 -22wks
- Fetal echocardiography: at 24 – 26 wks

- Woman is counselled to keep record of daily fetal movement counts because of unexplained IUD
- Well controlled GDM with MNT, can deliver at term , preferably with neonatal care facilities
- Woman on insulin should be referred at higher centre for monitoring during labour, infusion pump for insulin therapy & for neonatal management
- Steroid : who need early delivery between 24 to 34 wks gestation, and refer to higher centre

Care during Labour

- Induction of labour - at early morning
- BG monitoring
  If on MNT: 4 to 6hrly
  If on insulin: Hourly

- Maintain glycaemic control between 4 - 7mmol/l
- If well-controlled , insulin may not be needed
- Those on insulin:

  i) 5% dextrose solution with a fixed dose of insulin in it or a simultaneous infusion of insulin through insulin pump can be started with glucose infusion and then titrated to maintain the glycemic target.

  ii) 6-8 units of conventional regular insulin or analogue like lispro or aspart be added to 500 ml of 5% DNS with monitoring of the blood glucose every 1-2h and then titrate the insulin infusion rate

Labour Analgesia: *Epidural* analgesia **(**If available)

Care during Caesarean section (CS)

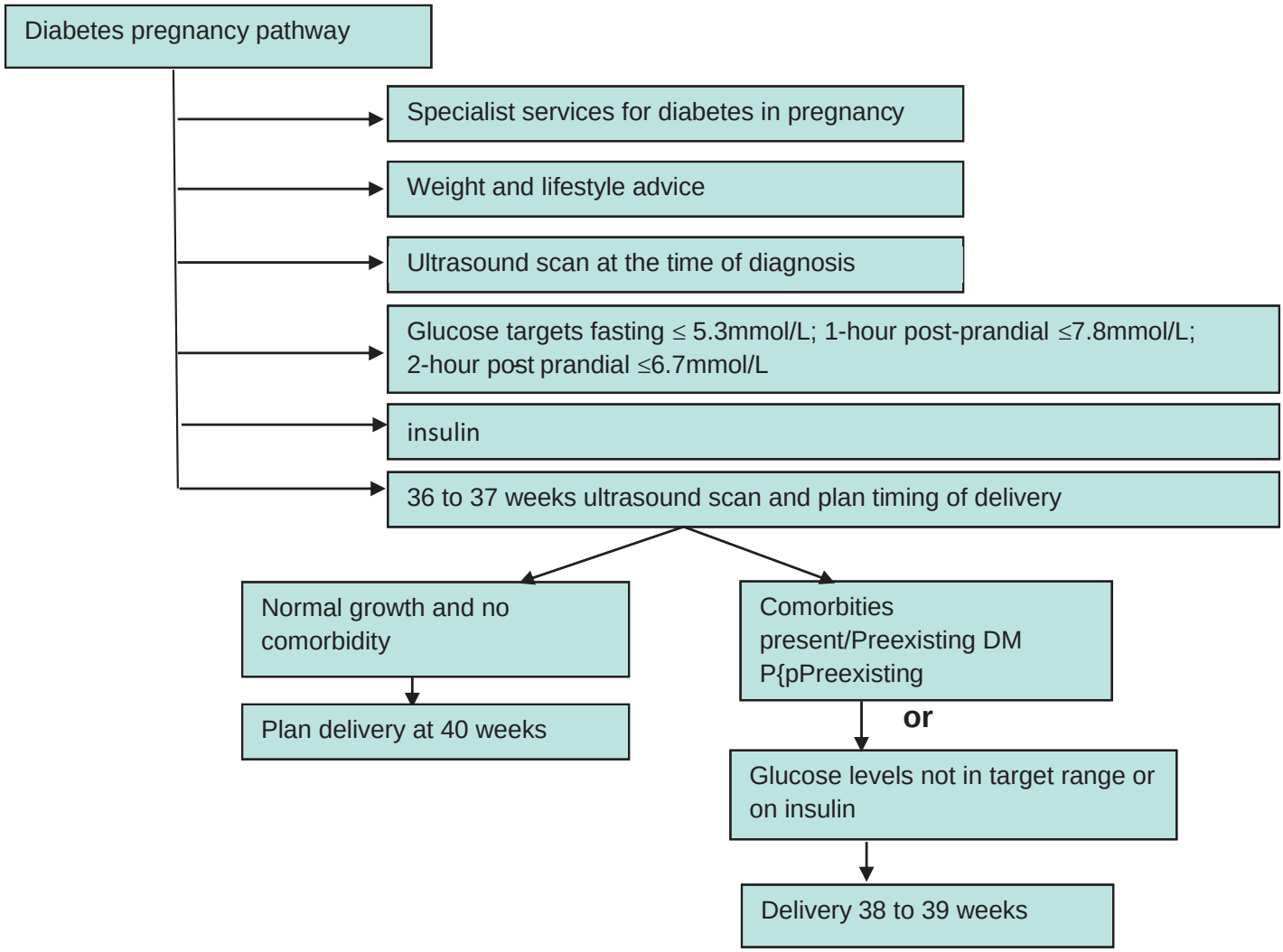
- Plan caesarean section(elective) at early morning.
- Give usual night dose of insulin.
- Morning dose to be withheld and patient be kept nothing by mouth.
- Monitor blood glucose hourly.
- If require corrective dose of short acting insulin can be given subcutaneously.
- Hyperglycemia should be avoided during the surgery to reduce the risk of neonatal hypoglycemia.
- Optimization of glycemic control is vital during perioperative and postoperative period.

Neonatal Care

- Ensure presence of neonatologist/paeditrician (if available)
- Feeding should be started as soon as possible after birth, preferably within 30 minutes and then continue every 2-3 hours until feeding maintains pre-feed capillary plasma glucose levels at a minimum of 2.0 mmol/litre
- If values are < 2.0 mmol/L on 2 consecutive times, or there are abnormal clinical signs or if the baby does not feed orally effectively, additional measures to be taken such as tube feeding or intravenous dextrose.

Postnatal Care: Women with gestational diabetes mellitus should go for test for persistent diabetes at 4–12 weeks' postpartum, using the oral glucose tolerance test

Flowchart for Management for Diabetes in Pregnancy



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25: Protocol of Jaundice in Pregnancy

Definition	Yellow discoloration of the skin, mucous membranes, and the sclera of the eyes caused by the increased amounts of bilirubin in the blood. Jaundice detected clinically at bilirubin concentration of 2 mg% or more (normal 0.2-0.8 mg%).

Causes of Jaundice in pregnancy

Jaundice unique to pregnancy	Jaundice due to inter-current illness
• Obstetric cholestasis	Viral hepatitis
• Acute fatty liver	Drug induced – INH, Phenothiazines
• Severe preeclampsia & eclampsia	Cholelithiasis
• HELLP syndrome	Haemolytic jaundice
• Severe hyperemesis gravidarum	Auto immune hepatitis
• Endotoxic shock	CLD
	Malaria
	Hepatic neoplasm
	Pancreatitis

Clinical presentation

- Yellow coloration of the eyes and skin
- Itching all over the body
- Dark colored urine
- Pale stools
- Weakness
- Loss of appetite
- Headache
- Nausea and vomiting
- Fever
- Hepatomegaly
- Tremor of the hand
- Bleeding manifestation
  - Per vaginal bleeding
  - Hematuria
  - Gum bleeding
- Semiconscious
- Unconscious

Abdominal Examination

- Liver slightly enlarged and tender – viral hepatitis
- Firm liver edge – Cirrhosis
- Liver enlarged and smooth – post hepatic obstructive jaundice
- Splenomegaly – Cirrhosis
- Pancreatic tumor may be palpable

Investigations:

- CBC-including reticulocyte count and blood smear to detect haemolysis
- Serum bilirubin
- Liver enzymes
  - Serum alanine transaminase (ALT/SGPT)
  - Serum aspartate transaminase (AST/SGOT)
  - Alkaline phosphatase
  - Fasting bile acid
  - Gamma glutamyltransferase (GCT)
  - Lactate dehydrogenase (LDH)

Interpretation

- From ALT (SGPT) level different liver diseases can be suspected e.g.
  - > 1000 IU/L: acute parenchymal disease
  - > 400 IU/L: Viral hepatitis (diffuse acute hepatocellular damage)
  - 150 - 400 IU/L: chronic active hepatitis, or viral or drug induced hepatitis
  - <100 IU/L: obstructive jaundice
- ALT (SGPT) raised more than AST(SGOT) in acute hepatitis and in extrahepatic obstruction
- AST (SGT) raised more than ALT(SGPT) in cirrhosis, intrahepatic nepolasia, hemolytic jaundice and alcoholic hepatitis
- Alkaline phosphatase, Fasting bile acid, GCT are raised in intrahepatic cholestasis
- Alkaline phosphatase is raised in gall stone causing bile duct obstruction
- LDH a marker of hemolysis raised in HELLP syndrome

- Viral markers i.e. Antibodies (IgM & IgG) against hepatitis A, C, D, and E
- For hepatitis B virus
  - HBsAg (Surface antigen)
  - HBeAg (E antigen)
  - (Core antibody)
  - HBsAb (Surface antibody)
- Blood sugar, Fasting and 2 hours after 75 gm glucose
- Coagulation profile
  - Prothrombin time (PT)
  - Fibrinogen level
  - Fibrin degradation product (FDP)
  - D-Dimer
- Ultrasonography of Hepatobiliary system and pregnancy profile

Overview of different jaundice including management

1. Jaundice unique to pregnancy

a) Obstetric cholestasis/intrahepatic cholestasis

Clinical Features

- Typically present at third trimester
- Intense Pruritis, starts from palms and soles, generalized and often worse at night
- Jaundice uncommon, if present; arises 2-4 weeks after the onset of pruritus
- May be associated with other signs of cholestasis – e. g. pale stool, dark urine

Laboratory findings

- ALT: raised 2- 20 fold
- Fasting serum bile acid (key diagnostic): >10 micro mol/L
- Alkaline phosphatase: raised up to 4 fold
- Gama Glutamine transferase: > 40U/L

Fetal risk

- Spontaneous preterm labour
- Increased risk of fetal distress –more when fasting bile acid is > 40 micro mol/ L
- Fetal asphyxia
- Intra uterine death (IUD)

Monitoring

- No current guidelines regarding specific fetal monitoring that might reduce the risks , however maintaining kick count and regular CTG can be done
- LFTs including PT to be done weekly, if they return to normal or increase (into the 100s), the diagnosis needs to be revised

Treatment

- General care of the mother
  - Adequate rest
  - Low fat diet
- Specific treatment
  - Topical emollients (aqueous cream with menthol)
  - Ursodeoxycholic acid (UDCA) 150-300 mg 2-3 times a day
  - Inj. vitamin K- 10 mg I/V daily for 5days
- **Delivery** - Induction of labour after 37 weeks because of increased risk of perinatal mortality and maternal morbidity
- Continuous fetal monitoring during labour
- Inj. Vitamin K: IM for neonate
- Postnatal: Check LFTs on the day of discharge. If not normalize recheck at approx. day 14
- **Recurrence risk: 90% in subsequent pregnancies**

b) Acute fatty liver of pregnancy is a rare condition characterized by acute liver failure

Risk factors:

- First pregnancy
- Preeclampsia
- Twin pregnancies
- Male fetuses

Pathology: Deficiency of LCHAD (3-hydroxyacyl-CoA dehydrogenase) in the foetus leads to accumulation of medium and long chain fatty acids. These unmetabolized fatty acids will re-enter the maternal circulation through the placenta, and overwhelm the beta-oxidation enzymes of the mother. LCHAD deficiency is autosomal recessive in inheritance and mothers are often found to be heterozygous for the affected mutation.

Clinical Presentation: Usually presents acutely at about 35 weeks of gestation but can occur much earlier and may immediately after delivery with

- Nausea, vomiting
- Abdominal pain
- Fevers, headache
- Polydipsia and polyuria
- Pruritus
- Jaundice
- Fulminant liver failure may follow

Laboratory Findings

- Leukocytosis , often with neutrophilia and thrombocytopenia
- Liver transaminases are moderately high (3 to 10 times)
- Raised serum bilirubin (> 14 micro mol/L)
- Coagulopathy (prolongation of PT, a PTT, and decreased fibrinogen levels)
- Hypoglycemia (< 4 mmol/L)
- Renal impairment (creatinine > 150 micro mol/L)
- Elevated ammonia (> 47 micro mol/L)
- Elevated urate (> 340 micro mol/L)
- Ascites or bright liver on ultrasound scan
- Micro vascular steatosis on liver biopsy ,usually not done
- CT/MRI scanning may show reduced attenuation in the liver

**One of the keys to diagnosis of AFLP is rapid deterioration of liver function.

Management:

- Admission in ICU

- Multidisciplinary approach (Fetomaternal and hepatology specialist)
- Maternal resuscitation by correction of
    - Hypoglycemia
    - Fluid balance
    - Coagulapathy
- Intensive fetal monitoring
- Urgent delivery. Vaginal delivery is preferable.
- Remain vigilant for PPH

Complications/ outcome:

- AFLP is a life-threatening condition with a reported 1.8% maternal and 23% fetal mortality rate
- Serious complications include
    - DIC
    - Hepatic encephalopathy
    - Acute Kidney injury
    - Pancreatitis
    - Hypoglycemia
- Recurrence may be as high as 10-20%

c) HELLP Syndrome (Hemolysis, Elevated Liver enzymes and Low Platelets)

About70% of cases occur during the last trimester of pregnancy.

Clinical Presentation:

- Right upper quadrant abdominal pain, nausea, vomiting, malaise, and edema with significant weight gain

Laboratory findings include

- Bilirubin: usually < 5 mg/dL
- Lactate dehydrogenase (LDH): > 600 IU/L
- Moderately elevated aspartate aminotransferase (AST) and ALT levels (200 IU/L to 700 IU/L)
- Thrombocytopenia (< 100,000/mm^3)
- PT and a PTT may be prolonged
- DIC may be present

Management:

- Multidisciplinary approach involving Obstetrician, Internist, and Neonatologist.
- Maternal resuscitation by correction of
    - Control of hypertension
    - Fluid and electrolytes balance
    - Prophylaxis for convulsion with MgSO
- Intensive fetal monitoring
- Steroid (between 24 wk. - 34 wk.)
- Timely delivery
- Remain vigilant for PPH
- Close monitoring up to 48 h postpartum.

Complications/Outcome:

- Increased maternal mortality (1%) and perinatal mortality (7%-22%)
- Abruption of placenta
- Acute renal failure
- Adult respiratory distress syndrome
- Pulmonary edema
- Stroke
- Liver failure
- Hepatic infarction

2. Jaundice due to inter-current illness

Viral Hepatitis: Most common cause of jaundice in pregnancy.

The course of most viral hepatitis infections is unaltered by pregnancy except **hepatitis E** having fatality rate 10-20% in pregnancy

Hepatitis A

- Management and prognosis is similar to non-pregnant women.
- Isolation
- Pregnant women exposed to the virus can be given immune globulin within two weeks of exposure, together with vaccine.
- If the baby isborn within 2 weeks of acute maternal illness, neonate should receive immune globulin.

Hepatitis B

Can occur in acute, subclinical or chronic form.

- Presence of HBeAg is associated with very high risk of neonatal infection
- Without treatment in HBeAg positive mothers, 90% cases and in negative mothers , 10% cases of newborn develop hepatitis B virus infection.
- Before initiating breast feeding, newborn should receive hepatitis B immune globulin and also vaccine (10µgm) at birth, and complete the vaccine schedule . This will reduces vertical transmission to < 3%.
- Antivirals to be given (with consultation with Hepatologist or refer) to mothers who are HBeAg positive and having HBV DNA $> 10^9$ copies.

Hepatitis E

Hepatitis E virus infection occurs in non-industrialized nations, usually as an epidemic disease during the monsoon season.

Hepatitis E Infection in third trimester is a cause of fulminant hepatic failure and has a mortality rate of up to 20%.

- Spread by feco - oral route.
- May need ICU supports if fulminant hepatic failure develops
- Associated with increased risk of abortion and intrauterine fetal death
- Maternal fetal transmission results in symptomatic neonatal hepatitis.
- No known therapy to prevent vertical transmission

Management

- Bed rest
- Low fat intake
- Maintain adequate protein and energy intake
- Intraveneous hydration: if nausea, vomiting or anorexia
- All hepatotoxic agents should be avoided
- Inj Vit K: 10mg IM for 3 to 5 days
- Laxative: Lactulose 40 -120ml daily
- Gut sterilization
  - Neomycin 550mg 12 hourly at least for 2 weeks or
    - Cap. Amoxycillin 500mg 8hourly +
    - Tab. Metronidazol 400mg 8hurly
- Antenatal fetal assessment should be instituted in 3rd trimester
- Fresh Frozen Plasma : Indication of use
    - INR >1.5
    - PT > 1.5 times normal
    - APTT > 2 times normal

Dose: 10-15ml/Kg body wt and transfuse within 4 hour.

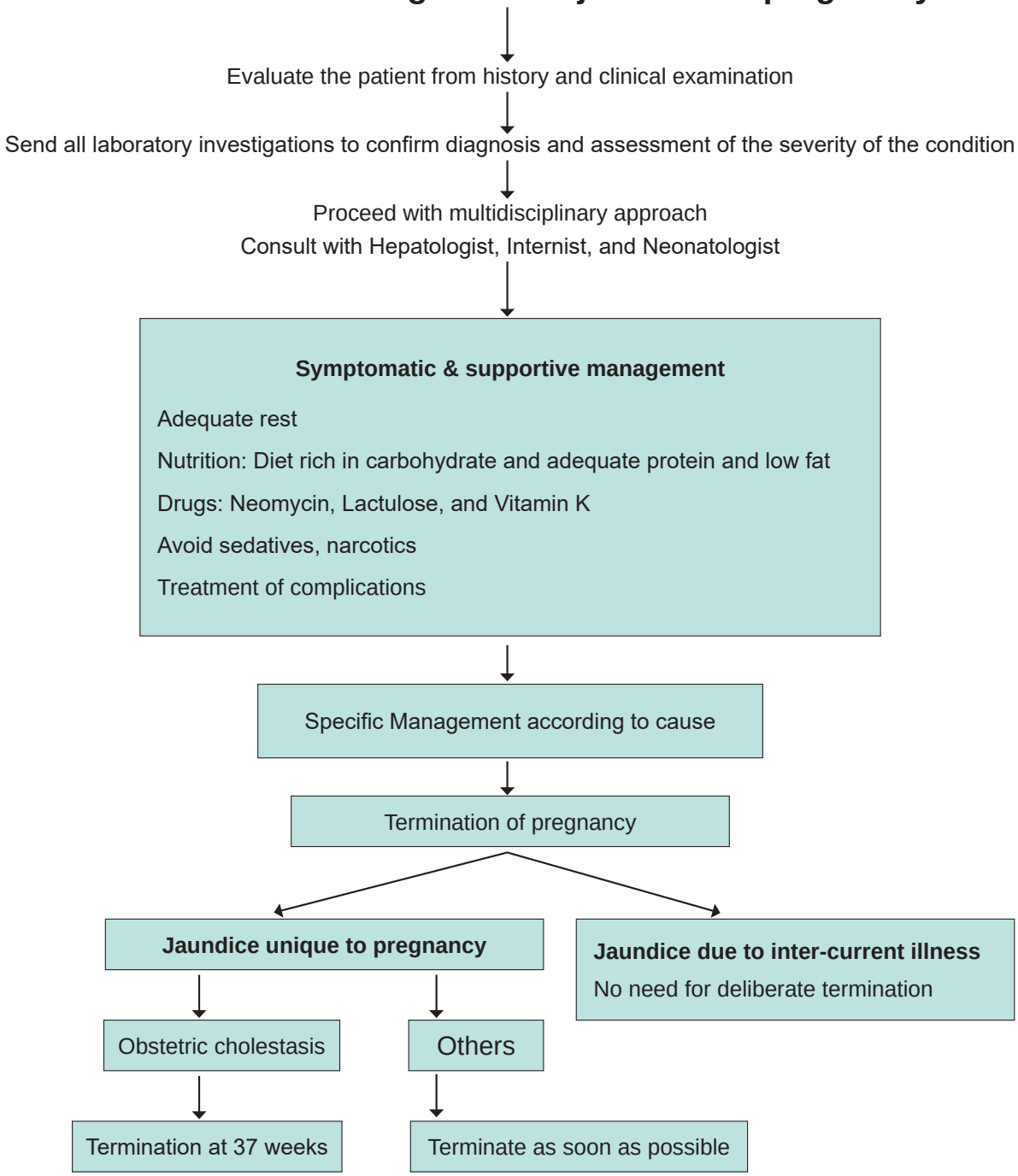
For a woman of 60 kg 3-5 unit FFP have to be given

Follow up: daily with PT which begins to rise after 8 hours of plasma transfusion.

References:

1. Williamson C and Girling J. Hepatic and Gastrointestinal Disease. In High Risk Pregnancy: management Options, 4th edition; James D, Steer PJ, Weiner CP, Gonik B, Crowther CA, and Robson SC editors. Publisher: Elsevier Inc. Saunders, Missouri. 2011; 839- 860.
2. Obstetric Cholestasis; Royal College of Obstetricians and Gynaecologists (May 2011)
3. Newsome PN, Cramb R, Davison SM, Dillon JF, Foulerton M, Godfrey EM, et al. Guidelines on the management of abnormal liver blood tests Downloaded from http://gut.bmj.com/ on May 2018 - Published by group.bmj.com
4. Henderson Roger, Health article download from http://patient. Info/ doctor/ jaundice-pro

Flow chart for management of jaundice in pregnancy



26: Anaemia in pregnancy

Iron Deficiency Anemia

Anaemia is defined as Hb<11g/dl (110g/L) in the first and third trimester <10.5g/d in the second trimester and <10g/dl (100g/L) in the postpartum period(WHO).

Classification

Mild anemia: 10-10.9g/dl

Moderate anemia: 7 – 10g/dl

Severe anemia: 4 – 6.9g/dl

Very severe < 4g/dl

Treatment

General Treatment:

Diet: Balance diet rich in protein, iron and vitamins

Identify and eradicate if any sustained infection.

Effective therapy to cure the cause of anaemia.

Specific Treatment: The BNF recommends between 100-200mg of elemental iron per day until Hb-conc rises to normal. Thereafter standard daily antenatal iron dose to prevent recurrence of anemia.

Note: Always exclude Haemoglobinopathies (by Hb Electrophoresis & S. Ferritin) if there is moderate to severe anemia &/or MCV < 77 fl.

Do not give Iron, if Ferritin level is >150µgm/L

Iron Therapy: Oral and Parenteral therapy.

Choice of therapy depends on – Severity of anaemia, duration of pregnancy and associated complicating factors.

Oral iron should be taken on empty stomach 1 hr. before meal with a source of Vitamin C like orange juice. Other medications or antacid should not be taken at the same time.

Ferrous sulphate: 200mg contains 60 mg of elemental iron. The initial dose is one tablet to be given thrice daily. Thereafter a maintenance dose of one tablet daily. Iron therapy response is evidenced by –

Sense of well being, increased appetite.

Increased reticulocyte count within 7-10 days.

Increase in Hb level about 0.7gm/100ml per week.

N.B: If taken correctly will give a rise in Hb of 2mg/dl every 3wks

Available form in Bangladesh

Carbonyl Iron + Folic acid + Zinc

Parenteral Iron Therapy

Indication

- Absolute non-compliance with oral iron,
- intolerance to oral iron or proven malabsorption
- If rapid replacement is required, such as patients at risk of haemorrhage approaching their due date.
- Serum ferritin should always be confirmed prior to giving perenteral iron except where it is being used in the immediate postpartum period following a massive postpartum haemorrhage.

Protocol for the use (example)

Iron - carboxymaltose has 50mg/ml of elemental iron.

- Administer by slow iv injection or infusion with no need for a test dose
- Should be avoided in the first trimester.

- Small risk of anaphylactoid reaction.
- It is suitable for administration in OPD and does not require any monitoring
- Oral iron should be avoided for 5 days after the administration of Ferinject.
- A follow up CBC should be performed at 2-3 weeks

Contraindications for the use of parenteral iron

First Trimester:

- Known hypersensitivity
- Anaemia not attributed to iron deficiency.
- Evidence of iron overload or disturbances in utilisation of iron.

Warnings and precautions:

Risk/benefits need to be considered if liver dysfunction, acute/chronic infection, atopic conditions.

Should be stopped if

- paravenous leakage lead to irritation and discolouration.
- anyanaphylactoid reaction, signs of allergic reaction or intolerance.

The dose is calculated on the pre-pregnancy/booking weight aiming for a target Hb of 11g/dl.

Table

Hb (g/dl)	Weight 35kg -<70kg	Weight ≥ 70kg
<10	1500mg	2000mg
≥10	1000mg	1500mg

Dilution plan carboxymaltose for IV drip infusion

Ferinject	Iron	Maximum amount of sterile 0.9% sodium chloride	Minimum administration time
2-4ml	100-200mg	50ml	-
≥2-10ml	≥200-500mg	100ml	6min
≥10-20ml	≥500-1000mg	250ml	15min

Indication of Blood Transfusion

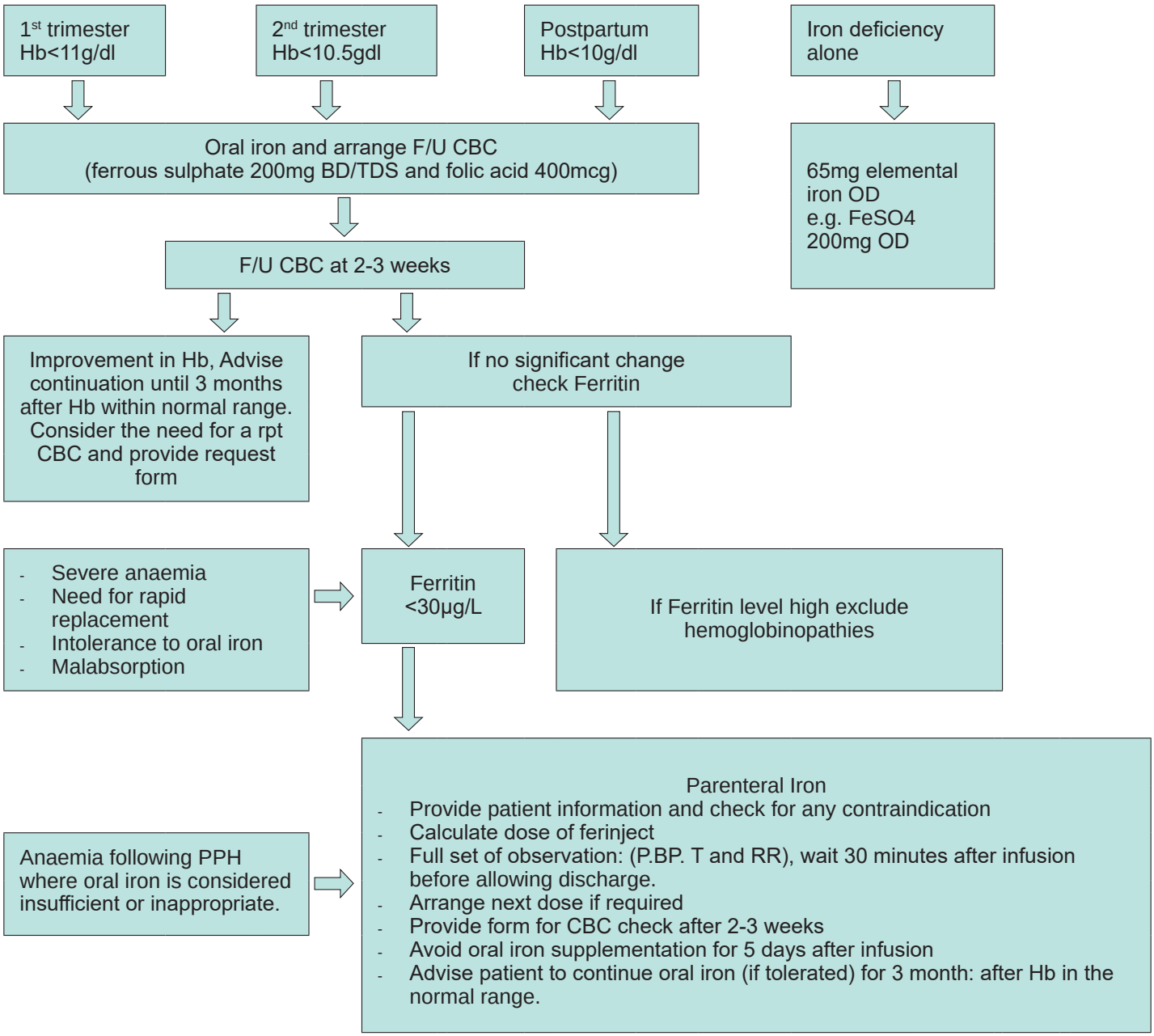
- Haemoglobin 6.0 g/dl or below and gestational age is >36 weeks
- Haemoglobin between 6- 8 gm/dl and in the presence of the following conditions:
  - Established or incipient cardiac failure or clinical evidence of hypoxia
  - Pneumonia or any other serious bacterial infection
  - Malaria
  - Pre-existing heart disease, not causally related to the anaemia

Advice for Hospital delivery If Hb <10.5g/dl .

Women with Hb<10g/dl in postpartum period should be given 100-200mg elemental iron for 3 months. Once Hb is in the normal range, supplementation should continue for 3 months

Flow chart for the treatment of anaemia

Please note-the following should be used in conjunction with the full guideline and each case Individualized



References:

1. WHO e-library of evidence for Nutrition Actions (eLENA), Daily iron and folic acid supplementation during pregnancy.
2. Anemia in pregnancy, Antenatal Guidelines Plymouth Hospitals, NHS Trust
3. WHO guidelines for management of common maternal conditions ,Pocket book for Hospital care of mothers, 2017ed.p-135

27: Intra Uterine Growth Restriction (IUGR)/Fetal Growth Restriction (FGR)

Definition: IUGR/FGR is said to be present when Estimated Foetal Weight (EFW) is below 10th percentile of the average for gestational age due to pathologic restriction of growth.

Screening:

A. Primary level care

History **-** Identify maternal, fetal, and placental risk factors

Establish dates by last menstrual period and first trimester ultrasound

Physical**:** SFH measurement

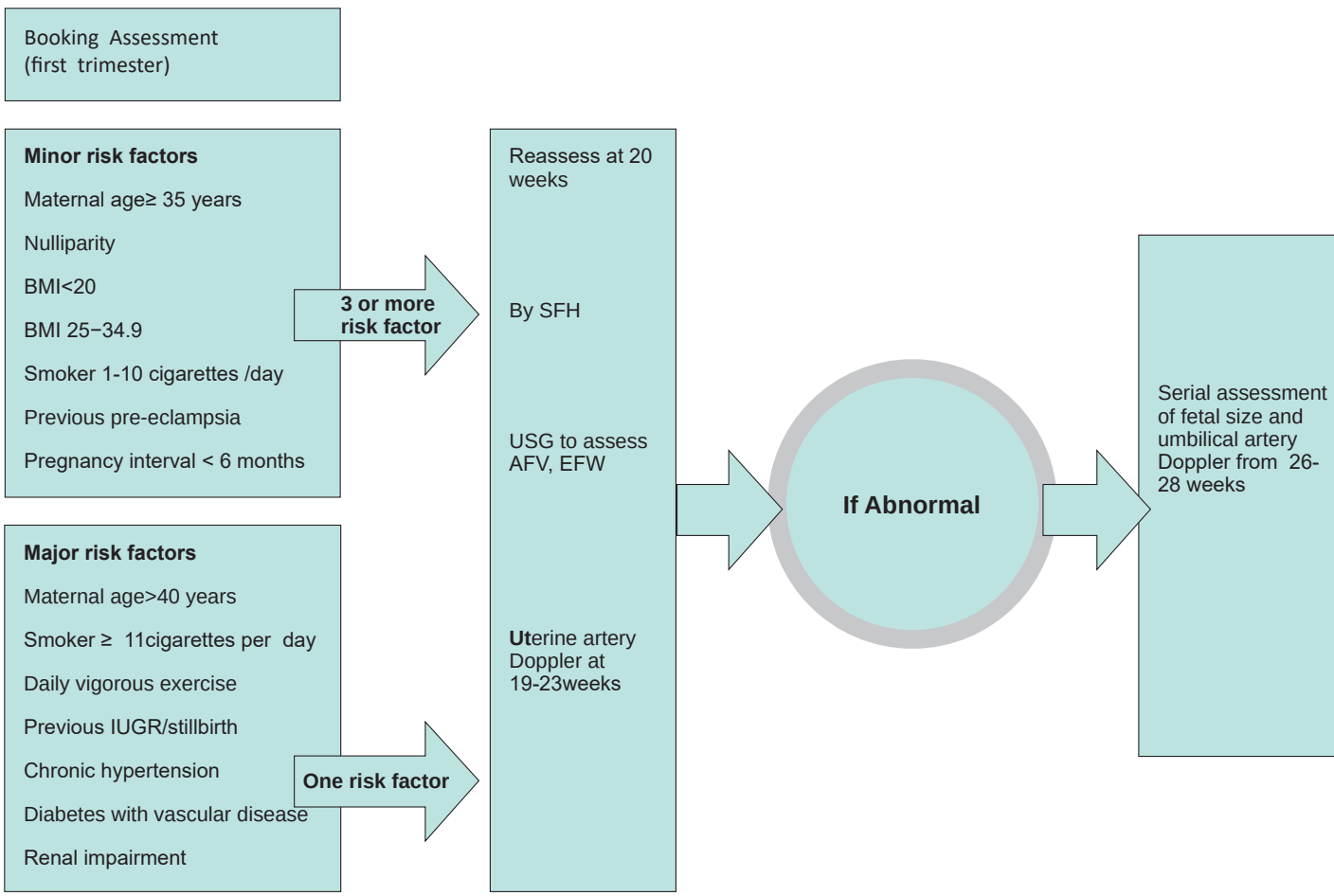
B. Secondary/Tertiary level care :In addition to above, consider following Investigations

- biochemical screening tests for Trisomy 21
- first trimester ultrasound for dating and nuchal translucency
- uterine artery Doppler at 19 to 23 weeks
- if SFH (in centimeters) is less than gestational age (in weeks) by > 3, arrange ultrasound for EFW, Amniotic Fluid Volume (AFV) or Ductus Venosus flow, biophysical profile, and/or umbilical Doppler studies.

Diagnosis of intrauterine growth restriction

EFW or AC < 10th percentile

Screening of IUGR:



Management of Intrauterine Growth Restriction

General management

- Encourage patient to quit smoking if smoker
- Consider adding low-dose aspirin early in pregnancy before 14 weeks if previous H/O IUGR
- Rest
- Improve Nutrition
- Treatment of underlying pathology (preeclampsia, DM)
- Consider maternal-fetal medicine and neonatologist consultation
- Consider in utero referral to tertiary centr e
- Consider Timely delivery before fetal demise or damage

Timing and Mode of Delivery

A. **When Umbilical Artery End Diastolic Flow (UmA EDF) is present** , delay delivery until 37 weeks , provided other surveillance are normal

B. **When Umbilical Artery End Diastolic Flow (UmA EDF) is absent or reversed**

- consider admission
- close Foetal monitoring
- if other surveillance results *(BPP, Venous Doppler)* are abnormal,

delivery is indicated

C. **When Umbilical Artery End Diastolic Flow (UmA EDF) is absent or reversed , but gestational age is > 34 weeks** -delivery may be considered even if other results are normal

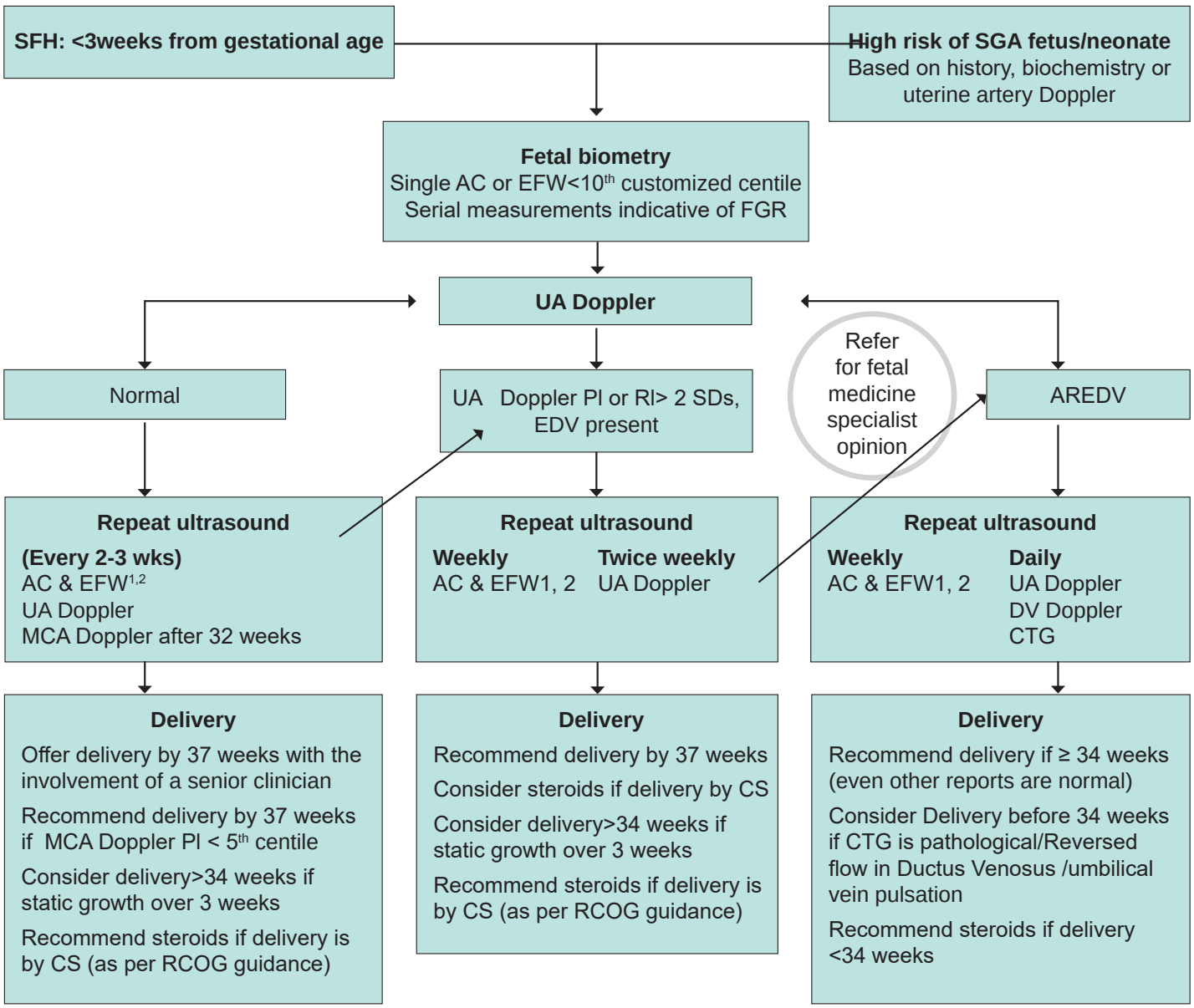
D. **When Umbilical Artery End Diastolic Flow (UmA EDF) is absent or reversed but other results are normal,** options include daily CTG/BPP &/or Venous Doppler and

- **Consider Delivery before 34 weeks if**
  - CTG is pathological i.e. decelerations with reduced variability
  - Reversed Doppler velocities in ductus venosus or
  - There are umbilical vein pulsations
    In this situation Delivery is likely to be by LSCS

E. **In addition delivery is indicated if:**

- Results of fetal testing are grossly abnormal
- Foetal lung maturity is documented
- Foetal distress
- Maternal disease possess serious risk to the foetus

APPENDIX: Flow chart of Management of IUGR



[1]Weekly measurement of fetal size is valuable in predicting birth weight and determining size-for-gestational age

[2]If two AC/EFW measurements are used to estimate growth; they should be at least 3 weeks apart

[3]Use cCTG when DV Doppler is unavailable or results are inconsistent-recommend delivery if STV<3ms

Abbreviations: AC, abdominal circumference; EFW, estimated fetal weight; PI, pulsatility index; RI, resistance index; UA, umbilical artery; MCA, middle cerebral artery; DV ducts venosus;SD, standard deviation; AREDV, Absent/reversed end-diastolic velocities; CTG, cardiotography; STV, short term variation; SFH, symphysis-fundal height FGR, fetal growth restriction; EDV, end-diastolic velocities.

References :

1. The investigation and management of the small-for-Gestational age fetus. Green Top Guideline No. 31. 2nd Edition. February -2013. Minor Revision – January 2014.
2. Evidence-based national guidelines for the management of suspected fetal growth restriction: comparison, consensus, and controversy. Am J Obstet Gynecol. 2018 Feb;218(2S):S855-S868. doi: 10.1016/j.ajog.2017.12.004
3. Fetal Growth Restriction. Practical Guide to High-Risk Pregnancy& Delivery. 3rd Edition. P 105

28: Pain & Bleeding in Early Pregnancy

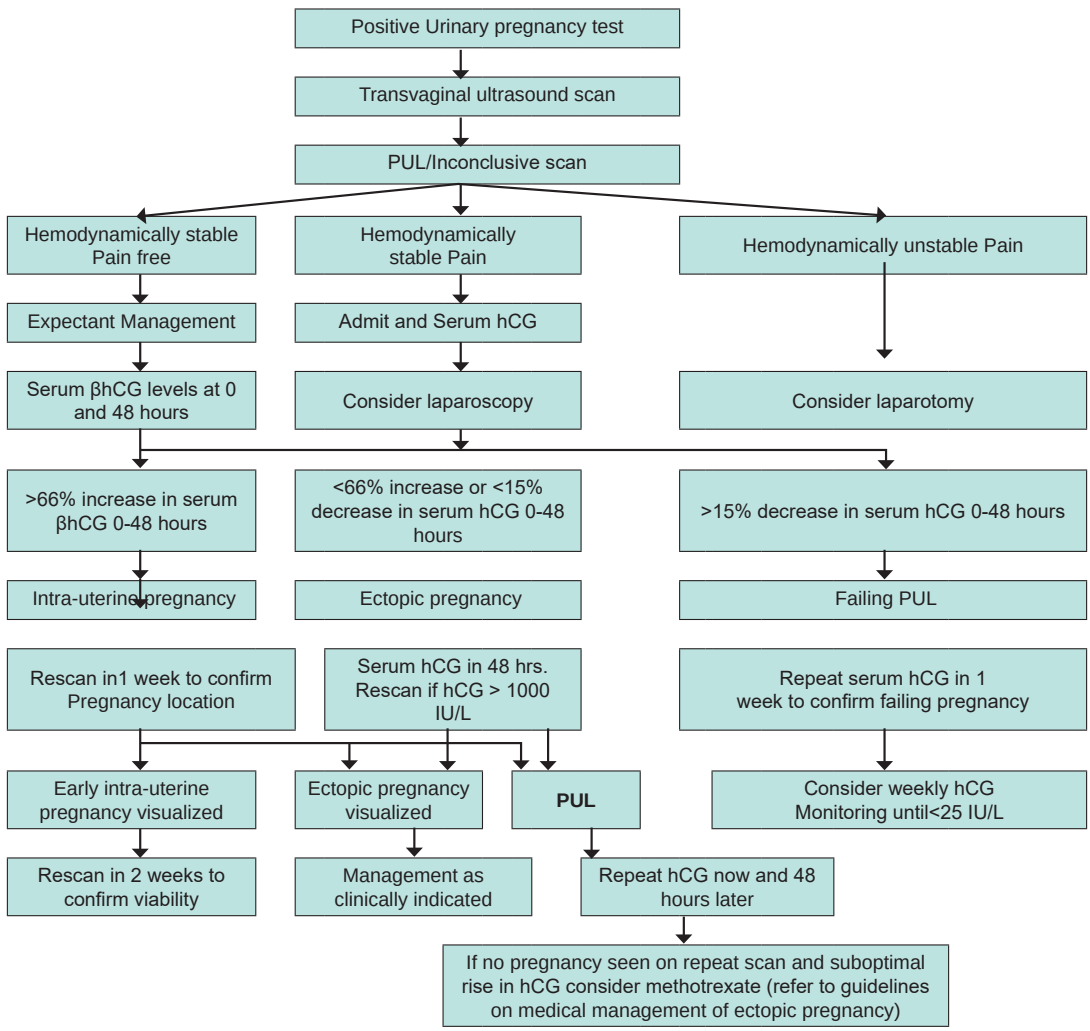
A pregnancy of unknown location (PUL) is when[1]:

- Pregnancy test is positive but
- Pregnancy cannot be seen clearly on ultrasound scan

Reasons:

- Pregnancy is too small or too early to be seen. Pregnancy may not be seen on ultrasound until approximately 3 weeks after conception (at least 5 weeks from last period).
- Early miscarriage: Pregnancy tests can stay positive for a week or two after a miscarriage.
- Ectopic pregnancy that is too small to be seen. As many as one in five women with a PUL may have an ectopic pregnancy.

Guidelines on management of pregnancy of unknown location (PUL)[2]



Special points:

hCG pattern:

- Doubling every 48 hours suggestive of normal intrauterine pregnancy
- hCG>1500IU/L: Intrauterine sac likely to be visible in TVS
- Sustained fall is suggestive of miscarriage
- Plateau or slow rise or slow fall or Fluctuating levels suggestive of ectopic pregnancy

References:

1. Bleeding and/or pain in early pregnancy patient information-RCOG https:// www.rcog.org.uk/en/patients/patient../bleeding-and-pain-in-early-pregnancy/Sep 21, 2016
2. Management of pregnancy of unknown location (PUL).https://www.nuh.nhs.uk/handlers/downloads.ashx?id=6118Emergency Gynecology SSU_S.Deb Guidelines on Management of PUL

29: Protocol for Vaginal Bleeding in Early Pregnancy (Miscarriage/Abortion)

Definition: Vaginal bleeding during first 22wks of pregnancy (WHO)

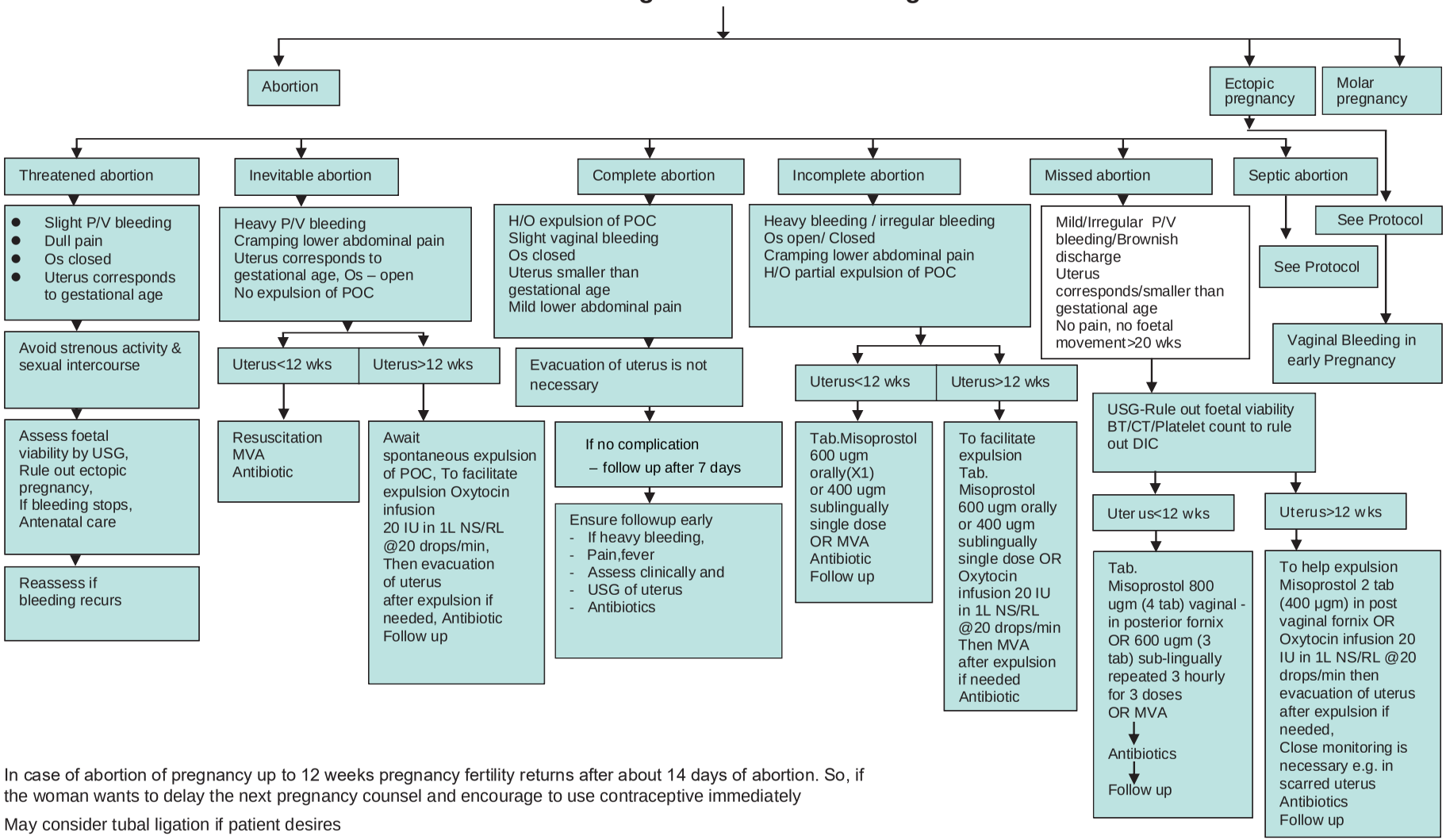
	Symptoms	Sign	
Signs and Symptoms	• H/O Amenorrhea • Early symptoms of pregnancy • Per vaginal bleeding • Pain in lower abdomen: (dull/severe/spasmodic) • Passage of fleshy mass/clots	Pallor/ Anemic Raised pulse, low BP Dehydration may be present	Uterus may or may not correspond to period of gestation, Os – open/ closed, P/V bleeding

Categorize

General Management	**Recognition** • Rapid evaluation of vital signs **Communication** • Counseling: Pre procedure/during procedure/post procedure and Assurance **Initial Management** • Signs of Shock-may be present • Resuscitation (if shock is present) • Analgesic: Inj. Pethidine (if pain) • IV access & IV fluid (Normal saline/Ringer Lactate solution) • Blood transfusion if bleeding is excessive **Monitoring & Investigations** Hb%, Blood grouping & Rh typing, USG of lower abdomen **If expertise/facility not available** • Provide first aid • Counsel patient and family • Refer

Flow chart for Specific Management of Early Pregnancy bleeding (Abortion)

According to Cause of Bleeding



In case of abortion of pregnancy up to 12 weeks pregnancy fertility returns after about 14 days of abortion. So, if the woman wants to delay the next pregnancy counsel and encourage to use contraceptive immediately

May consider tubal ligation if patient desires

If the women Rh negative husband is Rh positive give inj. AntiD 300 ugm IM to mother

POC- product of conceptus

References:

1. Ipas, VSI, Misoprostol use in post abortion care : A service delivery Tool kit chapel, Hill, Ipas, 2011: 47-48
2. WHO - Safe abortion: Technical and policy guidance for health systems - 2nd edition, Geneva: WHO
3. OGSB - Blue TOP guideline - Standard clinical management prototcols and guidelines September 2012
4. Misoprostol Only Recommended Regimens 2017. FOGO www.figo. org

30: Protocol for Vaginal Bleeding in Early Pregnancy (Mole/Ectopic)13

Definition: Bleeding pervagina up to 22 weeks of pregnancy due to any cause is known as early pregnancy vaginal bleeding.

The causes of bleeding are broadly divided into

- ❖ Related to the pregnancy: 95% is caused by abortion. Other causes are: Ectopic pregnancy, hydatidiform mole and implantation site bleeding.
- ❖ Associated with pregnancy: Cervical lesions such as vascular ectopy (erosion), cervical polyp, cervical cancer, and ruptured varicose vein.

<table>
<tr>
<td>Diagnosis: Clinical and radiological evidence</td>
<td>
Suspect Tubal abortion /ruptured ectopic pregnancy

Short period of amenorrhea
Sudden severe abdominal pain with fainting attack
Shoulder tip pain.
Shock
Rigid, tender abdomen, flanks full
Fornixes tender/ Tender adnexal mass
Uterus bulky
Small amount of P/V bleeding.
Pouch of Douglas- full
Ultra-sonographic findings: uterus empty, collection in POD, adnexal mass

Suspect Mole

Exaggerated early pregnancy sign/symptom
Mild to severe vaginal bleeding during the first 22 weeks of pregnancy
Pain in lower abdomen: (dull/severe/ spasmodic)
Altered color P/V discharge/bleeding
Passage of grape like structure
Anaemia, dehydration, toxicity or shock
Ultrasonographic evidence of snow-storm appearance of intrauterine mass.

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<tr>
<td>General Management</td>
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Rapid evaluation of vital signs-pulse, B.P, anaemia, dehydration, temperature, edema, jaundice.
Resuscitation, if shock.
IV access & IV fluid: Normal saline/Ringer’s Lactate solution if sign of dehydration or delay in getting blood.
Blood transfusion if severe bleeding/ anemic.
Analgesic: Inj. Pethidine (if necessary)
Antibiotic
Investigations: Blood for Grouping & Rh typing, USG of lower abdomen, Blood for CBC, βhCG,FT4, TSH, SGPT, Creatinine, HBsAg.
In case of mole: X-ray chest
Counseling about:Pre- procedure, per operative and post procedure preparation and assurance.

If expertise/facility unavailable:

Provide first aid
Counsel patient and family
Refer

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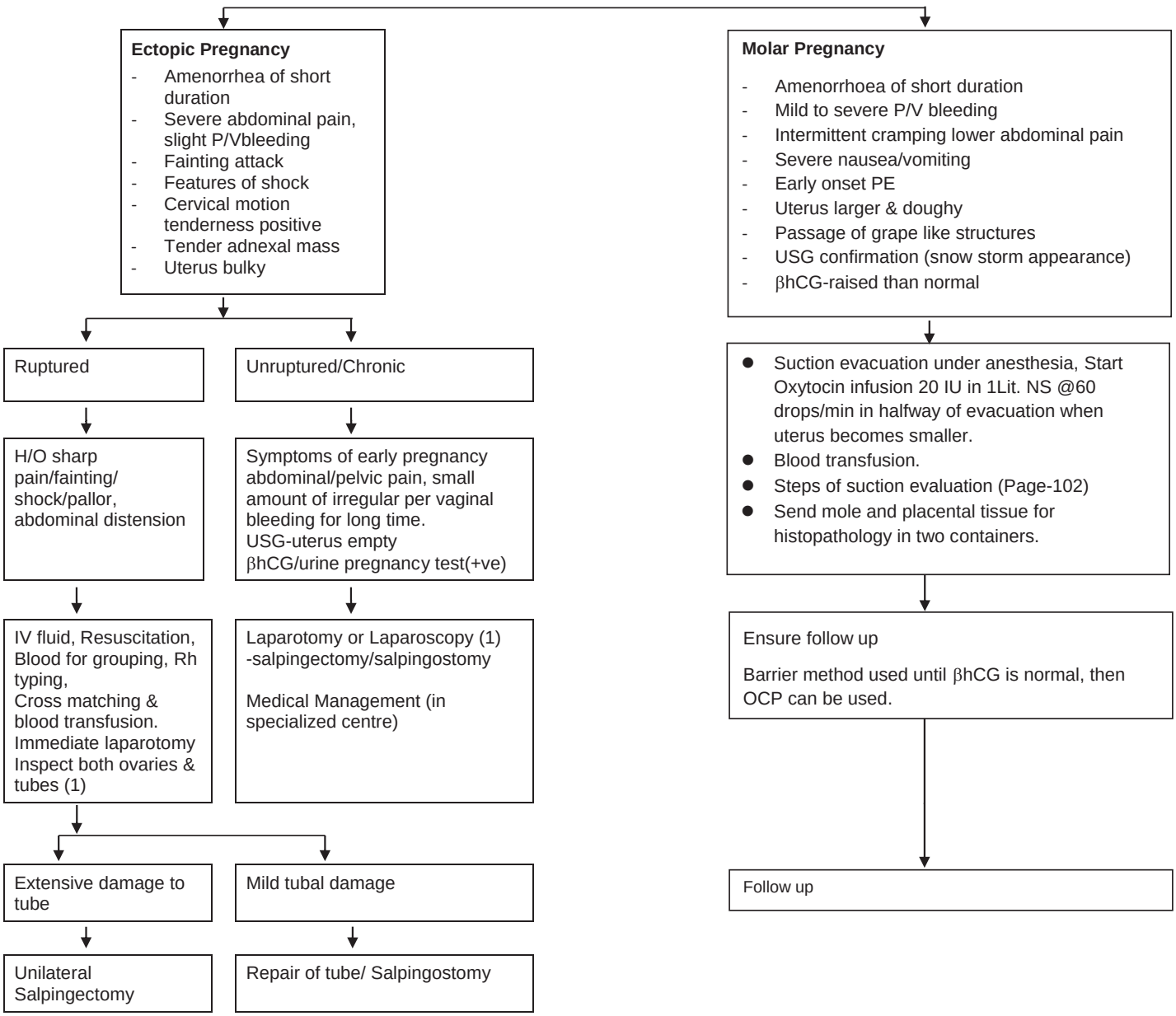
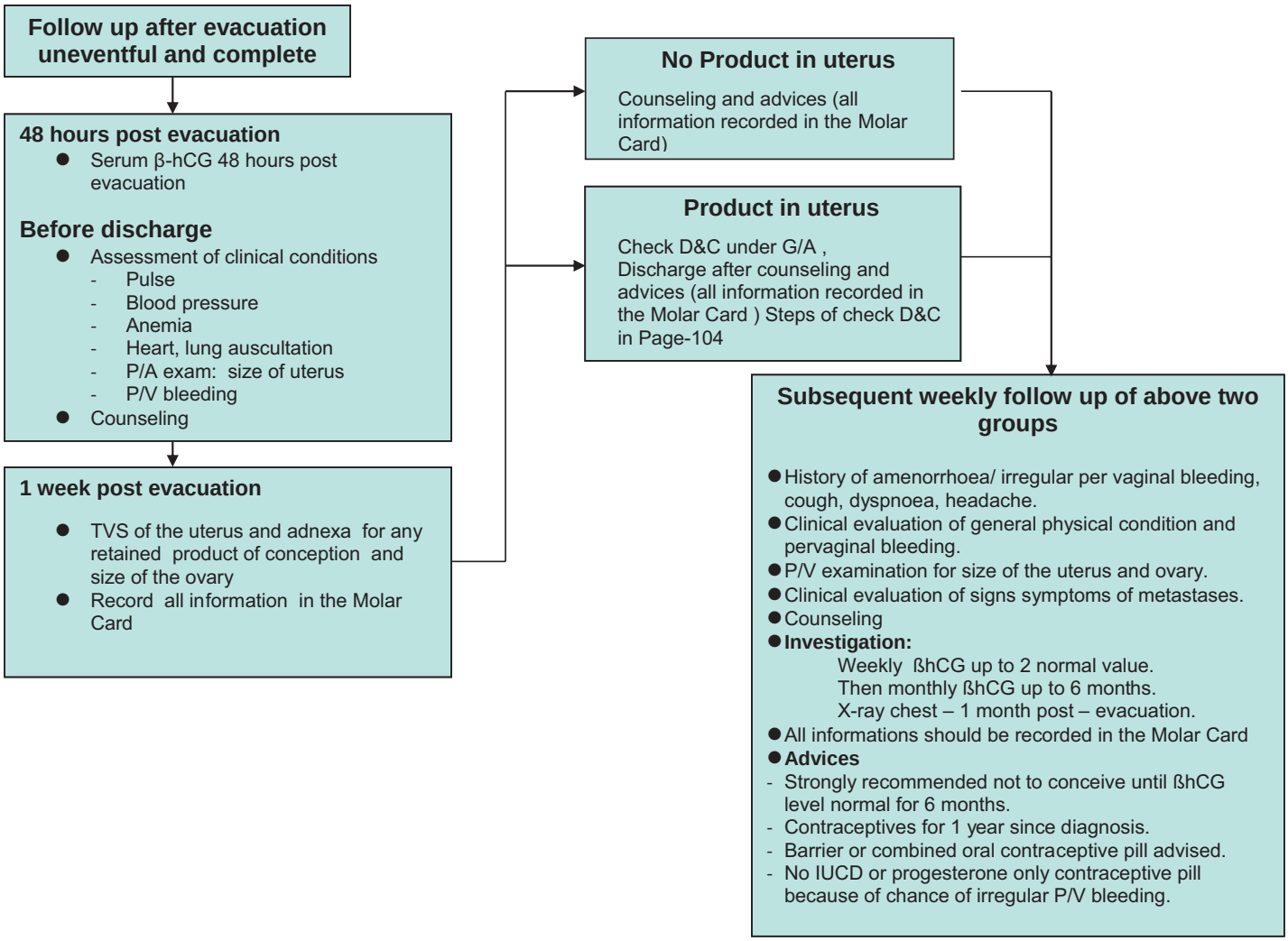
</table>

Flow chart for Specific Management of Ectopic Pregnancy/Mole According to Cause of Bleeding



Flow chart



Diagnosis of Gestational Trophoblastic Neoplasia (GTN)

Definition: The malignant forms of GTD are collectively known as Gestational Trophoblastic Tumours or Neoplasia (GTN)
Diagnosis of GTN is based on clinical and biological rather than histological criteria.
FIGO oncology committee recommendations[1]:

1. βhCG plateau for 4 consecutive values over 3 weeks (days 0,7,14,21)
2. βhCG level increase of more than 10% for three consecutive valuesover 2-weeks (days 0,7, and 14)
3. βhCG persistence 6 months after molar evacuation.

Histological confirmation of metastases should be avoided since the punction may causes excessive bleeding[2]. For any woman presenting in her reproductive age with metastatic disease of unknown origin, βhCG should be checked to exclude a GTN[3].

References:

1. FIGO oncology committee. FIGO staging for gestational trophoblastic neoplasia2000. FIGO oncology committee. Int JGynaecol Obstet. 2002 Jun;77 (3):285-7.
2. Mangili G, Lorusso D, Brown J, PfistererJ, Massuger L, Vaughan M, et al. Trophoblastic diseases review for Diagnosis and Management: A Joint Report From the International Society for the Study of Trophoblastic disease, European Organization for the Treatment of Trophoblastic Diease, and the Gynaecologic Cancer Inter Group. Int J Gynecol Cancer.2014 Nov;24(9Suppl3): s109-16.
3. Bolze P-A, Attia J, Massardier J, Seckl MJ, Massuger L, van Trommel N, et al. Formalisedconsensus of the EuropeanOrganisation for Treatment of Trophoblastic Diseases on management of gestotional trophoblastic diseases. Eur J Cancer. Elsevier Ltd; 2015 Sep. 1;51(13): 1725-31.

Protocol for Suction/Evacuation of Mole

a) Immediate hospitalization is mandatory once a case is diagnosed as molar pregnancy.

1. Thorough evaluation of general physical condition which includes anaemia, dehydration, fever, pulse, BP, infection, electrolyte imbalance, hyperthyroidism and pre-eclampsia.
2. Evaluation of uterine size and condition of cervix.
3. Evaluation of medical co-morbidities which includes diabetes, hypertension, cardiac disease, respiration problem.
4. Investigation to be done are: CBC, X-ray Chest P/A view, urine R/M/E and C/S, FT_4, TSH, Serum creatinine, SGPT, HBsAg and Blood sugar 2 hrs after 75 gm of glucose and USG if not done before.

c) Pre-operative preparation

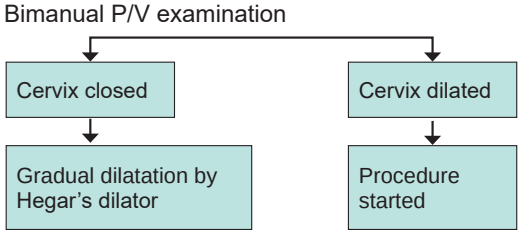
1. Correction of anaemia by blood transfusion.
2. Injectable antibiotic.
3. Correction of electrolyte imbalance and dehydration (if any) by Hartmann's solution.
4. Treatment of Hyperthyroidism, PE, Diabetes (if any)
5. Proper counseling.
6. Intravaginal misoprostol 200mg if cervix is long, tubular and firm.
7. Keep 2 bags of whole blood ready for transfusion if required.
8. Keep laparotomy set ready if the uterine size is >12 weeks (may be required if bleeding is uncontrolled or perforation of uterus occurs or intraperitoneal haemorrhage occurs). In these situations, hysterectomy, hysterotomy or bilateral internal iliac artery ligation may be required.

d) Procedure

Electronic suction/evacuation is the method of choice for evacuation of mole regardless of size of the uterus. Manual MR syringe and Karman cannula <10mm size is not suitable for S/E of molar tissue

STEPS OF PROCEDURE:

1. Anesthesia preferably by G/A.
2. Bimanual P/V examination



3. Selection of appropriate size cannula and sucker tube.
4. Sucker machine is checked.
5. Depth of uterine cavity assessed by uterine sound.
6. Sucker tube connected to cannula.
7. A wide bore cannula >10mm is introduced more than halfway to the uterine cavity, not touching the fundus.
8. Sucker machine is started.
9. The cannula is rotated in the upper segment of uterine cavity by very short in and out stroking motion.
10. Best accomplished by slowly rotating 180° in one direction, then reversing direction.
11. Halfway through the procedure, an oxytocin drip is started.
12. Operator should be aware of the capacity of the bottle of sucker machine, as vacuum capacity of the machine falls markedly when it is half-filled with aspirate.
13. Operator should also be aware of the size of the vesicle removed and should be marked in the operation note.
14. Some molar tissue collected for HPE.
15. During the whole procedure, one hand of the assistant or operator should be kept on the fundus of the uterus to guard against perforation, reduction in size of uterus and to provide continuous gentle massage which helps in contraction of the uterus.
16. At the end of the procedure, per-rectal misoprostol is given to control any unwanted P/V bleeding and Inj. Ergometrine if excessive bleeding.

Protocol for check D&C for Incomplete Evacuation of Molar Pregnancy

1. Thorough evaluation by history, clinical examination and investigation
   - History of evacuation of mole followed by irregular P/V bleeding for >2 weeks
   - Clinical examination for-
     - Anaemia – corrected by blood transfusion
     - Dehydration – corrected by fluid
     - size and consistency of uterus and cervix

   - Uterus firm, indicate contracted and less molar tissue in the uterus
   - Uterus soft and doughy, indicate large amount of molar tissue in the uterus
   - Cervix firm, tubular which needs use of misoprostol for ripening- 1 hour before procedure.
   - Cervix-soft, os open which indicate ripe cervix.
   - Investigations
     - CBC, Serum β-hCG, CXR, P/A view, Urine R/M/E & C/S, S.creatinine, SGPT, HBs Ag, TSH, FT4-if not done earlier

2. Procedure: Usually electronic suction machine is not required for check D&C.
   b. Use of oxytocin 20IU in 1000ml Hartman solution at the onset of procedure.
   c. Dilatation of cervix required by maximum size dilator.
   d. First removal of molar tissue by maximum size sponge holding forcep.
   e. Removal of molar tissue by using maximum size curette.
   f. Introduce curette up to fundus each time.
   g. Curettage of anterior wall - 3-4 times.
   h. Curettage of posterior wall - 3-4 times.
   i. Curettage of 2 lateral wall - 3-4 times.
   j. Curettage of fundus -3-4 times, up to completeness.
   k. Sponge holding forcep required in case of large amount of tissue.
   l. All products are sent for HPE.
   m. Give gentle massage.
   n. Give- Inj. Ergometrine and per-rectal misoprostol to control heavy bleeding.
   o. Advice given for serum β-hCG 48 hour after check D&C.
   p. Patient is advised to come with the report of serum β-hCG and histopathology report.

If histology report normal, she is asked

31: Protocol for Septic Abortion

Definition: Abortion complicated with infection is called septic abortion

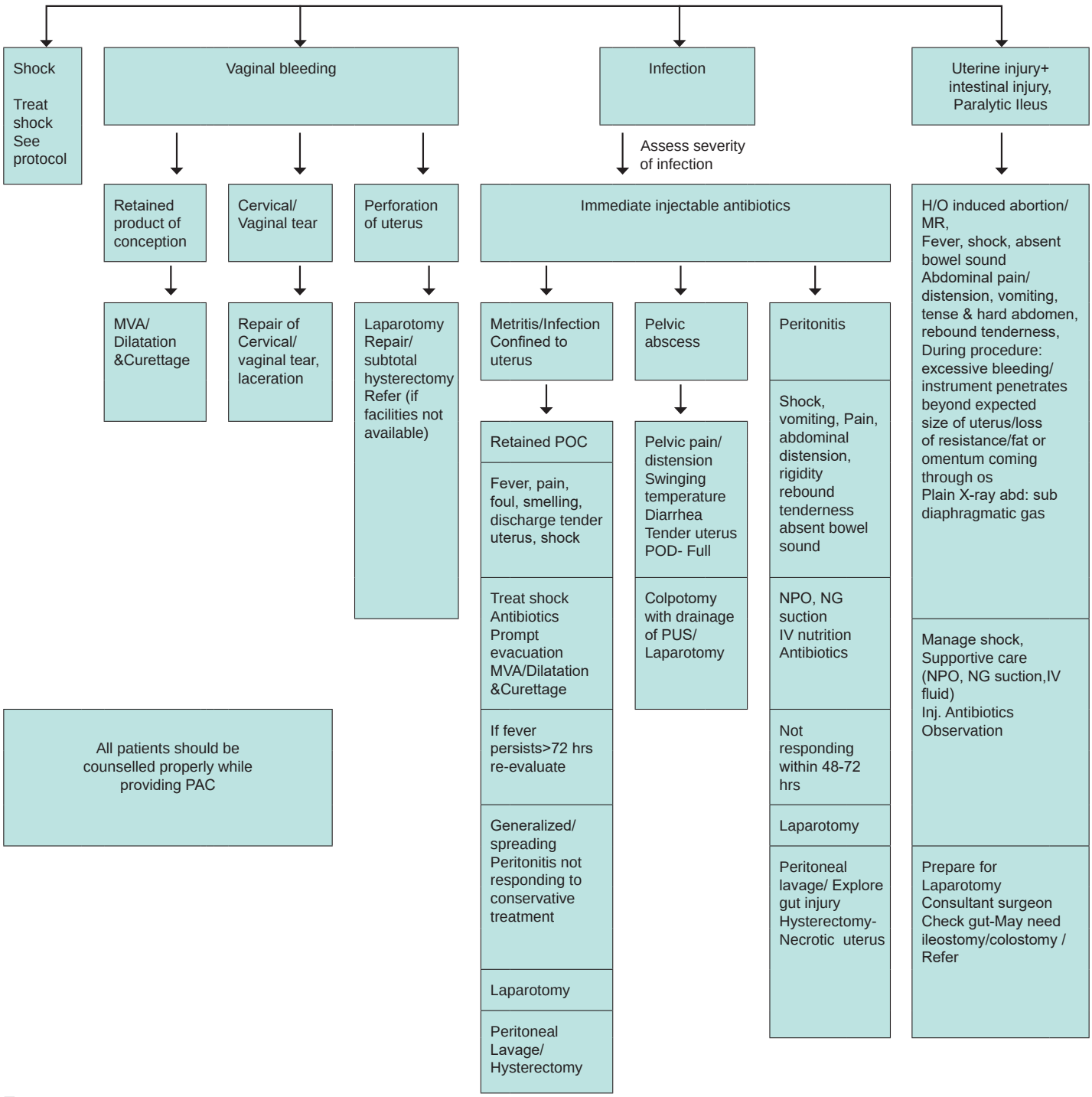
<table>
<tr><td>Symptoms and Signs</td><td>• Amenorrhea
• H/O induced abortion/MR
• Vaginal bleeding, foul smelling discharge
• Abdominal pain
• Fever, chills
• Passage of product of conception
• Features of shock
- Hypothermia
- Rapid pulse, low BP
- Oliguria
- Respiratory distress
- Reduced level of consciousness
• May be anaemia, anuria, Jaundice, hemoglobinuria, hemosidernuria due to intravascular hemolysis</td><td>Features of Peritonitis/ Internal Hemorrhage/ Intestinal injury
• Vomiting
• Temp: High or sub normal
• Dehydration
• Raised pulse, low BP
• Abdominal distension
• Rebound tenderness
• Rigid abdomen
• Absent bowel sound</td><td>Pervaginal
• Enlarge uterus
• Foul smelling discharge
• Cervical motion tenderness +ve
• POD-Full
• Pelvic mass</td></tr>
<tr><td>Categorize</td><td>1. Only S/S of infection
2. Retained product of conception
3. Severe abdominal pain- uterine perforation
4. Paralytic Ileus/suspected bowel injury</td><td></td><td></td></tr>
<tr><td>General Management</td><td colspan="3">1. Hospital admission
2. Recognition: Assessment of maternal condition
3. Communication about the etiology& consequences
Reassurance/confidentiality
4. Initial management
• IV access: IV fluids Normal saline/Ringer’s lactate
• Maintenance of nutrition
• Antibiotics: Immediate injectable broad spectrum antibiotics
Ampicillin+ Gentamycin and metronidazole or clindamycin + Gentamycin (Ref: Marck Manual)
• Pain Relief: Inj. Pethidine
• Antipyretic and cold sponging- if high temperature
• Catheterization
• Strict fluid balance, maintain intake output chart
• Inj. Tetanus toxide 0.5 ml IM & Tetanus Immunoglobulin IM
5. Monitoring and investigation
• Monitor temperature, Pulse, BP, respiration, Intake output
• Inv: CBC, Blood Grouping & Rh typing, S.creatinine, electrolytes, HVS/urine/blood for C/S, USG of abdomen, X-ray abdomen in erect posture including both doses diaphragm as necessary
• Blood for cross matching.</td></tr>
</table>

If expertise/facility unavailable:

- Provide first aid
- Counsel patient and family
- Refer

Flow Chart for Specific Management of Septic Abortion

SCREEN FOR LIFE THREATENING COMPLICATION AND PREPROCEDURE COUNSELING



Foot note

Antibiotics: Ampicillin IV 2 gm every 6 hours+Gentamycin 80 mg IV every 8 hours+Metronidazole 500 mg IV every 8 hours

POD: Pouch of Douglus

POC- Product of conception, PAC= Post Abortion Care

Reference:

1. Technical standard & service delivery guideline: Post Abortion Care DGFP, MOHFW and Engender health

Regime-Protocol

Antibiotic Regime for Different Condition

1. Delivery and Episiotomy	Routine antibiotic prophylaxis is not recommended for women with uncomplicated vaginal birth. One course of antibiotic may be given when membrane ruptures for > 6 hours during vaginal delivery Dose: Cap. Amoxicillin 500 mg 8 hourly/ Cap Cephalosporine 500 mg 6 hourly for 5 days Routine antibiotic prophylaxis is not recommended for women with episiotomy. Second degree perineal tear is anatomically similar to episiotomy and does not warrant use of prophylactic antibiotics Where episiotomy wound extends to become third or fourth degree perineal tear prophylactic antibiotics should be administered
2. Caesarean Section	One course of injectable antibiotic should be given after cord is clamped following delivery of the baby or 30 minutes before the start of the procedure Regime: Inj. Amoxicillin 1 gm IV and repeat 8 hourly for 3 doses +Inj. Metronidazole 500 mg IV slowly for 3 doses OR Inj. Cephalosporine 1 gm IV and repeat 6 hourly for 4 doses + Inj. Metronidazole 500 mg IV slowly for 3 doses OR Inj. Cephalosporine 1 gm IV single dose, Inj. Metronidazole 500 mg IV slowly for 3 doses Followed by Cap. Amoxicillin 500 mg 8 hourly or Cap. Cephalosporine 500 mg 6 hourly for 5 days
3. Eclampsia	Inj. Amoxicillin 1 gm IV and repeat 8 hourly for 5 days/Inj. Cephalosporine 1 gm IV and repeat 6 hourly for 5 days
4. Manual removal of placenta	
5. Inversion of uterus	Regime: Broad spectrum combination antibiotics IV route Inj Amoxicillin 2 gm stat and 1 gm 8 hourly + Inj. Gentamycin 5 mg/kg-24 hourly + Inj. Metronidazole 500 mg 8 hourly continue same dose same route until the patient is symptom free for 72 hours
6. Prolognedlabour	
7. Obstructed labour	
8. Puerperal sepsis	
9. Septic Abortion	
10. Chorioamnionitis	
11. Minor procedures	Regime: Single dose orally Ciprofloxacin 500 mg or Doxicycline 100 mg

Reference:

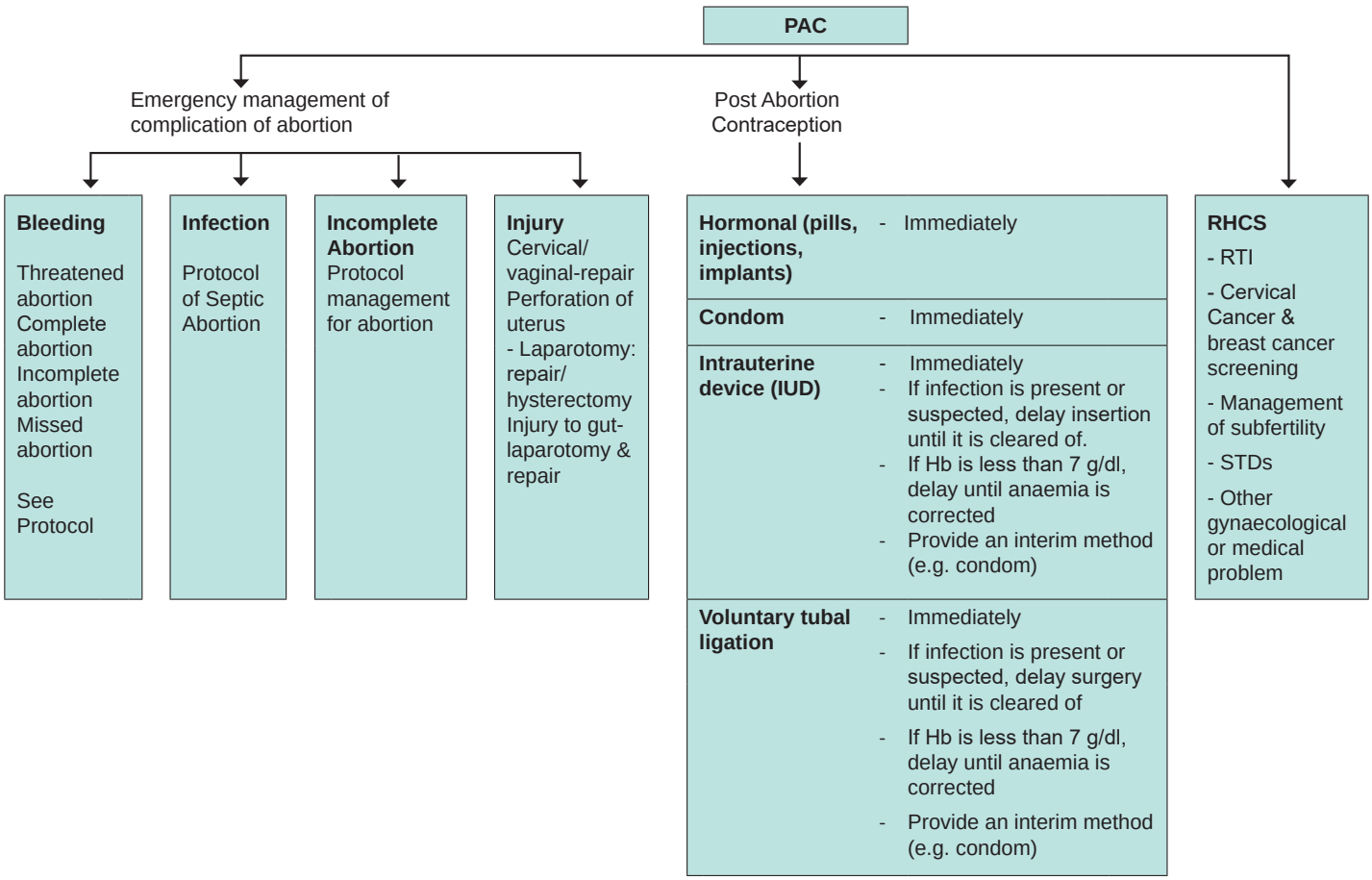
1.Clinical Practice Guideline SOGC , No 247 , 2017

2. WHO recommendations Intrapartum care for a positive childbirth experience 2018

32: Flow chart for Post Abortion Care (PAC)

Comprehensive post abortion care includes both curative and preventive care. I+ consists of three key elements-

- **Emergency management for complications of spontaneous or induced abortion- bleeding, infection and injury**
- **Post abortion contraception counseling and services**
- **Coordination between emergency post abortion treatment and comprehensive reproductive health care services (RHCS)**



Post abortion counseling

Pre procedure Counseling: The patient's overall physical condition, result of physical and pelvic examinations and laboratory tests, the time frame for treatment and follow up, treatment procedure and its risks and benefits post abortion care, warning signs, available contraceptive methods, preventive measures for the sexually transmitted infections, information regarding other reproductive health services. During procedure counseling: Positive empathetic, verbal/non-verbal communication.

Post Procedure counseling: Possible side effects and warming signs. How to take care of herself at home, the importance of follow up visit, available contraceptive methods, The benefits and limitations of all contraceptive methods and help choose her the appropriate one

Foot Note:
In case of abortion up to 12 weeks pregnancy fertility retuns after 14 days of abortion. Counsel and encourage using contraceptive
If the women is Rh negative& husband is Rh positive give inj. AnitD-250 ugm IM to mother

33: Protocol for Antibiotic Therapy

1. Antibiotic therapy

- Infection during pregnancy and the postpartum period may be caused by a combination of organisms including aerobic and anaerobic cocci and bacilli.
- Uterine infection can follow an abortion or childbirth and is one of the cause of maternal death.
- Broad spectrum antibiotics are often required to treat these infections.
- Antibiotics should be started based on the woman's clinical condition.
- If there is no clinical response, culture of vaginal discharge, pus or urine may help in choosing alternate antibiotics. In addition, blood culture may be done if septicemia is suspected.
- In cases of unsafe abortion and non-institutional delivery, anti-tetanus prophylaxis should also be provided – if necessary
- In case of puerperal sepsis and unsafe abortion culture sensitivity of collected materials to be sent before starting antibiotics

2. PROVIDING PROPHYLACTIC ANTIBIOTICS

1. Performing certain obstetrical procedures (e.g. caesarean section, manual removal of placenta) increases morbidity due to infection.
2. This risk can be reduced by:
   - following recommended infection prevention practices ;
   - Providing prophylactic antibiotics at the time /before the procedure.
3. Prophylactic antibiotics are given to help prevent infection.
4. If a woman is suspected to have or is diagnosed as having an infection, therapeutic antibiotics are more appropriate.
5. Give prophylactic antibiotics 30 minutes before the start of a procedure, when possible, to allow adequate blood levels of the antibiotic at the time of the procedure.
6. In caesarean section, prophylactic antibiotics is usually given when the cord is clamped after delivery of the baby
7. One dose of prophylactic antibiotics is sufficient.
8. The choice of antibiotic for C/S is single dose of 1st generation cephalosporin. In case of Allergic to Penicillin, Clindamycin/ Erythromycin can be used.
9. If the procedure lasts longer than 6 hours or blood loss is 1500 mL or more, give a second dose of prophylactic antibiotics to maintain adequate blood levels during the procedure.
10. In patient with morbid obesity (BMI > 35 lbs), doubling the antibiotic dose may be given.

3.Therapeutic Antibiotics- when the women is suspected to have or is diagnosed as having infection

- As a first defense against serious infections, give a combination of antibiotics:
  - Inj Amoxicillin/Cephalosporin 2g IV every 6 hours or Inj. ceftriaxone
  - PLUS Gentamicin 5 mg/kg body weight IV every 8 hours
  - PLUS Metronidazole 500 mg IV every 8 hours

Note: If the infection is not severe, Amoxicillin 500 mg by mouth every 8 hours can be used instead of ampicillin. Metronidazole can be given by mouth instead of IV

- If the clinical response is poor after 48 hours, ensure adequate dosages of antibiotics are being given, thoroughly re-evaluate the woman or other sources of infection or consider altering treatment according to reported microbial sensitivity (or adding an additional agent to cover anaerobes, if not yet given).
- If culture facilities are not available, re-examine for pus collection especially in the pelvis, and for non- infective causes such as deep vein and pelvic vein thrombosis. Consider the possibility of infection due to organisms resistant to the above combination of antibiotics:
  - If staphylococcal infection is suspected, add:
    - Flucloxacillin 1 g IV every 4 hours;
    - OR Vancomycin 1 g IV every 12 hours infused over 1 hours
  - If Clostridial infection or Group A hemolytic streptococci is suspected, add penicillin 2 million units IV every 4 hours;
  - If neither of the above are possibilities, add ceftriaxone 2 g IV every 24 hours

  Note: To avoid phlebitis, the infusion site should be changed every 3 days or at the first signs of inflammation
- If the infection does not clear, evaluate for the source of infection
- For the treatment of metritis, combinations of antibiotics are usually continued until the woman is fever free for 48 hours
- Discontinue antibiotics once the woman has been fever free for 48 hours
- There is no need to continue with oral antibiotics, as this has not been proven to have additional benefit.
- Women with blood stream infections, however, will require antibiotics for at least 7 days.

34: Infection Prevention Practices

Introduction

Infections are caused by microorganisms which are tiny organisms that can only be seen under microscope. Microorganism are everywhere i.e on skin, in air, in people, animals, plants, soil and water.

Who are at risk of infection?

Health care provider, Clients, Community.

Antiseptics: is a chemical agent used to reduce the number of microorganisms on skin and mucous membrane without causing damage or irritation.

Antiseptics are used for:

- Skin, cervical, or vaginal preparation before a clinical procedure
- Surgical scrub
- Handwashing before invasive procedure, or contact with client at high risk of infection

Common antiseptics are – Betadine, Savlon, Chlorhexidine (Hibitane, Hibiscrub)

Disinfectants: is a chemical agent used to kill microorganism on inanimate objects such as instruments and surfaces. Disinfectants are used in three different ways:

- During decontamination
- During chemical HLD & sterilization
- During house keeping

Common disinfectants are – Phenol, Lysol, Chlorine, Gluteraldehyde (Cidex)

Decontamination Process that makes inanimate objects **safer** to be handled by staff **before** cleaning (i.e., inactivates HBV, HCV and HIV and reduces, but does not eliminate, the number of other contaminating microorganisms).

Cleaning Process that physically removes all visible dust, soil, blood or other body fluids from inanimate objects. It consists of thoroughly washing with soap or detergent and water, rinsing with clean water and drying[8].

Principles of Infection Prevention

- ***Consider*** every person (client or staff) infectious
- ***Wash hands*** – It is most practical procedure for preventing cross-contamination (person to person).
- ***Wear gloves***- before touching anything wet, broken skin, mucous membranes, blood or other body fluids (secretions or excretions) or soiled instruments and other items.
- ***Use physical barriers-*** (protective goggles, face masks and aprons) if splashes and spills of any body fluids (secretions or excretions) are anticipated.
- ***Use safe work practices:***
  - Not recapping or bending needles
  - Safely passing sharp instruments
  - Properly disposing of medical waste

Hand Hygiene Practices

Antimicrobial soaps or detergents are not more effective than plain soap & clean water in reducing the risk of infection when used for routine hand wash providing the water quality satisfaction.

Hand hygiene significantly reduces the number of disease-causing microorganisms on hands and arms and can minimize cross-contamination (e.g., from health worker to patient)

Hand Washing

The purpose of handwashing is to mechanically remove soil and debris from the skin and reduce the number of transient microorganisms. Handwashing with plain soap and **clean** water is as effective as washing with antimicrobial soaps. In addition, plain soap causes much less skin irritation.

Hand washing should be done **before**:

- examining (direct contact with) a patient; and
- putting on **sterile** or **high-level disinfected** surgical gloves prior to an operation, or examination gloves for routine procedures such as a pelvic examination.

Hand washing should be done **after**:

- any situation in which hands may become contaminated, such as:
  - handling soiled instruments and other items;
  - touching mucous membranes, blood or other body fluids (secretions or excretions);
  - having prolonged and intense contact with a patient; and removing gloves.

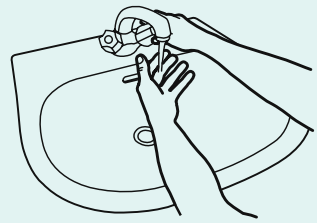
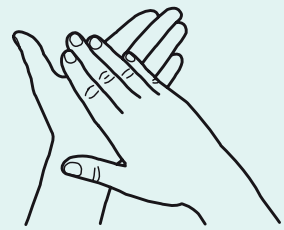
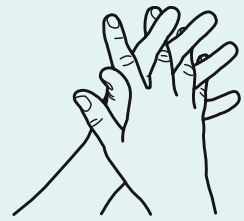
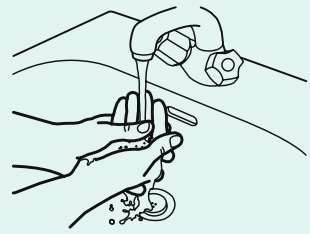
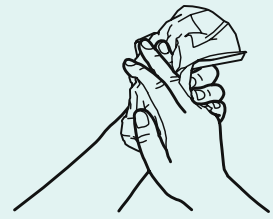
Gloves

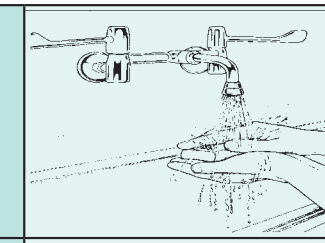
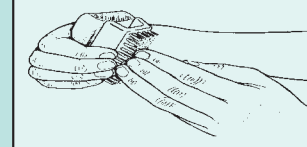
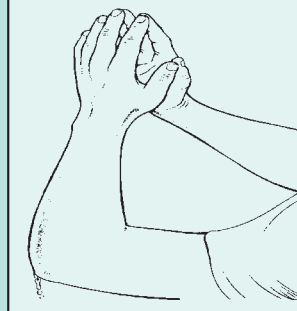
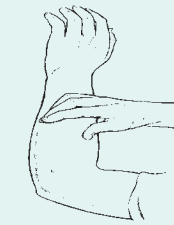
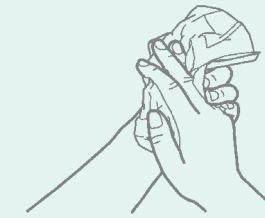
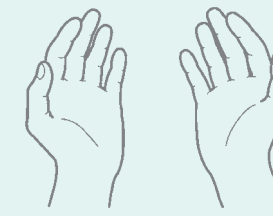
Some Do's and Don'ts about Gloves

- **Do** wear the correct size glove, particularly surgical gloves. A poorly fitting glove can limit your ability to perform the task and may be damaged (torn or cut) more easily.
- **Do** change surgical gloves periodically during long cases as the protective effect of latex rubber gloves decreases with time and in apparent tears may occur.
- **Do** keep fingernails trimmed moderately short (less than 3 mm or 1/8 inch beyond the finger tip) to reduce the risk of tears.
- **Do** pull gloves up over cuffs of gown (if worn) to protect the wrists.
- **Do** use water-soluble (nonfat-containing) hand lotions and moisturizers often to prevent hands from drying, cracking and chapping due to frequent handwashing and gloving.
- **Don't** use oil-based hand lotions or creams, because they will damage latex rubber surgical and examination gloves.
- **Don't** use hand lotions and moisturizers that are very fragrant (perfumed) as they irritate the skin under gloves.
- **Don't** store gloves in areas where there are extremes in temperature (e.g., in the sun, or near a heater, air conditioner, ultraviolet light, fluorescent light or X-ray machines). These conditions may damage the gloves (cause breakdown of the material they are made of), thus reducing their effectiveness as a barrier.

Infection Prevention Practices

Hand Washing

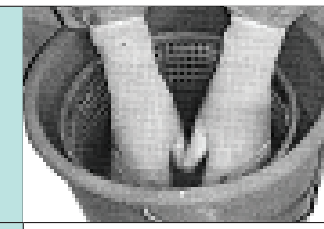
Steps of Routine Hand Washing (10-15 sec)	
Step-1 Remove all jewelry from the hands and wrists. Wet hands with running water	
Step-2 Rub hands together with soap and lather well, covering all surfaces	
Step-3 Vigorously weave nails, fingers and thumbs together and slide them back and forth for 10-15 second	
Step-4 Rinse hands under a stream of clean, running water until all soap is gone	
Step-5 Blot hands dry with a clean towel or allow hands to air-dry	

Steps of Surgical hands scrub (3-5 minutes)	
Step-1 Remove all jewelry from the hands and wrists. Wear OT dress masks, cap and foot wear. Wet hands and forearms thoroughly	
Step-2 Clean under each fingernail with a stick or brush. It is important for all surgical staff to keep fingernails short	
Step-3 Holding hands up above the level of the elbow, apply the antiseptic. Using a circular motion, begin at the fingertips of one hand and later and wash between the fingers, continuing from fingertip to elbow. Repeat this for the second hand and arm. Continue washing in this way for 3-5 minutes.	
Step-4 Rinse each arm separately, fingertips first, holding hands above the level of the elbow	
Step-5 Using a sterile towel, dry the arms from fingertips to elbow using a different side of the towel on each arm.	
Step-6 Keep the hands above the level of the waist and do not touch anything before putting on sterile surgical gloves.	

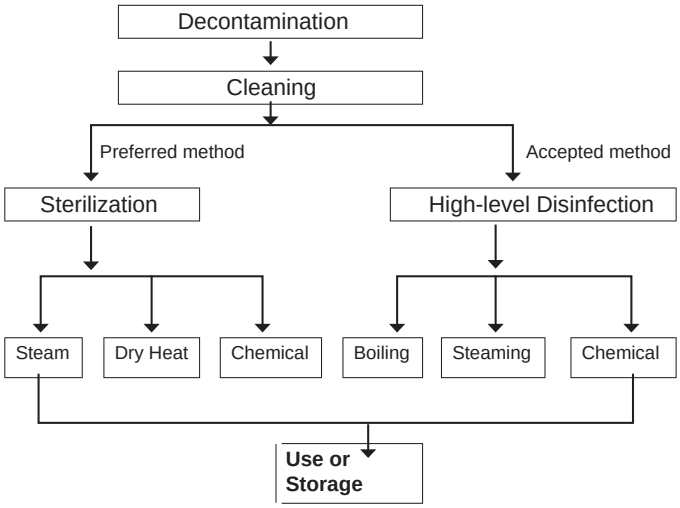
Steps of putting on sterile gloves

Step-1 Prepare a large, clean, dry area for opening the package of gloves and perform a surgical hand scrub and ask someone else to open the package of gloves	
Step-2 Open the inner glove wrapper, exposing the cuffed gloves with the palms up. The first gloves should be picked up by the cuff only	
Step-3 Pick up the first glove by the cuff, touching only the inside portion of the cuff (the inside is the side that will be touching the skin of the service provider). While holding the cuff in one hand, slip the other hand into the glove (pointing the fingers of the glove toward the floor will keep the fingers open). Be careful not touch any thing and hold the gloves above the waist level.	
Step-4 Pick up the second glove by sliding the fingers of the gloved hand under the cuff of the second glove. Be careful not contaminate the gloved hand with the ungloved hand as the second glove is being put on.	
Step-5 Put the second glove on the ungloved hand by maintaining a steady pull through the cuff.	
Step-6 Adjust the glove fingers until the gloves fits comfortably	

Steps of Removing Surgical Gloves

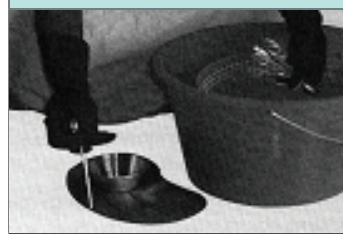
Step-1 Rinse gloved hands in a bucket of decontamination solution to remove blood or other body fluids.	
Step-2 Grasp one of the gloves near the cuff and pull it partway off. The glove will turn inside out. It is important to keep the first glove partially on the hand before removing the second glove to protect from touching the outside surface of either glove with the bare hands	
Step-3 Leaving the first glove over the fingers, grasp the second glove near the cuff and pull it part of the way off. And pull it part of the way off. The glove will turn inside out. It is important to keep the second glove partially on the hand to protect from touching the outside surface of the first glove with the bare hand.	
Step-4 Pull off the two gloves at the same time, being careful to touch only the inside surfaces of the gloves with bare hands.	
Step-5 If the gloves are disposable or are not intact, dispose them properly. If they are to be processed for reuse, place them in a container of decontamination solution.	

Instruments Processing



Decontamination
Steps of Decontamination

Step-1
Immediately after use, decontaminate instruments and other items by placing them in a plastic container of 0.5% chlorine solution. Let them soak for 10 minutes. A container of this solution should be kept in every operating theater and procedure room so that service provider can put used instruments directly into the bucket.



Step-2
After 10 minutes, remove the items from the chlorine solution and either rinse with water or clean immediately. Do not leave items in the solution for more than 10 minutes, since excessive soaking in the solution can demandge instrument and other items. Use utility gloves when removing instruments and other items from a chlorine solution.

Cleaning
Steps of Cleaning

Step-1
Using a soft brush or old toothbrush, detergent and water, scrup instruments and other items vigorously to completely remove all blood, other body fluids, tissue, and other foreign matter. Hold instruments and other items under the surface of the water while scrubbing and cleaning to avoid splashing. Disassemble instruments and other items with multiple parts, and be sure to brush in the grooves, teeth, and joints of items where organic material can collect and stick.

Step-2
Rinse items thoroughly with clean water to remove all detergent. Any detergent left on the items can reduce the effectiveness of further chemical processing

Step-3
Allow items to air dry (or dry them with a clean towel)

High Level Disinfection (HLD)
Steps of High Level Disinfection (HLD) by boiling

Step-1
Decontaminate and clean all items to be placed in a sterilizer/boiler for HLD

Step-2
Water must touch all surfaces for HLD to be achieved, completely submerge all items in the water in the pot or boiler. Open all hinged items and disassemble those with sliding or multiple parts. Place any bowels and containers upright, not upside-down, and fill with water.

Step-3
Cover the pot or close the lid on the boiler and bring the water to a gentle, rolling boil. When the water comes to a rolling boil, start timing for 30 minutes. Use a timer or make sure to record the time that boiling begins. From this point on, don not add or remove any water and do not add any items to the pot or boiler. Lower the heat to keep the water at a gentle, rolling boil.

Step-4
After 30 minutes, remove the items using dry, HLD pickups (lifters, cheatle forceps) place the items on an HLD tray or in an HLD container.

Step-5
Allow to air dry before use or storage. Use items immediately or keep them in a covered, sterile or HLD container for up to one week.

Chemical HLD

Steps of Chemical HLD

Step-1	Decontaminate, clean, and thoroughly dry all instrument and other items to be processed. Water from wet items will dilute the chemical solution, thereby reducing its effectiveness.
Step-2	When using a glutaraldehyde solution: Prepare the solution according to the manufacturer's instruction. After preparing the solution, put it in a clean container with a lid. Mark the container with the date the solution was prepared and the date it expires. When using a chlorine solution: Prepare the 0.5% chlorine solution as described for decontamination. Fresh solution should be made each day, or more often if the solution becomes cloudy. Put the solution in a clean container with a lid.
Step-3	Open all hinged items and disassemble those with sliding or multiple parts. The solution must contact all surfaces in order for HLD to be achieved. Completely submerge all items in the solution. All parts of the items should be under the surface of the solution. Place any bowels and containers upright, not upside-down, and fill with the solution.
Step-4	Cover the container, and allow the items to soak for 20 minutes. Do not add or remove any instruments or other items once timing has begun.
Step-5	Remove the items from the solution using dry, HLD pickups (Lifters, cheatle forceps)
Step-6	Rinse thoroughly with boiled water to remove the residue that chemical sterilants leave on items; this residue is toxic to skin and tissue
Step-7	Place the items on an HLD tray on in an HLD container and allow to air-dry before use or storage. Use items immediately or keep in a covered, dry, HLD container and use within one week.

Stem Sterilization (Autoclave)

Steps of Steam Sterilization

Step-1	Decontaminate, clean and dry all instruments and other items to be sterilized
Step-2	Open or unlock all jointed instruments and other items and disassemble those with sliding or multiple parts. This allows steam to reach all surface of the items. Avoid arranging the instruments and other items together tightly, because this prevents steam from reaching all surfaces.
Step-3	If instruments and other items are to be wrapped before steam sterilization, use two layers of paper, newsprint, or cotton or muslin fabric (do not use canvas). Instruments and other items should not be placed in a closed container. If drums are being used, make sure the holes of the drum are open.
Step-4	In general, sterilize wrapped items for 30 minutes and unwrapped items for 20 minutes at 121 degrees C (250 degree F) and 106 kPa (15lb /in2) pressures. (Do not begin timing until the autoclave reaches the desired temperature an d pressure).
Step-5	Arrange all packs, drums, or unwrapped items in the chamber of the autoclave in a way that allows steam to circulate freely.
Step-6	If the autoclave is automatic, the heat will shut off and the pressure will began to fall once the sterilization cycle is complete. If the autoclave is not automatic, turn off the heat or remove the autoclave from the heat source after 30 minutes if items are wrapped, 20 minutes if items are unwrapped. Wait until the pressure gauge reads "zero" to open the autoclave. Open the lid or door to allow the remaining steam to escape. Leave instruments packs or items in the autoclave until they dry completely, which can take up to 30 minutes.
Step-7	Remove the packs, drums, or unwrapped items from the autoclave using sterile pickups. To prevent condensation after removing packs or drums from the autoclave, place them on a surface padded with sterile paper or fabric until they are cool. Wait until the packs, drums, or items reach room temperature (which may take up to several hours) before storing.
Step-8	Store items properly. Proper storage is as important as the sterilization process itself: Wrapped Items: Under optimal storage condition and with minimal handling, proper wrapped items can be considered sterile as long as they remain intact and dry. For optimal storage, place sterile packs in closed cabinets in areas that are not heavily trafficked, have moderate temperature, and are dry or of low humidity. When in doubt about the sterility of a pack, consider it contaminated and re sterilizes it. Unwrapped items: Use unwrapped items immediately after removal from the autoclave or keep them in a covered, sterile container.

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3. Pereira LJ, GM Lee and KJ Wade. 1997. An evaluation of five protocols for surgical handwashing in relatin to skin condition and microbial counts, J Hosp Infect 36(I):49-65.
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Essential Drug List &Equipment

1. Infusion-Normal saline
2. Infusion- Hartman Saline
3. Inj. Amoxicilin 500mg
4. Inj. Metronidazole 500mg
5. Inj. Gentamycin 80mg
6. Inj. Oxytocin
7. Inj. Ergometrine
8. Tab. Misoprostol
9. Inj. Magnesium Sulphate ampoule (5ml/2.5gm 50% solution)
10. Inj. Magnesium Sulphate- bottle (Nalepsin) (4 gm/100 ml 4% solution)
11. Inj. Diazepam
12. Inj. Labetalol
13. Inj. Hydralazine
14. Inj. Frusemide
15. Inj. Dopamine
16. Inj. Roxadex (Dexamethasone)
17. Inj. Hydrocortisone
18. Inj. Adrenaline
19. Distilled water
20. Tab. Nifidipine
21. Nifidipine gel
22. Saline set
23. Transfusion set
24. IV canula I6G/I8G/21G
25. Foley's catheter
26. Urobag
27. Sterile Gloves
28. Umbo bag- adult and baby
29. Tongue depressor
30. Airway tube
31. Syringe 5/10 cc
32. Ryles tube
33. Test tube
34. Condom packet
35. Sterile threads
36. BP machine
37. Stethoscope
38. Doppler
39. Plain rubber catheter

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Standard Management Protocol on EmONC

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